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A Three-Stage Adoption Process for Social Media Use in Government

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Social media applications are slowly diffusing across all levels of government. The organizational dynamics underlying adoption and use decisions follow a process similar to that for previous waves of new information and communication technologies. The authors suggest that the organizational diffusion of these types of new information and communication technologies, initially aimed at individual use and available through markets, including social media applications, follows a three-stage process. First, agencies experiment informally with social media outside of accepted technology use policies. Next, order evolves from the first chaotic stage as government organizations recognize the need to draft norms and regulations. Finally, organizational institutions evolve that clearly outline appropriate behavior, types of interactions, and new modes of communication that subsequently are formalized in social media strategies and policies. For each of the stages, the authors provide examples and a set of propositions to guide future research.

Over the past 30 years, many new information and communication technologies (ICTs) have been introduced. Each new wave, whether it is the introduction of time-sharing systems, personal computers, or now social media, is often viewed as a game changer. Such claims reflect a form of technological determinism, which suggests that new social arrangements and institutions are not simply enabled by technology but are determined by them. While few serious scholars support the pure form of the technological determinist perspective, most accept that new technology enables new potential. Some authors have argued that the effects of new technology are typically mitigated by preexisting rules and regulations and therefore do not necessarily lead to wholesale change. Research continues to try to sort out the role of technology in institutions over time.

With each new wave of technology, organizations are faced with a number of choices, many of which begin with the decision of whether to adopt and implement the technology. Social science has several well-established theories to explain this general process. Diffusion theory looks at how the communication of innovation leads to growing numbers of adopters over time in aggregate over a population of potential users. This theory gives rise to the classic S-shaped curve and its numerous variations. Because the diffusion process unfolds over time, it is often organized into stages reflecting different points in the process. Throughout the history of ICT innovation, staged models have been used to describe, predict, and control the process for practicing managers. A critical review of several such staged models applied to e-government is provided by Coursey and Norris (2008). Sometimes these models focus on whether individual organizations are likely to be early adopters or laggards. Others view the process as moving from simple to more complex forms of the technology or more complete integration within organizational processes.

At the same time, social science has developed a number of theories related to the individual decision processes used by individuals and organizations to adopt new technology. So-called adoption theories focus on individual decision units. Some derive from economic theory and cost–benefit analysis, while others apply a communication of innovation element such as information media and conduits, and still others look at a more complex array of institutional and organizational factors. While diffusion models tend to focus on aggregate behavior over time, adoption is the micro-level adoption process. Diffusion begins from the assumption that individuals learn about the innovation from others and decide to adopt, but it does not provide an explanation of why they decide to adopt. The implied assumption is that exposure to the idea is sufficient to make them want to adopt.

In the context of the current cluster of new ICTs, social media applications (e.g., Facebook, blogs, and Twitter), this article reflects on government organizations' previous experiences with new ICTs to construct a staged model that focuses on adoption and implementation. Unlike previous work, this model does not attempt to explain the adoption decision or

stages of technical implementation; rather, it looks at the organizational dynamics of the process. First, we consider only those new ICTs that are available to individuals through normal market mechanisms and exclude complex, interdependent ICT innovations that require systemwide consideration for adoption. For example, we exclude enterprise resource planning systems but include microcomputers, simple LAN systems, and online user services such as Facebook, Twitter, and most social media applications. The second important characteristic of the process that we examine here is that it is initiated by individuals within an organization, typically to enhance their personal productivity or that of an organizational subunit. We focus on how some new ICTs are initiated in organizations by individual "intrapreneurial" activities, a term used by Joseph Schumpeter (1934) to define risk-taking behaviors among organizational managers. These managerial intrapreneurs often create multiple and conflicting forms of the technology. Organizations respond to this through a process of formalization of rules, including standardization and codification. Finally, a form of status quo emerges in which the technology becomes part of the standard suite of ICT applications. While each stage has its unique characteristics and opportunities, the process is essentially a form of institutionalization that explains organizational responses to previous ICTs and is likely to apply to future technologies as well.

Social media applications include third-party platforms that allow for social interactions among users; content (co)creation, including text, videos, or pictures; and the sharing of status updates and news. Often known as the next generation of Internet applications, or Web 2.0, a term coined by O'Reilly (2005), social media applications in the public sector include, for example, the use of Facebook fan pages, blogs, and the micro-blogging service Twitter. Spurred by the Internet's successful role in the 2008 presidential election and President Barack Obama's Open Government Initiative memo (2009) instructing agencies to harness new technologies, government agencies are using social media tools to leverage bidirectional interactions with citizens. Their goal is to increase government's visibility by sharing data and insights into decision-making processes in order to become more transparent, to become more engaging and participatory by reaching previously underrepresented segments of the population, and to include all stakeholders in collaborative processes. This ongoing wave of ICT innovation and adoption in U.S. government provides many illustrative examples to support our model.

The next section of the article develops our staged process model at a level of generality that makes possible comparisons across technologies. The development of this model draws on the way previous technologies have worked their way into public organizations. This is followed by an application of the model to what we currently know about the pattern of adoption processes for social media technologies in both federal and state agencies. The fourth section of the article then presents a series of propositions that we derive from the general model with application to social media innovations in order to begin theorizing about the process and its potential impact on public organizations. We conclude by summarizing our results, developing some strategies for empirically testing the model, and offering some speculations on key issues that public organizations will face as they work through the stages of adoption for social media technology.

A General Theory of the Adoption Process for New Information and Telecommunications Technologies

This section develops and articulates a general staged process that describes how new ICTs first enter and are used by government agencies and then, over time, become routinized and standardized.

Unlike much of the literature on government technology adoption, this article focuses on the adoption process and not the specific decision to adopt or use.

Unlike much of the literature on government technology adoption, this article focuses on the adoption process and not the specific decision to adopt or use. As noted earlier, we limit our model to specific types of ICT innovation that are initially aimed at individuals, are market driven, and rely on individual intrapreneurs to spur organizational use. We also use the standard definition of "adoption of innovation" to mean something new to an organization or an individual. We postulate three broad stages of the process. As with any such staged model, it is likely that some organizations do not go through all of the stages, while some may go through the stages at different rates. Some organizations may get stuck at one stage for an extended period of time.

An important and necessary precursor to the adoption process is the existence of a new technology. In the case of most of the major ICT innovations of the past 40 years, these came from the market. An important characteristic of these technologies, then, is that they typically exist in a young and fiercely competitive industry. This environment generates multiple alternatives, each attempting to establish a market segment and a unique product characteristic. Over time, there is sorting, with some innovations succeeding and others failing. In the example of personal computer innovation, contenders for government offices included Apple, IBM, and DEC, plus a number of new producers' products.

In stage 1, called *intrapreneurship and experimentation,* the new ICT typically is used informally by individuals who have some experience with the technology prior to becoming members of the organization or from non-work-related activities. This is particularly true for social media technology, as its initial application was aimed at social non-work-related activities. During this stage, individual intrapreneurs act as change agents and, through the typical communication model, diffuse the technology locally within their organizations. As this process is informal and driven by individuals, large organizations are likely to have multiple intrapreneurial change agents operating at one time. Besides individual preferences and prior experiences, multiple competing forms of the technology are available, which creates uncertainty in both the form and the implementation process for new technology. This can lead to multiple versions of the same technology being used at one time in different places or even in the same offices of an organization. When personal computers were new, for instance, it was not uncommon for some organizations to have individuals using different hardware systems with different operating systems and multiple software applications to do the same thing, such as word processing or spreadsheet analysis.

During this phase of the process, a number of positive and negative activities occur. A great deal of experimentation occurs whereby

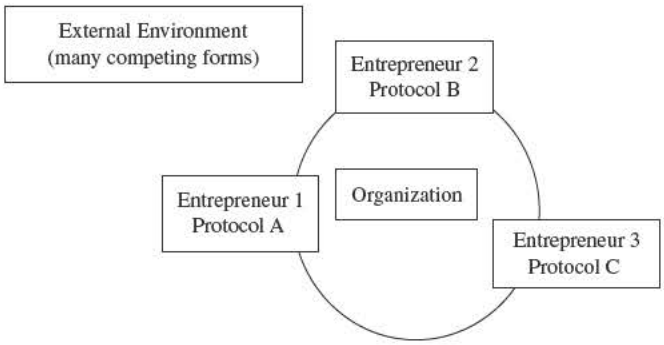

Figure 1 Stage 1: Intrepreneurship and Experimentation

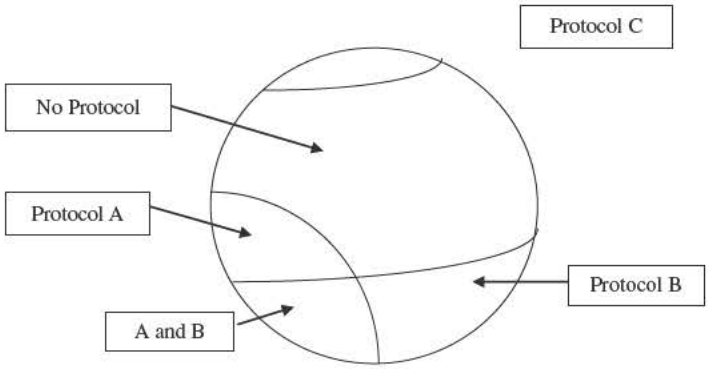

Figure 2 Stage 2: Constructive Chaos

intrapreneurs attempt to implement for themselves and small groups around them useful applications of the technology. The intrapreneurs are typically looking for applications that are simple to implement but have clear benefits—low-hanging fruit. They are also interested in expanding the domain of use, both in terms of individuals who use the application and the application domain. At the same time, this process creates a number of tensions and problems. Many of the tensions come from a blurring of personal and professional norms of conduct. This is particularly true for social media because of its focus on group communications. Social norms for private and social communications are not always appropriate in professional work environments. Many of these same problems occurred when e-mail was first being introduced in organizations. These conflicts between personal and professional communication norms often manifest in a set of four information policy issues originally identified by Mason: privacy of information, including electronically stored communications; accuracy of information; property or ownership rights of information; and access to information. Compounding these tensions is the potential for multiple conflicting and potentially incompatible forms of the technology to be present in the organization at the same time. Figure 1 provides a simple illustration of how multiple intrapreneurs span the environment and the organization and potentially introduce multiple versions of the technology in a single organization.

Stage 2 is called *order from chaos.* Figure 2 illustrates how subunits within the organization adopt different versions of the technology and, in some cases, multiple versions of the technology. This is a direct result of the activities of multiple intrapreneurs. Many of the individual successes are likely to be manifest, but the tensions created related to privacy of information, accuracy of information, property rights and ownership of information, and access to information are emergent as well. How the process unfolds will be partly affected by organizational structure and organizational culture. For example, decentralized organizations are likely to experience more heterogeneous outcomes than centralized organizations with regard to the number and types of the technology present. Nevertheless, the likely outcome will be essentially similar, with multiple and conflicting technologies or, at the very least, variation in the view of applicability of the technology to organizational tasks.

Eventually, organizations will seek to minimize this sort of variation and control the technology so as to reduce the problems that it is creating in order to mitigate the risks of heterogeneous experimentation. In other words, organizations will initiate some form of standard-setting process. A number of mechanisms have been used to accomplish uniformity or standards in the ICT area, including, but not limited to, intraorganizational task forces, steering committees, policy boards, and technical rule-setting processes. Steering committees in particular have been one of the major prescriptions for both standard setting, planning, and routine decision making in the ICT area for more than 30 years.

It is not unusual for organizations to begin the standard-setting process by using analogies from the previous wave of ICT technologies. E-mail was compared to telephones and filing policies, as Web technologies are being compared to e-mail. While this is an initial and useful first step, each new technology presents unique challenges not dealt with in policy solutions to previous ICTs. Another approach to defining standards and policies comes from the policy diffusion process. Here, organizations search for solutions developed by other organizations. In the context of the U.S. federal government, certain centralized service organizations such as the Government Accountability Office and the Office of Management and Budget develop standards and protocols that are more readily diffused as a top-down approach.

This phase is characterized primarily as an organizational response to the intrapreneurial phase. We assume that the success or potential of the technology has been accepted by the organizational leadership, so that it is willing to develop formal rules and standards for the deployment and use of the technology. It is possible that some of the standard setting is also in reaction to organizational disasters associated with unconstrained use of the technology. As discussed earlier, the response is likely to have both a structural element (e.g., steering committee) as well as a procedural piece.

Stage 3 is called *institutionalization.* Figure 3 illustrates that by this stage, all of the variation has been removed from across the organization as it utilizes the technology. This is overstated, however. Even with mature ICTs, new elements are constantly being introduced and tested within organizations. The difference is that the organization has a set of standards, rules, and processes for managing the process and some resources associated with the enforcement of these protocols.

While one of the downsides of this type of formalization of ICT management is a slower rate of change and reduced experimentation, there are a number of important benefits. First, the organization

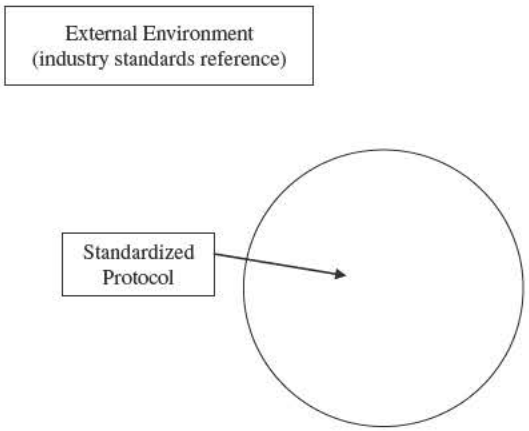

Figure 3 Stage 3: Institutionalization

attempts to create predictability in ICT use to reduce organizational problems and organizational failures, particularly those associated with privacy of information, accuracy of information, property and ownership of information, and access to information. The existence of standard rules and protocols also allows the innovation to reach a wider set of organizational actors, possibly even everyone. This is typically accomplished by providing a minimum level of technology support through some or all of the following: formal training, staff support, or document and online help systems. Finally, the new ICT becomes part of the socialization process for new entrants, thus reinforcing application patterns and use. Typically, newly hired individuals receive a basic package of information, training, and access-to-technology tools. These also are some of the earliest exposures that new entrants have to the organization. Some organizations even attempt to use their adoption of new ICT technologies as an edge in the labor market when recruiting.

The external environment may also reassert an influence during stage 3. Typically, over time, new technology creates a market, and producers or vendors compete for market share. Winners and losers in the marketplace lead to either concentration or standardization. As industry groups mature, standardization of technology is one of the common results. Organizations that are formalizing their use of new technology can then appeal to external industrial standards to help them generate internal rules and procedures. High-definition television is a recent example of this process. As this technology emerged, there were many competing forms of the technology and concomitant competing standards, but over time, specific core technologies succeeded in the marketplace and became the basis for a single industry standard.

Overall, the process is one of organizational adaptation to change—in this case, the incorporation of certain types of new ICT technology. Case studies suggest that although the process that we describe here seems to apply to some new waves of ICT since the 1980s, it is also connected to standard internal organizational processes such as formalization and adaptation.

Applying a Staged Model of Technology Adoption to the Use of Social Media in the Public Sector

Stage 1: Decentralized, Informal Early Experimentation by Social Media Mavericks

Social media adoption in the public sector is characterized by an early phase of informal experimentation. A few intrapreneurs—or those we like to call "mavericks"—experiment with the use of social media applications for their own department or service. Third-party social media platforms allow users to set up free accounts outside the regular constraints of approval processes through information technology (IT) departments, which serve as gatekeepers in the IT acquisition process, hardware purchasing requirements, and existing IT infrastructure hosting needs. At this early stage, social media is not officially recognized as an acceptable practice by the organization as a whole, and experimentation occurs outside existing norms and standards of technology use. Stage 1 often does not include investment decisions and typically departs from the norms previously established for existing types of ICTs. Early adopters observe the uptake of social media use among their audiences and peers in their social network. They regard adoption as a means of representing their agency as part of the ongoing conversations that citizens have on diverse social media channels. They instinctively join the medium that their audience members are using and discover incidences in which the agency is mentioned or issues emerge that are of interest to their agency. They are willing to add the tasks of setting up and maintaining social media accounts and curating content to their formal job description. Unlike other types of ICT adoption in the public sector, social media adoption is often not a top-down, conscious decision sanctioned by higher-level management.

Social media at this early stage presents an opportunity to directly interact with audiences and for government to provide an innovative channel for representation, information dissemination, and education that a traditional, static Web site cannot provide. Interactions on social media channels are bidirectional, allowing for frequent back-and-forth communication between agency representatives and the public. The early experimentation phase allows social media mavericks to test out different approaches. Some are highly innovative, allowing a constant stream of feedback and ongoing conversation with and among those members of the public who prefer informal interaction instead of formalized contact. Others use social media channels in the same way that they use their agency's Web site and mostly push information in a broadcasting mode without allowing direct interaction.

Social media intrapreneurs in the public sector operate in a gray area with standards that were last updated for the use of agency-owned Web sites or e-mail traffic. This, in turn, may hinder and often discourage potential adopters in other agencies who adhere to the existing regulations and are not willing to take the risk of unsanctioned experimentation.

Although social media mavericks act in their official capacity, the use of social media in the first stage occurs outside the accepted use policies of an agency: existing rules and standards are not updated to reflect third-party behavior or procedural innovations that are implicit in social networking platforms. Social media intrapreneurs in the public sector operate in a gray area with standards that were last updated for the use of agency-owned Web sites or e-mail traffic. This, in turn, may hinder and often discourage

potential adopters in other agencies who adhere to the existing regulations and are not willing to take the risk of unsanctioned experimentation.

In this early stage of informal social media practices, only a few "lighthouse" projects emerge. Informal exchanges across agencies or even across industries help innovators push the boundaries of their own local use of social media to develop best-practice examples. This stage is characterized by a high degree of internal voluntarism, distinguishing social media adoption from other technology adoption processes. Instead of passively reacting to a top-down directive, intrapreneurs voluntarily experiment in their free time and add social media activities to their existing tasks. No additional resources in the form of monetary incentives or manpower are officially allocated in stage 1. Instead, intrapreneurs use word-of-mouth mechanisms to get others with similar interests or technology affinities involved in innovating with social media. Based on their experiential learning, social media intrapreneurs collect experiences and evidence to build a business case for presentation to top management.

All early innovators operate within a relative vacuum, without explicit standards or acceptable use policies for social media applications.

The side effects of this form of informal, unsanctioned experimentation are that, in some cases, multiple experiments are started in different and potentially disconnected locations within agencies. Many different intrapreneurs emerge as the use of social media among their diverse constituencies increases. Subunits set up their own Twitter accounts or create multiple Facebook pages, reflecting the need to correspond with specific subject-matter experts through a dedicated news stream. This is a situation that is often referred to as the "Wild West" of social media use in the public sector. Little coordination or branding occurs, content might be duplicated, and uncertainty over official agency positions develops. Unintentional consequences occur in this stage when use contradicts official agency communication standards and users engage in social media exchanges that do not support the agency's mission.

A few remarkable early experimentations include the National Aeronautics and Space Administration's (2012) social media efforts to reach the general public, as well as to use space fandom to organize Tweetups (meetings among Twitter users) to meet astronauts or participate in rocket launches or the recent Mars *Rover* landing. Other early experiments include the Environmental Protection Agency's *Greenversations* blog, the Centers for Disease Control and Prevention's "Zombie Preparedness Apocalypse" warnings using a social media toolkit, and the Federal Bureau of Investigation's use of a Facebook fan page to crowdsource the public in identifying crime scene evidence. This phase was inspired by early successes using in-house social networking platforms, such as the use of Intellipedia, a social media suite that includes a wiki for information creation and sharing among the agencies of the intelligence community.

Stage 2: Coordinated Chaos: Making the Business Case for Social Media

In stage 2 of the adoption of social media use model, decentralized and informal experimentation leads to an increased awareness of social media activities across the organization. Because of this informal nature, the many different social media accounts, differing practices, and overlapping audiences increase the need for consolidation of efforts. All early innovators operate within a relative vacuum, without explicit standards or acceptable use policies for social media applications. The fact that standards and policies only cover the use of officially purchased technology prevents others from following, even when they recognize the value of social media applications. This increases the awareness of top management of the need for new standards. An example of this stage in the U.S. federal government comes from the Government Accountability Office (2011), which highlighted the challenges for social media standards in its report to Congress and the Office of Management and Budget followed up with guidelines. Another important milestone toward creating order out of the initial chaos was the signing of model terms of service agreements with a wide range of social media providers by the General Services Administration's Office of Innovative Technologies (2010). These focused on automatic advertising, data collection, and archiving mechanisms to follow existing government standards and allow each agency to sign similar agreements for their own organizations. External standards reduce the overall risk and uncertainty for later adopters and increase the likelihood that the majority will adopt social media practices.

Social media mavericks socialize their ideas among interested stakeholders. Additional adopters join the still-informal efforts and are able to extend the current efforts, taking over some of the now distributed burden and, in turn, increasing visibility.

Stage 2 is characterized by informal standards that emerge as a result of unintended consequences, for example, when employees post inappropriate content and receive negative press coverage or backlash from the social media audience. To avoid future pitfalls, employees involved in social media efforts start to agree on and cowrite informal standards, describe best practices to provide guidelines, and pay increased attention to their peers across government.

As part of stage 2, social media mavericks build a solid business case based on their experimentation, positive feedback from audience members, quantitative statistics of postings and reciprocation, as well as growing user numbers to provide evidence for a presentation to top management. These data then serve as a basis for moving the accumulated social media practices from unsanctioned, informal experimentation to officially approved use. In some cases, it might even lead to formally sanctioned resource allocations in the form of manpower, training of key personnel, and financial support to broaden social media efforts across the organization.

Stage 3: Institutionalization and Consolidation of Behavior and Norms

The final stage of social media adoption includes clear guidelines for the use of social media in the public sector. This stage is characterized by the publication of an official organizational social media strategy or policy document. The norms are designed to direct social media practices. In some cases, they merely provide a general context in the form of a framework in which government social media professionals can interact with their audience(s). In other cases, the

social media documents provide not only detailed direction for the selection of accepted third-party social media tools, but also standards for information production and information-vetting processes, intellectual property rights, daily posting schedules, or directions on how to measure social media impact. These social media standards also justify how innovative social media practices fit into the existing technology framework.

As organizational social media use advances in stage 3, some government organizations start to regulate professional conduct and the use of social media channels for purely instrumental purposes. Instead, social media standards often include standards for the private use of employees' personal social media accounts. As an example, the first iteration of the U.S. Army Social Media Handbook (2010) included general standards, as described earlier, and was extended in 2011 to explicitly include guidance for army families on their safe and secure use of social media—similar to offline directions provided for interaction and communication. In 2012, the handbook included updates to reflect the changing technology features introduced by third parties, such as the introduction of the Facebook timeline. This example highlights another characteristic of stage 3, in which organizations are working toward institutionalizing their social media practices: standard setting is highly reactive in the social media realm. Third parties make decisions about new technological features that, in turn, influence user behavior. Government organizations then react to changes in behavior and reflect those changes in their updated rules and regulations.

In stage 3, government agencies set up norms and policies for acceptable online behavior for citizens interacting with government through their official social media channels. Existing forms of online etiquette or "netiquette" are adapted to commenting functions on social networking sites to cover appropriate language or on-topic comments. A prominent example is the commenting policy of the Environmental Protection Agency. Before a government employee responds to a comment on a blog or a social networking site, the agency asks, "Should I respond online on EPA's behalf?" A flowchart provides employees with a decision guide to evaluate whether the tone of a comment is positive and balanced and whether responding is worthwhile to a wider audience.

Institutionalization of innovative social media practices can include the creation of new organizational roles and/or specialized units. These types of organizational commitments include positions for a social media director with a formal job description, including success metrics. Agencies have created dedicated social media departments and funded industry standards training through consulting fees. Social media practices are included in the training of new hires, indicating that these channels are part of the organization's standard mode of operation.

Overall, stage 3 is characterized by a high degree of formalization and standard setting for acceptable use by government employees and citizens interacting with official government social media accounts. Standards for both the selection and use of social media applications are set. New policies focus mostly on appropriate behavior to increase social awareness of the use of the adopted technology and to reduce or mitigate the risks to the organization. Examples of the consolidation efforts of stage 3 are supported by other top-down institutionalization elements, such as the General Services Administration's HowTo.gov platform, which provides support for the selection and use of social media applications and content, as well as the Social Media Registry, which helps verify official government social media accounts.

Propositions for New ICT Adoption in Public Sector Organizations

We have provided a description of what we see as a general staged model of organizational innovation and adoption that applies to individually (intrapreneurial) driven bottom-up ICTs developed for individual use and dependent on markets. We have also illustrated that process with the most recent wave of such ICTs, social media technology. The theoretical framework developed earlier lends itself to a number of potentially testable propositions. In this section, we develop a number of such propositions. It is organized around the three stages of the process.

Stage 1: Intrapreneurship and Experimentation

We postulate that two critical variables affect the nature of decentralized intrapreneurial activity associated with new ICT use in public organizations: characteristics of the organizational structure and culture and characteristics of the emergent technology.

The Role of Organizational Structure and Culture. Decisions to use new market-driven ICTs in the first stage are mostly driven by individuals, their observations of their peers in other government organizations (or other sectors), and their audience's use. Adoption, therefore, is highly driven by individual need and not a dedicated, formal organizational decision. The level of personal proficiency, the degree of comfort with the technology, and the willingness to experiment outside acceptable technology use standards drive adoption. We suggest two propositions for stage 1:

> **Proposition 1.1:** The more decentralized the decision-making process of an organization, the greater the typical level of heterogeneity of intrapreneurial applications and technology.

We predict that as more internal mavericks experiment with new technology such as social media, there will be a higher degree of heterogeneity across government organizations. In addition, as they experience less freedom in their bureaucratic environment, less experimentation will occur. Instead, government employees who adhere to existing ICT rules and regulations will not experiment outside the realm of acceptable use policies.

> **Proposition 1.2:** The greater the degree of formalization of the organization, the less heterogeneity of intrapreneurial applications and technology.

The Role of Technology Characteristics. Social media adoption, like similar past ICTs, is also highly influenced by the type of application. The technology characteristics influence not only use in general, but also the resulting tactics of use. As an example, in the early stages of social media adoption, entrepreneurs will use social media as an additional channel to replicate information that is published through the standard ICT channels, instead of using the medium for social interactions. More complex technological features will likely lead to more sophisticated tactics—although the

development of more sophisticated adoption behavior will take time to develop until it is successful. We suggest the following propositions:

> **Proposition 1.3a:** The more complex the technological innovation or rate of change in the core technology, the lower the likelihood of early successes.

This means, in turn, that technologies that are already known from personal and private use of individual government professionals are more likely to be adopted than technologies such as Twitter that are focused on issue and user networks in which member and user interactions are more difficult to understand. Thus,

> **Proposition 1.3b:** The higher the rate of technological innovation or rate of change in the core technology, the greater the likelihood of organizational risk and subsequent errors and failure during the early experimentation phase.

In turn, the focus needs to be on content and network curation—that is, the discovery, presentation, and publication of and interaction with meaningful content—instead of the technological details in order to show the value of the networking interactions. We predict that ICT innovations that start as technology-oriented projects are more likely to fail because they do not focus on issues and the mission of the organization. In those cases, new ICT adoption initiated by either knowledge and/or issue experts will have a higher degree of survival and will be less static and more interactive.

> **Proposition 1.4:** The more the technology focus is on mission support as opposed to computation or analysis, the greater the likelihood for organizational success.

Stage 2: Coordinated Chaos: Making the Business Case for Social Media

Once the organization has begun to experiment with new technology, a range of reactions occur. The process is again influenced by organizational factors and characteristics of the technology, but at this stage, a form of path dependency emerges. In particular, propositions 1.3a and 1.3b create variation in rates of early success and the likelihood of organizational failure. Both of these outcomes from the first stage are likely to influence the process and outcomes of the formalization and standardization process.

The Role of Organizational Structure. As new ICT use becomes more prominent and success stories emerge, government organizations with highly specialized organizational units tend to standardize behavior and processes. We predict that,

> **Proposition 2.1a:** More centralized organizations will respond to greater degrees of heterogeneity of technological alternatives by preferring the use of existing structures (e.g., an ICT unit) and the promulgation of rules and procedures, thereby reinforcing the centralized nature of ICT adoption.

As a result, those who were early users of new ICT such as social media in their organizations will have strong incentives to create business cases that suggest the allocation of additional resources for content curation, account maintenance, and new organizational structures and processes to use social media safely on behalf of their organization.

> **Proposition 2.1b:** More decentralized organizations will respond to greater degrees of heterogeneity of technological alternatives by preferring the creation of new structures (e.g., steering committees) and focusing more on coordination than control-related rules and procedures.

In this stage, first drafts of new ICT policies and strategies emerge that focus on existing norms, regulations, and acceptable IT standards and practices. The limits of the existing rules become clearer, and the need for new standard operating procedures becomes evident.

> **Proposition 2.2a:** The organizational search for new rules and procedures will be influenced laterally by rules promulgated by other units that are either at the same level or have a common organization or unit within other organizations having comparable functions.

External actors, best practices across government, and the pervasive use of the new technology such as social media among networked publics then provide direction and urgency to the internal adoption of formal rules and procedures.

> **Proposition 2.2b:** The organizational search for new rules and procedures will be imposed from higher-level structures when such organizations have specialized authority or expertise (e.g., General Services Administration, ICT units).

The Role of Stage 2 Outcomes.In addition to external pressures to innovate, internal errors and unintended use of new technologies such as social media applications on behalf of the agency also increase the urgency of formal adoption rules. Prominent mishaps such as inappropriate use by high-level politicians, celebrities, and international movements such as the Arab Spring uprisings supported by social media increase the internal social awareness of top management. In addition, fast-changing technological features that lead to user errors increase the need to strategically approach social media adoption.

> **Proposition 2.3:** Organizational and technological failures accelerate and intensify the organizational process to adapt and standardize the use of new technology.

Stage 3: Institutionalization and Consolidation of Behavior and Norms

The final stage of this process occurs once the organization has developed and implemented rules and procedures for use of the new technology.

The Role of New Technology Standards. The insights gained from lessons learned in the two preceding stages lead to better strategies for harnessing new ICT to support the mission of the organization, as well as policies that provide guidance for day-to-day routines and practices. The degree to which these new standards are formalized and prescribe behavior depends on the existing culture of the use of standardized protocols. We predict that existing standards will predict new formats and, in turn, acceptance throughout the organization.

Proposition 3.1: Organizations with standardized protocols will have wider lateral and hierarchical diffusion and use of the technology than those that do not.

Organizations applying highly prescriptive new ICT standards will not only dictate the management of ICT resources but also prescribe which applications are acceptable, instead of allowing further experimentation.

Proposition 3.2: Organizations with standardized protocols will have less variation in types of applications for the new technology than those that do not.

Highly structured and prescriptive standards not only remove variation in behavior and technology but also reduce the risk of failures and errors that might discredit the organization and lead to costly campaigns to mitigate the harm.

Proposition 3.3: Organizations with standardized protocols will have fewer organizational failures associated with the technology than those that do not.

The Role of New Organizational Institutions. Stage 3 institutionalizes the acceptable use of new ICTs such as social media applications as part of the overall ICT and communication strategy of government organizations. In this stage, the organization—specifically, top management—recognizes the need for additional resources in the form of manpower, organizational structures, and rethinking of existing engagement tactics and interactions. Whereas in previous stages, new ICTs such as social media were added as an additional task to the intrapreneur's existing portfolio, we predict that in stage 3, dedicated resources will be allocated.

Proposition 3.4: New organizational institutions, such as social media directors, will extend the new ICT uses and applications (e.g., social media) beyond the standard uses (e.g., broadcasting model).

Top-down institutional support, centralized resources, clear responsibilities, and approved behavior and technologies will also lead to other types of innovations: a dedicated director for the new ICT with support for a policy that allows his or her subunit to accelerate the use of the new ICT will have to rethink tactics for different purposes. The new organizational unit and standards will help support the overall mission of the organization, as well as more innovative tactics that go beyond mere broadcasting of already existing content to take into account innovative approaches of online participation and collaboration with the government agency's audiences.

Proposition 3.5: Organizations with standardized policies for the new ICT encourage the innovative use of those technologies applications.

Table 1 summarizes the set of propositions derived for the role of organizational structure, technology, outcomes, and predicted organizational responses for each stage.

Three-Stage New ICT Adoption Model with Application to Social Media as a Future Research Agenda

In this article, we suggest a three-stage adoption model for new ICT technologies in government that moves from early experimentation outside the formal organizational rules and regulations (stage 1), to first standards (stage 2), and on to centralized organizational institutions (stage 3). This model was then applied to the latest new ICT, social media technologies. We then generated a set of general propositions for empirical analysis and testing. The model that we proposed is limited to those types of new ICTs that derive from the market and can be implemented by individual intrapreneurs within an organization. Previous technologies that fit this model include personal computers in the 1980s and cell phones in the early 2000s. The process is primarily a bottom-up approach.

Social media occurs in many cases as a bottom-up adoption process that is highly driven by experiments and the willingness of intrapreneurs to take the risks associated with the use of social media. The main driver of social media use in government is not a dedicated top-down decision to implement technology innovations. Instead, changing citizen behavior and innovations in third-party platforms, in combination with internal mavericks, are the drivers for the use of social media. Internal organizational structures and routines then follow experimentation to reduce overall uncertainty and mitigate the risks associated with duplicated accounts and streamline content curation.

Even though some previous waves of digital government adoption might have occurred stepwise, diffusing the implementation from early adopters to the late majority, social media adoption shows signs of an innovation diffusion scheme.

Even though some previous waves of digital government adoption might have occurred stepwise, diffusing the implementation from early adopters to the late majority, social media adoption shows signs of an innovation diffusion scheme. Some previous ICT adoption cycles focused on internal process efficiency and less on interactive and inclusive

Table 1 Summary of Staged Model of Adoption Process through Intrapreneurial Activity

	Role of Organizational Structure	Role of Technology	Role of Outcomes	Organizational Response
Stage 1: Decentralized, informal experimentation	Important to allow for experimentation	Following outside best practices (replication of successes)	Early tests lead to first insights	Unsanctioned accounts, not on the organizational radar screen
Stage 2: Coordinated chaos	Important to consolidate heterogeneity of use	Increases in importance but mainly because of innovative use and routines	Highly important to create business cases	Task force, steering committee, draft policies/strategies
Stage 3: Institutionalization and consolidation	New organizational structures	Set of accepted technologies versus wide range of innovative technologies to support different purposes	Important for future resource allocation	Formalized institutions, work assignments, tasks, roles, dedicated resource allocation, formal social media policies

elements than the adoption of social media practices promises. Many earlier ICT innovations, such as the use of personal computers or the initial use of the Internet, slowly diffused from small pockets of early innovators to the larger system of all government entities. We believe that social media diffusion occurs in similar steps as the diffusion of the later examples, and as soon as it reaches maturity and general acceptance, social media decisions might also be made in a top-down manner.

This three-stage diffusion model adds value for both researchers and public managers who are interested in testing and understanding emergent technology innovations in the public sector. They can test certain management protocols to understand how technologies emerge. Moreover, it will be valuable for them to recognize early signs of innovation diffusion, respond more rapidly to changes in their external environment, and consequently start the formalization phase earlier to reduce risk and uncertainty.

Early formalization will create opportunities for variations: public managers can observe as technology evolves in other sectors and recognize the potential for the public sector. Understanding early trends and adoption variations can then lead to diverse implementation tactics. The next technology-based innovation in the public sector can be better managed based on the experiences and observations of the current innovation cycle.

The presidential directive as part of the Open Government Initiative may have been a unique motivation for social media adoption in a more hierarchical manner. It may have facilitated both the speed and direction of the adoption outcomes. If empirically supported, the three-stage theory can help evaluate the impact of these unique contributions and provide guidance for how political action can incentivize other technological innovations. Thus, this three-stage adoption model can facilitate both explanatory as well as prescriptive future research.

Finally, in many ways, this model looks a lot like private sector adoption of new market-based ICTs. It is not what we might have expected from government and may constitute a departure from the existing public administration view of new information and communication adoption processes. One explanation is that the presidential directive gave many departments an opportunity to be more entrepreneurial and to experiment with new technologies. Alternatively, the legacy of the New Public Management may, over time, have made government organizations more like market-based organizations. While all of these suggestions are relevant in building insights into the use of social media, we do not have all the answers yet. Thus, an additional item for future work is to develop deeper explanations of how the government context distinguishes these processes for those occurring in private sector organizations.

Future research is needed to test the propositions presented in this article. The current wave of experimentation and use of social media technology provides an excellent basis for such empirical testing. We propose to design research projects that do not focus only on government agencies at the federal level. Instead, researchers should focus on those government agencies that (1) are willing to go the extra mile and experiment with innovative social media tactics, and (2) are highly interactive and use social media for its intended use to engage with their audiences. These agencies might not necessarily be found at the federal government level; they are more likely found at the state and local levels, where citizens and their representatives interact with each other directly. Findings from empirical data testing the propositions laid out in this article will lead to insights for both academics and practitioners to design internal processes, standards, and routines, as well as external tactics of engagement.

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