# Digital Enablement: Social Media in Empowering the Grassroot Environmental Movement of Malaysia

*Research-in-Progress*

**Carmen Leong**
UNSW
Sydney NSW 2052, Australia
carmen.leong@unsw.edu.au

**Shan L Pan**
UNSW
Sydney NSW 2052, Australia
shan.pan@unsw.edu.au

**Shamshul Bahri**
University of Malaya
50603 Kuala Lumpur, Malaysia
esbi@um.edu.my

**Ali Fauzi Ahmad Khan**
University of Malaya
50603 Kuala Lumpur, Malaysia
alifauzi@um.edu.my

## Abstract

*This study examines the use of information and communication technologies (ICT) in mobilizing grassroot environmental movements. In recent years, the rise of social media has allowed the community to assume the role of driver without relying on central and formal leadership in people movements. Yet how this new form of technology enables grassroot organizing has remained theoretically obscure. This study provides an in-depth interpretive case study into an environmental movement in Malaysia, where people have rallied against a rare earth refinery plant that is feared would have posed environmental and health risks. By adopting empowerment as a theoretical lens, this paper focuses on understanding how social media empowers the community for grassroot mobilization from different dimensions, thus allowing a grassroot-driven environmental movement. The findings contribute to the literature of ICT-enabled sustainability and digitally empowered grassroot organizing.*

**Keywords:** Digital mobilization, ICT-empowered grassroot movement, environmental movement, digital enablement, case study

# Introduction

Environmental problems are a major and pressing global concern. As evidenced by the disastrous long-term impacts of mishaps such as the contamination at a waste dump site in the Love Canal neighborhood of Niagara Falls in 1978, the explosion at Chernobyl nuclear power plant in 1986, the Gulf of Mexico Oil Spill in 2010 and the Fukushima Daiichi nuclear disaster of Japan in 2011, it is difficult to deny the harmful impacts that careless and exploitative human activities have on natural environments (Longazel 2008). Despite the call for environmental conservation, there is a lack of formal and effective systems for people to voice their concerns (Shigetomi 2009) for environmentally sustainable development. Hence, informal, extra-institutional methods such as the environmental movement become an alternative dedicated to the protection of the environment through collective action (Goodwin and Jasper 2003; Shigetomi 2009).

It has been acknowledged that ICT is instrumental in various green efforts and movements. However, existing IS studies often focus on 1) Green IT, or a narrow view of technological aspects of IS use (Watson et al. 2010), 2) organization perspective (Loock et al. 2013) or 3) the informational role of ICT to amplify the size, speed and reach of a movement, given that it enables information to be broadcast widely and at a low cost (Castells 2001; Juris 2005). With the emerging use of social media in people movements in recent years (e.g., the Occupy Wall Street movement, Spain's indignados), we argue that social media has changed the ways in which people communicate, thus laying the foundation for advancing environmental sustainability (Malhotra et al. 2013). More specifically, social media has given rise to grassroot mobilization (Bennett and Segerberg 2012), where the community can assume the role of driver without relying on formal leadership and membership in an environmental movement. Firstly, social media reduces and even eliminates the need for central movement leadership (Castells 2010; Schussman and Earl 2004) by allowing citizens to play a more proactive role in mobilization without formal organizations or membership (Anduiza et al. 2013). Secondly, in relation to a command-and-control communications, social media gives rise to a connect-and-coordinate model in organizing the people movements (Agarwal et al. 2008). Social media allows a massive number of people to act in conjunction and to coordinate actions (Enjolras et al. 2013), thereby easing a centralized and hierarchical process of coordination and information dissemination between mobilizing agencies and community (Vicari 2013). Lastly, the use of ICT is no longer limited to informational functions. Indeed, social media is used for multiple purposes in organizing (Segerberg and Bennett 2011), such as motivating individuals (Enjolras et al. 2013), gathering and transferring resources (Mora 2014), group formation and management (Cardoso et al. 2013).

Despite the growing number of studies about ICT and social movements, there is a limited understanding of how ICT enables the community to drive grassroot mobilization (Cardoso et al. 2013). To address this gap, an in-depth case study was conducted into the environmental movement in Malaysia in order to understand: "How does social media enable grassroot mobilization in an environmental movement?"

# Literature Review

## *ICT and Social Media in Grassroot Movements*

In literature about social movements, key perspectives and arguments that underpin the success of collective action are developed. From the traditional collective perspective of 1950s, social movements are understood as spontaneous and uncoordinated bursts of action amid common grievances and system malfunction (Hannigan 1985). This irrational view of social movement is later challenged by resource mobilization theory (RMT). Asserting that movements are structured, RMT argues that the rise of social movements depends on the acquisition of resources by rational actors who are engaged through formal organization (McCarthy and Zald 1977; Tilly 1978). Subsequently, the concept of *framing* is developed to emphasize the socio-cognitive process; it explains how social movement leaders "assign meaning to and interpret relevant events and conditions in ways that are intended to mobilize potential adherents and constituents, to garner bystander support and to demobilize antagonists" (Snow and Benford 1988 p. 198). In the early 1980s, Klandermans (1984) proposed breaking down the complicated process of mobilization into conceptually distinct processes of consensus mobilization and action mobilization. While consensus mobilization refers to the process by which a social movement seeks to obtain support for its viewpoint, action mobilization represents the process by which people are called up to participate in

a social movement. Although consensus mobilization does not necessarily go together with action mobilization, action mobilization seldom emerges without consensus mobilization (Klandermans 1984).

Acknowledging that IS researchers need to move beyond the narrow perspective of an "exclusive focus" on ICT to understand environmentally sustainable development (Watson et al. 2010), we examine the set of people, processes and ICT in a green movement to study the role that ICT plays. We found that most studies of Green IS have largely adopted an organizational perspective. A majority of the studies are conducted at the organizational level of analysis (Loock et al. 2013). Simultaneously, IS researchers have focused on how mobilizing organizations or agencies such as social movement organizations, trade unions, voluntary associations and formal leaders "broadcast" to sympathetic others with electronic media (Rosenstone and Hansen 2003; Wittig and Schmitz 1996). In other words, ICT is narrowly regarded as an information dissemination channel (e.g., Van Laer 2010) in a command-and-control model. Besides, many continue to emphasize the informational role of ICT in amplifying the size, speed and reach of a movement because it offers a fast, low-cost medium to broadcast information (Earl and Kimport 2011; Oh et al. 2012). Taken together, we argue that community is largely regarded as a consumer of movements; they form a follower group to mobilizing agencies and a recipient party in ICT-enabled information transfer. However, it may be difficult to explain the emerging phenomenon of grassroot mobilization enabled by social media with these findings, considering that community can now assume the role of driver without relying on formal leadership.

As suggested earlier, it is evident that social media has empowered the community by advancing its role from consumer to driver in social movements (Fuentes 2007). Collectively, individuals can now generate public attention without relying on mainstream media by using social media (Yuce et al. 2014). However, few studies have addressed this perspective. Our review has shown that many IS studies focus on verifying the impact of social media on mobilization and activism, but sideline changes to the existing mobilizing agency and the rise of community (e.g., Anduiza et al. 2013; Kumar and Thapa 2014; Maghrabi and Salam 2013; McGrath et al. 2011). These studies focus on communication, information dissemination and consensus mobilization aspects with regards to the use of social media in social movements. For instance, Maghrabi and Salam (2013) have proposed a variable model to understand the influence of social media on social movements and political change, while Agarwal et al. (2012) and Yuce et al. (2014) show how issues are propagated and sentiment is diffused in social media networks. On the other hand, some researchers focus on classifying different types of online actions and information that is posted on social media (e.g., Harlow 2012; Penney and Dadas 2014). For instance, Kelly and Etling (2008) cluster bloggers based on their views and topics of interest after analyzing 60,000 blogs using social network and content analysis. There are also a few studies that look into the process or mechanisms of how the use of social media translates into movements (e.g., Bennett et al. 2014; Maghrabi and Salam 2013; Valenzuela 2013). However, these studies have yet to probe the fundamental change in a community's role. While some researchers have briefly suggested the concept of grassroot mobilization (e.g., Enjolras et al. 2013; Mora 2014; Segerberg and Bennett 2011), there remains a limited understanding of how ICT enables the community to drive grassroot mobilization (Cardoso et al. 2013).

From our review, we summarize key challenges in grassroot mobilization associated with the absence of a central and formal leader (e.g., Greenpeace). First, there is a lack of mobilizing structure for a community's self-driven mobilization. The absence of a mobilizing agency, formal leadership and central organization represents a lack of social structures and tactical repertoires that enable individuals to engage in collective action (McCarthy 1996). More specifically, the absence of mobilizing structures results in a high participation cost in the community. Second, it is uncertain whether a collective identity, which is critical in encouraging collective action, can emerge from a dispersed population without formal leadership. Mobilizing agency is an important source of identity (Della Porta and Diani 2006). It may be more challenging for the community to associate themselves with a movement that lacks a central and influential leader who can frame the understanding and stimulate the emotion of a crowd (Selander and Jarvenpaa 2013). Third, without a legitimate mobilizing agency, the drivers of grassroot movements need to build trust with the community before soliciting for resources that are crucial to a movement. Besides aggregating resources, a mobilizing agency has organizational capacities (such as skills and networks) that are also missing in a grassroot movement (Klandermans and Roggeband 2010).

To address our research question, we adopt **empowerment** as our theoretical lens for a few reasons. First, empowerment is a core element in self-help principles (Gutierrez 1990), which forms the foundation

of a grassroot mobilization. An empowerment perspective rejects the notion of dependency on central agencies or professionals that limit the discovery of indigenous resources and strength in grassroot communities (Zimmerman 2000). Second, a community empowerment strategy is suggested as the most effective means of attaining environmental justice because it is targeted at the root cause of the problem: the political and/or economic powerlessness of disadvantaged communities (Roberts 1998). Only by becoming involved in the decision-making process can the community regain ownership, dignity and control of the struggle in changing their circumstances (Gaventa 1980). Third, the use of ICT has the potential to shift the power dynamics in social movement politics (Bennett and Segerberg 2013). In our study, which examines the use of social media for environmental conservation purposes, we observe how an ICT-enabled grassroot approach typically involves "people at the bottom of the formal power structure, such as ordinary citizens, band[ing] together to establish a power base and pursue macro changes" (Kirst-Ashman 2009 p. 208). Next, we provide a review of literature related to empowerment.

## *Empowerment*

Empowerment has been studied in diverse disciplines (Hur 2006). In this study, empowerment is defined as the process of enhancing the capacity of individuals or groups to make choices and to transform those choices into desired actions and outcomes (World Bank 2012). Importantly, the purpose of community empowerment is to address imperative community needs (e.g., social, economic, justice, etc.) (Zimmerman 2000) that formal systems and institutions with authoritative power have failed to fulfill. In essence, empowerment speaks to self-determined change and is concerned with alternative approaches to social development for disadvantaged, underprivileged or impoverished people in gaining greater control, efficacy and social justice (Parpart et al. 2003; Peterson et al. 2005).

Empowerment is a multi-dimensional social process (Hur 2006). Our literature review shows three key dimensions in the process of empowerment: structural, psychological and resource (Hardy and Leiba-O'Sullivan 1998; Leiba-O'Sullivan 2013; Leong et al. 2015). Structural empowerment refers to the provision of facilitating conditions (e.g., access, channel, policies, hierarchy) to give the power for actions (Spreitzer and Doneson 2005; Thomas and Velthouse 1990). Some examples include changing policies and practices, installing a reward system (Conger and Kanungo 1988), expanding the level and area of involvement (Wandersman and Florin 2000) and affording a platform (e.g., social media) to establish a social network (Bertot et al. 2010). This objectivist view assumes structural antecedents are an indication of empowerment themselves and tend to overlook the "perceptual" or social psychological aspect of powerless (Spreitzer and Doneson 2005). This gives rise to psychological empowerment, which means improving the subjective interpretation by the individuals themselves (e.g., self-confidence, self-awareness, assertiveness, intrinsic motivation) so that they feel in control of their own destiny (Spreitzer and Doneson 2005; Thomas and Velthouse 1990). Studies have suggested examples of such empowerment: providing emotional support (Kieffer 1984), cultivating a supportive climate (Spreitzer 1996), bridging social divisions and facilitating others' empowerment (Christens 2012). Still, "feeling empowered is not the same as being empowered" (Jacques 1996 p. 141), given that the control over resources remains in the hands of the powerful (e.g. the power remains in the hands of producers although consumers are "empowered with more choices" (Shankar et al. 2006)). Hence, resource empowerment is conceptualized to represent the process of improving the competence and ability of the powerless in acquiring and mobilizing resources (Hardy and Leiba-O'Sullivan 1998). In other words, empowerment from this dimension argues in favor of attention to identifying and capitalizing on local assets within the community (Van den Eynde and Veno 1999).

Despite their abundance, extant studies of empowerment fail to consider its multi-dimensional characteristics (Ersing 2003; Hur 2006). Most studies are situated in a uni-dimensional perspective, i.e. structural empowerment (e.g., Adamson 2010; Bowen and Lawler 1995) or psychological empowerment (e.g., Christens 2012; Drury and Reicher 2009; Gutierrez 1990; Ouschan et al. 2006; Spreitzer 1996; Zimmerman 1990). Therefore, the longstanding limitations of these studies remain. While structural empowerment assumes that the provision of empowering conditions will necessarily lead to an empowered outcome (Conger and Kanungo 1988), the delegation of power (one form of structural empowerment) may not empower the employee psychologically (Spreitzer and Doneson 2005). More importantly, ultimate power (e.g., power over resources) often remains in the hands of authorities, even if the community feels empowered (psychological empowerment). For example, studies about psychological empowerment have always been challenged by the question "where is the power?" (Spreitzer and Doneson

2005). As such, we argue that these dimensions, when viewed independently, are insufficient to empower a community to achieve effective social change. Similarly, though IS studies have highlighted the empowering potential of social media in socio-political contexts (Leiba-O'Sullivan 2013), few approach digital empowerment as a multi-dimensional concept. For instance, social media is regarded as a channel of issue diffusion and temporary coalition (structural empowerment) (Ahlqvist et al. 2010) and the Internet is regarded as a structural empowerment mechanism in consumer empowerment (Harrison et al. 2006).

## Methodology

In this study, we adopt a case study research methodology because 1) it is appropriate for such an exploratory study (Siggelkow 2007) and 2) it allows us to uncover the operational links or processes (Gephart 2004) over time that are "sticky" in a context-rich environment, providing a solution to the "how" question (Pan and Tan 2011; Walsham 1995). The interpretive approach is well-suited to our research because there is no established theoretical model of community digital empowerment (Klein and Myers 1999). Our theoretical lens serves as an initial guide to data collection design and is involved as part of an iterative process of data collection and analysis (Walsham 1995). By using empowerment as the "sensitizing device to view the world in a certain way" (Klein and Myers 1999 p. 75), we can conduct the study with certain expectations based on prior theory while allowing for new, unexpected findings that are not identifiable at the outset of the inquiry to emerge from the data (e.g., Ravishankar et al. 2011).

The selection of the case site was based on the criteria of uniqueness and opportunity. First, the local community: activists, students, working professionals and residents living near the rare earth plant participated as drivers in the movement, constituting a natural environment for a grassroot mobilization. Second, the use of social media served as a critical enabler in the mobilization. There were at least 40 self-organized communities on Facebook, more than 20 self-made videos on YouTube with one millions views, and countless Malaysians who shared relevant information in their personal social media pages. Third, the outcome of empowerment was evident in the impact of self-organized actions using ICT, particularly from two aspects: 1) increased individual efficacy and 2) recognition by the existing power structure (Pigg 2002). For instance, environmental movements mobilized by the grassroot community have successfully attracted public attention and have exerted pressure on Malaysia government, who once suspended the license of the plant to conduct further safety assessments.

In February 2014, we conducted semi-structured interviews and focus groups with state representatives, activists, students and local residents. The interviews with 30 subjects were recorded and transcribed. Archival data in social media was also collected by screening for community-created content in the 40 community-established Facebook pages and 20 YouTube videos (the list of pages and videos is available upon request). The data collected amounts to 334 pages of transcripts, field notes and secondary data. The timeline of this case study lasted from March 2011 to June 2014: it covered a critical period that mirrored the emergence of a grassroot movement and the use of social media (Maghrabi and Salam 2011). We began in March 2011 because that was when the public was made aware of the plant through an article that appeared in international media, and we ended in June 2014 because that was when the latest activity of the movement took place. While the movement was ongoing, it has created a significant impact on society, which will be elaborated in the following section.

Our data analysis began with data organization (Eisenhardt 1989; Pan and Tan 2011). Narratives regarding the movement, the use of social media and community involvement were chronicled. Next, drawing on the different dimensions of empowerment (structural, psychological and resource), relevant narratives were organized into tabular form. From organized descriptions, we then developed tentative explanations that illustrated the affordances of social media in helping the local community to band together and to make their voices and concerns heard. More specifically, tentative explanations were developed corresponding to the three dimensions of empowerment. In other words, we attempted to look for new "regularities in social life" (Babbie 2007 p. 11) that were driven by the use of social media. In order to derive the "underlying coherence" (Taylor 1976p. 153) through our interpretation, we juxtaposed the tentative explanations of each empowerment dimension. We focused on the further "abstraction" of the tentative explanations to derive the overarching empowerment process enabled by social media (e.g., *networked congregation*). As we proceeded, each cycle of abstraction improved the clarity of explanations as a better understanding of the data was developed in this inductive reasoning process. These two steps –

abstraction of the empowerment process and refinement of tentative explanations – were reiterated until all the tentative explanations were accounted for and a temporal internal agreement was achieved. As findings emerged, we consistently ensured alignment among data, theory and findings (Klein and Myers 1999). To ensure the convergence of interpretations by the interviewees, the rule of triangulation (Dubé and Paré 2003) was applied; multiple data sources (interviews, news reports and archival data) were used to filter the "false preconceptions" of interviewees and researchers. The multiple sources of data also reduced recall bias. Throughout the data collection and analysis, we applied the principles of Klein and Myers (1999) to conduct interpretive work. Next, we provide the details of the environmental movement.
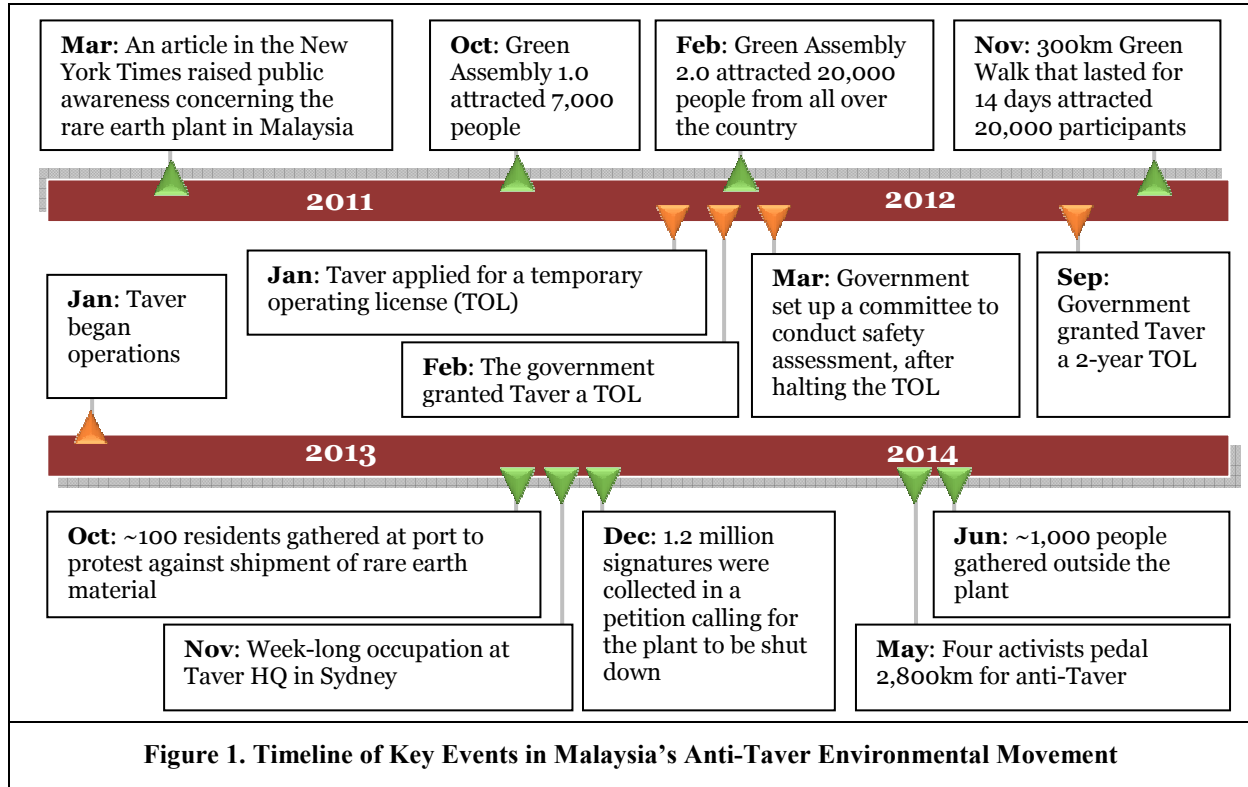
## Case Description

On March 8, 2011, the people of Malaysia were taken aback by an article in the New York Times entitled "Taking a Risk for Rare Earth". A photo showing an already-begun construction of a rare earth processing plant in Malaysia was published, while the local people thought that the government was still considering the approval to Taver (a pseudonym), a foreign company that owned this plant. Rare earth elements are used to produce a wide array of electronic equipment, from computers, mobile phones, green technology (including wind turbines and hybrid cars) to military applications (including jet engines and satellites). What worried people was the conjunction between rare earth elements and significant radioactivity that was harmful to both the environment and human health. Yet when the 2.5 billion ringgit (USD 748 million) construction in Kuantan, the state capital of the Pahang state of Malaysia, was completed, the plant was expected to meet as much as 30% of global demand for rare earth materials outside of China!

People had reason to be cautious. They were worried that the plant would emit radioactive pollution that was harmful to human health and the environment. Aside from their uneasiness that the plant would leak radioactive and toxic materials, critics also claimed that Taver's plan for disposing of the radioactive processed waste was deplorable. Although Taver insisted that the plant was safe, saying any radioactive waste would be low-level and safely disposed of, the opposing residents claimed that the plant did not meet with industry's best practice standards because it was located too close to heavily populated areas; it put 700,000 people living within a 30km radius from the plant directly at risk from toxic leaks and emissions. By comparison, Molycorp's plant in California was situated far from residential areas (Reuters 2012). These fears were reinforced by Malaysia's experience with an earlier rare earth plant, which was forced to shut down in 1992 after unusually high numbers of fatal leukemia cases, birth defects and a range of other ailments were detected in nearby villages. In fact, the clean-up effort from that plant is still ongoing. To add insult to injury, the government's approval to Taver's plant was given with little prior consultation with the local community.

Hence, beginning in 2011, enraged people attempted to raise public awareness and mobilize the actions of the community by leveraging social media. More than 40 Facebook groups/pages were created, registering more than 116,000 views/members (as at Oct 2014). Many grassroot campaigns emerged from the self-organized efforts of concerned citizens, including social activists, environmentalists, government officials, students, working professionals and nearby residents. For instance, 7,000 people attended the Green Assembly movement at Kuantan Beach on 9 October 2012. In February 2012, about 20,000 people from all over the country gathered at the Kuantan Municipal Council field as the news for the peaceful gathering spread on Facebook. In November 2012, the movement reached its peak with a 300km Green Walk from Kuantan to Kuala Lumpur. During this 14-day walk, updates and pictures of the participants were shared through Facebook. From an initial 70 participants, the movement gradually gained momentum, and by the time the group reached Kuala Lumpur, an estimated 20,000 people had joined in. As the green movement unfolded in Malaysia, grassroot groups such as Save Malaysia Stop Taver (SMST), Himpunan Hijau group and Stop Taver Coalition (STC) (pseudonyms) emerged. They showed the primary characteristics of grassroot groups because they were locally mobilized and primarily single-issue based. More importantly, they organized themselves, and any simple structure or roles in the groups "were not appointed, elected or recruited except by themselves" (Zander 1990 p. 22).

The grassroot environmental movement led to two important outcomes. First, the social movement created a sense of instability and pressure, leading to the attention and actions of institutions. In responding to the lobbying of citizens, the authorities set up a committee to look into the safety of the plant in March 2012, barely one month after halting a conditional temporary operating license granted to Taver (Reuters 2012). The CEO of Taver also made a public acknowledgement, stating that he "would

have dealt with the emerging community debate by the social media a little bit more intensely, a little bit earlier" (Bloomberg 2012). Second, grassroot actions have created public environmental awareness. As illustrated by Mr. Adi, the state assemblymen of Pahang, "Our people began to talk about environment issues. They began to pay attention to the environmental impacts of every economic activity, including industrial, agricultural and fisheries. They would observe changes in the environment, air and sea... People also pick up a phone and call the regulatory authorities if there is any concern." Figure 1 shows the timeline of the key events in this green movement.

**Mar**: An article in the New York Times raised public awareness concerning the rare earth plant in Malaysia

**Oct**: Green Assembly 1.0 attracted 7,000 people

**Feb**: Green Assembly 2.0 attracted 20,000 people from all over the country

**Nov**: 300km Green Walk that lasted for 14 days attracted 20,000 participants

**2011**    **2012**

**Jan**: Taver began operations

**Jan**: Taver applied for a temporary operating license (TOL)

**Feb**: The government granted Taver a TOL

**Mar**: Government set up a committee to conduct safety assessment, after halting the TOL

**Sep**: Government granted Taver a 2-year TOL

**2013**    **2014**

**Oct**: ~100 residents gathered at port to protest against shipment of rare earth material

**Nov**: Week-long occupation at Taver HQ in Sydney

**Dec**: 1.2 million signatures were collected in a petition calling for the plant to be shut down

**Jun**: ~1,000 people gathered outside the plant

**May**: Four activists pedal 2,800km for anti-Taver

**Figure 1. Timeline of Key Events in Malaysia's Anti-Taver Environmental Movement**

At the initial stage, most Kuantan locals did not know about Taver or rare earth and its potential risks because it was difficult to get the information from the state-controlled newspapers or television. It is through social media that the community, including Mr. Yong, a working employee in Kuala Lumpur, could share relevant news and their personal views. The Facebook group that Mr. Yong created, "I'm from Malaysia! I say Stop Taver!," had more than 10,000 members. In another online grassroot group, "Pahang Don't Need 'Hazardous' Project," there are more than 40,000 members, and the Facebook page for the Green Walk event "Himpunan Hijau 2.0: Langkah Lestari" has more than 16,000 "likes". Although many of these self-initiated efforts took place in 13 different states and in various cities across Malaysia, they are not fragmented efforts because of the network connections enabled by social media. The connections enabled the emerging groups to play a role in moving towards a common goal. At a high level, the Himpunan Hijau group focused on mobilizing the people, the Save Malaysia Stop Taver (SMST) group focused on making judicial review against Taver, and the Stop Taver Coalition (STC) focused on collecting and analyzing data about the plant and environment impacts. Through social media, the three largest groups of the movement were loosely connected, complementing each other's' initiatives. Mr. Chun, a student representative from Malaysia Youth & Student Democratic Movement (DEMA), illustrated the connections between their group and others:

> "*We are helping other groups such as Stop Taver Coalition to promote mobilization in the university since we are from the universities... We have about 1,500 followers in our Facebook group and they will pass [the message] to other people. At the same time, we also share this information to other student groups such as Solidarity Mahasiswa. They have an even bigger crowd....*"

Another example was the links created by Mr. Yong. When he established the Facebook group "I'm from Malaysia! I say Stop Taver!", he encouraged others to create groups for their own cities/town in a message on his group introduction page. At least 33 such groups were initiated on Facebook. More importantly, he collated the pages and urged every administrator of the group to cross-share the details of their local events and photos in order to increase the spread of information.

Through social media, the relationships among active community members were reinforced, contributing to a higher degree of trust in their further coordination for the green movement in the long run. As described by Ms. May (an activist), "In one of the activity in Kuantan, I met a lot of online friends face-to-face. When this is brought back to the Facebook, you will see this effect of trust after face-to-face contact. You may even realize, through Facebook, that his friend is also my friend… So, we have a trusted point of contact." Mr. Yong added that the process of trust building could continue by checking to see whether what a person had posted on Facebook was consistent with what he/she said in their previous encounters, online or offline. Furthermore, virtual connections were arguably more sustaining because this allowed community members to communicate frequently and conveniently. The trust and connections helped to improve the coordination among the dispersed groups. As Ms. May stated, it would be easier to communicate with and convince a page administrator, with whom she has established a relationship, when she found that the person was posting some misleading information on his/her page. In illustrating the sustaining relationship enabled by social media, Ms. Cui, a student representative from DEMA, also commented:

> *"Social media can connect people and give us confidence and encouragement. In the olden days, people paid attention to the issues that interest them today and they disappeared the next day. This is the difference in the new force of power [in social media]."*

Social media also served well as a real-time coordination channel on the ground when an event was taking place. According to Ms. May, "our coordination is very voluntarily spontaneous. There is no need for a president. No one needs to tell you that you are responsible for this, you are responsible for that. Nobody wants to follow other's instruction. They can make the decision on their own action." This was particularly evident in the 14-day Green Walk, where the resources requested via social media were responded to overwhelmingly by social media users. Sharing by the activists and excerpts from the Facebook page further substantiated this point:

> *"When there was not enough water to drink, people requested it through social media. It was like 'praying to God'. We had to specify the quantity. Otherwise, the resource will continue to flow in… Once there were not enough socks, and someone sponsored 200 pairs of socks." (Ms. May).*

> *"Somebody just said we wanted coconuts [on Facebook] and from that day onwards, we got coconuts every day. More than one person read and reacted to our request." (Mr. Yuan, a social activist).*

---

An excerpt from the Facebook's group "I'm from Malaysia! I say Stop Taver!":

Posted on November 15, 2012:

*I was not able to join the Green Walk. But I saw from social media that many participants were injured with swollen legs and boiling blisters on the foot. That's why I tried to contact my customer who manufactures socks. He was very generous and offered to sponsor 100 pairs of socks at first. Later, when my friend went to pick up the socks, they actually gave more than 600 pairs of socks.*

*I made an effort to post this message in order to encourage more businessmen to sponsor necessities to the people who go to the frontline, who deserve our appreciation!*

| *Myolie Tan:* | *Good job!* | |
|---|---|---|
| *Shan Yap:* | *Bravo!!* | Likes: 2195 \| Shares: 518 \| Comments: 80 |

---

## Preliminary Findings

Through an inductive process, our preliminary findings are derived based on an iterative analysis of our empirical data and our theoretical lens. Social media allows the community to locate each other easily and to form a loosely connected network. As such, these online, self-organized groups can act in accordance with one another and focus their energy when they organize an activity, thus amplifying the scale of

participation and influence. From the dimension of structural empowerment, we term this as **networked congregation**. Through social media, it is easier for people to form groups and initiate a movement activity (Kane et al. 2014). More importantly, network connections in social media allow for the formation of a coalition among these grassroot groups. This fluid form of association in social media enables rapid diffusion of knowledge, and acquaintanceship among the administrators of these groups allows the masses to coordinate actions that cohere and aggregate into mass mobilization (Enjolras et al. 2013; van de Donk et al. 2004). With a shared superordinate goal (i.e., to appeal for changes in the decision of the rare earth plant), these groups can take concerted action in order to organize a large scale campaign such as that of the Green Walk. This resonates with the concept of a stitching mechanism (Bennett et al. 2014), which can connect many separate, self-initiated online groups into a coherent organization in order to make claims regarding environmental conservation. As such, the attention of the social media users is concentrated, thus escalating the spread of influence and the scale of the movement.

Social media gives rise to **relational solidification,** which means that it fosters continuing relationships that lead to a common identity, which in turn sustains the collective activism. From the point of view of psychological empowerment, some scholars question the low level of trust among the online participants of a movement, since virtual ties have been classified as weak ties (Diani 2000). Nonetheless, these studies may have assumed that there is no face-to-face interaction. From the case analysis, we posit that due to the interplay of offline and online relationship building in the movement, social media can contribute to strengthening the relationships within a community that shares a common goal. While Mora (2014) suggests that virtual relationships can be enhanced with offline meetings, our study shows that this relationship can also be reinforced and sustained via the constant connection that is enabled by social media. Furthermore, information posted by a person and maintained in social media may serve as evidence of his/her commitment to the movement. Such a deepened and sustained relationship therefore leads to the maintenance of a shared vision and identity, and thus contributes to better coordination in the community's collective action.

Through social media, everyone has the autonomy and freedom to make a request for resources and to respond to a request in a movement activity, and this allows them to complement their respective strengths, even more so in real time. From the aspect of resource empowerment, we term this **decentralized coordination**. Social media allows for the real-time coordination of resources. Through social media, the community overcomes a "boots to the ground" mentality by requesting or providing resources (e.g., logistic assistance) through online means while movement activities are ongoing (Gardner 2011). With the affordance of mobile technology, the needs of the participants in a street movement can be channeled to the online crowd in real time. As such, the online community can supplement the efforts of offline actions by providing the resources to offline participants. In this regard, the hybridity between online and offline space of movement is enhanced (Penney and Dadas 2014), leading to a synchronized coordination of resources that continue to support community action.

## Current Progress and Expected Contributions

Data gathering and analysis are still ongoing and will extend the preliminary findings. In particular, our study seeks to contribute to IS literature in a few ways. First, by examining the use of ICT in mobilizing an environmental movement, this study sheds lights on the use of social media in raising environmental awareness, and hence we develop the research direction beyond Green IT and the organizational level of analysis (Loock et al. 2013; Watson et al. 2010). Second, by illustrating how social media empowers the community from different dimensions, the findings contribute to an understanding of how ICT enables the community, who used to be passive follower, to assume the role of a driver that could mobilize the movement without relying on central leadership and formal membership with the mobilizing agency. Third, by studying the process of digital empowerment, our findings show that social media can serve as a grassroot organizing mechanism. This advances our understanding of social media beyond the much-discussed informational capacity of ICT (Bennett and Segerberg 2012). Lastly, our data suggests the potential for deriving both intended and unintended consequences as the community is empowered by ICT. Undesirable consequences induced by the use of ICT may be manifested in drawbacks that occur simultaneously with the positive consequences, or in constraints that inflict a specific segment of population (e.g. some people have exploited the social media groups/pages to advance their personal goals, such as political or commercial goals). In order to preserve and strengthen the potential benefits of ICT, potential undesirable impacts have to be identified, mitigated and managed.

## Acknowledgements

## References

Adamson, D. 2010. "Community Empowerment: Identifying the Barriers to "Purposeful" Citizen Participation " *International Journal of Sociology and Social Policy* (30:3/4), pp. 114 -126.

Agarwal, N., Lim, M., and Wigand, R. 2012. "Raising and Rising Voices in Social Media," *Business & Information Systems Engineering* (4:3), pp. 113-126.

Agarwal, R., Gupta, A.K., and Kraut, R. 2008. "Editorial Overview—the Interplay between Digital and Social Networks," *Information Systems Research* (19:3), pp. 243-252.

Ahlqvist, T., Bäck, A., Heinonen, S., and Halonen, M. 2010. "Road-Mapping the Societal Transformation Potential of Social Media," *Foresight* (12:5), pp. 3-26.

Anduiza, E., Cristancho, C., and Sabucedo, J.M. 2013. "Mobilization through Online Social Networks: The Political Protest of the Indignados in Spain," *Information, Communication & Society* (17:6), pp. 750-764.

Babbie, E. 2007. *The Practice of Social Research*. Australia: Wadsworth.

Bennett, W.L., and Segerberg, A. 2012. "The Logic of Connective Action," *Information, Communication & Society* (15:5), pp. 739-768.

Bennett, W.L., and Segerberg, A. 2013. *The Logic of Connective Action: Digital Media and the Personalization of Contentious Politics*. New York: Cambridge University Press.

Bennett, W.L., Segerberg, A., and Walker, S. 2014. "Organization in the Crowd: Peer Production in Large-Scale Networked Protests," *Information, Communication & Society* (17:2), pp. 232-260.

Bertot, J.C., Jaeger, P.T., and Grimes, J.M. 2010. "Using Icts to Create a Culture of Transparency: E-Government and Social Media as Openness and Anti-Corruption Tools for Societies," *Government Information Quarterly* (27:3), pp. 264-271.

Bloomberg. 2012. "Zelen (Pseudonym) Ceo Finds Social Media Hobbles Rare-Earths Plans."

Bowen, D.E., and Lawler, E.E. 1995. "Empowering Service Employees," *Sloan Management Review* (36:4), pp. 73-84.

Cardoso, A., Boudreau, M.-C., and Carvalho, J. 2013. "Think Individually, Act Collectively: Studying the Dynamics of a Technologically Enabled Civic Movement," in: *International Conference on Information Systems*. Milan.

Castells, M. 2001. *The Internet Galaxy: Reflections on the Internet, Business and Society*. Oxford: Oxford University Press.

Castells, M. 2010. *The Power of Identity*, (2nd ed.). Malden, MA: Wiley-Blackwell.

Christens, B.D. 2012. "Toward Relational Empowerment " *American Journal of Community Psychology* (50:1), pp. 114 - 128.

Conger, J.A., and Kanungo, R.N. 1988. "The Empowerment Process: Integrating Theory and Practice " *Academy of Management Review* (13:3), pp. 471-482.

Della Porta, D., and Diani, M. 2006. *Social Movements: An Introduction*. Malden, MA: Blackwell.

Diani, M. 2000. "Social Movement Networks Virtual and Real," *Information, Communication & Society* (3:3), pp. 386-401.

Drury, J., and Reicher, S. 2009. "Collective Psychological Empowerment as a Model of Social Change: Researching Crowds and Power " *Journal of Social Issues* (65:4), pp. 707-725.

Dubé, L., and Paré, G. 2003. "Rigor in Information Systems Positivist Case Research: Current Practices, Trends, and Recommendations," *MIS Quarterly* (27:4), pp. 597-635.

Earl, J., and Kimport, K. 2011. *Digitally Enabled Social Change: Activism in the Internet Age*. Cambridge, Mass: MIT Press.

Eisenhardt, K.M. 1989. "Building Theories from Case Study Research," *Academy of Management Review* (14:4), pp. 532-550.

Enjolras, B., Steen-Johnsen, K., and Wollebæk, D. 2013. "Social Media and Mobilization to Offline Demonstrations: Transcending Participatory Divides?," *New Media & Society* (15:6), pp. 890-908.

Ersing, R.L. 2003. "Community Empowerment," in: *Encyclopedia of Community: From the Village to the Virtual World,* K. Christensen and D. Levinson (eds.).

Fuentes, M.A. 2007. "Digital Activism," in: *Encyclopedia of Activism and Social Justice,* G.L. Anderson and K.G. Herr (eds.). Thousand Oaks: SAGE Publications, Inc.

Gardner, R.O. 2011. "Grassroots Organizations," in *Green Culture: An a-to-Z Guide,* K. Wehr (ed.). Thousand Oaks: SAGE Publications, Inc.

Gaventa, J. 1980. *Power and Powerlessness: Quiescence and Rebellion in an Appalachian Valley*. University of Illinois Press: Urbana.

Gephart, R.P. 2004. "Qualitative Research and the Academy of Management Journal," *Academy of Management Journal* (47:4), pp. 454-462.

Goodwin, J., and Jasper, J.M. 2003. *The Social Movements Reader: Cases and Concepts*. Malden: Blackwell Publishers.

Gutierrez, L.M. 1990. "Working with Women of Color: An Empowerment Perspective," *Social Work* (35:2), pp. 149-153.

Hannigan, J.A. 1985. "Alain Touraine, Manuel Castells and Social Movement Theory a Critical Appraisal," *The Sociological Quarterly* (26:4), pp. 435-454.

Hardy, C., and Leiba-O'Sullivan, S. 1998. "The Power Behind Empowerment: Implications for Research and Practice," *Human Relations* (51:4), pp. 451-483.

Harlow, S. 2012. "Social Media and Social Movements: Facebook and an Online Guatemalan Justice Movement That Moved Offline," *New Media & Society* (14:2), pp. 225-243.

Harrison, T., Waite, K., and Hunter, G.L. 2006. "The Internet, Information and Empowerment," *European Journal of Marketing* (40:9/10), pp. 972-993.

Hur, M.H. 2006. "Empowerment in Terms of Theoretical Perspectives: Exploring a Typology of the Process and Components across Disciplines," *Journal of Community Psychology* (34:5), pp. 523-540.

Jacques, R. 1996. *Manufacturing the Employee: Management Knowledge from the 9th to the 21st Centuries*. London: Sage.

Juris, J.S. 2005. "The New Digital Media and Activist Networking within Anti-Corporate Globalization Movements," *Annals of the American Academy of Political and Social Science* (597), pp. 189-208.

Kane, G.C., Alavi, M., Labianca, G., and Borgatti, S.P. 2014. "What's Different About Social Media Networks? A Framework and Research Agenda," *MIS Quarterly* (38:1), pp. 275-304.

Kelly, J., and Etling, B. 2008. "Mapping Iran's Online Public: Politics and Culture in the Persian Blogosphere," *Berkman Center for Internet and Society and Internet & Democracy Project, Harvard Law School*).

Kieffer, C.H. 1984. "Citizen Empowerment: A Developmental Perspective," *Prevention in Human Services* (3:2-3), pp. 9-36.

Kirst-Ashman, K. 2009. *Introduction to Social Work & Social Welfare: Critical Thinking Perspectives*. Cengage Learning.

Klandermans, B. 1984. "Mobilization and Participation: Social-Psychological Expansisons of Resource Mobilization Theory," *American Sociological Review* (49:5), pp. 583-600.

Klandermans, B., and Roggeband, C. 2010. *Handbook of Social Movements across Disciplines*. New York: Springer US.

Klein, H.K., and Myers, M.D. 1999. "A Set of Principles for Conducting and Evaluating Interpretive Field Studies in Information Systems," *MIS Quarterly* (23:1), pp. 67-93.

Kumar, R., and Thapa, D. 2014. "Social Media as a Catalyst for Civil Society Movements in India: A Study in Dehradun City," *New Media & Society*).

Leiba-O'Sullivan, S. 2013. "The Empowering Potential of Social Media for Key Stakeholders in the Repatriation Process," *Journal of Global Mobility* (1:3), pp. 264-286.

Leong, C., Pan, S.L., Ractham, P., and Kaewkitipong, L. 2015. "Ict-Enabled Community Empowerment in Crisis Response: Social Media in Thailand Flooding 2011," *Journal of the Association for Information Systems* (16:3), pp. 174-212.

Longazel, J. 2008. "Environmental Movement," in: *Encyclopedia of Social Problems,* V.N. Parrillo (ed.). Thousand Oaks: SAGE Publications, Inc., pp. 324-325.

Loock, C.-M., Staake, T., and Thiesse, F. 2013. "Motivating Energy-Efficient Behavior with Green Is: An Investigation of Goal Setting and the Role of Defaults," *MIS Quarterly* (37:4), pp. 1313-A1315.

Maghrabi, R.O., and Salam, A.F. 2011. "Social Media, Social Movement and Political Change: The Case of 2011 Cairo Revolt," in: *International Conference on Information Systems*. Shanghai.

Maghrabi, R.O., and Salam, A.F. 2013. "Social Media and Citizen Social Movement Process for Political Change: The Case of 2011 Egyptian Revolution," in: *International Conference on Information Systems*. Milan.

Malhotra, A., Melville, N.P., and Watson, R.T. 2013. "Spurring Impactful Research on Information Systems for Environmental Sustainability," *MIS Quarterly* (37:4), pp. 1265-1274.

McCarthy, J.D. 1996. "Constraints and Opportunities in Adopting, Adapting, and Inventing," in *Comparative Perspectives on Social Movements: Political Opportunities, Mobilizing Structures, and Cultural Framings,* D. McAdam, J.D. McCarthy and M.N. Zald (eds.). New York: Cambridge University Press, pp. 141– 151.

McCarthy, J.D., and Zald, M.N. 1977. "Resource Mobilization and Social Movements: A Partial Theory," *American Journal of Sociology* (82:6), pp. 1212-1241.

McGrath, K., Elbanna, A., Hercheui, M., Panagiotopoulos, P., and Saad, E. 2011. "Online Social Networking and Citizen Engagement: Debating the Potential and Limitations," in: *International Conference on Information Systems*. Shanghai.

Mora, F.A. 2014. "Emergent Digital Activism: The Generational/Technological Connection," *The Journal of Community Informatics* (10:1).

Oh, O., Tahmasbi, N., Rao, H.R., and Vreede, G.-J.d. 2012. "A Sociotechnical View of Information Diffusion and Social Changes: From Reprint to Retweet," in: *International Conference on Information Systems*. Orlando.

Ouschan, R., Sweeney, J., and Johnson, L. 2006. "Customer Empowerment and Relationship Outcomes in Healthcare Consultations," *European Journal of Marketing* (40:9/10), pp. 1068-1086.

Pan, S.L., and Tan, B. 2011. "Demystifying Case Research: A Structured–Pragmatic–Situational (Sps) Approach to Conducting Case Studies," *Information & Organization* (21:3), pp. 161-176.

Parpart, J.L., Rai, S.M., and Staudt, K. 2003. *Rethinking Empowerment: Gender and Development in a Global/Local World. .* New York: Routledge.

Penney, J., and Dadas, C. 2014. "(Re)Tweeting in the Service of Protest: Digital Composition and Circulation in the Occupy Wall Street Movement," *New Media & Society* (16:1), February 1, 2014, pp. 74-90.

Peterson, N.A., Lowe, J.B., Aquilino, M.L., and Schnider, J.E. 2005. "Linking Social Cohesion and Interactional Empowerment: Support and New Implications for Theory," *Journal of Community Psychology* (33:2), pp. 233–244.

Pigg, K.E. 2002. "Three Faces of Empowerment: Expanding the Theory of Empowerment in Community Development " *Journal of the Community Development Society* (33:1), pp. 107-123.

Ravishankar, M.N., Pan, S.L., and Leidner, D.E. 2011. "Examining the Strategic Alignment and Implementation Success of a Kms: A Subculture-Based Multilevel Analysis," *Information Systems Research* (22:1), pp. 39-59.

Reuters. 2012. "Citizen Backlash Keeps Malaysia Rare Earth Plant on Hold."

Roberts, R. 1998. "Environmental Justice and Community Empowerment: Learning from the Civil Rights Movement," *American University Law Review* (48:1), pp. 229-269.

Rosenstone, S.J., and Hansen, J.M. 2003. *Mobilization, Participation, and Democracy in America*. New York: Longman.

Schussman, A., and Earl, J. 2004. "From Barricades to Firewalls? Strategic Voting and Social Movement Leadership in the Internet Age," *Sociological Inquiry* (74:4), pp. 439-463.

Segerberg, A., and Bennett, W.L. 2011. "Social Media and the Organization of Collective Action: Using Twitter to Explore the Ecologies of Two Climate Change Protests," *The Communication Review* (14:3), pp. 197-215.

Selander, L., and Jarvenpaa, S. 2013. "Online Impulse Activism at Amnesty International," in: *International Conference on Information Systems*. Milan.

Shankar, A., Cherrier, H., and Canniford, R. 2006. "Consumer Empowerment: A Foucauldian Interpretation," *European Journal of Marketing* (40:9/10), pp. 1013-1030.

Shigetomi, S. 2009. "Rethinking Theories on Social Movements and Development," in *Protest and Social Movements in the Developing World,* S. Shigetomi and K. Makino (eds.). Cheltenham, UK: Edward Elgar Publishing.

Siggelkow, N. 2007. "Persuasion with Case Studies," *Academy of Management Journal* (50:1), pp. 20-24.

Snow, D.A., and Benford, R.D. 1988. "Ideology, Frame Resonance, and Participant Mobilization," *International Social Movement Research* (1), pp. 197-218.

Spreitzer, G.M. 1996. "Social Structural Characteristics of Psychological Empowerment " *The Academy of Management Journal* (39:2), pp. 483-504.

Spreitzer, G.M., and Doneson, D. 2005. "Musings on the Past and Future of Employee Empowerment," in *Handbook of Organizational Development,* T.G. Cummings (ed.). Thousand Oaks: Sage.

Taylor, C. 1976. "Hermeneutics and Politics," in *Critical Sociology: Selected Readings,* P. Connerton (ed.). Middlesex: Penguin, pp. 153-193.

Thomas, K., and Velthouse, B. 1990. "Cognitive Elements of Empowerment: An Interpretive Model Intrinsic Task Motivation " *Academy of Management Review* (15:4), pp. 666–681.

Tilly, C. 1978. *From Mobilization to Revolution*. Reading, MA: Addison-Wesley.

Valenzuela, S. 2013. "Unpacking the Use of Social Media for Protest Behavior: The Roles of Information, Opinion Expression, and Activism," *American Behavioral Scientist* (57:7), pp. 920-942.

van de Donk, W., Lader, B.D., Nixon, P.G., and Rucht, D. 2004. *Cyberprotest: New Media, Citizens and Social Movements*. London: Routledge.

Van den Eynde, J., and Veno, A. 1999. "Coping with Disastrous Events: An Empowerment Model of Community Healing," in *Response to Disaster: Psychosocial, Community, and Ecological Approaches* R. Gist and B. Lubin (eds.). Philadelphia, PA: Bruner/Mazel, pp. 167–192.

Van Laer, J. 2010. "Activists Online and Offline: The Internet as an Information Channel for Protest Demonstrations," *Mobilization* (15:3), pp. 347-366.

Vicari, S. 2013. "Public Reasoning around Social Contention: A Case Study of Twitter Use in the Italian Mobilization for Global Change," *Current Sociology* (61:4), Jul 2013, pp. 474-490.

Walsham, G. 1995. "Interpretive Case Studies in Is Research: Nature and Method," *European Journal of Information Systems* (4:2), pp. 74-81.

Wandersman, A., and Florin, P. 2000. "Citizen Participation and Community Organizations " in *Handbook of Community Psychology,* J. Rappaport and E. Seidman (eds.). US: Springer, pp. 247-272.

Watson, R.T., Boudreau, M.-C., and Chen, A.J. 2010. "Information Systems and Environmentally Sustainable Development: Energy Informatics and New Directions for the Is Community," *MIS Quarterly* (34:1), pp. 23-38.

Wittig, M.A., and Schmitz, J. 1996. "Electronic Grassroots Organizing," *Journal of Social Issues* (52:1), pp. 53-69.

World Bank. 2012. "What Is Empowerment?."

Yuce, S.T., Agarwal, N., Wigand, R.T., Lim, M., and Robinson, R.S. 2014. "Bridging Women Rights Networks: Analyzing Interconnected Online Collective Actions," *Journal of Global Information Management* (22:4).

Zander, A. 1990. *Effective Social Action by Community Groups*. San Francisco: Jossey-Bass.

Zimmerman, M.A. 1990. "Taking Aim on Empowerment Research: On the Distinction between Individual and Psychological Conceptions," *American Journal of Community Psychology* (18:1), pp. 169 - 177.

Zimmerman, M.A. 2000. "Empowerment Theory: Psychological, Organizational and Community Levels of Analysis," in *The Handbook of Community Psychology,* J. Rappaport and E. Seidman (eds.). New York: Plenum Press.