

A taxonomy design for mobile applications in the Spanish political communication context

Rocío Zamora-Medina; José-Carlos Losada-Díaz; Pablo Vázquez-Sande

How to cite this article:

Zamora-Medina, Rocío; Losada-Díaz, José-Carlos; Vázquez-Sande, Pablo (2020). "A taxonomy design for mobile applications in the Spanish political communication context". *Profesional de la información*, v. 29, n. 3, e290327.

<https://doi.org/10.3145/epi.2020.may.27>

Manuscript received on August 8th 2019

Accepted on January 23rd 2020



Rocío Zamora-Medina ✉
<https://orcid.org/0000-0002-0541-2456>

Universidad de Murcia
Facultad de Comunicación y
Documentación
Campus Universitario de Espinardo
30100 Espinardo (Murcia), Spain
rzamoredina@um.es



José-Carlos Losada-Díaz
<https://orcid.org/0000-0002-3966-837X>

Universidad de Murcia
Facultad de Comunicación y
Documentación
Campus Universitario de Espinardo
30100 Espinardo (Murcia), Spain
jclosada@um.es



Pablo Vázquez-Sande
<http://orcid.org/0000-0001-5081-385X>

Universidad de Santiago de Compostela
Facultad de Humanidades
Campus Universitario de Lugo
Avda. Filarmónica Lucense, s/n.
27002 Lugo, Spain
pablo.vazquez.sande@usc.es

Abstract

The new mobile ecosystem that now defines the so-called mobile society and the mobile culture is already a key territory for contemporary political communication. Within this culture, mobile applications have become a common ground for the meeting between organisations and citizens interested in participating in political matters through the direct experience that these platforms allow. Despite this development, it is difficult to find a complete and reliable taxonomy of apps in the academic or professional literature that analyses how these relationships impact the field of political communication. This study tries to address this gap, introducing the first systematic taxonomy of political communication apps in Spain based on the development of a self-produced taxonomical model that gathers in detail all the variables required to understand the nature of these applications that are available for any smartphone. This rigorous taxonomy comprises political communication applications available at the main app stores (about 316 found in *Play Store* and *App Store*). Specifically, the methodological classification was elaborated based on the following categories: promoter agent, app objective, level of interaction, level of autonomy and predominant tone. A very complete picture was obtained from the empirical analysis, which defines and explains the landscape of political communication applications for mobile devices in Spain.

Keywords

Techno politics; Mobile communication; Mobile politics; Pocket politics; Apps; Political communication; Smartphones; Mobile ecosystem; Mobile technology; Media ecology; Economy of applications.

1. Introduction

Mobile media are clearly an emergent interdisciplinary field for researchers to identify new opportunities to advance mobile political communication theory (Martín, 2014). All aspects of social life have been touched by mobile technology so that cultural, symbolic, and social interaction aspects of mobile communication are more and more a research topic that requires further academic contributions from a comparative perspective (Katz, 2011). Studies dealing with mobile communication have focused on different research lines in political contexts (Costa-Sánchez, 2012) mostly dealing with technology innovations aspects (Serrano-Tellería, 2017) or even privacy as a key research issue (Sarabia-Sánchez; Aguado; Martínez-Martínez, 2019).

Specifically, the use of mobile communication in political contexts is a relatively recent phenomenon for researchers who are mostly focused on their use for online campaigns (Stromer-Galley, 2019). However, some international scholars also question to what extent mobile applications are considered a new political discussion platform (Pang, 2018), while other scholars examine the importance of apps to build a politics of openness and to create mobile ubiquity cultures (Goggin, 2011).

In Spain, only a few studies have followed a media consumption-oriented approach, such as those dealing with content and the interactivity of the apps for national television networks (Videla-Rodríguez; García-Torre; Formoso-Barro, 2016; Ortega-Mohedano, 2015; Diego-González; Guerrero-Pérez; Etayo-Pérez, 2014) or an overview of radio broadcasting networks (Hernando-Lera, 2016; Piñeiro-Otero, 2015; Herrera-Damas; Ferreras-Rodríguez, 2015) and even the impact on printed media (López-García; Westlund; Silva-Rodríguez, 2015). A few examples can be cited from a peripheral approach to the political communication field, such as a case study about the discourse on corruption in the news games platforms (Gómez-García; Cabeza-San-Deogracias, 2016) or an analysis about the applications linked to smart cities in Spain (Barceló-Ugarte; Cabezuelo-Lorenzo; Sánchez-Martínez, 2017). In an attempt to classify mobile apps during elections, Vázquez-Sande (2016) focused on three parameters: the objectives identified, the geographical scope, and the agents promoting the apps. However, among our limitations, the institutional initiatives were not included in the sample and apps with a minimum of 100 downloads were not considered either. Another recent study included the analysis of the political discourse of the President of the United States, Donald Trump, (Gómez-García *et al.*, 2019) to identify main content features in the most downloaded apps.

Based on previous endeavours of mobile communication scholars (Aguado; Martínez-Martínez; Cañete-Sanz, 2015; Flora; Wang; Chande, 2014; Scolari; Aguado; Feijóo, 2012) the present study exclusively focused on elaborating a categorisation of mobile apps in political contexts in Spain. Taking the state of the art of mobile communication studies in mind, there is a need to establish an updated taxonomy that allows us to integrate the diversity of applications available in political contexts. This study tries to provide a first picture of the use of these communication tools in the specific field of political contexts in Spain by proposing the first systematic classification of political communication apps in the country to help reduce the complexity of this field.

1.1. The relevance of applications on the new mobile ecosystem

The exponential growth of mobile technology in Spain and worldwide is well-known. According to a report from *Fundación Telefónica* (2017), mobile phone penetration is 99.7 lines for each 100 inhabitants. More than 29 million individuals own a smartphone today and the mobile phone is the most used device for Internet access (97%). The number of smartphone users exceeds that of Internet users (Ditrendia, 2018). In fact, Spain is still positioned in the list of countries with more 'only mobile' users in the world, led by India (70%). The average of minutes in Spain per apps visitor is 3.248 minutes weekly (7.7 hours per week). These data clearly show the powerful potential of this mobile ecosystem, to justify the study of potential implications on new ways of interaction in political communication.

When defining the new mobile ecosystem, assumptions from Media Ecology conceptual framework need to be considered to analyse mobile technologies, from a theoretical perspective, the arrival of mobile devices as a new "species" coexisting in a new "atmosphere" defined by its presence with other media (Scolari; Aguado; Feijóo, 2013). With the launching of smartphones, the new concept of "app" was introduced. However, the spreading of mobile applications coincided with the launching of mobile platforms, such as *iPhone* back in 2007, and the opening of the first *App Store* for *iPhone* by *Apple* in 2008. In the context of the so-called "economy of applications" (Mandel, 2012), the market of mobile applications can be identified with

Applications, as emerging cultural platforms constituted and controlled by large transnational corporations of world mobile media, are far from being considered a free market

"a battlefield for the main stakeholders of the media ecosystem, but at the same time, the basic agreements between these huge armies (manufacturers of mobile devices, contents creators, telephone operators, etc.) allowed the market to expand" (Scolari; Aguado; Feijóo, 2012, p. 31).

In general, a mobile application can be defined as

"the use of a mobile technology by a final user for a specific purpose" (Nickerson *et al.*, 2009),

such as purchasing a ring tone, booking a flight in an airline or, spotting an election rally in your city during an electoral campaign. Nevertheless, from the user experience perspective, as some scholars suggested (**Aguado; Castellet, 2010**) it is necessary to reconsider the classical division between application (just tools for doing things) and mobile content (for knowing things), although both concepts seem to be connected.

In the specific case of political contexts, there are many purposes when it comes to developing a political app, and the hybrid function of applications is evident: knowing and doing things. Including apps that attempt to facilitate the civic engagement as well as apps providing communication channels to improve the representatives-represented dialogue, up to apps that aim to mobilize voters, coordinate grassroots campaigns, organize campaigns, spread electoral information, raise money, and even provide some sort of game related to the candidates' images.

1.2. Towards a taxonomy of mobile applications

The mobile ecosystem, where the political applications are included, is such a dynamic field that any taxonomy must be flexible and adaptable to adjust to the ever-shifting mobile communication market (**Scolari; Aguado; Feijóo, 2012; Abolfazli et al., 2013; Karhu; Tang; Hämäläinen, 2014; Aguado; Martínez-Martínez; Cañete-Sanz, 2015; Flora; Wang; Chande, 2014; Aceto et al., 2017**).

The term taxonomy refers to a classification in organized groups or categories, usually used to minimise the complexity and to identify similarities and differences (**Bailey, 1995**). However, up until today, taxonomies proposed in this field are scarce (**Nickerson et al., 2009**); therefore, a greater research endeavour is required. Any attempt to establish a taxonomy for mobile phone applications must be based on different criteria to be concise, inclusive enough, comprehensive, and also extendible (**Nickerson et al., 2009**).

In order to review the most adequate criteria for the present taxonomy, generic mobile applications taxonomies proposed from other disciplines have been considered. Thus, **Kemper and Wolf (2002)** proposed a taxonomy based on a three-dimensional classification (level of innovation, speed of development, and risk) as well as a set of features focused in the development of mobile applications. **Seong-Leem, Sik-Suh and Seong-Kim (2004)** developed a hierarchical classification scheme, based on a more specific perspective, linked to mobile business models. Shortly after, **Nysveen, Pedersen and Thorbjørnsen (2005)** offered a basic scheme of bidimensional classification of mobile services clustered in two binary categories: the type of interactivity (person-interactive vs. machine-interactive) and characteristics of the process (objective-oriented vs. experimental). From a client-oriented perspective, **Heinonen and Pura (2006)** developed a classification scheme for mobile services based on four categories: type of consumption, context, social environment, and relationship. **Dombroviak and Ramnath (2007)** investigated the mobile versions of applications for the computer and created a taxonomy based on the application features. In the same line, **Nickerson et al. (2009)** developed an interesting taxonomy of mobile applications for the field of information system based on how the user interacts with the application; **Kennedy-Eden and Gretzel (2012)** suggested their own model for tourism. More recently, **Shroff, Keyes and Linger (2015)** proposed a specific taxonomy of mobile applications to be used in education to unify the existing learning theories in an attempt to facilitate understanding pedagogical issues in mobile learning.

Other attempts to provide a taxonomy of mobile contents looked for a more extensible taxonomy and other criteria to follow. For instance, **Scolari, Aguado and Feijóo (2012)** provided their own taxonomy of contents and applications based, in each case, on the categories genre/ purpose, origin/ adaptation, narrative strategy and storage conditions.

In the case of content classification, most of usual classifications

“are only translations of other industries in the mobile domain and do not measure the attributes of the mobile content that can promote their evolution” (**Feijóo et al., 2009, p. 284**).

In this sense, from the genre's perspective, the domain of mobile content is influenced by the standard content of media, where different categories can be identified following the functions of traditional media: information, persuasion and entertainment.

The mobile contents can also be classified using the criterion of the origin of each application. **Scolari et al. (2009a; 2009b)** differentiate between specific contents created for mobile devices, contents adapted or transformed for mobile devices and non-adapted contents. A new taxonomy proposed later by **Feijóo et al. (2009)**, not only for contents but also for applications, differentiates four categories: contents or applications that are *original or specific*; *adapted* contents or applications; contents or applications that have been *reused* for mobility; and *augmented* content or applications. Likewise, the mobile content tends to occupy a relevant place in the transmedia strategies. Mobile contents can also be classified into autonomous/ dependent contents, depending on whether they allow autonomous consumption or not. Finally, these experts classified the mobile content depending on whether the content can be stored in a cloud server or downloaded in the mobile device.

“ From the user experience perspective, it is necessary to reconsider the classical division between application (just tools for doing things) and mobile content (for knowing things), since both concepts seem to be intricately connected ”

Although all these criteria are a good starting point to map the issue of digital content applications, they are not good enough to explain the specific nature of the mobile content (Scolari; Aguado; Feijóo, 2013). For this reason, Scolari, Aguado and Feijóo (2013) proposed a new positional model to classify mobile applications of contents based on two crucial questions. On the one hand, they located the action developed in a first axis – contemplation versus intervention– to distinguish between content (to know things) and the application (a tool for doing things); in the second axis, the distinction between the dimension of the content narrative (as text for knowing things) and the interaction derived from that content (a tool for doing things). Finally, they identified four spaces in the intersection of these axes: the adaptation; the content and the application as a tool for doing things; the management; and, finally, participation.

“The progressively higher penetration of smartphones and, consequently, the democratisation of mobile applications, require an exhaustive review of the rationales followed in the specific field of political communication”

Recently, Aguado, Martínez-Martínez and Cañete-Sanz (2015) used this functional model of mobile content applications to measure to what extent the functional evolution of mobile content applications is moving across the four spaces of this model, pointing out to an acceleration of the fusion between the idea of the application as a tool and the idea of the application as a content. In the context of mobile applications, where there is a mix between types of contexts, functions and services, this task represents a real challenge. When studying the evolution of a sample of 12 relevant mobile applications with their corresponding updated versions for two years (N = 646), the content of the applications was analysed using a score scale depending on the relevance of the four functional key categories: content reproduction, content creation, content management and participation in contents. Results showed a clear evolution towards the multifunctional integration in mobile content applications. Specifically, most relevant functions were content management and social participation. The functional convergence of applications of a mobile content means, in the end, an

“active and social conception of the content, that is not only a final consumption object, but also a language, a resource” (Aguado *et al.*, 2015, p. 795).

Even though this recent proposal aims only to become a descriptive model to understand the evolution of the ecosystem of mobile contents applications, it can be usefully applied to other specific contexts, like the field of political communication.

2. Methodology

The first step to elaborate the taxonomy of mobile applications in the context of mobile political communication has been selecting the representative sample of apps from the catalogue available on the main app stores (*Play Store* and *App Store* for *Android* and *Apple* devices, respectively). The selection was done from 1 to 15 December 2018 considering the following criteria:

1. Apps that presented some kind of activity in the past year (to avoid apps that were strictly temporary).
2. Apps that were downloaded at least 100 times (to avoid marginal examples).
3. Apps strictly focused on Political Communication issues (apps where there is an exchange of messages focused on all kinds of political affairs -opinions, decisions, actions- and their application to the public reality).

There were excluded from the analysis all apps whose main objective was the management of incidences, notices, emergencies, complaints (although there were included those that had that function together with another of actual political nature), game apps or simulations that used politicians as characters for their stories, media apps in their political section, as well as the news feed applications. The resulting sample consisted of 316 applications, whereas 57.3% corresponded to apps available for the *Android* operating system, while the remaining 42.7% were available for *iOS*.

The analysis of all these applications was conducted based on three sets of variables: the formal aspects, the content related elements and the level of presence of specific features that define mobile 2.0 communications. The approach was mainly qualitative, incorporating typical communication concepts and public relations to define the parameters that allowed the classification of mobile applications as political communication. The proposal of methodological classification was based on all categories included in Table 1.

3. Results

After coding 316 apps a very complete picture was obtained to describe the political communication applications for mobile devices available in Spain. From this picture, some relevant findings were identified, organized from each coding category:

3.1. Promoter agent

Nine out of ten applications are associated with initiatives of public nature, since 91.5% of apps correspond to public institutions. From the remaining percentage, 3.5% come from political parties, an identical percentage compared to those started up by individuals. Consequently, the emphasis about the subject of the political action mostly relies on the

Table 1. Taxonomy proposed for mobile political applications

Promoter agent	Nature	Public	Institution
		Private	Political party
			Candidate
			Association / entity
			Individuals
	Mixed		
	Emphasis on the subject of political action	Candidate	
		Political party	
		Institution	
	Promoter identification (definition of actual identity as organisation or person)	Yes	In a first level
No		In another level	
Accessibility: publics targeted	Open to all (without access passwords)		
	Restricted access (need user and password)		
	Mixed access (some contents have open access and others are restricted)		
Accessibility: availability depending on the Price per download	Free		
	With price		
	Mixed system (free download)		
App objective	Informational (merely display contents about the reality the political subject wants to show)		
	Dissemination (explanation of political positioning / decisions)		
	Internal mobilisation (to stimulate internal publics -materials calling for action on the networks)		
	Mobilisation (to stimulate external publics)		
	Participatory (look for the implication beyond providing material to call for action, either inside or outside the app)		
Level of interaction	Unidirectional (possibilities of participation and interaction are not explored)		
	Non-symmetric Bidirectional (the participation is promoted, but always under the control of the organisation/entity. There is a shy approach to the characteristic tools of mobile apps, although they are exploited from the perspective of the political subject)		
	Symmetric Bidirectional (the publics are offered the option to participate in the design of the message and/ or in specific actions)		
Level of autonomy	Exact copy of other communication tools of the political subject		
	Some elements belong to other communicational tools of the political subject, but others are characteristic of the app		
	Design and structure are specific for the app		
	Not applicable		
Predominant tone	Neutral (there is no clear positioning regarding the information provided)		
	Ideological (there is a marked positioning of ideas)		
	Emotional (main appeal to the field of feelings, not ideas)		
	Satirical-parodic (the general tone is humoristic and not so serious, although with a certain critical approach)		
	Critical (the tone is demanding regarding the reality shown)		
	Conversational/Debate (a space of balanced dialogue is shown towards all the interlocutors with opinion contrast)		
	Others		

different public administrations (95.9% of cases), in such a way that only in the remaining 4.1% there is focus on some specific political leader or party.

This trend is also observed regarding the identification of the promoter, which is explicitly indicated in practically all cases (99%), as well as in the accessibility of applications in a double sense: both from the perspective of the target publics (in 97.8% of apps anyone can access freely to all contents of the app, compared to a 1.9% of cases where the query is restricted and a 0.3% where a mixed system is incorporated) as well as the availability depending on the download price (100% are free).

3.2. App objective

Compared to the homogeneity observed in relation to the apps promoter agent, there is a wide diversity of purposes when it comes to starting up a mobile application. Among objectives, there clearly prevails the informational objective, with which 56.8% of the apps identify. The trend of most apps show a certain unidirectionality and, in a way, reproduce in the mobile environment, the dynamics of other contexts where the potential to involve and obtain a feedback of users downloading those apps is wasted. Only 21.6% of apps stimulate citizen participation as main purpose. In these cases, promoters seem to have understood the usefulness of this technological resource to achieve a true interaction beyond the mere queries, characteristic of informational dynamics. Finally, 12.7% of apps were oriented towards the mobilisation of external publics, while 4.4% try to achieve this same purpose with their internal publics and, in another 4.4% there prevails the dissemination purpose.

“ The mobile ecosystem, where the political applications are included, is such a dynamic field that any taxonomy must be flexible and adaptable to the market of mobile communication changes ”

When the variable nature of the promoter agent and app objective were analysed jointly, two very different patterns were detected: applications coming both from institutions and from individuals mostly pursued an informational purpose (59.4% of public administrations and 45.5% of the second group of agents) because the prevailing objective was dissemination, with 54.5% of apps. On the other hand, the participatory purpose specially stands out among apps promoted by political parties. There, 27.3% of the total were essentially participation oriented (21.9% of institutions and 9.1% of individuals). This can be understood like a greater need of legitimation for political groups due representation crisis they are submerged in. A third difference is related to the role granted to internal and external publics, because while political parties platforms are not oriented to mobilize external publics, the institutional initiative apps try to stimulate these external agents in 13.5% of cases, ten points above those targeted to internal publics. When apps with restricted access were analysed, it is confirmed that in half of the cases the main goal was precisely the mobilisation of agents belonging to the organisation.

3.3. Level of interaction

Only one out of four applications (25.7% of the total) showed a symmetrical bidirectional model where users have the capacity of participating in the design of the message or any other specific action. In these cases, the promoter agents show their predisposition to allow that final recipients could adopt an active role that transcends the mere search for information.

On the other hand, more than one third of these applications (34.6%) followed a clear unidirectional model where the user cannot participate or interact in an active manner. This way, the apps that correspond to this pattern established action rationales of promoters that only look to convey a specific type of contents without showing the will to be influenced by recipients.

The remaining apps (39.7% of the total) showed a non-symmetric bidirectional approach, which means there is a superficial intention of promoting user participation but always under the control of the organisation preserving the final decision about materials or ideas to be disseminated. Therefore, although there is a certain bidirectionality, the influencing capacity of subjects is always unbalanced in favour of the institution or political party.

Comparing to the other mentioned parameters, two differentiated patterns were observed, and something similar happens when the variables of interaction and objective are analysed jointly. Thus, apps that implement a unidirectional model in relation to recipients are essentially associated with the platforms that have an informational objective: almost nine out of ten apps (89.9%) that do not opt for participation and direct interaction of users comply with this pattern. To the contrary, more than seven out of ten apps (70.4%) that show a symmetric bidirectional model, where the recipient has the capacity to actively intervene in the design of the message or with specific actions, have an essentially participatory objective. However, among the apps included in the symmetric bidirectional category there are some that are oriented towards an informational purpose (14.8%).

Meanwhile, apps using a non-symmetric bidirectional model have mainly the purpose of conveying information (55.2%), although the mobilisation of external publics is the second objective by majority (28%).

3.4. Level of autonomy

Although most apps analysed include a specific design and structure for this digital platform (51.4%), there are cases where there is observed an exact copy of other different tools that were transferred to this mobile ecosystem (3.8%) and others where there is a combination of specific aspects of the mobile app with other elements belonging to different external tools (21.7%).

This circumstance evidences that there still persists a certain tendency of perpetuating communication models that have not been conceived specifically for the apps but instead have been integrated in them, coming from other contexts of use.

Some differences are observed here depending on whether it is an application promoted by a public institution or by a political party. Even though in both cases the apps that have a specific design and structure prevail, in the case of apps promoted by political parties, we identify a greater percentage of apps that still keep a very close connection with other communication tools, like websites for example (36.4% versus 21.3%).

3.5. Predominant tone

The trend towards homogeneity observed in the study of the first variable of the promoter agent is shown again when analysing the predominant tone, because 91.1% of apps show a neutral tone. To the contrary, only 5.1% of them manifest an ideological tone and 2.9% only a conversational tone.

Most of the apps are created for a merely informational purpose, with only a few showing a more ambitious objective, like the mobilisation or participation of users

When this parameter is analysed along with the objective, it is confirmed that there is a significant correlation between both, because a neutral tone is specially characteristic of informational oriented apps (60.3% of apps with this tone correspond to this objective); an ideological tone with dissemination oriented apps (43.8%); a critical tone with the mobilisation of external publics (100%); and, finally, a conversational tone with the mobilisation of internal publics (44.4%).

In a longitudinal analysis, we observe an evolution when compared to previous reference studies (Vázquez-Sande, 2016) characterised by the increasing presence of public institutions as promoter agents of the apps. Back in 2016, these hardly represented 2%, and now they are more than 91%, which means a radical change in the X-ray picture obtained. The sample selection criteria used were not exactly the same because the research of 2016 used a much more restrictive political communication concept than the one used in the present study.

Despite the passing of time, these platforms still continue to avoid participation and real interaction of citizens. In fact, the proportion of apps fostering the intervention of recipients in 2016 was 25.9%, while the percentage keeps practically identical now, considering that only 25.7% of apps implement a symmetric bidirectional model.

4. Discussion

The use of this classification proposal for political communication apps available in the main online stores in Spain – based on the promoter agent, app objective, level of interaction, level of autonomy and predominant tone– allows to ensure, firstly, that the Public Administrations are the promoters –almost in exclusivity– of this kind of tool, leaving participation as something residual, not only regarding individuals or social or civil organisations, but also regarding political parties and leaders.

At the same time, it has been confirmed that the most relevant part of these apps has been created for a merely informational purpose, whereas few have a more ambitious objective, like the mobilisation or the participation of users, something absolutely consistent with the datum that one out of every three apps show an unidirectional communication model. And, headed in that same direction, it is worth mentioning that the predominant tone is neutral, rather than an ideological or conversational tone.

Therefore, the most important finding of this research is that our data demonstrate a manifested waste of the apps potential, which neither include the activity of the user, nor foster conversation nor dialogue, nor promote action, but limit to being only informational instruments. With these kinds of practices, on the one hand, a dissonance is generated between the predisposition of citizens, who are more and more familiar with the rationales of this type of platforms and, on the other, the actual technical possibilities that the different promoters provide, therefore causing a false feeling of openness to public participation.

5. Conclusion

The progressively higher penetration of smartphones and, consequently, the democratisation of mobile apps, require an exhaustive review of the rationales followed in the specific field of political communication, whereas previous analyses were insufficient to apprehend this phenomenon. This study has offered a complete picture obtained from an empirical analysis, which defines and explains the landscape of political communication apps for mobile devices in Spain. The meagre academic contribution performed up until now justifies the need to investigate the mobile market more thoroughly in its relationship with political contexts.

In an attempt to overcome the limitations of other studies, the purpose of this research was to provide the first systematic classification of political communication apps in Spain. This taxonomy proposal aims to become more ambitious to the extent it comprises not only the use of mobile apps in electoral contexts, but also in the field of institutional communication. In order to do this, the three sets of parameters deployed and the proposal of a taxonomy of mobile apps included herein (formal aspects, content and level of presence of 2.0 features) provide a complete and complex view of apps for the field of political communication. In fact, each one of these parameters subdivides into multiple elements that allow a holistic perspective with which to approach the analysis of the market of these tools in Spain.

“The most important finding of this research is that our data demonstrate a manifested waste of the apps capabilities, whereas most neither include the activity of the user, nor foster conversation or dialogue, nor promote action, but are mere informational instruments instead”

With the development of further communication strategies in mobile communication, especially as a tool for digital campaigning, research should move beyond the descriptive studies that try to map the diversity of apps in the political contexts, and examine instead critical information included in all these apps, like the use of users personal information for electoral purposes.

6. References

- Abolfazli, Saeid; Sanaei, Zohreh; Gani, Abdullah; Xia, Feng; Yang, Laurence T.** (2013). “Rich mobile applications: Genesis, taxonomy, and open issues”. *Journal of network and computer applications*, v. 40, pp. 345-362.
<https://doi.org/10.1016/j.jnca.2013.09.009>
- Aceto, Giuseppe; Ciunzo, Domenico; Montieri, Antonio; Pescape, Antonio** (2017). “Traffic classification of mobile apps through multi-classification”. In: *Proceedings of the Globecom 2017. 2017 IEEE Global communications conference* (Singapore, December 4-8, 2017).
<https://doi.org/10.1109/GLOCOM.2017.8254059>
- Aguado, Juan-Miguel; Castellet, Andreu** (2010). “Contenidos informativos en el ecosistema móvil: horizontes y desafíos”. In: Cabrera-González, María-Ángeles (ed.). *Evolución tecnológica y cibermedios*. Sevilla: Comunicación Social Ediciones, pp. 126-143. ISBN: 978 84 92860 42 5
- Aguado, Juan-Miguel; Martínez-Martínez, Inmaculada J.; Cañete-Sanz, Laura** (2015). “Tendencias evolutivas del contenido digital en aplicaciones móviles”. *El profesional de la información*, v. 24, n. 6, pp. 787-796.
<https://doi.org/10.3145/epi.2015.nov.10>
- Bailey, Keneth D.** (1995). *Typologies and taxonomies: An introduction to classification techniques*. Sage, Thousand Oaks. ISBN: 978 0 803952591
- Barceló-Ugarte, Teresa; Cabezuelo-Lorenzo, Francisco; Sánchez-Martínez, María** (2017). “Ciudades inteligentes y apps para la ciudadanía: Análisis de casos pioneros en España”. *Anuario electrónico de estudios en comunicación social “Disertaciones”*, v. 10, n. 2, pp. 225-236.
<https://doi.org/10.12804/revistas.urosario.edu.co/disertaciones/a.5106>
- Costa-Sánchez, Carmen** (2012). “Estado del arte de la comunicación móvil en España. Aportaciones realizadas y retos de futuro”. *Vivat academia*, n. 117, pp. 1049-1058.
<https://doi.org/10.15178/va.2011.117E.1049-1058>
- Diego-González, Patricia; Guerrero-Pérez, Enrique; Etayo-Pérez, Cristina** (2014). “Televisión conectada en España. Contenidos, pantallas y hábitos de visionado”. *Revista mediterránea de comunicación*, v. 5, n. 1, pp. 179-199.
<https://doi.org/10.14198/MEDCOM2014.5.1.10>
- Ditrendia* (2018). *Informe Mobile en España y en el mundo 2018*.
<https://ditrendia.es/informe-mobile-2018>
- Dombroviak, Krista M.; Ramnath, Rajiv** (2007). “A taxonomy of mobile and pervasive applications”. In: *Proceedings of the 2007 ACM symposium on applied computing* (Seoul, Korea, March 11-15).
<https://doi.org/10.1145/1244002.1244345>
- Feijóo, Claudio; Maghiros, Ioannis; Abadie, Fabienne; Gómez-Barroso, José-Luis** (2009). “Exploring a heterogeneous and fragmented digital ecosystem: Mobile content”. *Telematics and informatics*, v. 26, n. 3, pp. 282-292.
<https://doi.org/10.1016/j.tele.2008.11.009>
- Flora, Harleen K.; Wang, Xiaofeng; Chande, Swati V.** (2014). “An investigation on the characteristics of mobile applications: A survey study”. *International journal of information technology and computer science*, v. 6, n. 11, pp. 21-27.
<https://doi.org/10.5815/ijitcs.2014.11.03>

- Fundación Telefónica* (2017). *La sociedad de la información en España 2016*. Madrid: Ariel. ISBN: 978 84 08 16947 5
- Goggin, Gerard** (2011). "Ubiquitous apps: Politics of openness in global mobile cultures". *Digital creativity*, v. 22, n. 3, pp. 148-159.
<https://doi.org/10.1080/14626268.2011.603733>
- Gómez-García, Salvador; Cabeza-San-Deogracias, José** (2016). "El discurso informativo de los *newsgames*: el caso Bárcenas en los juegos para dispositivos móviles". *Cuadernos.info*, n. 38, pp. 137-148.
<https://doi.org/10.7764/cdi.38.593>
- Gómez-García, Salvador; Gil-Torres, Alicia; Carrillo-Vera, José-Agustín; Navarro-Sierra, Nuria** (2019). "Creando a Donald Trump: las apps en el discurso político sobre el presidente de Estados Unidos". *Comunicar*, v. 27, n. 59.
<https://doi.org/10.3916/c59-2019-05>
- Heinonen, Kristina; Pura, Minna** (2006). "Developing a conceptual framework for mobile services". *Proceedings of the Helsinki Mobility Roundtable* (Helsinki, June 1-2, 2006).
https://aisel.aisnet.org/sprouts_proceedings_helsinki_mob_rt
- Hernando-Lera, Marta** (2016). "El universo app radiofónico. Estudio comparado de Radio España FM y Radio Nacional de España". *Fonseca journal of communication*, n. 13.
<https://doi.org/10.14201/fjc201613115128>
- Herrera-Damas, Susana; Ferreras-Rodríguez, Eva-María** (2015). "Mobile apps of Spanish talk radio stations. Analysis of SER, Radio Nacional, COPE and Onda Cero's proposals". *El profesional de la información*, v. 24, n. 3, pp. 274-281.
<https://doi.org/10.3145/epi.2015.may.07>
- Karhu, Kimmo; Tang, Tingan; Hämäläinen, Matti** (2014). "Analyzing competitive and collaborative differences among mobile ecosystems using abstracted strategy networks". *Telematics and informatics*, v. 31, n. 2.
<https://doi.org/10.1016/j.tele.2013.09.003>
- Katz, James E.** (2011). *Mobile communication*. New York: Routledge. ISBN: 978 1 315124629
<https://doi.org/10.4324/9781315124629>
- Kemper, Hans-Georg; Wolf, Elke** (2002). "Iterative process models for mobile application systems: A framework". In: *Proceedings of the 23rd Intl conf on information systems* (Varazdin, Croatia, September, 2-4).
<http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.194.6893>
- Kennedy-Eden, Heather; Gretzel, Ulrike** (2012). "A taxonomy of mobile applications in tourism". *E-review of tourism research*, v. 10, n. 2.
<https://ro.uow.edu.au/cgi/viewcontent.cgi?article=3559&context=compmpapers>
- López-García, Xosé; Westlund, Óscar; Silva-Rodríguez, Alba** (2015). "La industria de medios impresos se sube al periodismo móvil". *Telos*, n. 100, pp. 128-139.
<https://telos.fundaciontelefonica.com/archivo/numero100/la-industria-de-medios-impresos-se-sube-al-periodismo-movil>
- Mandel, Michael** (2012). *Where the jobs are: The app economy*. Technet; OECD.
<https://southmountaineconomics.files.wordpress.com/2012/09/technet-app-economy-study.pdf>
- Martin, Jason A.** (2014). "Mobile media and political participation: Defining and developing an emerging field". *Mobile media & communication*, v. 2, n. 2, pp. 173-195.
<https://doi.org/10.1177/2050157914520847>
- Nickerson, Robert; Varshney, Upkar; Muntermann, Jan; Isaac, Henri** (2009). "Taxonomy development in information systems: Developing a taxonomy of mobile applications". In: *Proceedings of the European conference on information systems* (Verona, Italy, June 8-10).
<https://halshs.archives-ouvertes.fr/halshs-00375103/document>
- Nysveen, Herbjørn; Pedersen, Per E.; Thorbjørnsen, Helge** (2005). "Intentions to use mobile services: Antecedents and cross-service comparisons". *Journal of the Academy of Marketing Science*, v. 33, n. 3, art. 330.
<https://doi.org/10.1177/0092070305276149>
- Ortega-Mohedano, Félix** (2015). "La app-revolución, usos y consumos de la televisión en tabletas y teléfonos inteligentes". In: Quintas-Froufe, Natalia; González-Neira, Ana. *La participación de la audiencia en la televisión: de la audiencia activa a la social*, AIMC, Madrid, pp. 121-147. ISBN: 978 84 608 4242 2
<https://ruc.udc.es/dspace/handle/2183/16235>
- Pang, Hua** (2018). "Is mobile app a new political discussion platform? An empirical study of the effect of WeChat use on college students' political discussion and political efficacy". *PLoS one*, v. 13, n. 8, e0202244.
<https://doi.org/10.1371/journal.pone.0202244>

- Piñeiro-Otero, Teresa** (2015). "Información, multimedialidad y personalización en las radioapps de España y Portugal". *El profesional de la información*, v. 24, n. 4, pp. 463-471. <https://doi.org/10.3145/epi.2015.jul.13>
- Sarabia-Sánchez, Francisco-José; Aguado, Juan-Miguel; Martínez-Martínez, Inmaculada J.** (2019). "Privacy paradox in the mobile environment: The influence of the emotions". *El profesional de la información*, v. 28, n. 2, e280212. <https://doi.org/10.3145/epi.2019.mar.12>
- Scolari, Carlos-Alberto; Aguado, Juan-Miguel; Feijóo, Claudio** (2012). "Mobile media: Towards a definition and taxonomy of contents and applications". *International journal of interactive mobile technologies*, v. 6, n. 2, pp. 29-38. <https://online-journals.org/index.php/i-jim/article/view/1880>
- Scolari, Carlos-Alberto; Aguado, Juan-Miguel; Feijóo, Claudio** (2013). "Una ecología del medio móvil: contenidos y aplicaciones". En: Aguado, Juan-Miguel; Feijóo-González, Claudio; Martínez-Martínez, Inmaculada J. *La comunicación móvil. Hacia un nuevo ecosistema digital*. Madrid: Gedisa, pp. 79-106. ISBN: 978 84 97847827
- Scolari, Carlos-Alberto; Navarro-Güere, Héctor; García, Irene; Pardo-Kuklinski, Hugo; Soriano, Jaume** (2009a). "The Barcelona mobile cluster: Actors, contents and trends". *International journal of interactive mobile technologies*, v. 3, n. 3, pp. 47-54. <https://online-journals.org/index.php/i-jim/article/view/814>
- Scolari, Carlos-Alberto; Navarro-Güere, Héctor; García, Irene; Pardo-Kuklinski, Hugo; Soriano, Jaume** (2009b). "Comunicación móvil: actores y producción de contenidos en Cataluña". *Comunicación y sociedad*, v. 22, n. 2, pp. 159-185. <https://revistas.unav.edu/index.php/communication-and-society/article/view/36267> <https://doi.org/10.15581/003.22.2.159-186>
- Seong-Leem, Choon; Sik-Suh, Hyung; Seong-Kim, Dae** (2004). A classification of mobile business models and its applications. *Industrial management & data systems*, v. 104, n. 1, pp 78-87. <https://doi.org/10.1108/02635570410514115>
- Serrano-Tellería, Ana** (2017). "Innovations in mobile interface design: Affordances and risks". *El profesional de la información*, v. 26, n. 2, pp. 320-327. <https://doi.org/10.3145/epi.2017.mar.19>
- Shroff, Ronnie; Keyes, Christopher; Linger, Warren S.** (2015). "A proposed taxonomy of theoretical and pedagogical perspectives of mobile applications to support ubiquitous learning". *Ubiquitous learning: An international journal*, v. 8, n. 4, pp. 23-44. <https://doi.org/10.18848/1835-9795/cgp/v08i04/58074>
- Stromer-Galley, Jennifer** (2019). *Presidential campaigning in the internet age*, 2nd ed. UK: Oxford University Press. ISBN: 978 0 199731947
- Vázquez-Sande, Pablo** (2016). "Políticapp: hacia una categorización de las apps móviles de comunicación política". *Fon-seca journal of communication*, n. 12, pp. 59-78. <https://doi.org/10.14201/fjc2016125978>
- Videla-Rodríguez, José-Juan; García-Torre, Manuel; Formoso-Barro, María-Josefa** (2016). "Contenidos e interactividad de las apps para smartphones de las televisiones españolas". *Revista latina de comunicación social*, n. 71, pp. 52-569. <https://doi.org/10.4185/rlds-2016-1109>

Annex

List of mobile political apps

Populares	Utiel	Sonseca Ayto.
PolitiJoc	Pantoja Ayto.	Ayuntamiento de Guadalupe Informa
Mensajería PP	Albalate del Arzobispo	Orihuela en tu mano
Socialistas de Alcalá	La Guardia (Toledo)	Tu Murcia
Ayuntamiento en tu móvil	Valdemorillo	Tu Ayuntamiento al día
Ayuntamiento de Villa del Prado	Ajuntament de Palau-solità i Plegamans	Rivas Ciudad
Alcobendas	Pozuelo Responde	Ayuntamiento de Ocaña
Ayuntamiento de Pamplona	L'Eliana	Mora, mi pueblo
TokApp	Mejora Ubrique	Santa Cruz de Mudela informa
Ayuntamiento de Salamanca	Vive Urda	Ayuntamiento de San Bartolomé
Ayuntamiento de Arucas	Torres de Berrellén	Ayuntamiento de Simancas

AppValencia	Aldaia	Ayuntamiento de Carboneras
Ayuntamiento de Cáceres	Villa de Osuna	Cardiel de los Montes de Ayto.
Ayuntamiento de Vélez-Málaga	San Martín de Pusa Ayto.	Ayuntamiento de Noblejas
Ayto. de Roquetas de Mar	El Casar	Ayuntamiento de La Oliva
Ayuntamiento de León	Benetússer	Mogán
Ayuntamiento de Escatrón	Tuineje	Ayuntamiento de Fondón
Ayuntamiento de Arganda del Rey	Castelldefels Participa	Ayuntamiento de Crevillent
Ayuntamiento de Lucena	Ayto Tías	Ayuntamiento de Ogjares
Ainforma, tu Ayuntamiento informa	Ayto Lobras	Ayuntamiento de Lillo
Tu ayuntamiento al día	PSOE Jérez del Marquesado	Ayuntamiento de Peligros
Ayuntamiento de Boecillo	Partido Popular Alovera	Adeje
iBadajoz	Unitat Popular	San Pedro del Pinatar
Alameda Ayuntamiento	Canal Parlament	Buzón Ciudadano
Ayuntamiento de Huétor Tájar	JGPAApp	Santovenia de Pisuerga Informa
Ayuntamiento de Carbonero el Mayor	Servicio de Estudios del PE	Escorial Informa
Ayuntamiento de Valleseco	App Movil SCE	Villarejo de Órbigo Informa
Ayuntamiento de Yebes	eGobCan	Valladolid en tu mano
Ayuntamiento de Santa Cruz de La Palma	miPSOE	Valera Informa
Ayuntamiento de Mieres	Ayuntamiento en tu móvil	Palazuelos de Eresma Informa
Ayuntamiento de Albox	Ayuntamiento de Alhedín	Pantoja Ayto.
Ayuntamiento de Vera	Línea Verde: Comunicación de incidencias	Villamiel Informa
Ayuntamiento de Gozón	Ayuntamiento de Tías	Ayuntamiento de Vera
Ayuntamiento de Mojados	Ayuntamiento de Escatrón	Benetússer
Ayuntamiento de Posadas	Ayuntamiento Vélez Benaudalla	Ayuntamiento de Poblete
Ayuntamiento de Fustiñana	Ayuntamiento de Martos	Olivenza
App Ayuntamiento de Velilla de San Antonio	Ayuntamiento de Casillas	Ayuntamiento de Salamanca
Ayuntamiento de Los Gallardos	La República- LRP	L'olleria Info
Ayuntamiento de Navaleño	Referendum	Puerto del Rosario
Ayuntamiento de Cebreros	PSOE Jaén	Ayuntamiento de Mieres
Ayuntamiento de Romangordo	PSOE de Cartaya	Posadas
Ayuntamiento de Buñuel	PSOE de Guadix	Montemayor de Pililla Informa
Ayuntamiento Huércal-Overa	Populares	San Miguel de Abona
Ayuntamiento de Doñinos	Zaragoza Ciudadana	Alameda de la Sagrada Informa
Bustarviejo	Vost Euskadi	Ayuntamiento de Valleseco
Ayuntamiento de Torreorgaz	Tamarite de Litera Informa	Comunica Gandia
Ayuntamiento de Conquista	Parla Participa	Almoharín Informa
Ayuntamiento de Pola de Lena	MiPSOE	La Pesga Informa
Ayuntamiento Inteligente	Mensajería PP	Tejeda de Tiétar Informa
Ayuntamiento de Brea de Tajo	AppVàlencia	Smart Guadalajara
Ayuntamiento de Almaraz	Ayuntamiento de Cartaya	Valenica del Mombuey Informa
Ayuntamiento de Belmonte	Ayuntamiento de Tocina	Hinojosa del Duque
Ayuntamiento de La Victoria	Ayuntamiento de Benavente	San Bartolomé de Tirajana
Ayuntamiento de Santaella	Ayuntamiento de Los Yébenes	Bétera en línea
Ayuntamiento de Castropol	Logroño.es	Almáchar Informa
Ayuntamiento de Rocafort	Carcaixent	Ayuntamiento de Cúllar Vega
Ayuntamiento de Fuente Palmera	Ayuntamiento de Navalcarnero	Cabra
Ayuntamiento de Valsequillo	Tavernes Blanques	Rubí Ciutat
Ayuntamiento de Rute	Picassent	Calañas Informa
Ayuntamiento de Benifaíó	Ayuntamiento de Macael	Chiloeches Informa
Ayuntamiento Fornes	Alcobendas	Domeño
Vive Puebla de la Calzada	Burgos al móvil	Nules
Ayuntamiento Valderrey	Gáldar	Ayuntamiento de Mocejón

Gáldar	Ayuntamiento de Lucena	Peñarroya-Pueblonuevo
Ayuntamiento de Muñogalindo	Ayuntamiento de Huesca	Cullera Online
Girona App	Ayuntamiento de Marchamalo	Esparragosa de Lares Informa
Águilas Participa	AppDénia	Alcasser
Ayuntamiento de Fiñana	Ayuntamiento de Dílar	Quart de Poblet App
Ayto. Huesca	Ayuntamiento de Roquetas de Mar	Burjassot info
La Nucía App	Ayuntamiento de Aspe	Zarza de Montánchez Informa
Almería Ciudad	Ayuntamiento de Huétor Vega	Valsequillo
Playas de Málaga	Ayuntamiento de Gójar	Iniesta Informa
eLebrija	Chiva	Caspe en tu bolsillo
Adeje	Ayuntamiento de Cáceres	Requena App
Cobisa App	Ayuntamiento de Toro	Cañete de Real Informa
Ayto. Martos	Almassora	Moralzarzal
Tu Murcia	Ayuntamienot de Pedro Muñoz	Velada Informa
Transparènci-App	Arroyomolinos Participa	Malpartida de Plasencia infor.
Don Benito	Corral de Calatrava Informa	Barcarrota Informa
Vila-real	Esparralejo Informa	Telde
MuniciApp	Torremenga Informa	Honachelos Informa
Mi Municipio Al Día	Casas Ibáñez Informa	Ugena Ayto.
Turégano	Arucas	Zahínos Informa
Mogán	Monterrubio Informa	Mojados Informa
Garrucha	Barrado Informa	Ayuntamiento de Fustiñana
Carcaixent	Riolobos Informa	App Velilla de San Antonio
Gibraleón	Trijueque Informa	Ayuntamiento de Los Gallardos
Paracuellos al Día	Siruela Informa	Ayuntamiento de Bueñel
Ontinyent	Ayuntamiento de Aranda de Duero	Ayuntamiento de Doñinos
Puerto del Rosario	Tarazona de la Mancha Informa	Ayuntamiento Brea de Tajo
Mora mi pueblo	Huelma Informa	Santaella
Chiva	La Nava de Santiago Informa	Girona App
Alcàsser	Ingenio	Mi municipio al Día
San Bartolomé de Tirajana	Algete Informa	Garrucha
CuidaGijón	Segurilla Ayto.	JGPApp
Calatayud en tus manos	Fuenlabrada Informa	Godella
San Miguel de Abona	Ayuntamiento de Agaete	Ontiyent
Picassent	Jerez Actúa	La Nucía
Banyeres App	Ayuntamiento de Pamplona	Almería Ciudad
Sonseca Ayto.	Ayuntamiento de Íscar	elebrija
Lubrín	San Clemente Informa	Don Benito
Sant Mateu Info	Láchar Informa	Vila-real
Godella	Ayuntamiento de Consuegra	Ayuntamiento de Turégano
Comunica Gandía	Toledo	Lubrín
Nules	Ayuntamienot de Torrijos	Cantabria Informa
Prats de Lluçanès		