doi: 10.5191/jiaee.2021.28101

Organizational Innovation in Times of Crises: The Case of Extension and Advisory Services

Kristin Davis
International Food Policy Research Institute (IFPRI)
Washington, D. C., USA

Anna Snider
University of Illinois

Thomas Archibald
Benjamin Grove
Virginia Tech University

Suresh Babu
International Food Policy Research Institute (IFPRI)
Washington, D. C., USA

Abstract

Since it formally began, extension institutions have been innovating in response to the changing environment. Past crises have induced organizational innovation in limited ways. The COVID-19 crisis appears to have brought about more radical change in extension organizations. In this manuscript, we apply organizational change theory—including insights from recent research on adaptive management in international development—to examine how extension organizations innovated during the COVID-19 crisis. We explore how extension organizations modified inputs such as human capital, technology, and equipment; outputs such as services; and organizational components, such as social structures, participants, and goals. We review previous crises to learn how global extension adapted and then examine contemporary experiences of organizational change during COVID-19. This allows us to provide suggestions for future directions for implementers on how to strengthen extension services to respond in times of crisis and continue to support clientele in varying circumstances. We suggest that extension organizations embrace inclusive technology cautiously, provide staff with skills to adapt and problem solve, and ensure flexible structures that allow for collaboration.

Keywords: extension; innovation; managing change; organizations

Introduction

Since it formally began in the late 1800s as university-based outreach (Swanson et al., 1997) extension—as an institution—has been innovating in response to environmental flux, including crises. In times of crisis, information, advice, and coaching for rural producers and other food system actors is necessary at the local level. Extension, as a trusted communication and education institution, is thus a critical element of response to crises, providing credible information and supporting clientele with advice to adapt to shocks.

A significant shock hit in 2020 when the novel coronavirus (COVID-19) pandemic broke out with major consequences for food security, human health, and livelihoods (Committee on World Food Security High Level Panel of Experts, 2020). An estimated additional 140 million people will live in extreme poverty on less than US$1.90 per day due to the pandemic (Hedley et. al, 2020). These shocks and disruptions force people to adapt.

Extension can be an important resource for people adapting to new circumstances (Narine & Meier, 2020). Past crises have included natural disasters (Boteler, 2007), political disruptions and conflict (McNamara & Moore, 2017), human and animal health emergencies such as Ebola (Bello-Bravo et al., 2017) and avian influenza (World Bank, 2015), and pest outbreaks like desert locust (FAO, 2020) or fall armyworm (Tambo et al, 2019). However, past crises mainly forced extension organizations to innovate in limited ways, such as temporarily taking up new topics and providing additional training (Telg et al, 2008). COVID-19 appears to have brought about more radical changes in extension globally.

In this manuscript, we explore potential applications of organizational change theory to elucidate how such change occurs using extension as a case. We review previous crises to learn how extension organizations adapted to support their clientele. We then examine recent and ongoing experiences of global extension innovation during COVID-19. The authors use these examples to illustrate how to apply organizational change theory to extension during crises. This allows us to provide suggestions for future directions on how to strengthen extension services globally to respond in times of crisis and continue to support clientele in varying circumstances.

Theoretical Framework

Our theoretical framework consists of aspects of organizational change theory – especially as applied to extension – plus more recent literature on adaptive management in international development. Organizations are tools used to achieve goals, or systems that create value through transforming inputs using skills and knowledge (Jones, 2013). To create value, organizations use inputs such as human capital or information and transform them into outputs such as services (Jones, 2013). Organizations are affected by the environment in which they operate; as the environment changes, organizations morph into something new to increase their effectiveness (Jones, 2013). Leavitt's 1949 diamond model of organizations (as cited in Scott, 2003) proposes that organizations are made up of social structure, technology, goals, and participants. Social structure consists of the patterns of relationships among participants, who are the individuals contributing to an organization. Technology, according to Clark (2002), is used to transform resources into something of value.

Goals comprise the desired ends of organizations (Scott, 2003), and as such, are highly affected by the values of an organization.

Bartunek and Moch (1987) apply schemata, organizing frameworks for understanding events, to organizational development. Schemata in extension could be paternalism or participation, for instance. The authors link organizational schemata with organizational change and distinguish between first-order, second-order, and third-order change. First-order changes include small modifications within already-established schemata, reinforcing existing paradigms. Second-order change involves conscious modification of schemata. Third-order change requires intentional coaching of organizations to change schemata (Bartunek & Moch, 1987).

Goes and colleagues (2000) review the literature on organizational change and provide a framework for classifying theories of change in healthcare. Their framework includes *levels* of change (organizational to industry-wide), *type* of change (incremental to radical), and *mode* of change (prescribed versus voluntaristic).

Other research and commentary on change processes in extension focused on employee readiness for change (Bloir & Scheer, 2017; Smith & Torppa, 2010), disruptive innovation (Franz & Cox, 2012; Turner, 2015), paradigm shifts and restructuring efforts to address "mission and money" crises (Morse, 2009; Strong et al., 2015), and more.

We use these elements of organizational theory to examine how extension organizations innovated during the COVID-19 crisis by modifying *inputs* such as human capital, technology, and equipment, *outputs* such as services, and the organizational *components*: social structure, participants, goals, and technology. In addition, we apply insights from research on adaptive management in international development focused on "how change happens" (Green, 2015). Adaptive development is "an intentional approach to making decisions and adjustments in response to new information and changes in context" (USAID, 2020, p. 142). It is an approach to tackling complex international development challenges in a way that is honest about uncertainty and characterized by flexibility, testing, monitoring, feedback, and mid-course corrections (O'Donnell, 2016). Adaptive approaches that emerged in sectors like software development, product design, and technology startups—including agile, human-centered design, lean startup, thinking and working politically, and problem-driven iterative adaptation—are increasingly embedded in the project cycle in international development (Pett, 2020). They thus have potential utility when seeking to understand how extension responds nimbly and well to crises.

Purpose & Objectives

The purpose of this research note is to: (a) provide a theoretical framework to examine organizational change in extension in response to crises; (b) use document review and participant observation to understand organizational change in extension and illustrate how to apply organizational change theory to extension during crises; and (c) provide suggestions for future directions for more resilient extension organizations.

Methods

We used document analysis (Bowen, 2009) to examine the phenomenon of organizational innovation and apply the concept to examples of extension responding to past crises (the 2014-2016 Ebola outbreak and the 2005-2007 avian influenza pandemic). Documents included journal articles, websites, electronic

documents, and online articles. We targeted extension journals and used Google Scholar and Web of Science to search for terms including "extension" and "education" with "Ebola," "HIV/AIDS," "avian influenza," and "COVID-19." To apply the concept of organizational innovation to changes in extension due to the COVID-19 pandemic, we collected data via participant observation (Merriam & Tisdell, 2016) and personal narratives from extension practitioners engaged in the phenomenon. These samples were convenience samples (Merriam & Tisdell, 2016) based on availability of information and the people willing to contribute the information. We selected four cases of extension innovation in response to the COVID-19 crisis. We used content analysis, a method used in qualitative research to analyze unstructured data (Krippendorff, 2004), to examine the data from documents and participant observation and personal narratives for themes and results across the theoretical framework.

Results

The COVID-19 pandemic is not the first time that extension organizations have been called to action in a crisis. As an institution with trained staff who are trusted by communities and have local reach and communication skills, extension has supported efforts and educated communities during many crises and natural disasters.

The 2014-2016 Ebola outbreak in West Africa caused 11,325 deaths and had widespread economic and social consequences (Huber et al., 2018). The United Nations' work during the Ebola crisis identified partnering with local journalists and community radio as the most effective and flexible way to share information, allowing real-time rapid feedback from communities (Gillespie et al., 2016). In Sierra Leone, extension agents received social communication training to encourage behavior change messages through community sensitization meetings and radio discussions (FAO, 2016). In Asia, extension was instrumental in controlling outbreaks of avian influenza, a zoonotic viral disease. In Viet Nam during the 2005-2007 outbreak, extension officers helped detect positive avian influenza cases, coordinated establishment of quarantine zones in collaboration with local authorities, and supervised culling of infected flocks and disinfection of farms (C. Larsen, personal communication, April 3, 2020).

These crises, while destructive, were nowhere near as widespread and devastating as the COVID-19 crisis. Extension started to innovate as the crisis hit (Narine & Meier, 2020). The US Cooperative Extension System quickly adapted to offer virtual programming, aggregate information, and work with local partners to provide services to vulnerable populations (Grove et al., in press). Utah et al. (2020) showed how the Cooperative Extension response to COVID-19 included adaptations in technology (e.g., online learning), service content (e.g., homeschooling), and in the social structure of external partnerships (e.g., informing local leaders on Extension's potential supportive role). In the first weeks of the outbreak, Cooperative Extension took action to: change face-to-face classes to online; connect with and update clientele through social media; create new online classes; partner and coordinate with nongovernmental emergency response organizations; and provide information to media outlets—actions that were largely due to staff capacity and readiness (Narine & Meier, 2020).

In addition to the technological and logistical challenges of this shift, extension professionals had to consider varying levels of technological comfort and skill of their audiences. Virginia Cooperative Extension supported the beef cattle industry by moving

an in-person cattle auction to a combination of online and teleauction formats and offered local Extension offices as remote bidding locations for buyers who did not have comfort with the technology or who lacked adequate internet access (Esterhuizen, 2020).

In China, to cope with the coronavirus outbreak, local extension service centers developed a digitalized agricultural extension service (K. Chen, personal communication, April 2, 2020). A big data service platform was established to mitigate adverse impacts of the coronavirus on extension services during the spring planting season. The platform linked to the National Cloud Platform for Grass-Root Agricultural Technology Extension (NAECP). NAECP targeted field-level agricultural extension workers whose smartphones allowed for ubiquitous connection to NAECP. Extension provided information in various formats such as text, voice, video, and online documents. The platform offered three major categories of applications. The first focused on information exchange, knowledge sharing, self-learning, and self-improvement. The second supported management and performance appraisal of extension staff based on localization technologies. The third followed information collection, such as crop coverage, crop pests and animal diseases, and market supply and demand of agriculture products and materials. All these services were deployed online, via a cloud environment.

In Malawi, the biggest organizational change for extension was the switch to online meetings (C. Chowa, personal communication, September 14, 2020). The Strengthening Agricultural and Nutrition Extension in Malawi (SANE) Activity worked with District Agriculture Coordinating Committees in 13 districts to promote the use of Zoom or other online meeting platforms. Use of these new tools required training sessions on Zoom (e.g., how to get connected, how to mute/unmute your microphone, meeting etiquette, etc.) and the development of standard operating procedures to guide virtual meetings. Virtual meetings helped districts share and discuss strategies about how to adapt and respond to government-imposed restrictions on gatherings. Several challenges occurred with online meetings; in addition to the variability of internet service, SANE had to provide airtime to participants to allow them to join. Virtual meetings worked well at the national and district levels. At the village level, however, online meetings were not possible due to lack of smartphones or other devices.

Other online platforms have also increased in use in Malawi, including WhatsApp for group communication. There was some experimentation with virtual agricultural fairs using Zoom and Facebook Live. Extension also connected farmers directly with buyers to avoid overcrowding in the market. They counselled farmers about upcoming changes in supply and demand due to supply chain disruptions and advised them to focus on food crops rather than export crops and to save some food for home consumption.

In Iran, a public awareness campaign—including extension organizations—via radio, TV, social media, and text messages informed the public about the virus and its prevention. The Agricultural Education and Extension Institute established a national working group on March 10, 2020 to use extension to prevent COVID-19 in agricultural, rural, and nomadic communities. The Institute produced posters, apps, 27 electronic pamphlets, videos, and text messages for training and information on the outbreak. Extension agents used social distancing and changed from face-to-face contact to using

mass media and electronic devices.

These examples of extension organizations innovating during crises, especially the COVID-19 cases, provide us with insight on the different ways that extension organizations dealt with the crises. We now examine the examples through the lens of the theoretical framework to understand how the organizations innovated in response to crisis.

Conclusions, Implications, & Suggestions for Future Directions

Referring to the Goes framework (2000), the examples above showed that changes resulting from COVID-19 in extension organizations are happening at industry level—that is, in multiple organizations. The type of change was second-order, involving radical change. The change was also voluntaristic rather than deterministic or prescribed. Thus, much of the change in extension organizations globally can be seen as revolution or creative destruction, second-order change that is voluntaristic and collective at industry level (Goes et al., 2000). The cases showed that extension organizations have proved adaptable to change, and in response to crises, have modified their technology, structure, participants, and services—successfully demonstrating adaptive management for development. Through this, extension's goals focused on a service orientation paradigm, which allowed them to innovate to serve.

Many changes started with *technology*: the tools used to support extension outreach. Many organizations switched to online or other distance means of outreach. Most used multiple means (e.g., pamphlets, radio, television) to share messages. Technology allowed organizations to continue their work: holding an auction online or meeting with clientele over WhatsApp. However, capacities and infrastructure are necessary to benefit from technology. Budgets may need realignment when dealing with crises (e.g. using funds for airtime instead of transport).

The increased dependence on technology raises questions about the equity of extension services. There is substantial evidence that digital tools can increase farmers' access to extension services in a cost-effective way (Tata & McNamara, 2018). However, digital tools are only one part of an effective extension service (Saravanan et al., 2015) and may risk widening the gap between rich and poor or male and female.

Changing technologies also mean upskilling the knowledge of the organizational *participants* – the extension professionals who are critical to providing services and meeting the goals of extension organizations. Many staff needed education on the crisis in addition to the new tools and technologies. During crises, extension staff required a special set of skills beyond technical ones; they had to problem solve, adapt, and employ critical thinking.

The *structure* or relationships also changed in response to COVID-19. Many of the crises saw extension organizations partnering with health and local government authorities. Utah Extension reached out to local leaders about Cooperative Extension's potential support during COVID-19. The Malawian extension shifted to meeting online. This may save on costs and time; however, the social implications of noncontact meetings are yet to be examined. Extension organizational structure needs to be adaptable. When normal communication mechanisms are not possible or people are falling ill, the organization must still operate.

Content, or the *services*, of extension also changed. As seen in disaster response (Telg et al., 2008), Extension educators were required to deliver services that were outside

their normal duties or expertise. Many organizations provided information about the health crisis and its prevention. Others provided specialized information on electronic marketing. Some showed farmers and extension providers how to make personal protective equipment.

Crises forcing change and innovation may now be the "new normal." To effectively cope with change, we suggest that extension organizations (a) embrace technology for the many benefits in terms of reach and cost-savings, but do so cautiously to prevent exclusion; (b) provide extension staff with the necessary job skills, also ensuring they have critical thinking skills and empowerment to act; and (c) ensure an organizational structure that is flexible and collaborative, able to form strong partnerships.

References

Bartunek, J. M., & Moch, M. K. (1987). First-order, second-order, and third-order change and organization development interventions: A cognitive approach. *The Journal of Applied Behavioral Science*, *23*(4), 483-500.

Bello-Bravo, J., Lutomia, A. N., Songu, T., & Pittendrigh, B. R. (2017). Viral education via mobile phone: Virtual international networks and Ebola prevention in Sierra Leone. In *health information systems and the advancement of medical practice in developing countries* (pp. 78-92). IGI Global.

Bloir, K., & Scheer, S. D. (2017). Exploring employee readiness for change in a state extension system. *Journal of Extension, 55*(6), Article 6FEA3. Retrieved from https://www.joe.org/joe/2017december/pdf/JOE_v55_6a3.pdf

Boteler, F. E. (2007). Building disaster-resilient families, communities, and businesses. *Journal of Extension, 45*(6), Article 6FEA1. Retrieved from https://www.joe.org/joe/2007december/a1.php

Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal*, *9*(2), 27-40.

Clark, N. (2002). Innovation systems, institutional change and the new knowledge market: implications for third world agricultural development. *Economics of Innovation and New Technology*, *11*(4-5), 353-368.

Committee on World Food Security High Level Panel of Experts. (2020). *Interim issues paper on the impact of COVID-19 on food security and nutrition.* HLPE Secretariat.

Esterhuizen. M. (2020, May 28). *Virginia Cooperative Extension goes digital, explores new pathways for content delivery.* Blacksburg, VA, USA.

FAO. (2016, May). *Farming communities survive Ebola virus disease: Training session of Agricultural Extension Officers across the country*. Rome, Italy.

FAO. (2020, April 9). *FAO continues to fight Desert Locust upsurge in East Africa and Yemen despite COVID-19 constraints*. Rome, Italy.

Franz, N. K., & Cox, R. A. (2012). Extension's future: Time for disruptive innovation. *Journal of Extension*, *50*(2), Article 2COM1. Retrieved from https://www.joe.org/joe/2012april/comm1.php

Gillespie, A. M., Obregon, R., El Asawi, R., Richey, C., Manoncourt, E., Joshi, K., ... & Quereshi, S. (2016). Social

mobilization and community engagement central to the Ebola response in West Africa: Lessons for future public health emergencies. *Global Health: Science and Practice, 4*(4), 626-646. Retrieved from https://doi.org/10.9745/GHSP-D-16-00226

Goes, J. B., Friedman, L., Seifert, N., & Buffa, J. (2000). A turbulent field: Theory, research, and practice on organizational change in health care. *Advances in health care management*, *1*, 131-168.

Grove, B., Archibald, T., & Davis, K. (2020). *Extension and advisory services: Supporting communities before, during and after crises*. Virginia Tech College of Agriculture and Life Sciences Global Agricultural Productivity Report.

Harries, S. (2012). Innovation and change: Ideas, networks and communities. In *Records Management and Knowledge Mobilisation* (pp. 115-141). Chandos Publication.

Headey, D., Heidkamp, R., Osendarp, S., Ruel, M., Scott, N., Black, R., ... & Walker, N. (2020). Impacts of COVID-19 on childhood malnutrition and nutrition-related mortality. *The Lancet*, *396*(10250), 519-521.

Herr, K., & Anderson, G. (2015). *The action research dissertation: A guide for students and faculty* (2nd ed.). Sage.

Huber, C., Finelli, L., & Stevens, W. (2018). The economic and social burden of the 2014 Ebola outbreak in West Africa. *The Journal of Infectious Diseases*, *218*(Supplement_5), S698-S704.

Jones, G. R. (2013). *Organizational theory, design, and change*. Pearson Education Limited.

Krippendorff, K. (2004). *Content analysis: An introduction to its methodology* (2nd ed.). Sage.

McNamara, P. E., & Moore, A. (2017). *Building agricultural extension capacity in post-conflict settings*. CABI.

Merriam, S. B., & Tisdell, E. J. (2016). *Qualitative research: A guide to design and implementation*. Jossey-Bass.

Narine, L., & Meier, C. (2020). Responding in a time of crisis: Assessing extension efforts during COVID-19. *Advancements in Agricultural Development*, *1*(2), 12-23.

O'Donnell, M. (2016). *Adaptive management: What it means for CSOs. Bond.* Retrieved from https://www.bond.org.uk/resources/adaptive-management-what-it-means-for-csos

Pett, J. (2020). *Navigating adaptive approaches for development programmes: A guide for the uncertain.* Overseas Development Institute, Working paper 589. Retrieved from https://www.odi.org/publications/17367-navigating-adaptive-approaches-development-programmes-guide-uncertain.

Saravanan, R., Rasheed Sulaiman, V., Davis, K., & Suchiradipta, B. (2015). *Navigating ICTs for extension and advisory services.* Global Forum for Rural Advisory Services.

Schumpteter. J. (1950). *Capitalism, socialism, and democracy*. Harper & Row.

Scott, W. R. (2003). *Organizations: Rational, natural and open systems*. Pearson Education, Inc.

Smith, K. L., & Torppa, C. B. (2010). Creating the capacity for organizational change: Personnel

participation and receptivity to change. *Journal of Extension*, *48*(4), Article 4FEA1. Retrieved from https://www.joe.org/joe/2010august/pdf/JOE_v48_4a1.pdf

Strong, E., Rowntree, J., Thurlow, K., & Raven, M. R. (2015). The case for a paradigm shift in Extension from information-centric to community-centric programming. *Journal of Extension*, *53*(4), Article 4IAW1. Retrieved from https://www.joe.org/joe/2015august/pdf/JOE_v53_4iw1.pdf

Swanson, C. E., Bentz, R. P., & Sofranko, A. J. (1997). *Improving agricultural extension. A reference manual.* FAO.

Tambo, J. A., Aliamo, C., Davis, T., Mugambi, I., Romney, D., Onyango, D. O., ... & Byantwale, S. T. (2019). The impact of ICT-enabled extension campaign on farmers' knowledge and management of fall armyworm in Uganda. *PloS one*, *14*(8). https://doi.org/10.1371/journal.pone.0220844

Tata, J. S., & McNamara, P. E. (2018). Impact of ICT on agricultural extension services delivery: Evidence from the Catholic Relief Services SMART skills and Farmbook project in Kenya. *The Journal of Agricultural Education and Extension*, *24*(1), 89-110.

Telg, R., Irani, T., Place, N., DeGroat, A. R., Ladewig, H., Kistler, M., & Barnett, R. (2008). Disaster preparedness and professional and personal challenges of county Extension faculty during the 2004 Florida hurricane season. *Journal of Extension*, *46*(3), Article 3FEA6. Retrieved from https://www.joe.org/joe/2008june/a6.php

Turner, A. S. (2015). *Identifying the building blocks of disruptive innovation in Cornell Cooperative Extension: A grounded theory.* [Unpublished doctoral dissertation]. St. John Fisher College.

World Bank. (2015, May 12). *Vietnam Avian and Human Influenza control and preparedness.* Washington, DC, USA.