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Social Media and Innovation

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Introduction and overview

It is 6:30 am in the small town of Morogoro, Tanzania. Saibaba (meaning "spiritual master"), one of 82 mine detection trainees, has just finished his breakfast when he and his fellow soldiers are loaded onto a truck and driven to the nearby "landmine detection training field" at SOKINE University of Agriculture. When he arrives, Saibaba is outfitted with a harness and clipped onto a series of ropes, which will guide him through his individual training plot. On a good day, he will cover around 200 square meters, and he will be rewarded for every mine he discovers.

Saibaba, in fact, is an African pouched rat – a "HeroRAT." Detection of landmines is difficult, dangerous, and expensive. Yet rats are light enough that they can successfully locate these deadly mines without detonating them, long before they can harm innocent lives. HeroRATs offer a cost-effective means to get communities back on their land as quickly as possible. In 2013, their detection skills helped over 900,000 people to return to their villages and fields in order to work and play without fear. Saibaba's end-game? Being deployed as an elite, four-legged member of the "mineaction team," responsible for detecting *real* landmines in nearby Mozambique.

HeroRATs are trained and deployed by APOPO, a nonprofit that focuses on identifying innovative solutions to landmine clearance in post-conflict areas, as well as detecting TB (tuberculosis) in poverty-stricken communities. In the past, APOPO would need to approach a long list of potential benefactors one by one, or by writing a host of grant applications that would have taken months or years to get approved. Yet this incredible program, which works in six countries across Southern Africa and Southeast Asia, raises over $250,000 worth of public donations annually, from over 4,000 online donors across the globe. It gained wide exposure through the Global Giving platform, a charity fund-raising website that gives social entrepreneurs and nonprofits throughout the world a chance to raise money. Last year Global Giving was able to raise over $25,000 for APOPO through 500 donors, and

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they support APOPO with regular training, most importantly concerning the use of social media channels to crowd-fund its work from people throughout the world.

When companies want to test out new ideas, they often consider engaging the United States because it is such a highly developed market. But engagement levels in developed countries are typically low compared to emerging markets in less developed regions. Social media is a perfect, low-cost way to try something new. And because "a little" typically goes much farther in developing regions, the impact of a successful idea is often more profound (Carlman and Pursey, 2014).

Purpose of this chapter

This chapter illustrates social media's impact on innovation across Asia, Latin America, Central Europe, and the Middle East. We explore ways in which social media has shaped innovation in emerging markets, and we also highlight less obvious ways in which these platforms have accelerated progress across the globe.

For the purposes of our research, we have narrowed our focus to platforms like Facebook, Twitter, and Baidu (China), video-sharing platforms like YouTube, and socially driven data visualization tools. The examples we have chosen span critical global topics like natural disasters, international public health crises, and public diplomacy. They illustrate the dual role social media plays in promoting good (predicting pandemics), while fueling upheaval (using social media to instigate rebellions); in incurring passion (money raised globally for niche projects), while accelerating hate (beheadings publicized for millions to see). The chapter concludes with an analysis of the future implications social media is likely to have on society.

Social media as an information marketplace

Social media is defined as any form of electronic communication that allows people to share information, ideas, personal messages, and other content. Its goal is to foster a more open and connected world by giving people the power to create and share information instantly, and without barriers. The overwhelming surge in social media is driven by the simple fact that information is power, and social media platforms have created a perfect marketplace whereby information can be produced and consumed.

Today, anyone can become an *information producer*. Governments throughout the world no longer have complete control over the flow of information, and there are few to no production costs associated with creating and disseminating information across these channels. Likewise, *information consumers* are now able to gain immediate access to a much broader range of facts and opinions. Complex stories are distilled and discussed in a

more simplified way. One-way communication via mainstream media has been replaced by "feedback loops," where robust, two-way dialogue allows opinions, examples, and personal stories to generate a stronger pulse across global topics.

Its impact across the globe

The international impact of these channels is overwhelming. According to a recent study by the Pew Research Center's Global Attitudes Project: "While the internet still has a limited reach in the emerging and developing world, once people do gain access to the internet, they quickly begin to integrate it into their lives" (Pew Research Center, 2014).

Facebook currently has 829 million daily active users, with approximately 82 percent of its accounts outside of the United States and Canada. Twitter has 271 million monthly active users, with 77 percent of its accounts outside of the United States, and currently it supports over 35 different languages. These statistics are impressive as they are, but they become staggering when compared to the fact that only 40 percent of the world's population is online. As the digital divide continues to close and more people gain access to these types of online tools, social media will play an even more critical role in shaping the global landscape, both economically and politically. As we will see in the next section, some countries are much better at leveraging the power of social media than others.

I. Innovation as national policy

Governments throughout the world operate in a much more transparent environment than they did just a few decades ago. In today's globally connected world, a significant portion of social, economic, and political activity now happens online. As people share information, purchase products, and connect with others on social media, they leave a digital footprint that is a gold mine of information.

The private sector has become extremely savvy at combing through this data to understand consumer behavior and tailor their marketing messages in an attempt to influence purchasing decisions. Governments are now following suit. Almost every government agency in the United States has a Facebook and Twitter page, and more often than not, agencies will have a YouTube presence and an Instagram account too. This trend has extended internationally, including to many developing countries. Those in power recognize the value of these tools. Hillary Clinton, for example, described social media as the pulse of the planet. India's Narendra Modi uses social media to understand the needs of the populace and adapt policies to meet those needs. These politicians understand that social media is one of the most reliable checks on where the public's mood is on a particular topic and can be used to influence that mood and guide policy decisions.

This section looks at how social media has helped promote innovation within national policy, and in particular its role in emerging markets and in fueling democracy building across the globe.

Democracy building

Democracy building paves the way for new markets to emerge by controlling volatility and allowing economies to scale. Social media offers tools for reshaping national policy and promoting democracy that ordinary citizens may not have historically had. These channels foster collaboration, social space, a two-way dialogue of policy issues, and allow people to communicate broadly about critical topics.

Antidemocratic regimes understand the power that social media has over political arguments. Many try to stymie prodemocratic, social participation by limiting access to social media. We have seen this in regimes across the globe. China often limits access to specific keywords and websites. Other countries, such as Iran, turn off access to specific social media sites during times of protest. And of course the extreme example is North Korea, which not only forbids social media, but allows no web access for ordinary citizens.

The reshaping of public diplomacy is a unique example of how social media has transformed the national policy landscape across the globe. In this section, we compare traditional public diplomacy, elections, and revolutions to their modern-day counterparts in the digital age.

Reshaping public diplomacy and mobilizing public opinion

Social media allows people to disseminate information – classified or not – to millions of people. It takes away intermediaries' ability to control what types of information are allowable and not allowable. And it increases transparency around information, giving broader reach to critical content that may not have been so easily accessed before the onset of the digital revolution.

When comparing public diplomacy pre-social media to its characteristics in the digital age, three themes emerge:

1. Traditional diplomacy has been inherently slow, with process and red tape often hampering efforts to make progress on an issue. Social media accelerates movement by allowing people to instantly blast out information to hundreds, sometimes thousands, of their followers. These channels quickly bring critical topics to the forefront of people's minds, forcing movement and response by political leaders.
2. Traditional diplomacy relies heavily on a top-down flow of information. Social media has enriched the information environment by allowing exponentially more people to weigh in on critical topics. In doing so, it has become more difficult for nations to control the flow of information.
3. Traditional diplomacy centered on leadership and a pyramid-based leadership structure, whereas social media is much more disparate. This

flattened structure allows for more extreme attitudes to rise, amplifying voices at the edges of a given issue. Given that, it also creates a situation where compromise can be harder to achieve.

Hashtag diplomacy.   Twitter campaigns have become an increasingly common way for political leaders, intergovernmental organizations, and diplomats to bring attention to a specific topic. This brand of "hashtag diplomacy" happens when a specific hashtag like "#stopjosephkony" spotlights a particular social or political issue and drives public discourse around that issue. With over 271 million active users on Twitter as of spring 2014, tweets carrying a specific hashtag are able to reach an incredibly broad array of people. They bring deeper awareness to stories that take place in less media-heavy regions of the world (Joseph Kony's "Lord's Resistance Army" largely operated in the underdeveloped areas of northern Uganda, the Democratic Republic of Congo, and South Sudan, for example) and that may not have otherwise reached the global stage.

In many ways, governments take advantage of the way social media has changed the foreign relations landscape (Kojo Nnamdi Show, 2014a). It is a great way for them to create more transparency around their work. They can comb social media posts and pull out content to buttress their own positions. And they are now better equipped to listen to the people they serve. Long-standing barriers between the public and elected officials have been deconstructed, giving rise to an environment in which ordinary people have much greater accessibility to those in power. The asynchronous nature of this medium means government officials do not have to be available at a specific time in order to hear from the people they serve (e.g., at a public hearing or speech). They can respond on their own time, from their computer, tablet, or mobile phone.

Future implications of social media on public diplomacy.   The increased transparency that social media has fostered has created unique challenges for governments moving forward. Historically, heads of state have been able to discuss critical topics behind closed doors. But now, more than ever, the world is watching, which means they can no longer control the flow of information. The traditional top-down approach has given way to two-way diplomacy. Anyone can post their thoughts, opinions, and beliefs, and depending on how much traction a particular topic gets, governments may be forced to address the issue or even make diplomatic changes to respond more formally.

A force for good and evil

Social media amplifies everything, regardless of whether it is used to promote good or to instill harm. It levels the playing field in many regards, enabling ordinary citizens to weigh in on critical topics, and giving them undeniable power where they once had none.

Often, though, it is the opinions at the far edges of the argument that are loudest, which creates an environment where extremist attitudes are amplified, and proactive compromise becomes harder to achieve. This section explores ways in which social media has been used as a powerful force for both good and evil.

Waging war and terror

It should come as no surprise that social media has become an extremely popular platform for waging war. Social media is used to recruit new fighters, spur the populace to action, help prove facts on the ground, and mostly to empower a whole new breed of propaganda.

Social media has become a ubiquitous part of fighting, terrorism, and war. During the fighting in Syria, in Ukraine, and between Israel and Hamas in Gaza, all sides use social media to fight in the war of public opinion. It seemed that with every bomb there was a new video or posting to Twitter, YouTube, Instagram, Vine, and other social sites. When Israeli bombs hit four young boys on a beach, it predictably sparked outrage and defensive posts on popular social media channels.

After the shooting down of a Malaysian airliner with 298 passengers aboard over Ukraine, a rebel leader asserted responsibility. Igor Strelkov posted to a Russian networking site "We just downed an An-26 near Torez." A video of the plane falling accompanied the post. The post was quickly deleted when it became clear that it was a civilian aircraft that had been hit.

These stories point out many aspects of how social media has changed the ability to wage propaganda during wartime including: (1) information can be distributed in near real time – even if, as in this case, or with the embarrassing accidental "reply all," it is not in the best interest of the sender; (2) once on the Web, information is nearly impossible to pull back; and (3) cameras are in the pockets and purses of over a billion people and they can easily take a video and post it to social media with just a few finger taps.

There is also an ever-growing crop of journalists and bloggers who are happy to pontificate on the success, or failure, of social media campaigns (and with this chapter we add ourselves to this list). These produce headlines such as:

- "Israel is Winning the Social Media War in China" (LegalInsurrection. com)
- "Who's Winning the Eukraine Social Media War" (LewRockwell.com)
- "@ISIS is #Winning: Why Is a Barbaric Medieval Caliphate So Much Better at Social Media than Washington?" (*Foreign Policy Magazine*)

Case study: ISIS and social media

As with every war since time immemorial, propaganda is a staple. Social media does not change the basic tenets of propaganda, but dramatically

changes who can create propaganda, how it is disseminated, whom it reaches, and how it can be countered.

The Islamic State has been particularly effective at using social media to spread their message of death and fear. They have used a combination of well-produced photographs and videos, and a sophisticated understanding of how Twitter works to trick the platform into spreading their message to a far wider audience than it would normally reach.

ISIS has been very concerned with their brand from the very start. Even their name has changed several times to promote their changing brand. While name changes are always tricky for brands to pull off, ISIS has seen it as a necessity as their ambitions and reach have grown. Wikipedia documents no fewer than nine names for the group.

While at one time they referred to themselves as the Islamic State of Iraq, it was later expanded to the Islamic State of Syria and Iraq (ISIS). It later grew to the Islamic State of Iraq and the Levant (ISIL). The "Levant" refers to a geographic region in the Middle East. Finally, once their ambitions grew beyond the Middle East, they shed the limitations of their name to arrive upon "Islamic State." This has led to some social media and communications challenges for the group.

The Islamic State learned quickly how to game the system to grow their social media reach beyond those who were looking for them. They have been particularly good at using Twitter.

In Twitter, as with many other social networks, users may tag their posts with a hashtag to show its relevance. One would expect the Islamic State to use hashtags such as #ISIS, #ISIL, and #beheading. They have instead co-opted hashtags such as #WorldCup2014, #WC2014, #NapaEarthquake, and other trending hashtags. As a result, when someone on Twitter searched for #WC2014 during the World Cup they may have seen an ISIS recruitment video that they almost certainly were not looking for.

By co-opting the most popular hashtags (and there are easy-to-find lists of rising and popular hashtags), the Islamic State can ensure their message is viewed by many who would not have otherwise seen it.

The Islamic State also created a mobile app for Android phones called "The Dawn of Glad Tidings." Ostensibly the app allows users to follow ISIS and their messages. In reality, it also enabled ISIS to post messages to each app user's Twitter accounts without their knowledge. At times tens of thousands of app users would have the same message posted to their Twitter accounts simultaneously. This greatly amplified their propaganda by enabling it to be viewed by millions more Twitter users than through traditional distribution channels. Google soon removed the app from their app store (Berger, 2014).

Social media sites including Twitter and YouTube have worked hard to take ISIS's messages off their networks when they violate the company's terms of use. YouTube's terms of use provide easy cover for removing IS

videos including prohibitions on graphic or gratuitous violence, inciting violence, intent to shock, and hate speech. The Islamic State and its supporters, however, have shown resilience at creating new accounts and finding other platforms to stream their graphic and often fear-inducing videos. By one estimate over 60,000 pro-Islamic State accounts have been created on Twitter. Such proliferation has meant that Twitter cannot pull down sites fast enough to stop the messages from getting out.

The US State Department has also created its own Twitter account to counter the Islamic State. The @ThinkAgain_DOS Twitter handle includes links to articles, images, and videos – many taken from pictures and videos first posted by the Islamic State. The "Think Again Turn Away" campaign is targeted toward those considering joining the Islamic State. It shows the horrors of terrorism and explains why it is a bad choice. Some of their Twitter posts include: "US troops are punished for misconduct, #ISIS fighters are rewarded #thinkagainturnaway" and "#ISIS has no shame, using children's images to promote its cult of death #thinkagainturnaway."

But even the videos produced by the US State Department to counter the Islamic State tend to reinforce their message of fear and brutality. One State Department video, "Welcome to the 'Islamic State' Land (ISIS/ISIL)" uses grisly videos and images of beheaded corpses, blown-up mosques, crucified bodies, and whippings to try to dissuade potential followers. It is overlaid with statements such as "Learn useful new skills," "Blowing up mosques," and "Travel is inexpensive because you won't need a return ticket."

None of the Islamic State social media tactics is new, yet their savvy demonstrates how social media can be used for harm instead of good. It shows how the medium is optimized for those willing to break the rules (e.g. using irrelevant hashtags to promote a message, and posting to Twitter accounts without permission). It reinforces how difficult it is for government agencies to be successful on social media. It also shows how social media companies can be overwhelmed by a flood of messages that violate their policies (Warren, 2014).

II. Facilitating institutions

The private sector is seen as the "engine of growth," whereas universities are widely recognized as a vast repository of information and knowledge creation. Historically, these institutions have worked independently of one another, but the rise of a global knowledge economy has increased the need for strategic partnerships between the two. When effective, university–industry collaboration can help solve very big problems. This section explores how collaboration between universities and privately held companies has generated innovations related to social media that have helped to address recent global challenges.

Detecting illnesses and saving lives

Social media has led to innovative ways to monitor disease progression, and fill gaps in traditional epidemiology. Take the case of "HealthMap," an online mapping tool developed by a group of researchers, epidemiologists, and software engineers at Boston Children's Hospital, a "teaching hospital" affiliated with Harvard Medical School.

HealthMap relies on an algorithm that analyzes social media posts, news reports, medical workers' social networks, and government websites. It aggregates content from information freely available on other websites (e.g., ProMed Mail, WHO (World Health Organization), FAO (Food and Agriculture Organization of the United Nations)), many of which are generated by privately owned companies or universities.

HealthMap takes that information, distills it using an algorithm, and tracks the data outputs on an interactive map. The map itself uses the Google Maps API (application program interface), a desktop and mobile web-mapping service application and technology provided by Google.

Challenges with traditional epidemiology

Academically driven institutions, like Boston Children's Hospital, typically innovate in response to a long-standing challenge with traditional practices. In this case, traditional epidemiology techniques have historically been expensive, time-consuming, and heavily reliant on in-person data collection and analysis.

On-the-ground disease surveillance can be difficult, with few medical resources and labs available in remote, underdeveloped areas. Likewise, large international organizations like the WHO often face budgetary constraints, which can result in delayed access to resources across affected areas. According to Randal Shoepp, chief of the Applied Diagnostics Branch of the US Army Medical Research Institute of Infectious Diseases, "Aid workers have to bring everything with them. When they arrive, they have to set up entire laboratories, train medical staff, and supervise them as they continue their investigation" (Kojo Nnamdi Show, 2014b). Health officials often spend weeks interviewing victims, gathering test results and data, and completing their investigation and analyses. Most of this work is done in private, and it can take weeks or even months for final reports to be released.

Using socially driven data to predict Ebola

HealthMap was able to predict the Ebola outbreak nine days before the WHO issued its first statement on the epidemic. One of the first indications that an Ebola outbreak was starting was word of a "mystery hemorrhagic fever" spreading in Guinea, which had already killed eight people in that country (Schlanger, 2014). Ebola had struck numerous times before in the Democratic Republic of Congo, South Sudan, and Uganda, but never as far west as Guinea and Liberia (CDC, 2014a). As a result, local health officials did not see the warning signs as residents increasingly developed diarrhea, vomiting, and muscle pain.

Health officials initially started testing for more common causes of sickness in Western Africa, like malaria and Lassa fever, which meant they were not enforcing "barrier nursing techniques" to prevent the spread of Ebola. Barrier nursing requires the use of head-to-toe protective clothing (masks, gloves, gowns, and goggles), using infection-control measures (such as complete equipment sterilization and routine use of disinfectant), and isolating patients with Ebola from contact with unprotected persons (CDC, 2014b). And even as early indications of the possibility of Ebola arose, those discussions were restricted to private conversations between health-care workers and the family members of victims.

By March 19, 23 people in Guinea had died of the mystery illness, and HealthMap.org issued an alert by posting its first dot on that country's map. The tool also provided links to local news stories about reported cases in the region. HealthMap continued to plot data points in the days that followed, as scores more people in Guinea died, and the virus spread across borders to neighboring Sierra Leone. Finally on March 23, nine days after initial symptoms were reported in Guinea, the WHO confirmed the Ebola outbreak (Public Health Watch, 2014).

HealthMap is just one example of how technology has transformed the disease-hunting process. Another effort underway is the PREDICT project, led by the One Health Institute at the University of California, Davis. PREDICT works in concert with the US Agency for International Development (USAID)'s Emerging Threats Program, and "builds on the understanding that humans, wildlife and the environment are inextricably linked" (Kerlin, 2012).

The goal of this public–private partnership is to create a global early warning system for emerging diseases that move between wildlife and people. It does so by combining risk modeling, computerized data collection, and wildlife field sampling to identify specific situations and locations that are most likely to prompt the next pandemic (UC Davis, 2012). PREDICT utilizes the same HealthMap tool to visualize the global, relative risk of a new infectious disease emerging across Latin America, Southeast Asia, the Congo Basin, and other "hot spot" regions.

Economic impacts of Ebola.   The economic implications of the current Ebola outbreak in Liberia are significant, with costs associated with fighting the disease expected to reach $32 billion by the end of 2015. There is a very real possibility that countries will start attempting to close their borders (as best they can) to prevent people in Western Africa from entering and spreading the illness further.

Money to fight Ebola is not coming in nearly as quickly as it did for natural disasters like the Haiti earthquake or the Japanese tsunami. These crises offered a wealth of photo opportunities for journalists and ordinary citizens to capture the horror of the event and increase the emotional impact they had on viewers. Pictures coming from the Ebola outbreak, on the other

hand, usually show the same scene – medical workers clad in biohazard suits wheeling out body bags of disease-stricken victims. Even though the stories associated with this disease are awful, the Ebola crisis simply has not pulled at the heartstrings of people across the globe.

Private donations are only trickling in as a result. Four major US aid organizations recently surveyed had received a combined total of $19.5 million as of October 2014 (approximately six months after the outbreak began), much of which came from nonprofit foundations as opposed to individual donors. In contrast, major charities raised nearly double that amount within one week of the typhoon Haiyan (which struck the Philippines), and US relief organizations raised $1.3 billion within six months of the 2010 earthquake in Haiti (Cohen, 2014).

Furthermore, people living in heavily impacted parts of Liberia and other African nations can no longer work because many are in preventative quarantines. The reduction in work leads to even more money shortages in already low-income regions. According to Margaret Chan, head of the WHO: "I have never seen a health event threaten the very survival of societies and governments in already very poor countries," she said. "I have never seen an infectious disease contribute so strongly to potential state failure" (Chan, 2014).

Chan warned that "rumors and panic spreading faster than the virus" could create even more economic impact, with the World Bank recently estimating that 90 percent of the cost of the outbreak would arise from "irrational attempts of the public to avoid infection."

The future of technology in disease hunting

As technology continues to transform traditional epidemiology, many scientists are latching on to the importance of using social networks to track new outbreaks. According to Dr Taha Kass-Hout, deputy director for information science at the CDC (the US' Centers for Disease Control and Prevention), "Given that the next SARS probably can travel at the speed of an airliner from continent to continent in a matter of hours [Ebola has already been reported in Texas as a result of someone flying to the United States from Liberia], it just makes perfect sense to adapt the speed and flexibility of social networking to disease surveillance" (Kass-Hout, 2011).

International health agencies will no doubt continue to play a critical role in disease hunting, but these online tools can supplement their work by incorporating real-time, socially driven data into their studies (Garrity, 2011). The challenge that likely will plague scientists in the immediate future is how best to comb through the ever-present noise on social media channels, which is often ripe with misinformation and fear.

III. Firm-level innovation

Private sector organizations are constantly seeking out opportunities to expand their reach, and the innovations they pursue are often in direct

response to real-world challenges that have not yet been addressed. This section explores the effects that globalization has on firm-level productivity and innovation, and addresses common challenges that these companies face throughout these endeavors.

Western companies and the attraction of going abroad

Western entrepreneurs have become increasingly enthusiastic about launching start-ups in developing countries, and while there are many reasons why companies would decide to forge this path rather than stay stateside, most entrepreneurs who go abroad cite competitive advantages resulting from lower staff wages as the main benefit over following the path of similar firms operating from within the United States (TNW, 2014). These companies launch in developing countries like Southeast Asia, but in many cases the clients they serve continue to be stateside. According to Jan Jones, founder of "Oozou," a web and mobile app development studio based in Bangkok, Thailand: "Our Western customers get the same quality that they would get Stateside, but at considerably less cost" (Jones, 2014). Others, like Chilean start-up "Easy Vino" – a company that helps restaurants develop wine lists and provides an app to customers to select wines with their meal – gain so much success outside of the United States that their owners then try to bring these ideas to Silicon Valley (Borison, 2014).

And even other companies have recognized that the consumer base in developing and lower-income countries promotes ripe conditions for the sale of specific products or services. Asian consumers, for example, tend to be much more social, mobile, and gaming-centric, which means that products geared towards that user base will fare better than they would in another region with different target users.

The benefits of starting tech-centered businesses in developing countries are not without some unique challenges, with cultural differences, language barriers, corruption, and currency exchanges as some of the most notable. Time zone differences add to an already unique business communications environment, where asynchronous conversations with a globally disparate clientele are commonplace, and early morning or late evening calls via Skype are the only real way to connect with customers on opposite sides of the world in real time.

Public/private sector roles in promoting technical innovation in Southeast Asia

One Southeast Asian country in which technology start-ups are quickly gaining traction is Vietnam. Under a one-party political system, Vietnam has historically discouraged the kind of free speech and open communications promoted by online communities and services. While the country is only in the early stages of becoming a true tech hub like Silicon Valley or Singapore, Vietnamese regulatory policies around IT services are becoming increasingly progressive. In 2010 the prime minister, Nguyen Tan Dung, launched a campaign that was centered on transforming Vietnam into an advanced

IT country by 2019. The Vietnamese science and technology ministry has committed money in infrastructure and high-tech industrial parks, and the World Bank awarded a $100 million loan to be used towards tech-related development within the country. These improvements will provide a significant boost to the emerging start-up industry in Vietnam, and it will enable more companies to take advantage of high-tech subsidies (M.I. Hanoi, 2014).

Private sector-led start-ups are also gaining momentum in Vietnam. One example is the site "Chomp," which is an online platform that allows marketers to interact with target audiences through hashtags. Described by the company as "ActionTags," marketers can create several types of campaigns, including photo contests, prize money contests, giveaways, and voting challenges. The campaigns can be promoted across multiple social media channels like Facebook, Twitter, and Instagram, and marketers can track everything related to the campaign via a centralized dashboard.

Vietnamese start-ups face cultural nuances that more established technical industries are perhaps more experienced at navigating. Language barriers are always a top concern, and these companies must choose whether to create their websites in Vietnamese only – which limits readership to the 90 million people in the country, English – which may exclude many Vietnamese users, French, or in both/multiple languages. Some have stuck strictly to Vietnamese. "Lozi.vn," for example, is a "Yelp meets Pinterest"-style food site in Vietnam, where users can take photos of food, "pin" photos of food that other users have posted, and share this information via social media channels like Facebook. That site is only offered in Vietnamese, whereas other companies like Chomp offer English and Vietnamese language options to help bridge cultural divides among its users.

Using technology to conquer developing world challenges in Africa

For many countries throughout the world, going mobile is an afterthought – a second step that companies take to augment the services and products they already offer on desktop websites. Countries in Africa, however, are not just mobile first – they are *mobile only,* with mobile devices acting as the "digital equivalent of a railroad" and allowing these people to connect with others, even if they are in the most remote parts of the world. As of 2014, "Only 16 percent of the continent's one billion people are online, but that share is rising […]. More than 720 million Africans have mobile phones, some 167 million already use the Internet, and 52 million are on Facebook," a recent McKinsey report stated (Manyika, 2013).

A team of software developers, engineers, and technologists in Nairobi, Kenya, recently developed a self-powered, mobile WiFi device called "BRCK." BRCK's goal is to provide Internet connectivity in a go-anywhere device that can provide electricity and Internet access where urban and rural areas have none. The device looks just like a brick. It is able to connect to multiple networks, it has a huge battery that can keep 20 devices connected for eight

hours, and it is robust enough to handle power failures and poor connectivity speeds. According to BRCK's founders, "We realized that the way the entire world is connecting to the web is changing. We no longer only get online via desktops in our office with an ethernet connection, we have multiple devices, and mobile connectivity is crucial" (http://www.brck.com/).

Throughout Africa's poorest countries, many people still rely heavily on feature phones (i.e., non-"smartphone"), and as a result they have a hard time accessing some of the largest Western social media sites like Facebook and Twitter. Smart entrepreneurs have figured out how to tap the technology mismatch and help bridge the digital divide that exists in developing countries. In Zimbabwe, for instance, Internet connectivity is expensive, and, for many, only available in Internet cafes or offices. "ForgetMeNot" is an African "Optimiser Platform," which uses eTXT technology to connect mobile phones on any mobile network with a number of social media and Internet services. An "eTXT" is a message that can be sent and received as SMS, as an email, or even as a chat message. It allows users in rural areas to have instant two-way chats on their mobile phones with people who have full access to social media channels, etc., without having to download anything. And since nearly all phones have SMS capabilities at a very low cost, people who could not otherwise afford to use these services now can.

Limited access to lines of credit, online banking, online shopping, shipping, and delivery are additional obstacles deeply embedded in the way of life for many people living in Africa, and a company called "Jumia.com" is navigating these challenges by striving to become the Amazon.com of Africa. Jumia is the biggest online shopping mall in Africa and offers *cash-on-delivery* products to the cities of Lagos and Abuja in Nigeria. People living there can order online or via mobile phone, and the products are then driven by motorcycle to homes or businesses, where cash is paid upon delivery.

Best places to launch a start-up in South America

Latin America's high-tech industry has blossomed in recent years, and even though there is no single Silicon Valley within Latin America at the moment, several tech hubs have emerged, largely in the southern portions of the continent. Argentina's tech community is probably the most mature, with Buenos Aires and Palermo Valley counting start-ups like Globant (an IT and software development company operating in Argentina, Colombia, Uruguay, the UK, Brazil, and the US) and Mercado Libre (an online marketplace dedicated to e-commerce and online auctions) as hometown successes.

As parts of Europe have reduced their R&D budgets towards technology investments, countries like Chile, Argentina, and Brazil have increased tech-related funding, and as a result have begun to attract high-profile companies to their burgeoning tech hubs. The Brazilian government has injected significant funding into the tech industry to compete with more established tech sectors throughout Europe (Essinger, 2013). It is estimated that

Brazil invested approximately R$6.8 billion through its Ministry of Science and Technology in 2012, and even though the rest of the country experienced major budget cuts, science and technology investments were not affected (Group of Eight Australia, 2014). And some incredibly successful start-ups have popped up in Brazil in recent years, including:

- *Easy Taxi*, which is the "Uber" of Brazil. It is funded by Rocket Internet and has approximately 30,000 drivers in its system.
- *Dafiti*, which is Brazil's version of Amazon. It was launched in 2011 and has already raised more than $249 million.
- *XMarket*, which is the "Craigslist meets Amazon" of Brazil. This company is slated to be an online e-commerce site for real estate, cars, and second-hand items. It has $850,000 in seed funding and launched in the fourth quarter of 2014.

Countries like Chile and Peru are often referred to as Latin America's "tech accelerators" or "incubators" for start-ups. An accelerator takes single-digit portions of equity in externally developed ideas in return for small amounts of capital and mentorship. They are typically consolidated into a three- or four-month program, after which that start-up "graduates." Incubators, on the other hand, incorporate external management teams to manage an idea that was developed internally within a company. These ideas typically require more time to conceptualize, and as a result incubators take a larger amount of equity as compared to accelerators (Desmarais, 2012).

Abandonment and acquisitions

While Chile and Peru offer a friendly incubator/accelerator environment for fostering innovation in technology, lots of companies launch in areas like this but end up abandoning the continent after graduating from these programs. Likewise, start-ups that become incredibly successful are often acquired by larger companies. Before working on XMarket in Brazil, for example, the start-up's CEO Lonny Szneiberg founded Investing.com, which was acquired. The Indian-born company "Bookpad" is another example of acquisition, in which Yahoo acquired the company for an estimated $15 million. This follows acquisitions of other Indian start-ups, including by Facebook, which acquired Little Eye Labs (estimated at $10–15 million), and by Google, which took over Impermium ($9 million).

An interesting aspect of some of these international acquisitions is that sometimes the teams stay in place, whereas other times the whole company moves shop. When Yahoo! acquired Bookpad, for example, the team joined the Yahoo team in Bangalore. With Little Eye Labs, on the other hand, *The Telegraph* reported that "The entire Little Eye Labs team will move to Facebook's headquarters in Menlo Park, California" (Shu, 2014). Quite an upheaval for a three-year old company also based in Bangalore, India.

Altruism, or smart business moves?

The private sector will continue to look for opportunities to expand their own reach and impact by reinvesting in their companies to develop products and services that solve critical global challenges. Google's "Project Loon" (http://www.google.com/loon/), for example, is an attempt to help close the gap of nearly two-thirds of the world's population that does not yet have Internet access. Project Loon is a network of balloons traveling on the edge of space, designed to connect people in remote areas, help fill coverage gaps, and bring people back online after natural or other disasters. It began as a pilot test in 2013 in New Zealand and continued with experiments in California and Brazil. Project Loon partners with telecommunications companies to share the cellular spectrum, and end users can connect to the balloon's network directly from their smartphones and other devices.

Google is a $367.6 Billion company (as of May 2015), with a stock price that hovers around $776 per share (as of May 2015). It dominates the search landscape, with nearly 65 percent of the total share across all popular search engines (Search Engine Land, 2013).

While Project Loon is looking to help close a critical gap in Internet access worldwide, it also increases the company's name recognition and impact every time a user posts any reference to the project on a website or on a social media feed. It also highlights the fact that Google remains at the cutting edge of all things technology, outshining traditional media sources and government agencies alike.

Conclusion

Social media will continue to play a critical role in shaping the global landscape, both economically and politically. Its novelty has largely worn off, leaving the world with a common understanding that social media offers something truly valuable – and occasionally dangerous – for the world. It distills complex topics into shareable information that can be discussed in simplified ways. It creates feedback loops where two-way dialogue and personal stories humanize issues and generate more engagement. And it offers widespread reach that augments traditional media sources, with television, print, and social media reinforcing each other and creating even broader distribution channels.

A common thread woven throughout each of the examples we have shared is that social media often advances transparency and accountability. It can help to simplify complex topics, making them easier to grasp. It can be used to augment real-world activities – to recruit volunteers, raise money, or identify disease outbreaks. It can even be used to collect enough funds from a thousand people in a distant land to ensure that Saibaba, the rat, can continue to do his job as a minesweeper.

Yet for every benefit social media brings to global innovation come questions and potential challenges for its role in the future. Perhaps one of the most obvious questions is whether social media creates *too* much information.

Millions of people can now instantaneously share content and personal opinions about global topics. This creates a genuine risk of misinformation when that content is not properly vetted and verified. Others would point to the fact that social media dumbs down critical arguments, because there is only so much sophistication a person can bring to a topic in 140 characters or fewer.

This medium is asynchronous, which allows people to publish their thoughts before they edit them for the world to see. Yet it also allows people to hide anonymously behind their writing. Social media amplifies opinions at the far edges of an argument, which creates an environment where extremist attitudes tend to be loudest, and proactive compromise becomes harder to achieve. And although social media played a starring role in the Arab Spring, some have questioned whether the still-evolving results produced anything positive in the long term for the citizens of those countries.

Despite these questions, the conversations that take place across social media as a whole are often more detailed and comprehensive than mainstream media can offer. They are ripe with global opinions, personal stories of success and failure, and passion that have not yet been diluted by intermediaries.

Whether to stop protests, create revolutions, uncover corruption, prepare communities for disaster, or raise money to support HeroRATs in their pursuit of conquering minefields in Mozambique, social media will only become a more influential factor in the coming years.

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