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# Activism:  
A Stance on Social Connectivity in Digital Networks

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## Abstract

Today, most social activism incorporates an online component. In this paper, I test three concepts of communication and mobilization - resource mobilization, techno-determinism and social connectivity – as theoretical lenses for both spontaneous digital activism and social movements. I use OLS (ordinary least squares) regressions on a sample of 405 civic digital campaigns from 2010 to 2012 across 17 regions. I first tested my proposed hypotheses that the number of digital campaigns, normalized by the number of internet users, is explained best by social connectivity. I found that while social media has had an increasingly important role in coordinating, mobilizing and visibly producing political demands, differences in the numbers of campaigns are better predicted by the average social, political and resource contexts in a region. In particular, more conservative regions with more political freedoms and greater levels of internet accessibility have more digital campaigns. As for the choice in social media platforms, blog-type meta-media generally also affords populations with greater campaign numbers. I then further examined whether the presence of social movements such as the Arab Spring and global anti-austerity protests is similarly explained by the three mobilization concepts. For these cases, I found that the social context factors in the model did not sufficiently explain the difference between social movements and spontaneous campaigns. These findings suggest that descriptive analysis of the social and physical connections between activists in social movements must be accounted for when analyzing campaign and movement formations. Based on this, I recommend a variety of further research that can produce strategic knowledge for political leaders, policy-makers, and activists.

## Introduction

Cell phones and the internet, characterized by their participatory culture, transformed social protests through their power to mobilize large numbers of protestors in decentralized networks of resistance (DiNucci, 1998; O'Reilly, 2005). Innovations in information and communication technologies (ICTs), have made social media networks a common feature in mobilizations from 2008 onward. They act as vehicles for monitoring, information gathering, sparking dissent, and protesting against perceived social abuses. The role of social media in focusing social movement pressure across democratic struggles (Joyce, 2010; Hussain & Howard, 2013), capitalist structures (Barassi, 2015; Porta & Mattoni, 2015; Treré, Jeppesen, & Mattoni, 2017), and a range of political interests (Castells, 2012; Earl & Kimport, 2011; Melgaço & Monaghan, 2018) has been well recognized. Digital activism is a broad term that encompasses the usage of a variety of technology systems, devices, and networks as platforms for the engagement and coordination of crowds towards social and political change. Particularly since the 2010 Arab Spring movement, mass media and public observers have focused on the parallel global diffusion of social media and social unrest.

Previous research is helpful for situating my approach to the relationship between novel internet ICTs and social activism as a quantitative compliment to theories of social movement development. Earl and Kimport (2011) classify activism on the internet into the categories of e--mobilizations, e-tactics and e-movements to show how online tools can help traditional movements improve their reach and methods of information handling and online organizing (Earl & Kimport, 2011). Discussions related to the role of social media in activist campaigns have examined the validity of internet enabled activism as a new model of participation (Anduiza, Cantij & Gallego, 2009) or considered the impact of these practices on the value and

meaning of grassroots social movements (Gladwell, 2010; Morozov, 2009; Calhoun, 1993). Both old and new social communication frameworks have been used to situate internet activism among protestation history, suggesting several means by which social media can influence collective action, including the aforementioned information processes, exchange opportunities, and coordination of political action (Bennett & Segerberg, 2011; Chadwick & Howard, 2008). However, it remains unclear to what extent the theoretical frameworks used in observational studies can be explained through empirical analysis of global trends in modern digital activism.

This paper aims to empirically test the extent to which theories are useful explanations of internet-mediated social campaigns and movements. I begin with an explanation of how ‘techno-determinism’ and ‘resource-mobilization’ theories limit our understanding of both regional and global social movements – as defined through shared grievances, organizational structures and protestation tactics. Using the framework of ‘social connectivity’ posited by Bennet and Segerberg (2011) I argue that shared goals and organizing logics among protestations cannot be explained solely by internet ICTs or different regional contexts (Bennet & Segerberg, 2012). For this argument, I draw on the freedom ratings determined for various countries by Freedom House (Kelly, et al., 2013) and digital practices attributed to individual campaigns as factors contributing to the number of campaigns with shared goals within geographic regions, as reported in the 2013 Global Digital Activism Dataset (Edwards, Howard, & Joyce, 2013). To analyze which variables predict the number of digital campaigns, I operationalize the regional digital campaign distribution index. This measure uses the total count of campaigns occurring in a region divided by the percent of internet users in that region. The number of campaigns per region is a proxy for traditional social movement development metrics because activists within a regional boundary share similar cultural and social contexts, keeping the norms that shape crowd

behavior stable (Norris, 2001). Similarities in protest action are more easily visible and their diffusion understandable within set borders, allowing my analysis of explanatory theories to hold constant all other variables. My OLS (ordinary least squares) methodology uses contextual (social, political, and economic markers of the civil liberties afforded in each country) and toolkit (usage of social media, microblogs, and street demonstrations by activists) variables to predict dynamics in the sample of 405 civic digital campaigns in 42 countries from 2010 to 2012. I find that differences in the numbers of campaigns are bounded more by a country's political context and internet freedom than they are determined by any specific internet practice. Furthermore, these two variables influence digital tool selection and campaign goals in such a manner that the combination of conservative political governance and substandard digital infrastructure could explain the high number of campaigns in some regions. As for the growth of social movements with connected activist goals and practices, I find that these differed empirically from overall campaigns in the variables that were statistically significant explanatory variables. However, the model overall did not prove to be sufficiently explanatory. I concluded that techno-determinism, resource-mobilization, and social connectivity theories cannot quantitatively describe why social movements form, beyond predicting a series of unconnected activist campaigns. A cohesive explanation of the connections between activist campaigns must therefore include qualitative information about the connections between activists needs to be further examined.

I further attempt to generalize the combined theoretical and empirical argument to the study of non-geographically bounded social movement 'waves'. Social dynamics, histories of movement politics, and transforming ICTs all contribute to the creation of waves of connected social movements. These waves are recognized by the sharing of digital practices and activist networks themselves between social campaigns with similar goals (Barassi, 2015; Funke &

Wolfson, 2017). In order to see if social movements are discernibly different from spontaneous protestations, I looked to the well-studied Arab Spring movement as well as the connections between initial Spanish, Greek, and Portuguese anti-austerity movements in 2011 and their continued logic in the Global Occupy protests. I test techno-determinism and resource mobilization as possible predictors of both spontaneous activism and global social movements with social media platforms. Communications researchers have linked direct activist intervention from Spain in the Occupy Wallstreet meetings. Applying the same contextual and toolkit variables to this case study, I show that trans-national waves of social unrest are not quantitatively different from regional campaigns. As current media and activists draw attention to the crisis movements most known for their strength and longevity, I emphasize that neither toolkits nor socio-political frameworks alone can predict the development of social movements.

### Digital Networks: Social Media Activity, Connectivity and Infrastructure

The internet is neither the first “sharing” platform or first international digital network, yet the ease and scale of public participation developed by the collective intelligence of user-produced platforms is unprecedented (O’Reilly, 2005; Joyce, 2010). New media affordances increase data accessibility through innovative user-interfaces and allow individuals to organize faster, more cheaply, and on a larger scale than social movement theorists and collective action literature predicted (Bennett & Segerberg, 2013; Bimber, Flanagin, & Stohl, 2012; Castells, 2008; Curran, Fenton, & Freedman, 2012; Earl & Kimport, 2011; Howard, 2011; McAdam, Tarrow, & Tilly, 2001). However, popularized terms like “social media activism” advocate for the importance of technology at the expense of understanding the combined political, cultural and social factors that shape social movements in a globally connected society. In the following section, I first describe the basic infrastructure of digital media useful for understanding digital

activism. I then discuss internet-mediated collective action under two frameworks – resource mobilization and techno-determinism – in social movement theory that might explain why activists consider internet toolkits to be so important. Finally, I offer Bennet & Segerberg’s theory of social connectivity as a better framework for connected social media activism.

### Internet Infrastructure

In her framework of digital activism practices, Joyce (2010) outlines an infrastructure based on interconnected groups of devices that use digital code to transmit information: the digital network. The numerical representation of real-world content allows for its reproduction, manipulation, and transformation with unprecedented ease (Gane & Beer, 2008). Fluid information infrastructures, content, practices, and users on the web allow for the continuous adaption of digital media for different purposes. The amount of information that is stored online is vast. Search-engine capabilities and social media networks at all levels of society expand information-sharing and usage capabilities by enhancing individuals' ability to navigate information. The impacts of digital networks extend to any individual and system that produces, distributes and consumes ICT content (Howard, 2011). Research about the internet infrastructure involves inquiring about “the linkages and relationships between tools, content, producers, and consumers” (Howard, 2011, p.1). Precisely because new media is a “network of networks,” it facilitates “an unprecedented combination of flexibility and task implementation, of coordinated decision making, and de-centralized execution . . .” (Castells, 2000, p.15). Therefore, the main benefit for activism lies in the distribution of network connectivity.

Because internet-based communications depend on significant technical infrastructure (Castells, 2009), researchers must consider the economic, social, and political factors that define the environment in which digital activists operate. The extent to which the internet is relatively

inexpensive and can bridge social and economic gaps is immense. However, apart from informing the list of grievances for which protestations arise, inequalities in infrastructure materials between regions lead to differing activism outcomes. More developed economies and technical features, including both the network hardware and end-user devices, help transmit signals faster but are also more expensive and not universally available, thus increasing the barriers to entry and costs of immediate or long-term participation in digital activism (Joyce, 2010). While I do not focus on an analysis of the “digital divide,” as disparities in digital toolkits arising from social and economic inequalities have been coined, it is important to note that they lead to unequal representation in political movements.

Individual responses to online networks can also vary based on the standards and expectations of socio-cultural norms. Ragnedda (2017) considers the ways in which online participation is concretely explained by social class and power dynamics (Ragnedda, 2017). Dumitrica and Felt (2018) find that Facebook algorithms cause people to talk mostly with other like-minded people (Felt & Dumitrica, 2018). In both studies, societal dynamics and shared social or political values are shown to influence whether and how people use internet platforms to connect with others, build online communities, and participate in political activism.

### The Potential of ICT in Social Movements

According to Habermas’ framework of modern society, civil society consists of “associational networks” that “articulate political interests and confront the state with demands arising from the life worlds [public and private spheres] of various groups” (Habermas, 2006, 417). Because democratic legitimacy necessitates continuous dialogues between civil society and political actors, a public sphere where economic, social and political interests can mix freely is

crucial. If Habermas's requirement of the political public sphere is that it "has the advantage of a medium of unrestricted communication" to make it adept at perceiving problems, widening the discursive community, and articulating the individual needs of different collectives, then social media platforms offer a novel public platform to bridge the collaborative gap between the personal sphere of representation and political discourse (Habermas, 1996, p.308).

New social media platforms are meta-communication technologies (boyd & Ellison, 2008) because users create content, publish, and mass-distribute it, and all the while the medium enables others to manipulate the existing content (O'Reilly, 2005; Trottier & Fuchs, 2015). Even further, social networks generate profiles of descriptive information about users that they then use to suggest links to other online friends, groups, and content. Connections between users are therefore facilitated since the network systems find, codify, and reflect the collective values of society (a cooperative input) in the network and then tailor the connective and cognitive information received by users to display their individual dominant values. Beyond the connective infrastructure, direct messaging capabilities, digital video and imaging, contact connection lists, search capabilities, and linked webpages are all features in social media that increase user cooperation and co-production to the point that online communities are formed around shared cultural, societal and political values (Rheingold, 2000). The diffusion of these social innovations into spaces of social movements has resulted in collective actions and activism that do not require participants to be close together in time or space. The accelerated connectivity offered by the likes of Twitter, Facebook and other social media has therefore sprung new repertoires of contention. Defined by Melgaço and Monaghan (2018) as actions or organizational decisions adopted by activists because they make sense within given societal conditions and objectives of resistance, these repertoires of contention blur the lines between protestation and

the technosphere as activists work to make their collective resistance visible on a global scale (Melgaço & Monaghan, 2018, p.6).

Techno-politics is a term coined by Stefano Rodotà (1997) that expresses the nexus between politics and technology through an integrative analysis of transformative technology practices (Rodota, 1997). Of the two constitutive parts of techno-politics, scholars have tended to over-emphasize technological transformation as the causal factor in political transformation. But internet practices and the diffusion of information through the digital network must be understood as part of social spheres insofar as they integrate the interactions between economic, cultural, and political processes occurring outside of the digital world. As such, I want to introduce two interpretations of the techno-politics notion that differ in their assumption of the presence and use of political information in online media. First, the internet-enabled perspective of techno-determinism builds on the idea that ICTs are essential for the organization of contentious politics, citizen participation and deliberative processes (Kurban, Peña-López, & Haberer, 2016). Couched in the language of resource mobilization theory, the other prospect of techno-politics poses online networks as useful tools that individuals and grass-roots mobilizations alike can use to overcome the cost, time and space constraints inherent in physical forms of protest. In the following sections I outline and disavow both resource-mobilization and techno-determinism as explanatory theories for social-media activism.

### Techno-Determinism

To clarify the position of techno-deterministic theory, it is important to note that the motivations and contextual positions of actors always play a constitutive role in transforming. In other words, it is the practices that people adopt in using transformative technologies toward political processes that constitute techno-political action because technologies can never

determine action without an end-user (Edwards and Hecht, 2010). However, many social consequences of the internet boom, including near-instant connectivity across large spaces, relative ease of access for minority populations, and the offering of a readily-available medium for collective organization, have been cited as key to the creation of new democratic practices (Joyce, 2010). Furthermore, the convergence of communication and cooperation in social media makes these platforms especially suited for the communicative aspect of protests and larger amorphous social movements (Trottier & Fuchs, 2015). For these reasons, much research has adopted a techno-deterministic view of digital media in relation to digital activism.

Techno-determinism considers the way in which activists use social media to be the primary and most important source of change in recent movements. This approach to digital networks sees them as uniquely able to influence the way protest movements are built and operate within society (Bennet & Segerberg, 2012; Castells, 2009). If the logic of social media use, or indeed the appropriation of any novel technology, is analyzed with a fixed position on the political repercussions stemming from their innovation and implementation, then the model of social media activism – as using the internet to communicate, organize, and increase visible resistance - becomes determinant of each campaign's ultimate form of participation, of their success, or even of the social change or repercussions that followed. In other words, when Hughes (2006) proposed that technological innovations should be employed based on their intended political goal, his emphasizes on the design and implementation of ICTs as crucial in understanding their effectiveness when put to work toward political aims is a techno-deterministic conception of techno-politics (Hughes, 2006). He highlights how the design principles of the internet, such as decentralized networks and platforms open for co-production, inherently brings forward new political expressions and motivations. Although voices point

toward historic accounts of decentralization among grassroots social movements and the possibility of meaningless “slackivism” (Gladwell, 2010; Morozov, 2009; Calhoun, 1993) as rebuttals against the view of digital social networks as powerful and revolutionary tools (Castells, 2012), there remains the implication that digital networks have been a trigger for a new kind of protest mentality.

The possible generation of new forms of power and resistance through novel ICT designs justifies the perpetuation of technological newness as 1) deterministic of the type of protest action and social goals shared by activists and 2) emergent of a cycle of protest that attributes mobilization with spontaneity. Episodes of intense, highly-visible protests are often characterized as unprecedented, especially when the protesters do not identify with established political or social organizations, as is the case with autonomous social movements (Fominaya, 2015). The Arab Spring movement that kick-started the “Crisis Wave” of protests that includes anti-austerity protests across Europe and Occupy Wall Street (Fuchs, 2014; Funke & Wolfson, 2015) is, in this interpretation, the result of digital practices that have horizontalized political mobilization to empower heterogeneous groups (Earl & Kimport, 2011). As such, the democratic and horizontal organizational principles of social media, that privilege openness and transparency, make it seem as if any protest mobilization needs a Twitter or Facebook account to be heard and increase participation. If techno-politics concerns the dynamic process between ICT developments and political purpose, this techno-determinism theory applies only to the interaction of actors with the opportunities and constraints inherent in their digital toolkits without accounting for dynamic processes of political construction that emerges through the process.

## Resource Mobilization in Social Movements

In the techno-deterministic stance, the global re-structuring of capitalism that happened concurrently with the rise of the internet was greatly facilitated by new ICTs. Castells (1996) argues in favor of this view, writing that the technological revolution and widespread adoption of social media for social activism did not originate and diffuse as a consequence of capitalism but rather made new social and economic structures possible by providing the indispensable material basis for new resource mobilizations and economic development (Castells, 1996). In opposition to techno-determinism, however, some scholars focus on understanding political transformations in terms of resource mobilization, focusing on the purposive organizational strategies that activists engage in to acquire support and successfully compete to present their grievances to their target (McAdam, Tarrow, & Tilly, 2001). In this perspective, post-2010 movements are treated as sharing a logic linked to shifting social, political and economic factors surrounding activists themselves, with protestation tactics and ICT use changing in concert with the needs of activists.

Traditionally, the concentration of wealth in more liberal and democratic nations and the concentration of monopolistic power in more authoritarian nations have increased the cost of citizen participation and organization in the political sphere (Scott, 2012). Although cohesive claims-making among individuals is possible, monetary costs act as barriers against mass participation (Olson, 1965) unless formal structures assume the costs in order to motivate joint collective actions (McAdam, Tarrow, & Tilly, 2001). Because resource mobilization theory is a way to explain a movement's political efficacy in terms of its ability to acquire resources and attract individuals to achieve social and political goals, scholars such as Kim (2000) have focused on the costs of information and communication to analyze the extent to which the

internet relieves these constraints (Kim, 2000). Insofar as novel ICTs are a cheap and fast way to both receive and send information, communication through digital networks has indeed decreased the cost of contributing to the production of collective goods by reducing organization costs and by solving the principal-agent cost problem because individuals define both their own goals and involvement among the collective (Bennett & Segerberg, 2012; Bimber, Flanagin, & Stohl, 2012; Chadwick, 2013; Howard, 2011).

Returning to the various formulations of techno-political relations, resource mobilization asserts that the capacity activists have for mobilization is confined by various structural and socio-economic constraints in a society. Political relations are therefore reconfigured based on both technological adaptations and the continuous process that people undergo as they make choices about which technology to use, how to use it and, ultimately, which social values matter to them. In this vein, Kurban (2016) presents a dynamic relationship in which “the opportunities and constraints that are internal to the logic of a technology [such as social media] face the opportunities and constraints that are internal to democratic institutions and organized politics” (Kurban, Peña-López, & Haberer, 2016, p.514). From this perspective, resource mobilization generates new repertoires of contention by subverting ICTs into tools wielded by political actors for their individual goals. Because the techno-social relationship is not treated as having predetermined political motivations, unlike Hughes, the role of the internet in enabling political opposition, by activists who were previously constrained by the limits of mass media, emerges as individual techno-political strategies for each case.

More concretely, Barassi (2015) uses the refashioning of internet networks as a consumer medium to reason that digital environments are dynamic and continuously altered by users to

meet every-day economic and social needs. These economic, cultural, and political processes are “radically transforming the design of web platforms with clear consequences for the relationship between democratic processes and internet technologies” (Barassi, 2015, p.9). The reminder here is that while the internet plays a critical role in enabling large numbers of citizens to coordinate effective political movements, social and activist networks pre-dated the uprisings. Through this lens of economic resources and power structures, I note a key movement away from views of technology as begetting political change and toward an understanding of internet mediums as being the best adapted technology to support current developments in the global social sphere. Unfortunately, this instrumental approach is limited in its scope. Although activist practices on social media constitute a collective network that moves to make the resistance known to as far and broad an audience as possible (Melgaço & Monaghan, 2018, p.6), the resource constraints that the internet helps activists overcome ultimately exist at the local level. By this, I mean that, this theory does not abstract to the global sphere in which social contestation occurs today. As such, it does not explain non-regional and non-transactional interactions.

### Collective and Connective Movements

I advance Bennett and Segerberg’s logic of connective action as the foundation for my arguments that digital activist movements are necessarily grounded in social relations that span time and space. Internet infrastructures allow this socialization to be exhibited in the usage of similar social media tools and practices by activists sharing similar campaign goals and with some form of personal interaction between activists across protests. According to Bennett and Segerberg, some group-culture characteristics are necessary to explain the distinct organization of modern contentious political action that cannot be explained solely by the characteristics of activism enabled by new media (Bennet & Segerberg, 2012). Collective actions are now

organized by highly individualized publics (Habermas, 2006) who have only now joined political activism because they do not restrict expression of individual beliefs and can instead shape both their experiences of collective action and the goals and outcomes of the activist practices (Bimber, Flanagin, & Stohl, 2012). As organizations and formal structures of political contestation begin to matter less in light of the decreased resource mobilization costs that the internet affords, technological transformations “become agents in connective networks, automating and organizing the flow of information and providing various degrees of latitude for peer-defined relationships.” (Bennett & Segerberg, 2013, p.196). Because people have more agency and can shape their public experiences to act independently, even if they choose to organize together to achieve common goals, cohort characteristics of “individualized publics” formulate the new patterns in connective action-style activism that are centered on shared individual interests.

Mobilizations based on shared individual goals use digital media to “accommodate diverse individual paths to engagement” (Bennett & Segerberg, 2013, p.7). Rather than formulate cohesive group identities, connective action therefore incorporates multiple logics of collective action and communication. Among these, Padilla (2015) identifies “the traditional collective action and its structures; a collective action in which organizations only sponsor, but do not direct; and a crowd-enabled connective action, which is organized through networks of individuals that use digital media platforms as the organizing mechanism” (Padilla, 2015, p.17). Due to the possibility of peer co-production that social media entails, online networks can grow to a large scale while remaining assemblages of individuals partnered with formal organizations and supported by connective technologies. So, as individuals feel connected to the political sphere beyond their private lives through social cohorts that are integrated into their daily lives

through new media networks, and thanks to same networks' resource-mobilization potentials, even the unorganized masses can achieve political efficacy and organize for political change.

In terms of techno-political, the prospect of social connectivity most clearly envisions the relationship as a strategic way of citizen empowerment. Like Kellner (2001), who treats technology as an independent but transformative agent that can be strategically appropriated by political actors (Kellner, 2001), I understand activism on social media not as an end in and of itself, but as one factor in the evolution of political goals. Thus, techno-politics through an understanding of social connectivity do not see social media as a mere addition into activist repertoires, but as a new public sphere that can both enable and enhance already present political practices and transform political contestation forms. And in an equivalent cycle of influences, the political context of online participants determines the political efficacy of online tactics.

## Research Methods

This research intends to evaluate the extent to which contextual conditions and technical innovations are related to the number of digital campaigns and goal-types. More specifically, I try to answer the following question: To what extent can country-specific social, political and economic factors, used to understand traditional regional campaigns, and tool-kit variables, indicative of online practices, explain the prevalence of different types of civic digital campaigns? My hypothesis is that if a region's citizens have more political, social and digital freedom, and experience a higher GDP per capita, then the total number of campaigns will be higher. Furthermore, if civil activists have higher levels of technical resources and freedoms, and use novel social media, then the number of civic digital campaigns in the region will also likely be higher. However, in examining the application of these collective action motivations to larger,

non-regional waves of movements, I do not anticipate that techno-deterministic and resource mobilization theories alone can be used to empirically define differences between spontaneous action and recognized social movement waves. As a subset of this hypothesis, I posit that no broad goal category of activism experienced vastly different levels of average social or technology freedoms than the rest, or exhibit a higher proportion of social media use.

I obtained information regarding structural variables from the Global Digital Activism Dataset (GDADS2), the Freedom in World and Freedom on the Net reports, and the World Bank 2010-2012 reports (Edwards, Howard, & Joyce, 2013; Repucci, et al., 2013; Puddington, et al., 2018; International Comparison Program database, 2018). The GDADS2 contains qualitative and quantitative variables describing 426 cases of digital activism campaigns that were selected and their information studied by means of news reports about them. The cases were selected by reviewing reports between 2010 and 2012, using searches on Global Voices Online, Actipedia, and LexisNexis (Edwards, Howard, & Joyce, 2013). The GDADS2 uses individual digital activism campaigns as its unit of analysis while the unit of observation is the news report about that campaign (Edwards et al., 2013). Supervised graduate students performed the content analysis by reviewing news stories and assigning values for 25 qualitative and quantitative variables informing on the actors, targets, geographical scope, time, digital media applications and activist practices, and outcomes for each campaign. Annual campaigns and individual protests inside of larger campaigns were not considered as separate units and therefore only coded once to avoid redundancy. Considering the sampling method and the fact that the qualitative data was obtained through mass media reports, it is likely that cases of digital activism were disproportionately left out if they occurred in regions with less technological, social, and political freedoms, were demobilized, or failed prior to garnering global attention. As

such, any findings from this data are not representative of all possible digital campaigns. Still, the global digital activism cases in GDADS2 are very informative on digital trends in social activism.

The method I used is OLS, which is part of regression analysis used for studying the relationship between an outcome variable and a set of explanatory regressor variables (Mesquita & Fowler, 2020). Running OLS models in Stata 13.1.1 allowed me to analyze possible predictor variables for the number of digital campaigns, represented by the regional digital campaign distribution index described below, and for the probabilities of one or other types of campaigns. Here is the main model that is being tested:

$$\begin{aligned} \# \text{ of civic digital campaigns} = & \text{Social freedom} + \text{Political freedom} + \text{GDP per Capita} + \\ & \text{Internet availability and freedom} + \text{Presence of offline protest} + \text{Usage of Internet Social} \\ & \text{networks (Twitter and Facebook)} + \text{constants} \end{aligned}$$

This general model has three different expressions, with three different dependent variables. To accurately measure the effects of contextual and structural variables, I created an operationalized dependent variable that is an index of the total count of campaigns occurring in a subregion divided by the percent of internet users in a region. This regional digital campaign index makes regions with different aggregate populations and with different internet access comparable to other regions. The second dependent variable is a categorical variable that measures the proportion of each campaign goal that occurs in a region. Data for this variable comes from the ‘Goal Description’ variable of each campaign from the GDADS2 (Edwards, Howard, & Joyce, 2013). I ran the two parallel regressions to test differences in the explanatory power of techno-determinism and socio-political contexts on the number of campaigns based on

category and region. The OLS method is appropriate since the dependent regional campaign distribution index is a natural log function that can be analyzed as a continuous variable. It also works for the second model that tries to predict the change in the proportion of each goal-type category for the campaigns in a region, according to the independent variables.

The final expression measures the impact of the context variables, the toolkit variables, and expected category proportions on the presence of social movements waves. In order to see if social movements are discernibly different from spontaneous protestations, I looked only at campaigns in the regions that participated in either the Arab Spring or the global anti-austerity movement. Due to time and resource limits, I did not try to identify other movements occurring around this time that might have been more regional or in different categories than these two cases. I applied the model only to the 84 campaigns that occurred in the regions that participated in the two case study movements and had either Governance or Economic Justice goals – the goal-types of which the crisis wave was part. Although this caused some loss of statistical power due to decreased sample size, it improved the accuracy of my model by eliminating possible differences in the contexts and technologies between regions that experienced both organized social movement waves and spontaneous campaigns, versus those with no discerned crisis wave movement participation. Then, to empirically study the two popular case study movements, I generated another equation for the model that is as follows:

$$\begin{aligned} \textit{Movement} = & \textit{Governance \%} + \textit{Economic Justice \%} + \textit{Social freedom} + \textit{Political freedom} \\ & + \textit{GDP per Capita} + \textit{Internet availability and freedom} + \textit{Presence of offline protest} + \\ & \textit{microblog usage} + \textit{social media usage} + \textit{constants} \end{aligned}$$

The only factors changing, therefore, should be whether or not the campaign originated as part of a larger movement, or the dependent variable, and the toolkit versus social context variables meant to explain it. Because I suspected that the proportion of each goal-type of campaigns indicated the relative values or most consuming grievances of a population, I included also the previously analyzed ratios of campaigns for the two categories in which movements took place to act as controls. Statistically, the distribution of potential outcomes for movement should now be conditionally independent of the variables of interest, the toolkit and context variables, given control for confounding goal values in the population.

### Dependent Variables

To better account for the impact of social context factors on the number type of digital campaigns, I used methods like Padilla's (2014) in his application of multitheoretical factors to study differences in numbers of civic digital campaigns across countries (Padilla, 2014). Following from his research, I formulated an index of the regional digital campaign distribution. This index relates the number of internet users to the number of digital campaigns in a region. I elected to perform the study using the regional boundaries delineated in the GDADS2 (Edwards, Howard, & Joyce, 2013) because regions are political delineations of shared cultural factors that can be held constant across geographical borders with higher levels of social diffusion and exchange (Division, 1999). In descriptive terms when the numbers of digital campaigns are normalized by number of internet users and number of campaigns in the whole sample (representing a global total), the 17 regions for which data is available, plus the international campaigns with no ascertained initiator region, all show different numbers of digital campaigns. Regional analysis can therefore more accurately isolate where and why the number of digital campaigns deviates largely from what would be expected based on the number of internet users

in the region of interest. To create this index, I first calculated the average percent of internet users among all the countries in a region. I then created a ratio of each region's campaign totals divided by the total number of campaigns in the GDADS2 for each year. Finally, I calculated a ratio of the average percent of internet user per region to the average percent of internet users per year, according to information gathered from the World Bank database (International Comparison Program database, 2018).

The indexed ratio reveals whether the proportion of digital campaigns per region is as expected, given its number of internet users. Because the index uses average percentages for the number of users, coefficients for this dependent variable are interpreted such that values closer to zero indicate a less than proportionate share of social campaigns and while values closer to one represent a larger-than-expected number of campaigns. Average index values are between 0.08 and 0.12. This value is the dependent variable for the first OLS model in this project.

The second dependent variable is a binary marker indicating whether the individual campaigns were part of a recognized social movement wave. For this, I coded the eleven campaigns that took place as part of either Arab Spring or the global anti-austerity protests as 1, showing the presence of a social movement. This regression then finds possible predictors of movement presence among the noise of spontaneous campaigns. As previously described, social movement waves are recognized by sociologists as not being geographically bound to the region in which they initiated. Rather, what binds the campaigns are similar goals for the protestations and sharing of both digital practices and activist networks themselves (Bennet & Segerberg, 2012). Although it is possible that other, smaller, social movement waves arose during this time, these two movements are the best studied examples of connected activist networks. Furthermore, I had limited time available to study all 405 cases and determine if they had similarly intertwined

activity. To account for this limitation, I ran the movement OLS model using only the regions in which the known social movements occurred. Because past research has already considered possibly related campaigns occurring in these regions during the crisis wave for similarities, a comparison using only this subset will more accurately show possible predictor variables for social movements.

I also created a variable for the proportion of the number of digital campaigns by goal-type in each country versus the total number of campaigns in that country. The purpose of this variable is to see if countries with proportionally more campaigns about causes in a specific category are then more likely to participate in social movement waves. This part of the research abstracts the analysis of local campaign initiators and motivations to possible movement waves with similar goals. However, to assess whether novel technology is acting as a confounder in possible changes to this campaign category proportion, I also ran an OLS regression using the ratio as the dependent variable. In this model, the regression is used to predict the change in the proportion of a given category according to the two theories from which the independent variables stem. I identified six categories for goal-type under which I grouped all instances of digital campaigns: Consumer, Economic Justice, Environmental, Democracy and Governance, Human / Civil Rights, and Misc. I excluded the miscellaneous campaigns from the final regression due to there only being five in total. Below is a table with the full description of those campaigns included in each category:

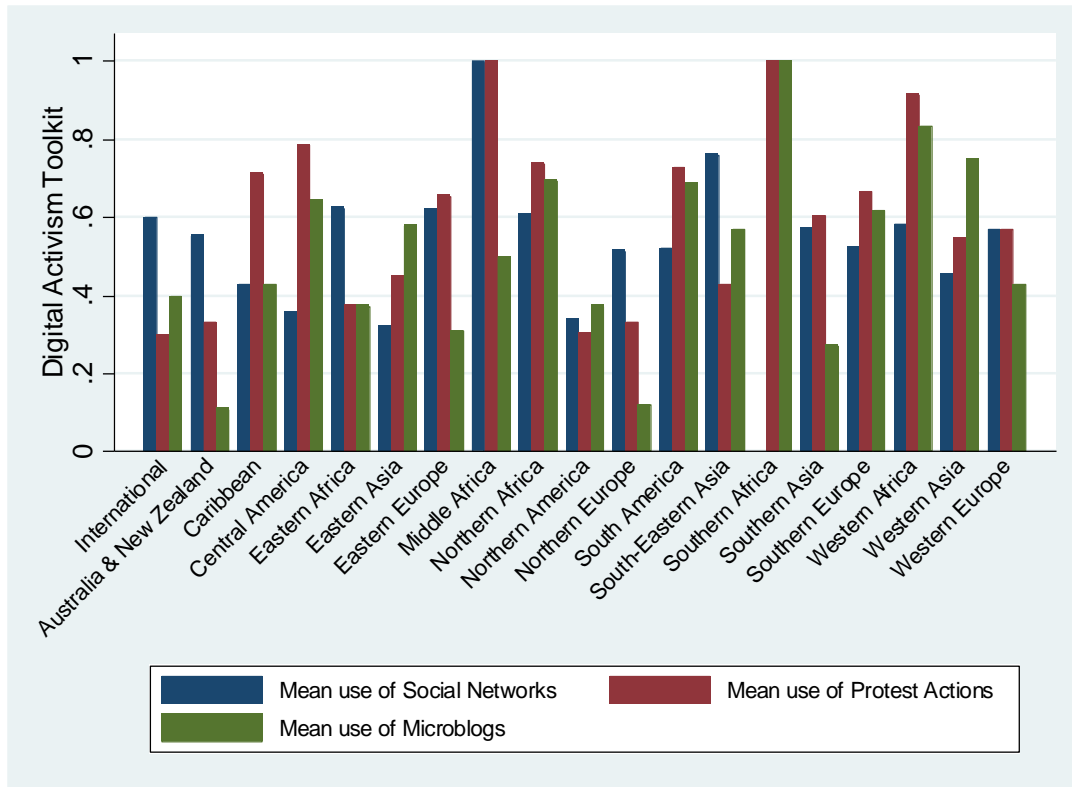
Campaign Goal Category	Types of digital campaigns according to their goals
Consumer Satisfaction	Campaigns for: goods, services, and activities that fulfill wants rather than necessities for those who purchase or pursue them. Includes campaigns for increased responsiveness of entertainers and companies to the preferences of their consumers and the public.
Democracy and Governance	Campaigns for: increasing or improving democratic governance structure, including accountable, transparent, and effective government; regime change, the resignation of oppressive leaders and democracy; free and fair elections and voter registration. Includes calls for freedom and release of political elites; de-militarization of foreign bases. Also includes campaigns calling for free media and information and for improved technology structures with a government organization as the target. Campaigns against: Corruption; dictatorship and military rule; state violence in and across political boundaries; foreign government interests. Also against media censorship.
Economic Justice	Campaigns for: fair distribution and equal access to economic goods and services in society; public safety, housing, pensions; employment and fair wages; fair taxation; other government services. Campaigns against: poverty and austerity.
Environmental Campaigns	Campaigns for: the protection of plants, animals, and nature; green energy; and urban green space. Campaigns against: the depredation of natural resources; pollution, natural resources and other harmful energy.
Human /Civil Rights	Campaigns for: equal access to quality education. Also campaigns for equal access to physical and mental healthcare, including their accessibility within prison systems. Campaigns against: oppression; physical harm; instances of organized violence against or unfair imprisonment of an individual or a group due to their religion, political beliefs or parties. Includes campaigns against discrimination of minorities and immigrants; organized violence or unfair application of legal rules against a group on the basis of race, national or ethnic origin, cultural traditions or religion. Also includes campaigns against discrimination based on gender or sex orientation.

Table 1: Campaign Categories

I identified the goal-types by analyzing the qualitative campaign goal description provided in GDADS2. Following some agreement issues in the original goal descriptor agreements between coders according to what Krippendorff suggests as optimal minimal  $\alpha$  of 0.667 for speculative conclusions (Hayes & Krippendorff, 2007), after further training for the coders in the importance of Krippendorff's alpha and their subsequent recoding of the campaign goals, an inter-coder reliability of 0.691 was reached (Edwards et al., 2013). While the speculation agreement is still low, it demonstrates that many campaigns had overlapping campaign goals even after two rounds of distinguishing between stated goals. For the purposes of my analysis I used what I identified to be the primary goal based both on the description of the campaign and the target types.

### Independent Variables

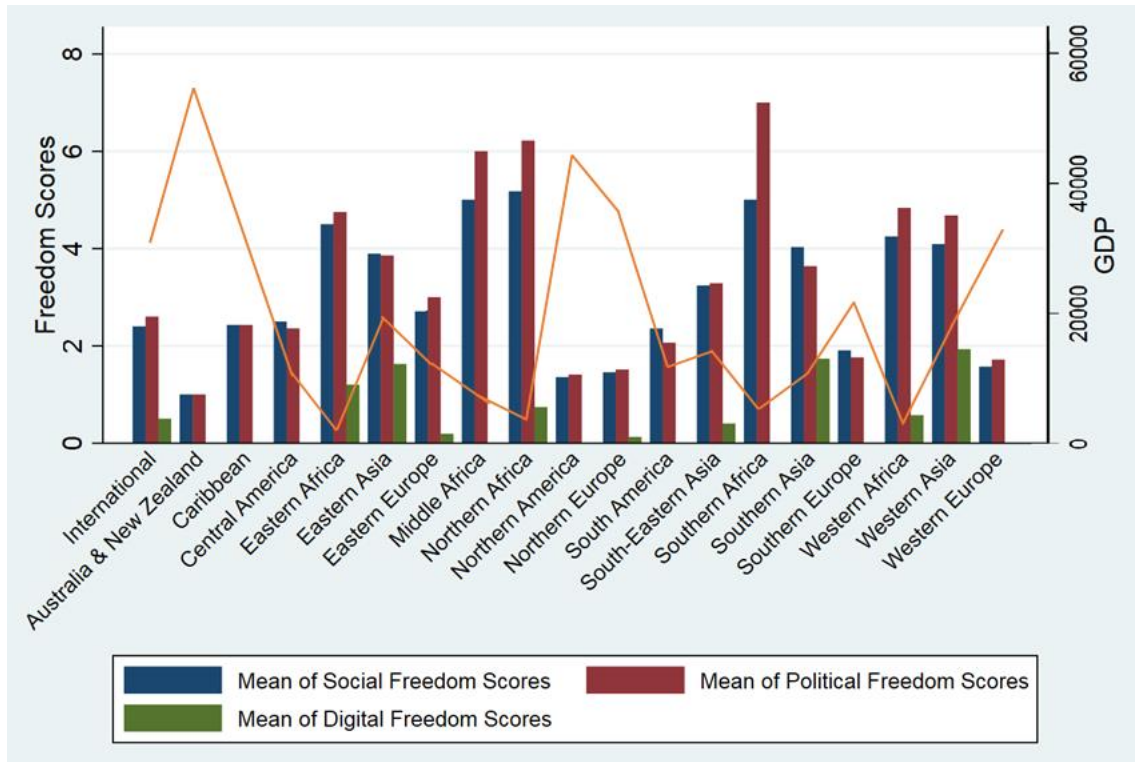
There are three groups of independent variables: regionally contextual variables that cover social, political, and economic variables; the technical toolkit variables, including specific digital practices in campaigns; and control variables. The variables I selected to test technodeterministic theory were based on initial research on the GDADS2. Edwards et al. posited different logics depending on whether activists target government or informal organizations, used social media or single-purpose technology, and chose whether to engage in street protest alongside digital tactics (Edwards et al., 2013). Thus, I coded three binary variables showing: street demonstration occurrences; usage of microblogs; and social network meta-technologies (where the latter two are dominated primarily by Twitter and Facebook, respectively) (Edwards et al., 2013). Graph 1, below, shows the mean use of these tools and tactics by region. There is no notable connection relating usage of any combination of the three toolkit variables or between these tactical choices and specific regions.



Graph 1: Average Use of Digital Tools and Practices per Region

This research considers four variables for analyzing conditions in each region: social, political and digital freedoms, and GDP. To analyze the resource-mobilization approach, I obtained data from Freedom House that measured the levels of social, political and technological freedoms at the level (Puddington, et al., 2018; Repucci, et al., 2013) Political and civil freedom is measured on a scale of 1 to 7, with lower numbers representing freer countries, and higher numbers representing less free countries. Technological freedom, a measure of digital infrastructure access that can affect the number and types of digital activism, was calculated on a scale of 1-4. Graph 2 shows the average distribution of these freedoms by region. Again, lower numbers in the measure of technology freedom show more freedom and increases in the level mark decreases in actual experienced freedom in the country. Graph 2 also overlays the average

GDP per region. A negative correlation of approximately -0.45 exists between GDP and both social and political freedom scores. Keeping in mind the inverse scale of the freedom scores, what this negative relationship indicates is a positive relationship between real freedoms and higher GDP per capita.



Graph 2: Average Distribution of Freedoms by Region

There was a very strong positive relationship between all three measures of freedom, which is expected from knowledge about the politics of different regimes. This initial descriptive data supports my first hypothesis – that campaigns will be greater in number in regions that experience higher GDP and more freedom – because it shows that the social and economic contexts are on average positively connected in cases of digital activism around the world. For the purposes of my OLS models, I calculated the average level for each freedom variable per region. Because technological freedom measures were not available for all of the countries

represented by the GDADS2 cases, the calculation of averages for this freedom variable are not as precise as they are in the social and political freedom calculations.

## Findings and Analysis

First, I present the descriptive results, followed by the results of the OLS for the prediction of the regional digital campaign index and the OLS that predicts changes in the proportions of different campaign goal-types over the total number of digital campaigns per region.

### OLS: Regional Digital Campaign Index

In Table 2, all of the campaigns in the sample are sorted by year and region to show, in the first column, the number of campaigns in each region. Values for the regional digital campaign index are in the second column. This value is the dependent variable for the first OLS model in this research. A value closer to zero reflects a region where the number of campaigns is less than the world average campaigns expected according to its number of internet users and the total number of campaigns in the sample. Similarly, a higher number shows that a country has more campaigns than the world average. The averages per region ranged between approximately 9.5 and 12.5 percent each year,

Year	Region	# Campaigns	Average of Index
2010	International	2	1.62%
	Australia and New Zealand	2	1.46%
	Caribbean	3	2.72%
	Central America	3	3.92%
	Eastern Africa	2	13.32%
	Eastern Asia	10	11.57%
	Eastern Europe	7	7.19%
	Northern Africa	4	7.60%
	Northern America	16	12.74%
	Northern Europe	15	9.80%
	South America	10	14.24%
	South-Eastern Asia	5	7.10%
	Southern Asia	6	26.72%
	Southern Europe	5	5.85%
	Western Africa	1	4.83%
	Western Asia	4	4.22%
	Western Europe	2	1.82%
2010 Total		97	10.23%
2011	International	2	1.36%
	Australia and New Zealand	2	0.82%
	Caribbean	1	0.47%
	Central America	4	4.02%
	Eastern Africa	3	11.42%
	Eastern Asia	9	5.47%
	Eastern Europe	6	3.22%
	Middle Africa	2	6.16%
	Northern Africa	10	13.29%
	Northern America	12	5.71%
	Northern Europe	8	3.23%
	South America	19	13.65%
	South-Eastern Asia	8	6.58%
	Southern Africa	1	
	Southern Asia	14	40.37%
	Southern Europe	8	4.32%
	Western Africa	4	18.84%
Western Asia	23	15.15%	
Western Europe	2	0.82%	
2011 Total		138	12.41%
2012	International	5	2.58%
	Australia and New Zealand	5	2.03%

	Caribbean	3	2.69%
	Central America	7	5.72%
	Eastern Africa	3	29.14%
	Eastern Asia	12	5.88%
	Eastern Europe	15	8.59%
	Northern Africa	9	7.20%
	Northern America	28	12.29%
	Northern Europe	10	4.33%
	South America	19	12.48%
	South-Eastern Asia	8	5.20%
	Southern Asia	12	16.24%
	Southern Europe	7	3.52%
	Western Africa	7	22.04%
	Western Asia	17	8.87%
	Western Europe	3	1.25%
2012	Total	170	9.51%
Grand	Total	405	10.67%

Table 2: Distribution of Digital Campaigns

For the purposes of the OLS methods, using the indexed ratio of campaign number to internet users per region allows for more accurate comparison between regions with different population sizes and levels of internet penetration. Furthermore, the ratio controls for some variance among cases occurring across countries. This is particularly important when the number of observations is small.

This research aims to: 1) identify the extent to which social, political and economic contextual factors explain the difference in the index, 2) the extent to which technology practices in digital campaigns are deterministic of differences in the index, and 3) to test whether differences in the regional averages of the contextual variables and the campaign-specific toolkit variables explain the proportions of the different goal-types of civic digital campaigns. To answer the first question, I ran four OLS using the calculated index as a dependent variable and both sets of explanatory variables, associated with social mobilization and techno-deterministic

theories, respectively, as independent variables. The first three regressions calculate the predictive value of the independent variables for specific years. The last regression predicts changes in the regional campaign index using averages for the social, political, and economic variables across all the years in the sample.

Columns two, three and four in Table 3 show the predicted probability of the campaign index representative of the number of digital campaigns per region for 2010, 2011 and 2012, respectively. This yearly analysis by region enables a comparison of significant predictors across multiple years. Repetition of the regression across a sample of multiple years improves the precision of the test. In 2010, six variables were found to be statistically significant - holding all the other independent variables constant at their means - for predicting the regional campaign index that signifies changes in the number of campaigns relative to the global average. The six variables are 2010's GDP per capita; average social freedom score measured across each region; average political freedom score measured across each region; average internet freedom and technology infrastructure availability score measured across each region; average percent of internet users in each region; and use of microblog technology (mostly representative of Twitter) in campaigns. In 2011, only three of these variables were statistically significant: usage of microblogs; GDP; and average percent of internet users per region. In 2012, four variables were statistically significant: GDP; average social freedom score measured across each region; average internet freedom and technology infrastructure availability score measured across each region; and average percent of internet users per region. These findings tentatively confirmed my hypothesis that social, political and economic contexts are equally, if not more, relevant causes for changes in the recorded numbers of modern digital campaigns than techno-deterministic approaches, as I explain in the following paragraphs.

I also ran an OLS regression using the social, political and technology freedom scores and percent of internet users in the population, with each variable averaged over all three years for each region in the sample. The results of this regression are described in Table 4. Interpreting this analysis in combination with the year-by-year regressions, I was able to analyze possible predictors for the total number of campaigns per region across the whole period recorded in the sample, which is relevant for my later analysis regarding predictors for campaign goals during this crisis wave period. Regarding the results shown in Table 4, it is relevant to note the R-squared values for the three models. The R-squared measure informs on how close the regression line is fitted to the data and, as such, increases with each new independent variable that improves the model more than would be expected by chance (Mesquita & Fowler, 2020). In this case, the R-squared for the models dealing separately with traditional contextual variables and the digital toolkit variables used to describe resource mobilization and techno-deterministic theories are 0.515 and 0.429, respectively. This highlights the fact that the predictive value for the contextual model is stronger than if research tried to simply use technology practices in digital campaigns as an explanation for the shaping of modern digital social activism. Even further, the last column in Table 4 shows the OLS model using variables from both theories to predict the regional digital campaign index. For this regression, the R-squared is 0.524, meaning that this combined model is a better predictor than either of the two separate theories. This is in-line with my hypothesis that supports social connectivity as a better theoretical approach to studies of social action (Bennet & Segerberg, 2012). As explained in the theoretical section, social connectivity theory posits that novel digital technology is key to understanding modern social movements only insofar as it supports previously existing shared social and political motivators and activist structures.

Furthermore, what I find from the combined OLS model is that all six of the original variables remain statistically significant predictors at the regional level. The average population for each region is also statistically significant, likely because the sample size has increased by combining all the years. From this generalized model, shown in the last column of Table 4, I analyze the combination of contextual and toolkit variables that best predict percentile increases in the regional digital campaign index and, by relation, in the number of campaigns per region, holding all other variables constant. Average population and percent of internet users per region are used as constants in each regression because they do not belong to any specific theoretical approach but are relevant to the creation of the digital campaign index variable and all campaigns in the sample. Combined, the two variables actually decrease the regional digital campaign index by 0.2 percent ( $p < 0.01$ ) for each percentage point increase in average internet users among a regional population.

	2010 b/se	2011 b/se	2012 b/se
Pop2010	0.000 (0.00)		
GDP2010	0.000*** (0.00)		
avgSoc2010	0.118*** (0.01)		
avgPoli2010	-0.078*** (0.01)		
avgTool2010	-0.001** (0.00)		
%Internet Users2010	-0.002*** (0.00)		
protest	-0.001 (0.01)	0.001 (0.01)	0.001 (0.01)
socnet_YN	0.010 (0.01)	0.006 (0.01)	0.009 (0.01)
micro_YN	-0.021** (0.01)	-0.020** (0.01)	-0.011 (0.01)
Pop2011		0.000 (0.00)	
GDP2011		0.000*** (0.00)	
avgSoc2011		0.003 (0.01)	
avgPoli2011		0.000 (.)	
avgTool2011		0.001 (0.00)	
%Internet Users2011		-0.002*** (0.00)	
Pop2012			-0.000 (0.00)
GDP2012			0.000*** (0.00)
avgSoc2012			-0.038*** (0.01)
avgPoli2012			0.000 (.)
avgTool2012			0.005*** (0.00)
%Internet Users2012			-0.002*** (0.00)
constant	0.089*** (0.02)	0.141*** (0.03)	0.111*** (0.02)
R-sqr	0.435	0.310	0.385
dfres	390	391	393
BIC	-1075.2	-1001.2	-1054.3

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

Table 3: OLS, dependent variable regional digital campaigns distribution index measured  
by year

	Contextual b/se	Toolkit b/se	Campaign Index b/se
avgPop	0.000*** (0.00)	0.000*** (0.00)	0.000*** (0.00)
netuseRY	-0.003*** (0.00)	-0.002*** (0.00)	-0.003*** (0.00)
GDPPerCap	0.000*** (0.00)		0.000*** (0.00)
avgSoc	0.032* (0.02)		0.035* (0.02)
avgPoli	-0.065*** (0.01)		-0.066*** (0.01)
avgTool	0.002*** (0.00)		0.002*** (0.00)
protest		0.001 (0.01)	0.005 (0.01)
socnet_YN		0.006 (0.01)	0.008 (0.01)
micro_YN		-0.015* (0.01)	-0.013* (0.01)
constant	0.269*** (0.02)	0.211*** (0.01)	0.263*** (0.02)
R-sqr	0.515	0.429	0.524
dfres	382	398	379
BIC	-1122.8	-1109.5	-1112.4

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

Table 4: OLS, dependent variable regional digital campaigns distribution index

Looking first at the contextual variables, the first statistically significant variable is GDP per capita. However, its impact on the measure of campaigns per region is less than 0.01 percent and therefore not practically significant for a real-world interpretation of the predictor. Based on previous resource mobilization research that shows the internet as capable of decreasing the barriers to political mobilization (Padilla, 2014), I actually anticipated that a lack of monetary resources could also factor into increased collective action online. However, this is not reflected in the empirical analysis.

The second variable that is statistically significant is the average social freedom level across countries in each region, which increases the digital campaign index. That means that a 1 point increase in the dimension scale of social freedom in a region increases the index measuring the number of campaigns per region by 3.5 percent ( $p < 0.05$ ). In real-world terms, because the measures of freedom from Freedom House range from 1 to 7 with lower numbers representing better freedom levels, the less social freedom a region experiences, the higher the digital campaign index and the greater the number of campaigns that occur.

The third statistically significant variable in the context category is average political freedom per region, meaning that a 1 point increase in the level of political freedom decreases the regional digital campaign index by 6.6 percent ( $p < 0.001$ ). Following the same interpretation as with social freedom measures, the positive relationship between the political variable and the digital campaign index shows that as political freedom decreases, there is a marked decrease in real political freedoms among a region.

Finally, the fourth variable is an indicator of average levels of internet availability and freedom per region. Although I noted in the Methods section that this variable ranges only from 1 to 4 and that the regional averages were abstracted from a more limited set of countries, I hold these internet freedom values to be generalizable estimates for countries within shared a geographic region as defined in GDADS2. As is shown in the last column of Table 4, an increase of 1 point in technical and internet freedom increases the index measuring the number of campaigns per region by 0.2 percent ( $p < 0.001$ ).

Consequently, the combined predictive power of these social context variables has an absolute value of 10.3 percent. This finding rejects purely techno-deterministic approaches to

modern activist movements that attempt to eliminate the social connections, precursors, and motivations that help build and then support civic organization. On the other hand, the analysis of contextual variables in the OLS supports my hypothesis that if a country's citizens have more political and social freedom and experience a higher GDP per capita, then the total number of campaigns will be higher.

Comparatively, the only variable found to be statistically significant among the toolkit category is microblog use, which categorically shows whether or not a campaign used microblogs as part of their digital tactics. This campaign-specific variable shows that using micro-blogs as one of the meta-technology platforms for campaign support may actually decrease the regional digital campaign index by 1.3 percent ( $p < 0.05$ ). The predictive power of the toolkit variables on the number of digital campaigns in a region is clearly much weaker than that of contextual variables. I therefore reject my initial hypothesis that if civil activists have higher levels of technical resources and freedoms, and use novel social media, then the region will also likely have a higher number of digital campaigns.

#### OLS: Movement and Spontaneity Analysis

In order to answer the second question of this research that tests whether regional social, political, and economic contexts and/or campaign-specific toolkit differences can explain waves of social movement, I ran six different OLS models. The first five models, shown in Table 5, use the proportion of campaigns by goal-type in each region as their dependent variable. Columns 1 through 5 show the probability of change in the proportion of any given goal-type of digital campaign according to the same contextual and toolkit factors applied to prediction of digital campaign count per region, controlled by average regional population and percent of internet use. The purpose of these regressions is to analyze if there are any possible confounders between

the proportions of each goal category in a region and the prediction of a movement spreading to the region.

	Governance	Consumer	Economic Justice	Environmental	Human/Civil Rights
	b/se	b/se	b/se	b/se	b/se
avgPop	0.000* (0.00)	-0.000* (0.00)	0.000 (0.00)	-0.000*** (0.00)	-0.000 (0.00)
netuseR	-0.001 (0.00)	-0.003** (0.00)	0.001 (0.00)	-0.001 (0.00)	0.003** (0.00)
GDPPerCap	0.000 (0.00)	-0.000* (0.00)	-0.000 (0.00)	-0.000 (0.00)	-0.000 (0.00)
avgSoc	0.010 (0.06)	0.017 (0.06)	0.215** (0.07)	-0.074 (0.07)	-0.036 (0.06)
avgPoli	-0.071 (0.06)	0.003 (0.05)	-0.162* (0.06)	0.148* (0.06)	0.040 (0.05)
avgTool	-0.001 (0.00)	-0.000 (0.00)	-0.001 (0.00)	-0.004** (0.00)	0.002 (0.00)
protest	0.004 (0.02)	0.067** (0.02)	-0.020 (0.03)	-0.027 (0.03)	-0.038 (0.02)
socnet_YN	-0.015 (0.02)	0.015 (0.02)	0.012 (0.02)	-0.036 (0.02)	0.013 (0.02)
micro_YN	-0.035 (0.02)	0.045* (0.02)	-0.081** (0.03)	0.052* (0.02)	0.004 (0.02)
constan	0.918*** (0.08)	0.948*** (0.07)	0.674*** (0.08)	0.830*** (0.08)	0.427*** (0.07)
R-sqr	0.202	0.242	0.095	0.169	0.046
dfres	379	379	379	379	379
BIC	-42.4	-85.5	43.3	4.9	-84.3

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

Table 5: OLS, dependent variable proportion of campaigns by goal-type per region

My hypothesis that the proportion of any given campaign in a region is not explained by either techno-determinism or social context is only partially confirmed. Keeping in mind that for a regression to be well-fitted for informing the data it should have both a positive R-squared (the larger the number, the better the fit, with 1.00 representing a perfect fit) and show statistical significance in the explanatory factors (otherwise the correlation is not actually applicable regardless of the size of the relationship), then the proportions of Governance and Economic Justice campaigns among the total number of campaigns in the region are found to have no relation to either social context or protestation toolkit factors.

In Governance campaigns, a category that contains 121 of the 405 campaigns, the only statistically significant variable explaining changes in the proportion of these types of digital

campaigns is average regional population. However, the population variable has no practical significance because the magnitude of the effect approximates zero. Thus, none of the independent variables provide a satisfactory explanation for increases in the number of Governance campaigns.

Economic Justice campaigns show a statistically significant correlation with three variables: social scores, political scores, and use of micro-blogs. The first statistically significant variable, average social freedom levels per region, shows that a 1 point increase in this freedom level increases the proportion of economic campaigns by 21.5 percent ( $p < 0.01$ ). Because higher numbers indicate less social freedom in the region, the actual interpretation of this relationship is that as social freedom decreases, the proportionate number of economic campaigns increases. If countries have more freedom of expression (an indicator for increased social freedom levels in the Freedom House measures), it is likely they will have a larger proportion of campaigns oriented to satisfying themselves as consumers or caring for the environment (Padilla, 2014). In cases with low levels of social freedom, then, it makes sense that campaigns orient around resource distribution when the population lacks basic resources fundamental for higher levels of self-expression (Padilla, 2014). Conversely, the second statistically significant variable, average political freedom, has a negative relationship with economic justice campaigns. This indicates that a 1 point decrease in the political freedom metric, which means a real increase of freedoms, increases the proportion of economic campaigns by 16.2 percent ( $p < 0.05$ ). Based on the resource mobilization approach, people in more restrictive political contexts might have less capacity to gather resources for their own political interests and make use of them for mobilizing.

Finally, microblog usage in economic campaigns seems predictive of a lower proportion of economic justice campaigns by 8.1 percent ( $p < 0.01$ ). This does not confirm that techno-

determinism is a viable explanation for changes in proportions of this type of campaign, however it may signify instead a beneficial relationship between certain types of digital technology and specific goals that improves success rates, visibility, or citizen approval.

Table 6, below, shows the distribution of movements across region and goal-type. Descriptively, I note that there is indeed a significant skew in the number of campaigns in any given goal-type depending on the region. This justifies my decision to control for differing goal proportions in each region as my study of social movements in Europe and Africa would not be applicable to, say, India and Latin America that experience both different political and social realities and also different traditional or conservative values.

Region	Goal-Type and Movement			
	- Economic -		- Governance -	
	0	1	0	1
Northern Africa	1	1	9	3
Northern America	9	1	3	
Northern Europe	4	1	4	
Southern Europe	3	3	7	
Western Africa	3		6	1
Western Asia	6	1	11	7

Table 6: Movements Across Regions and Goals

To briefly explain my selection of case studies, they are informed by a variety of previous research and my own stated goal to analyze whether known social movements look empirically different from independent campaigns. First, the five core characteristics - use of social media, pre-figurative politics, distrust of established institutions, grassroots democracy, and diversity, among actors - that Peter Funk and Todd Wolfson identify in the crisis wave campaigns suggest the importance of both novel communication practices and the contextual economic hardship amidst punishing regime policy in exploding the global phenomenon (Funke & Wolfson, 2017). Because previous research already considered the existence of a relationship between social

preconditions, grassroots goals, and social media communications systems to have benefited the success of the anti-austerity movement, I found it a perfect candidate for empirical research testing these contextual and toolkit variables. In relation to Governance movements such as the pro-democracy Arab Spring campaign, visibility dialects explain that as populations gain better technological infrastructure and connectivity with other regions, people with grievances against less democratic governance, which compose the majority of governance campaigns, come to perceive the injustices they suffer more clearly. Hussain and Howard (2013) acknowledge that in the Arab Spring, “ideas spread across borders, through informal networks of families, friends, and interested onlookers” (Hussain & Howard, 2013, p.57). In a model exploring these sociological case studies, incorporating social, political, and economic conditions and resource availability, and using goal-types to control for differing values, I can analyze the techno-deterministic hypothesis that those variables related to technological freedoms and practices can explain the rapid distribution of shared campaign goals across countries in multiple regions.

Following from the analysis of relevant goal categories, I used the proportions for Economic Justice and Governance in an OLS model with movement as the dependent variable. The results for the model can be seen in Table 7, below, where the first two columns give only the goal ratios separately and column three gives a combined analysis.

	Governance b/se	Economic b/se	Total b/se
ratioD	0.306 (0.21)		0.354 (0.31)
avgPop	-0.001 (0.00)	-0.000 (0.00)	-0.001 (0.00)
netuseR	0.011* (0.00)	0.011* (0.00)	0.011* (0.00)
GDPPerCap	0.000 (0.00)	-0.000 (0.00)	0.000 (0.00)
avgSoc	0.074 (0.17)	0.165 (0.21)	0.041 (0.24)
avgPoli	0.043 (0.14)	-0.028 (0.16)	0.067 (0.18)
avgTool	-0.001 (0.01)	-0.001 (0.01)	-0.000 (0.01)
protest	0.252* (0.10)	0.262* (0.11)	0.250* (0.11)
socnet_YN	0.084 (0.09)	0.098 (0.09)	0.086 (0.09)
micro_YN	0.152 (0.10)	0.123 (0.10)	0.156 (0.11)
ratioEcon		-0.170 (0.19)	0.058 (0.28)
constant	-1.136** (0.40)	-0.908* (0.37)	-1.172** (0.43)
R-sqr	0.290	0.277	0.291
dfres	69	69	68
BIC	104.8	106.2	109.1

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

Table 7: OLS, dependent variable movement

In this movement analysis, I found that only two independent variables were statistically significant predictors for the growth of either governance or economic justice movements. The combined analysis shows that the internet user ratio can predict the increased occurrence of a social movement (in the two goal-types) by 1.1 percent ( $p<0.05$ ) for each percent increase in average internet users per region, and the presence of protest in a campaign can explain an increased occurrence of social movement by 2.5 percent ( $p<0.05$ ). Importantly, neither the internet user ratio nor the presence of protests is the most representative of either the importance of social contexts or the deterministic value of social media. Thus, although these variables are statistically significant explanatory variables, they are ultimately not substantially supportive of any of the social theories that I assess in this paper. This finding supports my stated null hypothesis that a) there will be no quantitative difference between recognized social movement

waves and the general social activist campaigns and that b) techno-deterministic and resource mobilization theories will not provide sufficient explanation for the development of shared activist practices that constitute (crisis) wave movements. Unfortunately, I also cannot use this model to support my further hypothesis that social connectivity theory provides a better explanation of both social activist campaigns and the building of social movement waves. The following discussion will illuminate how the degree of collectiveness that creates social movements evades empirical proof in my analysis.

## Discussion

Most of the research and theorization regarding online collective action has entailed case studies or comparative case studies in which the focus is the “collective-action” or the movements’ internal features (Bennett & Segerberg, 2013; Bimber, Flanagin, & Stohl, 2012; Earl & Kimport, 2011). However, my aim was to apply an empirical analysis to the theoretical approaches - techno-determinism, resource mobilization and social connectivity – that are used in studies of social activist campaigns and social movement waves. To this end, I used groupings of variables that indicate, on one hand, the regional social, political, and economic contexts and internet availability, and, on the other hand, the social media tools and physical practices used by activists for each of 405 campaigns in the GDADS2 study (Edwards, Howard, & Joyce, 2013). I then created three models that used these different variable groupings to predict, first, changes in the number of campaigns per region, second, the types of campaign goals and values predominant in each region, and finally, the expansion of individual campaigns into shared practices that encompass whole regions. My functional hypotheses are stated again as follows:

1. If a region's citizens have more political and social freedom, and experience a higher GDP per capita, then the total number of campaigns will be higher.
2. If civil activists have higher levels of technical resources and freedoms, and use novel social media, then the region is more likely to have a higher number of civic digital campaigns.
3. Variables representative of techno-deterministic and resource mobilization theories cannot empirically define differences between spontaneous action and recognized social movement waves.
  - a. The above study is possible because no goal-category of activism experiences vastly different levels of average social or technology freedoms than the rest or exhibit a higher proportion of social media use.

In the analysis of the number of campaigns per region, normalized by the percent of internet users in each region, four of the socially contextualizing variables were statistically significant. Thus, there is more empirical evidence in support of studying social activist practices through traditional resource mobilization approaches because its representative variables were better predictors of the number of social activist campaigns at the regional level. Three of the four statistically significant variables (social, political, and online freedom) were also substantial. This means that regions that are more socially conservative and constrictive, experience higher levels of political freedom, and have higher levels of internet accessibility and freedom in general organize more civic digital campaigns. This finding is consistent with resource-mobilization research that interprets collective action as a consequence of a decreased cost, and increased agency and information, facilitated by digital media.

The last statistically significant result of the campaign index OLS is comes from the GDP variable. GDP is one measure of the availability of economic resources in a country, which is an important factor in explaining the number of digital campaigns because the resource mobilization approach that attests that the availability of resources is necessary for the production of collective action, such that poorer regions would have less campaigns. However, the campaign index model shows that GDP is not substantively significant for predicting an increase in the number of campaigns as normalized by region due to its negligible magnitude. As explained in my previous section about the digital network infrastructure, the internet is a powerful tool for decreasing costly barriers to entry into activism. Thus, while the lack or relative deprivation of resources that catalyzed grievances and social campaign before the internet still exist, the same populations can now act on their grievances in greater proportion. Furthermore, when other resource-descriptive measures more relevant to the introduction of widespread internet communication in the early 2010s – such as number of internet users – are included in the analysis, GDP likely loses explanatory value for future internet campaign numbers.

Contrastingly, only one of the toolkit variables studies was statistically significant. The use of microblogs like Twitter in this model increased the chance of social movement as well, but this finding simply shows that social media is an important aspect of internet campaigns. As such, I reject the possibility that novel digital technology is deterministic of the expansion of regional social campaign numbers. From a statistical point of view, the combined analysis increases the fit of the model by 0.9 percentage points. This supports my hypothesis that social connectivity theory, combining the focus on grievances, costs, and social contexts of populations with the communicative power of social media, best explains the number of activist campaigns in a region. I therefore proceeded with this model.

As for the variables that were not statistically significant, an interesting finding is that the number of campaign in which individuals participate in off-line political protestation does not determine if a region will have more civic digital campaigns. This finding is in line with Padilla's (2014) findings regarding relationships between online activities and physical demonstrations (Padilla, 2014). It seems in this case that although ICTs are becoming increasingly present and impactful on the logics of protesting, the organizational relationship flows mostly in one direction. That is to say that activists and social movements use social media to communicate and organize, but because physical co-presence is no longer needed for resistance movements to become visible may opt out of physical demonstrations if security and policing pose oppressive dangers (Melgaço & Monaghan, 2018, p.6). Furthermore, while usage of blog-like social media was shown to be a statistically significant factor for predicting increases in online digital campaigns, the other technology practice representative of social media networks like Facebook was not. This could be because of overlap in online practices: most internet campaigns use Facebook or similar regional apps and so all regions will show relatively high levels of this variable regardless of whether the number of campaigns increases or decreases.

In terms of campaign goal-type, different regions exhibit different percentages in each category. Research suggests that cultural and values-driven dissatisfaction and perceptions of political efficacy are easily shared across regions and drive similar types of campaigns (Padilla, 2014). This is also in-line with pre-resource mobilization social movement approaches that emphasized the possibility of shared beliefs as a requirement for action. The interesting result for the movement model is that only the percent of internet users and the presence of street protests were statistically significant predictors for the possibility of social movements. From a

communications stance, Barberà and Jackson (2016) posit that because people learn about the likelihood of social movement growth by talking to those around themselves, visible protest activity can signal people's willingness to actively participate in further social action for the same cause (Barberà & Jackson, 2016). Furthermore, as they find that "outcomes of revolutions in one region can inform citizens of another region and thus trigger (or discourage) neighboring revolutions." (Barberà & Jackson, 2016, p.1). Following the line of argument of this research, the complexities in the encounter between activist movements and social media technologies, with all of their inherent social and political contexts, can explain the sharing of protest practices and the diffusion of a global social movement. Intuitively, if the individuals in a region already have mechanisms of participation, in terms of access to free internet technology with few cost barriers, and/or there is a history of politically successful public manifestation, protesting, or social mobilization, then social movements can both manifest and gain leverage to spread more easily.

It is necessary to note that while these findings do not offer evidence for connections in crisis wave social movements, they do not reject social connectivity theory either. Some measure of temporal and organizational continuity must be sustained in social movement waves as part of their characteristics, but the degree of continuity and organization varies. In Della Porta and Mattoni's (2015) reading of anti-austerity cluster protests, they note that social movements cannot be considered as independent events with ahistorical uniqueness among a general classification of collective action (Porta & Mattoni, 2015). In fact, even beyond similar practices and goals, physical links between campaigns are probably the strongest evidence in favor of grouping them into waves. Occupy Wall Street was being discussed in Europe in meetings held by activists from the Spanish Indignados movement months prior (Carolina of Take the Square, 2011). Activists operating their own transnational networks diffused goals and tactics across sites

of anti-austerity protests until ‘Occupy’ became a social movement wave. Analyzing this wave shows how the American Occupy movement originated in the Occupy Wall Street protest influenced and planned transnationally by the precedent Indignados movement; America, in turn, inspired Canadian and British activists to organize their own ‘Occupy’ movements that share similar goals against government enforced austerity measures following the 2008 global economic crisis (Tilly, 2008). Perspectives of contagion and mimetism in the Occupy and Indignados movements analyze activists' mobility across physical and virtual boundaries to examine continuities and differences between campaign practices (Castañeda, 2012; Kerton, 2012; Della Porta and Mattoni, 2014). Thus, a combination of micro- and macro-level analysis that is not possible using only the resource and technology variables from this study is needed to address the similarities and differences of post-2010 movements across space and time. By theorizing ‘social connectivity’ as an improved process of information diffusion and communication that is informed by changes in political and ideological orientations and that has resulted in new conceptions of the internet and social media as tools for overcoming collective logic (Bennet & Segerberg, 2012), Bennet and Segerberg’s (2012) communicative approach is best-suited for both analyzing the empirical findings of this paper and for encouraging future research to find ways of measuring the physical, micro-level interactions occurring between activists in social movements.

### Limitations

The findings of this research are subject to three main limitations regarding the nature of the method and the data. First, although I expect that the variance between cases in GDADS2 allows reliable comparison, the dependent variables coded from this database still have some sample bias due to the way in which the GDADS2 database was built using news reports of

events rather than by the experimental gold standard of random samples. As such, finding that socially conservative or politically free regions have more internet campaigns could stem from the fact that news coverage of smaller campaigns in authoritarian regimes is markedly less than in more democratic nations. That would mean it is not that more politically free countries have more campaigns, but rather that campaigns in those region are over-reported in comparison to those in less free countries. The novelty of a campaign also matters for its visibility in mainstream media as it is less interesting to report petitions, and so more local and benign campaigns may have been disproportionately left out as well.

Second, and also related to the assumption of homogenized populations, is the fact that using regions as units of analysis is problematic in the sense that this method masks in-region variation by using averages of freedom levels. Furthermore, because the values of campaign initiators in a region are measured by goal-type categories, the variables do not necessarily represent the values of the non-dissident parts of the dominant culture (Valenzuela, 2012). As some research has suggested, because it is in large part the younger portion of the population that organizes and partakes in collective action, at the aggregative level, the values of the initiators are neutralized into the countries' averages (Hussain & Howard, 2013). Therefore, while attempts to measure static accounts of region-wide freedom levels or major grievances are informative, this method is insufficient for understanding the broader process through which these contestations arise and how values change. One interesting future study would be to test how the interaction, instead of the aggregation, of social and technological variables could explain organized digital collective action.

Third, this research looks to see if the number of social movements in the crisis wave can be explained using similar context and toolkit variables from those that explain the total number

of social campaigns per region, and thus did not code for the existence of physical interactions between activists, which communications research has shown to be key in the development of social movements with shared practices. I also only looked at two case studies for the analysis of social movements in the crisis wave. To improve the fit of this model and because not all countries and regions have the same types of campaigns, the sample is also greatly reduced when analyzing movements as the dependent variable. Because of this, only 84 observations were included for the model of 11 variables, which drops the model below the common heuristic of including at least 20 observations per variable. The variance and standard error of this model is consequently increased and can be problematic in order to generate fitted models. In future research that seeks to similarly analyze integrated techno-social factors and online activism, it would be recommendable to use qualitative and descriptive analysis first to identify other social movement case studies and the social interactions that built them. Then a different methodological approach can be used, potentially with mixed methods or using descriptive fuzzy set logic, that yield more valuable information than these less well-fitted models.

## Conclusion and Policy Recommendations

This paper used theoretical knowledge to try to fill an existing gap in the foundational knowledge of online activism. The need to understand underlying mechanisms and create frameworks is useful for building strategic knowledge. The question, then, is how to conceive the strategic knowledge that enables improvements in digital activism practices. Currently, a variety of claims about the role of social media in activism can be made and case studies specifically selected to back them up can be used because empirical meta-data does not exist to afford a basis of relative validity. While admittedly, politicians and policy-makers at national or global organizations have more realistic views regarding the political power of the internet when

used to organize citizens, better understanding the role of social media and the internet on digital activism can inform and support both citizens engaging with political and social causes and policy-makers responsible for responding to them. The following section therefore provides concluding thoughts on the scope of this project and its possible policy applications.

First, this research suggests several general research areas that require more attention. Based on the scope of this paper, civil activism can be understood in terms of measurable homogeneity and difference in social and political markers, resource availability, and values among the population. Foundational knowledge can then be created by applying rigorous quantitative analysis capable of comparing the qualitative assertions of various case studies. However, as I mentioned during the discussion of social connectivity, qualitative measures of similarity and difference form only part of the whole analysis. Strategic knowledge in the field of digital activism is not complete without the techno-political integration of both human social factors and technological infrastructure. Not only was it specifically highlighted in this paper that an analysis must connect the interactions between activists to fully capture the causes and methods of some social campaign formulations, but also representatives from nonprofits, the target organizations such as businesses and government structures, and academic institutions should be included in the conversation to provide all perspectives and because they, too, benefit from strategic toolkit analysis.

On the side of both researchers of digital activism and the political advocates who look to analyze the available digital toolkit in search for the most successful practices, I call for increased attention to how the internet policies themselves affect activism on social media, or on other internet platforms. It is imperative that the platform on which the movement rests be considered with reference to the supporting infrastructure, or lack thereof, available in the region.

Decisions can then be made regarding necessary improvements in technical infrastructure, availability, and freedom in order to allow for new discursive formations of digital populism with participatory democratic models.

However, because the above recommendations are all useful for free internet advocates and digital activists, it is important to note that not all governments want to expand these freedoms or communication networks. As such, another type of study largely absent in the field of digital activism is the empirical analysis of the negative consequences of new ICTs and social media. Many theoretical arguments and case studies exist that regard the ways in which novel communication on social media could contribute to social ills, from political polarization and misinformation to violent conflict escalations, citizen surveillance, and activist oppression, but we need rigorously collected data that help us understand whether and under what circumstances such behaviors occur. Because digital activism is enhanced or harmed by regime-specific internet policy, it would not suffice for policy-makers to simply promote technological development as a manner of encouraging democratic processes around the world or of instigating and helping grassroots political movements. To the extent that policy-makers can encourage particular uses of the internet to further political agendas, it is necessary to always keep in mind the risks posed by repressive and authoritarian governments that do not limit themselves to legal channels when acting on the digital activism environment and can make physical access and digital connectivity difficult under law (Melgaço & Monaghan, 2018). The government can track online political activities and block applications used by digital activists to repress social movement. At worst, online obstructions can lead to offline persecution and even imprisonment.

Finally, my review of existing research suggested several means by which social media can influence collective action, including information processes, the facilitation and coordination

of demonstrations, allowing users with high cost-barrier to partake in political activities, and creating opportunities for co-production and exchange among a global population (Bennett & Segerberg, 2011; Chadwick & Howard, 2008; Gil de Zúñiga & Valenzuela, 2011). The degree of collectiveness in the creation of media content on social networking sites goes beyond previous activist culture because they brought in a large number of newcomers in both personal and political capacities. Notably, multi-regional evidence across a range of political and social freedom and conservatism shows that political activists are frequent users of social media as both part of the social collective and for individual expression or information gathering (Earl & Kimport, 2011; Valenzuela, 2013). I therefore propose more comparative studies of the repercussions of using a given digital tool or online platform in the context of regional politics and government structures. Ultimately, the strategic knowledge of social media, video, petitions, or any other digital tool allows a framework of successful practices to be built for future activists to use and tailor to their situation. Promoting citizen involvement in government provides for improved legitimacy and government responsiveness. As such, with improved digital practices, a better toolkit can be built in the regions that lack it and incorporate higher levels of both citizen involvement and government response.

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