The *Journal of International Agricultural and Extension Education (JIAEE)* is the official refereed publication of the Association for International Agricultural and Extension Education (AIAEE). The purpose of the *JIAEE* is to enhance the research and knowledge base of agricultural and extension education from an international perspective. Acceptance rates for the past five volumes are: Volume 20 = 21%. Volume 21 = 13%. Volume 22 = 18%. Volume 23 = 12%. Volume 24 = 27%.

Articles intended for publication should focus on international agricultural education and/or international extension education. Articles should relate to current or emerging issues, cite appropriate literature, and develop implications for international agricultural and extension education. **Manuscripts, or portions of manuscripts, must not have been published or be under consideration for publication by another journal.**

For publication in the *JIAEE*, manuscripts must pass the *JIAEE’s double blind, referee process*, where peer reviewers evaluate manuscript content and ensure readability. Reviewers are selected from the AIAEE membership. In the double blind, referee process, all references to authors are removed before the manuscript is sent to reviewers. Articles may be submitted for peer review a total of **three times** before they are no longer acceptable for publication in the *JIAEE*. Failure to meet the submission formatting guidelines will result in an automatic first rejection.

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A Research Note is a concise but complete description of a limited investigation that will not be included in a later manuscript. It serves one of the following purposes: (1) presents initial proof-of-concept results on new ideas or program evaluations, timely issues, or innovative approaches; (2) reports replications or extensions of previously published research that does not merit another full-length manuscript yet provides results that contribute to a greater understanding of the phenomena under study. Research Notes are **no longer than 10 double-spaced pages, excluding references.**
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From the Executive Editor

The importance of education around the world cannot be overstated. Education comes in a variety of forms – structured classroom based to “hands-on” experiential education to place-based community education to unstructured learning that begins as soon as we take our first breath. The process of education permeates any context and plays a significant role in concert with other processes such as communication and leadership.

There is an inherent value to education; one that can be felt by learners and is celebrated within communities. The benefits of education are substantial. Historically, education has served as a catalyst to move society forward; education has been credited with encouraging higher rates of societal production, quicker adoption of technological change, development of government and business leaders and empowering women and minorities. From the opposite perspective, the absence of education (or access to it) has been cited as a primary reason for a lack of progress in developing countries. Education, it seems, can be found at the crossroads of good and evil.

Within this issue of JIAEE, you will see the process of education presented in a variety of contexts. From a more domestic perspective, dig into the philosophical perspectives, significant events and forces that have been responsible for forging the United States’ approach to international agricultural development, or read about evaluating agricultural extension and advisory services through a governance lens to see the effect these extension services had on local farmers.

Taking a more international route, we find the topics varied and diverse. Learn about the benefits of Barrier Analysis within the communities of Guatemala; look into how faculty in the Haitian Agricultural Education and Training (AET) system build social capital among themselves; delve into the capacities needed for rural advisory service (RAS) networks to advocate effectively; or perhaps take a trip into the lives of BS Agriculture (BSA) students at the University of the Philippines and learn what explains their persistence of seeking education. Taking diversity even further, you will find articles addressing extension agents’ use of social media in Bangladesh, the utilization of the Livelihood Vulnerability Index in Jamaica, a narrative assessment of extension and advisory services in South Africa and a hermeneutical phenomenological study of the lived...
experiences of change agents in Haiti. Each of these articles continues to illustrate the importance of creating a space for effective education, no matter the context.

Within the JIAEE we have the luxury of looking at education and learning within a variety of cultures and from a variety of contexts. But one thing remains the same - the irrepressible need for effective education the world over. As educational reformer and philosopher John Dewey once said:

*Education is not preparation for life; education is life itself.*

From one lifelong learner to another, I hope that you thoroughly enjoy the collection of manuscripts we have within this issue of the JIAEE. I hope they stretch how you think about learning and education a little bit, as much as I hope you glean a nugget of two of knowledge to implement in your everyday life. Whatever your application, use it well.

Warm Regards,

*Kristina D. Hains*

Kristina D. Hains
Executive Editor, *JIAEE*

Tools of the Profession

Barrier Analysis as a Tool to Inform Extension Activity Planning: Insights from Guatemala

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Abstract

Over the past decade, renewed emphasis has been placed on extension services in developing countries to reduce rural poverty and improve food security. Despite this emphasis, complex physical, political, and socioeconomic environments in developing countries pose significant difficulties to extension agents’ success rates of adoption of new practices and/or behavior change among rural populations. In addition, agents have meager resources at their disposal. Development programs in the health sector have had success with employing behavior change theories for program design, driven by the Barrier Analysis as a method for gathering data about target populations. Theory and research suggest this method provides key information about why a target population might adopt new practices. If extension agents in developing countries such as Guatemala had access to such information, they might intentionally design interventions that lead to adoption. This paper provides an examination of examples from the field in Guatemala that illuminate ways in which extension agents can gain formative data that when analyzed, may shape how they encourage adoption of new practices. The implications of this paper suggest that using formative data gathering for planning interventions can lead to the behavior change extension agents and their governments seek.

Keywords: program planning, formative research, Barrier Analysis, behavior change, extension, international development, Guatemala

Introduction

Research on the factors influencing adoption of new agricultural practices or behavior change in developing countries typically takes place after intervention and adoption have occurred. However, extension agents would be better served by identifying factors that influence adoption prior to interventions being implemented. Barrier Analysis (BA) (Kittle, 2017), as a tool for gathering data about target populations, used in conjunction with the Design for Behavior Change Framework (DBCF) for program design, holds promising possibilities to inform extension activity planning. Development programs in the health sector have had significant success with this tool and research suggests adapting it for use in the agriculture sector (Davis, 2012). Further,
implementation examples from Guatemalan projects reveal positive results. The use of BA as a tool for planning agriculture projects in developing countries has great potential.

Determinants of Adoption in Developing Countries

Various studies identified determinants (also known as barriers and enablers) of the adoption of new practices in agriculture within the context of developing countries such as Haiti, Uganda, Thailand, Indonesia, Zimbabwe and India (Albert, Roberts, & Harder, 2017; Moyo & Salawu, 2017). These studies support utilization of strategic planning through the identification of determinants for impactful interventions and program investments; however, in each example, the factors affecting adoption were identified after interventions had been implemented and adoption occurred. It would be more valuable to identify factors before program implementation. Formative research can be used during the intervention-planning phase to understand the attributes of a target audience that may determine their potential behavior with an intervention. The information gained would aid in the strategic development of culturally acceptable and effective activities to change behavior.

Design for Behavior Change Framework and the Barrier Analysis

Adapted from the Academy of Educational Development’s BEHAVE tool and refined by professionals in international development, the DBCF combines four complementary psychological theories involved in the behavior change process to inform program design processes (Food Security and Nutrition Network Social and Behavioral Change Task Force, 2016): Health Belief Model (Hochbaum, 1958); Ajzen’s (1991) Theory of Planned Behavior; Bandura’s (1986) Social Cognitive Theory; and, Prochaska, DiClemente, and Norcross’ (1992) Stages of Change Model. The DBCF guides the organization of existing information and gathering new information needed to design more effective behavior change strategies. Implementers conduct a BA to measure the strength of association between the determinants of behavior and the behavior to be adopted. The determinants found to be significant from the BA can then be used to design activities for the priority group to reach a change in behavior.

Examples from Guatemala

Non-Government Organizations (NGOs) have utilized the BA since 2013 and some of those projects are now reporting higher behavior change results. One evaluation conducted by the CORE Group’s Social and Behavior Change working group (2010) compared projects that successfully boosted behavior change for different practices (e.g., exclusive breastfeeding) with those that did not. The results of this evaluation concluded that projects with the highest levels of behavior change had relied on formative research tools such as the BA in developing interventions (CORE, 2010). In 2012, a Catholic Relief Services soil conservation project was administered differently in two departments in Guatemala, one that used BA and one that did not. The use of BA saw significant adoption of the desired practices compared to the sites that did not use BA (Davis, 2012). More recently, Mercy Corps Guatemala approached the study of determinants for adoption of agricultural practices that would reduce risk of mycotoxin contamination in corn with the BA Survey. They found that they could target low-cost practices to gain higher adoption of improved practices (Jackson, Ramirez, Janssen, & Lorenzana, 2015). Drawing on the success of these studies, in 2015 Peace Corps Guatemala and the Guatemalan Ministry of Agriculture designed the “Rural Extension
Project,” a partnership that includes the DBCF with an adapted version of BA that accommodates the diverse contexts of local extension agents.

Implications
The “Rural Extension Project” has implications beyond Guatemala. Using formative data gathering for planning interventions can address the various difficulties agricultural extension agents face and lead to desired behavior changes. Research indicates there are opportunities to increase success of extension services by focusing on formative research, similar to BA, to inform planning. The theory, methods, and research presented here suggest the BA may be a significant tool in initial formative research for planning effective projects and interventions by extension agents. Equipping extension agents with the BA as a means to predict the intent to adopt specific agricultural innovations will ground practice in data. Research shows this would lead to higher rates of behavior change, and thus, greater potential for food security.

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Abstract
The philosophical perspectives, including significant actors, events, and forces, that influenced and presaged the United States’ approach to international agricultural development are somewhat unclear. The purpose of this historical narrative, therefore, was to understand the key drivers responsible for forging the U.S. framework for technical agricultural assistance abroad, especially in its formative years. The study’s findings were reported by answering two questions. The first question explored historical events, including federal legislative acts and statutes, which precipitated the U.S. approach to international agricultural development. The second research question addressed the philosophical primers imbued in the U.S. approach to international agricultural development, including significant actors responsible for championing it. We assert the environmental pragmatism of Liberty Hyde Bailey and its other proponents was the philosophical foundation and worldview that informed many of the pioneers who guided the U.S. approach to offering agricultural assistance as part of the nation's international development efforts. As such, we recommend the inclusion of certain aspects of environmentalism in agricultural and extension educator preparation with implications for international and domestic development, including long-term sustainability initiatives.

Keywords: environmentalism; Extension; international agricultural development (IAD); sustainable agriculture; United States Agency for International Development (USAID)
Introduction

Foreign assistance is viewed as a fundamental instrument of U.S. foreign policy and supports many objectives (Tarnoff & Lawson, 2016). Three key rationales supporting the U.S. approach to foreign assistance have been proffered: national security, commercial, and humanitarian (Tarnoff & Lawson, 2016). National security has been the foremost concern of U.S. assistance programs. For example, following World War II, U.S. aid programs primarily addressed the incursion of communist influence around the globe. Next, commercial interests have long been viewed as a mechanism for promoting U.S. exports. Foreign assistance always has been a way to create new customers for U.S. products and to improve the global competitive environment for U.S. companies. Third, humanitarian concerns have driven both short- and long-term U.S. assistance programs in response to disasters and crises as well as long-term development assistance programs aimed at eradicating and reducing food insecurity and poverty, to name a few of its objectives (Tarnoff & Lawson, 2016).

To these aims, U.S. technical assistance abroad has received generally widespread support from the American public and policymakers alike. However, little is known about the origins of U.S. technical assistance as a form of advisory services in international agricultural development (IAD), including its historically significant actors, events, and forces. It was the intention of the authors, therefore, to understand more fully the basis for and evolution of the U.S. government’s approach to providing technical assistance abroad to support IAD. To understand the role of U.S. technical assistance in IAD, it was necessary to examine the historical evidence regarding its origins. This study aimed to present a historical perspective on the significant factors influencing the U.S. approach to IAD and, thereby, provide additional clarity for its practitioners and their counterparts in many of the least developed countries (LDCs) impacted by such.

LDCs are defined as “low-income countries confronting severe structural impediments to sustainable development” (United Nations [UN], 2017, para. 1). They are extremely vulnerable to economic and environmental shock and characterized as having inadequate levels of human capital (UN, 2017). According to the UN, LDCs receive exclusive access to “certain international support measures” (UN, 2017, para. 3) in particular areas, such as international trade and development assistance. Over time, this included various forms of assistance from the United States.

Purpose and Research Questions

This study’s purpose was to examine the historical events, forces, and actors that influenced and thereafter guided the U.S. government’s approach to offering agricultural technical assistance to other nations, including LDCs. Two research questions guided this inquiry:

1. What significant historical events, including interagency federal legislative acts and statutes, codified the U.S. government’s approach to offering technical agricultural assistance in its international development efforts?

2. What philosophical forces, including historically significant actors, influenced the U.S. government’s approach to offering technical agricultural assistance in its international development efforts?
Methods and Procedures

In 2002, McDowell published a comprehensive guide for conducting historical investigations. He suggested that examining the past could illuminate the similarities between conditions governing both past and present with implications for the future. Therefore, historical research methods were used to answer this study’s research questions. According to Camp and Crunkilton (1985), “[t]wo things emerge as the central foci in all such historical works: people who have made a difference and events that signal major accomplishments or turning points in the profession’s development” (p. 57). “[Having a] better understanding of the past places us in a more advantageous position to appreciate change in the present and to try and learn from past mistakes” (McDowell, 2002, p. 5).

McDowell (2002) added: “Historical research does not consist in the mere collection of ‘facts,’ but rather in the interrelationship between factual evidence and the interpretation of this evidence by historians” (p. 4). His recommendations were followed in conducting this study.

Historical data were derived from primary and secondary sources, including U.S. legislative acts, reports, and statutes; peer-refereed journal articles; and books. In addition, official U.S. government websites were examined for relevant content. The information was accessed and collected using online search engines provided by the main library at Oklahoma State University. Key search terms included agricultural development, environmentalism, international agricultural and extension education, sustainability, sustainable agriculture, United States Department of Agriculture (USDA), and United States Agency for International Development (USAID). The study’s sources of data were subjected to internal and external criticism by the authors to ensure their accuracy and authenticity (Johnson & Christensen, 2010; McDowell, 2002). In all, evidentiary documents were sources as identified in the manuscript’s references section. Triangulating multiple sources supported the study’s credibility and validity, as recommended by Tracy (2010).

Findings

Research Question #1: What significant historical events, including interagency federal legislative acts and statutes, codified the U.S. government’s approach to offering technical agricultural assistance in its international development efforts?

The provision of technical assistance, including programs involving agriculture, is not a concept first dawned by the U.S. government (American Council of Voluntary Agencies for Foreign Service [ACVAFS], 1953). For example, according to the Near East Foundation [NEF], “the practice NEF established of working in tandem with foreign governments and local organizations . . . provided a model for many of today’s most well-known development organizations – including USAID and the Peace Corps” (“History,” 2016, para. 7).

The U.S. Congress authorized the Foreign Agricultural Service (FAS) Act (46 Stat. 497) in 1930. This act assigned the FAS to lead USDA’s efforts in improving the agricultural systems of LDCs, including their international trade capacity, a precursor to its present-day objectives of partnering with USAID to deliver high-impact food aid programs and support for agricultural development initiatives (FAS, 2015). The FAS mission reads “linking U.S. agriculture to the world to enhance export opportunities and global food security”; its motto is simply “linking U.S. Agriculture to the World” (FAS, 2015, para. 6).
Franklin Delano Roosevelt (FDR) inherited immense challenges during his presidency beginning in 1933, especially the Great Depression – a singularly dark period in American history (McCalla, 1969). By the 1930s, persistent drought was evident throughout the Great Plains region, which manifested crop failures, soil erosion, and large dust storms (Schubert, Suarez, Pegion, Koster, & Bacmeister, 2004). According to Lal, Reicosky, and Hanson (2007), the U.S. agricultural revolution, especially escalating use of the plow, which occurred over many generations, invariably transformed the American landscape. They noted the “[u]se of the plow expanded rapidly with the introduction of the ‘steam horse’ [, i.e., tractor,] in 1910 that led to widespread severe soil erosion and environmental degradation culminating in the Dust Bowl of the 1930s” (p. 1). Beginning in the late 1800s, however, strong agrarian movements in rural America, e.g., emergence of the Grange and Farmers’ movement, sought advanced methods of agriculture that would effectively reduce the negative environmental, social, and economic impacts of prolonged intensive tillage, such as water, wind, and soil erosion. Later, “Hugh Hammond Bennett led the soil conservation movement in the U.S. in the 1920s and 1930s, and urged the nation to address the ‘national menace of soil erosion’” (Lal et al., 2007, p. 5). Bennett’s zeal for conservation stemmed from his experience “studying soils and agriculture nationally and internationally” (Lal et al., 2007, p. 5).

The Roosevelt Administration famously instituted its New Deal, i.e., the National Industrial Recovery Act, focused on relief, recovery, and reform in 1933 (Fraser & Gerstle, 1989), which included programs to assist U.S. farmers. Gilbert (2015) noted the New Deal exemplified four principles of agricultural democracy: “1) decentralized administration through local farmer committees; 2) referenda to determine administrative policies such as quotas and penalties; 3) group discussion and adult education to promote ‘intelligent participation’; and, 4) cooperative planning in policy formulation and localization of programs” (p. 15). As part of the New Deal, the Emergency Conservation Work Program (P. L. 73-5), popularized as the Civilian Conservation Corps (CCC), was a public works relief program for youth and the unemployed during the Great Depression (Maher, 2007).

The framework for the CCC was largely influenced by the emergence of service-learning as a method of instruction and success of another service-learning program, i.e., the National Youth Administration [NYA] (Roberts & Edwards, 2015). Similar to the NYA, the CCC provided employment opportunities to youth and unskilled workers. It paid these individuals to engage in civic activities directly related to conservation and management of natural resources on federal and state lands (Williams, 2005). CCC activities related to agricultural conservation were also widespread; for example, Corps members built terraces for farmers and dug farm ponds (Urban & Wagoner, 2014).

The National Industrial Recovery Act of 1933 (P. L. 73-67) codified conservation of soil and water as a national priority, including funding to fight soil erosion as the result of a combination of drought and poor agricultural practices (NRCS, 2016). Excessive use of the moldboard plow on the nation’s prairies had marginalized ecological stability and soil health in favor of mechanized production agriculture to meet both domestic and international demand for food and fiber products (Lal et al., 2007). Moreover, a wind-break program, the Shelterbelt Project of 1934, was also implemented by FDR’s
administration in response to the widespread wind and soil erosion, which required extensive interagency cooperation between the USDA’s Soil Conservation Service, state, county, and other local agencies, and farmers (Williams, 2005). The shelterbelt project integrated environmentalism and conservation concepts frequently used in forestry with novel farming practices and traditional approaches that reduced water, soil, and wind erosion, such as planting windrows (Lal et al., 2007). During this period, the Soil Conservation Act of 1935 (P. L. 74-46) established the Soil Conservation Service, renamed the Natural Resources Conservation Service (NRCS) in 1994, as a permanent agency within the USDA (Lal et al., 2007). As a consequence, USDA managers explored ways to extend conservation assistance to farmers for the first time (“A Brief History,” 2018; Lal et al., 2007).

In 1938, Dr. M. L. Wilson, director of federal Extension in the USDA, visited the Macedonian Project in Greece (Allen, 1953). He observed the NEF had successfully adapted the methods of U.S. county agents and other extension personnel to a culture very different from that of the United States (Curti, 1988). However, his tenure abroad did not begin there. In the late 1920s and early 1930s, the Soviets hired select U.S. agriculturists to help establish improved farming systems in the Soviet Union (Stock & Johnston, 2001). Among those selected, Wilson traveled to the Soviet Union with highly detailed plans for establishing integrated farming systems (Stock & Johnston, 2001). Dr. Wilson belonged to an elite group of agrarian intellectuals, including five economists and a sociologist, “who led the USDA during the New Deal” (Gilbert, 2015, p. 13):

Henry A. Wallace, secretary of agriculture; M. L. Wilson, undersecretary of agriculture and director of federal Extension; Howard R. Tolley, chief of the BAE [Bureau of Agricultural Economics]; Lewis C. Gracy, premier land planner, Bushrod W. Allin, top planning official; and Carl C. Taylor, leading rural sociologist. (Gilbert, 2015, p. 13)

“Half organic intellectual and half low modernist as the agrarian intellectuals were, the tradition they created was short-lived” (Stock & Johnston, 2001, p. 238). Many agriculturally focused New Dealers, however, pursued international careers following the end of WWII (Gilbert, 2015). For example, Tolley served as chief economist to the United Nations Food and Agriculture Organization (Gilbert, 2015), and others demonstrated an IAD focus earlier in their careers. According to Gilbert (2015), “Henry Wallace always stood as an internationalist” (p. 259). He added: “As vice president during most of America’s participation in World War II, he took it as his mission to internationalize the New Deal, . . . [while Dr. Wilson] pushed the globalization of the 4-H youth program” (Gilbert, 2015, p. 259). Wallace began his intellectual life as a “Jeffersonian and participant in the Country Life Movement. . . . His point of view, and that of his father and grandfather, Henry C. and ‘Uncle Henry’ Wallace, had been expressed, he recalled, by Liberty Hyde Bailey” (Kirkendall, 1997, para. 3). These agrarian New Dealers “ended their long careers abroad, working on land reform, rural development, and community development projects in places far removed from their native Midwest” (Gilbert, 2015, p. xv), including, in some cases, countries with government’s more receptive to their pragmatic approaches to participatory rural development.
As U.S. president, FDR had a reputation for reorganizing governmental operations with the intention of increasing their efficiency (Olson, 2001). The Reorganization Plan No. 2 of 1939 (53 Stat. 1431) instigated the regrouping of federal agencies to reduce costs and eliminate duplicitive programs (Roosevelt, 1939, para. 4). One result was the brief disbanding of the FAS and renaming it The Office of Foreign Agricultural Relations [OFAR] (ACVAFS, 1953). OFAR “[provided] technical knowledge and personnel, on a governmental level” (ACVAFS, 1953, p. 21). During this period, U.S. IAD policies were heavily reliant on national economic goals (McCalla, 1969), i.e., “imports of strategic raw materials,” and less, as some critics have argued, on offering technical assistance to developing nations (Paterson, 1972, p. 126). Gifford Pinchot, first chief of the U.S. Forest Service and an early champion of international conservation efforts, held correspondence with the president (Miller, 2013). In his September 8, 1944 letter, Pinchot urged FDR to convene a global summit on conservation with the United Nations (Paterson, 1972, p. 126). Gifford Pinchot, first chief of the U.S. Forest Service and an early champion of international conservation efforts, held correspondence with the president (Miller, 2013). In his September 8, 1944 letter, Pinchot urged FDR to convene a global summit on conservation with the United Nations (Paterson, 1972, p. 126). Gifford Pinchot, first chief of the U.S. Forest Service and an early champion of international conservation efforts, held correspondence with the president (Miller, 2013). In his September 8, 1944 letter, Pinchot urged FDR to convene a global summit on conservation with the United Nations (Paterson, 1972, p. 126). Gifford Pinchot, first chief of the U.S. Forest Service and an early champion of international conservation efforts, held correspondence with the president (Miller, 2013). In his September 8, 1944 letter, Pinchot urged FDR to convene a global summit on conservation with the United Nations (Paterson, 1972, p. 126). Gifford Pinchot, first chief of the U.S. Forest Service and an early champion of international conservation efforts, held correspondence with the president (Miller, 2013). In his September 8, 1944 letter, Pinchot urged FDR to convene a global summit on conservation with the United Nations (Paterson, 1972, p. 126). Gifford Pinchot, first chief of the U.S. Forest Service and an early champion of international conservation efforts, held correspondence with the president (Miller, 2013). In his September 8, 1944 letter, Pinchot urged FDR to convene a global summit on conservation with the United Nations (Paterson, 1972, p. 126). Gifford Pinchot, first chief of the U.S. Forest Service and an early champion of international conservation efforts, held correspondence with the president (Miller, 2013). In his September 8, 1944 letter, Pinchot urged FDR to convene a global summit on conservation with the United Nations (Paterson, 1972, p. 126). Gifford Pinchot, first chief of the U.S. Forest Service and an early champion of international conservation efforts, held correspondence with the president (Miller, 2013). In his September 8, 1944 letter, Pinchot urged FDR to convene a global summit on conservation with the United Nations (Paterson, 1972, p. 126). Gifford Pinchot, first chief of the U.S. Forest Service and an early champion of international conservation efforts, held correspondence with the president (Miller, 2013). In his September 8, 1944 letter, Pinchot urged FDR to convene a global summit on conservation with the United Nations (Paterson, 1972, p. 126).
As a result, the Point 4 Program was established in May of 1950 as Title IV of the Foreign Economic Assistance Act (Paterson, 1972). Its objective was to approach international development not through aid alone, but rather by facilitating technical assistance and private investment (Paterson, 1972). Some observers, however, took a contrarian viewpoint and saw the program as a “[m]eans for the United States to manage the postcolonial world while keeping less developed countries out of the Soviet [Union’s] fold” (Jundt, 2014, p. 47). Moreover, “[i]n this neocolonial system the United States sold former colonies the American way of modern industrial and consumer life while collecting payment in the form of their natural resources” (Jundt, 2014, p. 47). Nevertheless, the Technical Cooperation Administration (TCA) was established within the U.S. Department of State to implement the Point 4 Program (Erb, 1985).

The Point 4 Program was a series of bilateral agreements and contracts pertaining to “agriculture and rural programs” (ACVAFS, 1953, p. 33) between non-governmental organizations, foreign governments, and the U.S. government (ACVAFS, 1953). Henry G. Bennett, the first TCA administrator, led the Point 4 Program; Bennett also served as president of Oklahoma A&M College, now Oklahoma State University (Clark, Davis, & Simon, 2008), a land-grant institution. Unfortunately, Bennett died in an airplane crash in Iran while on assignment for the Program (Clark et al., 2008). The mission and vision of the Point 4 Program persisted, however, and in 1951 then U.S. Representative John F. Kennedy suggested “[y]oung college graduates would find a full life in bringing technical advice and assistance to the underprivileged and backward Middle East” (Maier, 2009, p. 200), i.e., an allusion to the forthcoming Peace Corps.

During the period after Representative Kennedy’s speech, the Mutual Security Act abolished the ECA and replaced it with the Mutual Security Agency (MSA), which launched major U.S. foreign assistance programs (Morgner, 1967). The agency’s main goal was to empower developing countries while containing the spread of communism by providing technical foreign assistance, including military and economic support (Morgner, 1967). To assess the impact and efficacy of U.S. foreign assistance programs, the ACVAFS published a study made possible by support from the Ford Foundation. The council’s report assessed The Role of Voluntary Agencies in Technical Assistance, which stated: “[T]echical aid proposed by government and intergovernmental groups must of course extend far beyond the limitations of non-tax supported agencies” (ACVAFS, 1953, p. vii).

In one of Dwight D. Eisenhower’s first acts as president in 1953, he renamed the Point 4 Program the Technical Assistance Program, and reorganized the TCA and MSA into the Foreign Operations Administration (FOA) to harmonize their efforts (USAID, 1999). Later, in 1955, the International Cooperation Administration (ICA) replaced the FOA (Morgner, 1967). Even though USDA’s technical agricultural expertise was in high demand in many LDCs at that time (USAID, 1999), two studies were implemented by the Foreign Relations Committee of the U.S. Senate to assess the nation’s international development efforts due to increasing pressure from the legislators’ constituents: Administrative Aspects of the U.S. Foreign Assistance Programs and Agricultural Surplus Disposal and Foreign Aid (USAID, 1999). Findings of the two studies stoked political uncertainties regarding further
adherence to the international development framework manifested by the Marshall Plan (USAID, 1999).

To “expand and unify American aid operations and strengthen the economic development component” (Morgner, 1967, p. 66), major policy reforms occurred in U.S. aid agencies offering technical agricultural expertise to LDCs (Morgner, 1967) during the 1960s. In 1961, President John F. Kennedy launched the United States Peace Corps, and the ICA was renamed the United States Agency for International Development (USAID), as arranged under the Foreign Assistance Act of 1961 (Morgner, 1967). The reorganization occurred because of increased dissatisfaction with the existing foreign aid program, and it combined already existing U.S. assistance efforts abroad (Morgner, 1967). Moreover, in 1959, the economist Walt Whitman Rostow published his economic model Rostow’s Stages of Economic Growth. The model posited that economic growth occurs in five basic stages, including traditional society, preconditions for take-off, take-off, drive to maturity, and age of high mass consumption (Rostow, 1959). This “economic development theory . . . provided the premise for much of the development planning in the . . . U.S. Agency for International Development” (USAID, 1999, para. 16). The approach was not without critics; for example, pushback arose against the position held by USAID and endorsed by the Washington Consensus on Agriculture, i.e., a growing point of view casting international aid as a business (Kydd & Dorward, 2001). Nonetheless, USAID is the modern standard for international and intergovernmental cooperation through its development projects and humanitarian aid, relief, and recovery programs (USAID, 1999), including efforts devoted to agricultural development. However, understanding better the origins and precursors of U.S. technical agricultural development assistance to other nations includes the need to examine the actors and philosophical influences that manifested its emergence, evolution, and status.

**Research Question #2: What philosophical forces, including historically significant actors, influenced the U.S. government’s approach to offering technical agricultural assistance in its international development efforts?**

By examining the individuals responsible for developing the notion of conservation of natural resources in the United States, including the intersection of anthropocentrism, i.e., dominated by humankind, and its antithesis, nonanthropocentrism, their influence on traditional agricultural practices becomes observable (Minteer, 2006), especially differing philosophical positions. In the decades after the USDA’s incorporation into the presidential cabinet in 1889, two preeminent environmental ethicists and longtime allies experienced a philosophical schism (Williams, 2005). Gifford Pinchot, first chief of the U.S. Forest Service and credited with establishing the definition for conservation of natural resources, and John Muir. Muir was founder of the Sierra Club, a naturalist, an eloquent spokesperson for the environmental movement, and author of many articles in national publications on nature (Williams, 2005).

Considered leaders of the United States’ nascent environmental movement, Pinchot and Muir fomented the notion that differences existed in American conservation. Further, they argued the movement could be conceptualized as two distinct camps: conservationists and preservationists (Minteer, 2006). Pinchot and Muir are largely credited with creating
the dialogue on how we as a nation should manage and preserve our natural resources (Minteer, 2006). Their relationships with Presidents, both Muir and Pinchot with Theodore Roosevelt and in regard to FDR and Harry Truman only Pinchot, influenced the passage of significant federal legislation protecting and preserving natural resources in the United States (Minteer, 2006). Such impact included formation of the Soil Conservation Service and other agencies within the USDA (Minteer, 2006). For example, the CCC was modeled after work camps established by Pinchot in Pennsylvania “in an attempt to relieve unemployment” (Pinchot, 1998, p. xv) during the Great Depression.

**Other Historically Significant Actors**

Minteer (2006), however, noted the competing narratives created by conservationist Gifford Pinchot and preservationist John Muir were oversimplifications of the rich and moral tradition of environmental thinking in the United States. In his book, *The Landscape of Reform: Civic Pragmatism and Environmental Thought in America*, Minteer (2006) suggested the existence of a “third way tradition to the intellectual landscape of American environmentalism, a philosophical path that has been almost completely obscured . . .” (p. 2). He perceived this path to environmentalism was advanced by

Liberty Hyde Bailey, a horticultural scientist and rural reformer who was a leading figure in the agrarian wing of Theodore Roosevelt’s conservation movement; Lewis Mumford, an urban theorist, cultural critic, and regional planner-thinker active in the Regional Planning Association of America (RPAA) during the interwar period; Benton MacKaye, a forester and conservationist (and Mumford’s RPAA colleague) who proposed the Appalachian Trail in the 1920s; and, finally, Aldo Leopold, the forester-philosopher and author of the environmentalist classic *A Sand County Almanac*. (Minteer, 2006, p. 2)

The *third-way tradition* offered an integrated and progressive view on land stewardship, traditional U.S. production agriculture, and the intersection between human ideals, interests, and non-material values. Beeman (1994) acknowledged Bailey and Leopold as major contributors to the third-way tradition, better known to Bailey as the Nature Study Movement (Connors, 2012). Jane Addams of Hull House also held similar views on using agriculture as an avenue for achieving social justice. Further, Beeman (1994) identified Edward Faulkner as a catalyst for this movement, and cited him as an antagonist for many scholars and practitioners of the period. His approach, however, was rejected because

. . . doing the opposite of what Faulkner preached was easier, more economical in the short-term, and was supported by the agricultural establishment, including the land-grant college scientists, the experiment stations, the Farm Bureau, the USDA, and especially those vested interests in agribusiness who had little to gain from the wholesale rejection of agricultural chemicals. (Beeman, 1994, p. 99)

Nevertheless, Beeman (1994) concluded Faulkner’s message was well-received by Hugh H. Bennett, the *father of soil conservation* and first head of the U.S. Soil Conservation Service (Nelson, 1997).
Foer and Connors (2010) examined the historical backgrounds and impacts of several early agricultural educators, including Liberty Hyde Bailey. Moreover, as Connors (2012) pointed out, researchers and practitioners should revisit Bailey’s idea of nature study. He recommended Bailey be “remembered along with other noted individuals, as one of the pioneers of agricultural education” (p. 51). Peters (2006) concluded Bailey viewed agriculture as a means for awakening farmers during the formative years of Cooperative Extension. Speaking to Bailey’s vision, Peters (2006) wrote: “[T]he main purpose of awakening farmers to this point of view was not to develop a more efficient, productive, and profitable agriculture, but to advance the larger cultural ideals of a ‘self-sustaining’ agriculture and personal happiness” (p. 190). To this point, we assert recognition of Bailey’s influence should be extended further and credit him with laying much of the philosophical foundation of the modern third-way environmentalism movement, which, in no small part, presaged the early approaches imbued in the U.S. government’s aims regarding IAD for LDCs.

Historically Significant Events

It was Bailey’s Nature Study Movement that garnered the attention of Gifford Pinchot and President Theodore Roosevelt (Ellsworth, 1960). Pinchot and Sir Horace Plunkett, Theodore Roosevelt’s second tutor on agriculture and founder of the Irish Agricultural Organisation Society, “created the memorable, working partnership of the colorful Roosevelt and the talented Bailey” (Ellsworth, 1960, p. 159). Bailey was eventually appointed by Roosevelt as chairman of the Commission on Country Life (Peters & Morgan, 2004) at the behest of Pinchot after Bailey had initially rejected an invitation to chair the group (Ellsworth, 1960). Bailey relented and accepted the appointment after Roosevelt appealed to him with a “mixture of praise and reproach” (Ellsworth, 1960, p. 162). Roosevelt admonished Bailey’s refusal and said that he “would not have created the commission unless he had assumed that Bailey would accept the chairmanship; that Bailey’s refusal would jeopardize the greatest opportunity which had yet presented itself to influence country life conditions . . .” (Ellsworth, 1960, p. 162). Other commission members included Kenyon Butterfield, Walter H. Page, Pinchot, and “Uncle Henry” Wallace (Connors, 2012; Peters & Morgan, 2004), Henry A. Wallace’s grandfather and editor of Wallace’s Farmer (Shoemaker, 2010).

Ellsworth (1960) further noted: “Bailey and Pinchot proved to be Roosevelt’s most influential advisors in agricultural matters” (p. 157). The Report of the Country Life Commission, as authored by Bailey and colleagues, showed the “general condition of farming life in the open country, and point[ed] out its larger problems” (Commission on Country Life, 1911, p. 3), but such was met with ambivalence from some stakeholders (Ellsworth, 1960). However, despite the indifference of some, the commission’s report ultimately provided stimulus for passage of the Smith-Lever Act (Ellsworth, 1960).

The Smith-Lever Act of 1914 was premised on the need to fund a Cooperative Extension Service (CES) with the purpose to diffuse “among the people of the United States useful and practical information, on subjects relating to agriculture and home economics, and to encourage application of the same” (Pope, 1958, p. 270). The CES has long embraced the strategy in which programming matched the needs of its beneficiaries. Other initiatives to improve rural life were realized in 1919 with creation
of the Division of Farm Population and Rural Life, and emergence of the National Country Life Association (Ellsworth, 1960). Moreover, “[r]ural sociology became a separate and thriving academic discipline as a result of the prestige given to it by the Country Life Commission” (Ellsworth, 1960, p. 172).

Bailey’s point of view makes it difficult to cast him in one philosophical tradition over another. Bailey (1893) wrote:

I am not pleading for mere numbers of students; of those we shall have enough. But I am urging those principles which, more than any other movement, must carry the university mission and influence to the homes of the people. I am pleading for the education of the farmer in those special occupations which the major part of our population must always follow, and not alone because it makes him a better farmer, but because, as well, it makes him a better citizen. All prosperity rests ultimately upon the land, and no higher institution of learning can serve the best interests of philanthropy and patriotism until it plants itself firmly in the soil which gave it birth! (p. 12)

Minteer (2006) referred to Bailey as an idealist and a pragmatist – a man who transcended philosophical boundaries and concerned with the nexus of “intellectual, aesthetic, and social character of rural life” (p. 21). Such appears compatible with the third-way tradition as a strand within environmentalism that should not be deemed entirely anthropocentric or nonanthropocentric, preservationist or conservationist, nor aesthetic or utilitarian (Minteer, 2006). These dispositions were manifested by Bailey’s “promotion of nature study for school children and an argument for its significance in creating an environmental ethic among country dwellers, especially farmers” (Minteer, 2006, p. 21).

**Discussion and Conclusions**

The U.S. approach to IAD was modeled after the work of organizations such as the NEF (“History,” 2016). Gifford Pinchot, first head of the U.S. Forest Service and a confidant to several U.S. presidents, led a decades-long crusade to globalize conservation and introduce an international audience to the use of natural resources as guided by sustainable and economically viable practices. The Shelterbelt Project of 1934 was the first evidence of interagency cooperation and the use of multidisciplinary teams to integrate environmentalism and traditional agriculture concepts in the United States (Williams, 2005). Moreover, key political and governmental figures advocated for legislation promulgating IAD by agencies of the U.S. Government (Gilbert, 2015).

Minteer (2006) proposed that a third-way tradition was embodied within American environmentalism. He concluded the third-way tradition was advanced by Liberty Hyde Bailey, Aldo Leopold, Lewis Mumford, and Benton MacKaye, among other proponents. Bailey initially declined a position with the Country Life Commission, and if not for Theodore Roosevelt’s, Pinchot’s, and Plunkett’s efforts to secure his leadership as its chair, the commission’s success was considered uncertain (Ellsworth, 1960). Beeman (1994) also alluded to the existence of a third-way to modern environmentalism, i.e., the precepts for a paradigm of sustainable agriculture practices, which were often diffused as part of U.S. IAD efforts. Based on his work with sustainable agriculture and the traditional American agriculture paradigm, Beeman
(1994) concluded Edward Faulkner, in addition to Bailey, Lewis, Leopold, and MacKaye, was responsible for popularizing the notion of sustainability and conservation, including select preservationist concepts, among the general U.S. populace. Aspects of this philosophy were manifested during the New Deal and led by champions that Gilbert (2015) described as agrarian intellectuals. Although their influence was short-lived domestically, many of these individuals migrated to working in international settings, including early post-World War II projects featuring agriculture and rural development (Gilbert, 2015). Their efforts presaged the U.S. Government-led initiatives that would become USAID (Gilbert, 2015).

In regard to participatory-democratic culture, the American education philosopher and reformer, John Dewey, (1939) stated: “An immense difference divides the planned society from a continuously planning society” (p. 321). In what he called the Great Community, Dewey asserted that “practical experience and experimentation in problem solving could teach communities and societies how to become more democratic” (as cited in Gilbert, 2015, p. 256). The notions of civic pragmatism and environmental ethics introduced significant implications imbuing the philosophical underpinnings of the U.S. approach to providing agricultural technical expertise as foreign assistance (Gilbert, 2015; Minteer, 2006). These worldviews, however, also suggest a philosophical chasm that grew to be deeply embedded in the U.S. approach to environmentalism, including social, political, economic, and cultural manifestations (Reid & Taylor, 2003) with ramifications for agriculture. Yet, we know this to be only a partial account of the larger phenomenon. To that end, agrarian New Dealers “believed that expertise must join with the local knowledge of farmers and that federal authority should decentralize to citizens. They sought both to merge science with citizen knowledge and to integrate government action with local participation” (Gilbert, 2015, p. 21). It is likely Dewey would have supported such an approach to governance, including the stewardship of natural resources. Their philosophy, however, failed to promulgate in rural America to the extent they had hoped it would (Gilbert, 2015). Nevertheless, the agrarian New Dealers did take aspects of their third-way tradition of decentralized, participatory rural development abroad: “[L]ocal social change bore fruit globally before coming home to help shape major social reforms in poor rural and urban neighborhoods throughout the United States” (Gilbert, 2015, p. 260).

In addition, the crucial role of indigenous knowledge in the U.S. approach to domestic and IAD efforts should not be understated. For example, the issue of equality (Rogers, 2003), in both formal and non-formal teaching and learning environments, is important domestically and internationally. In international development, agricultural extension agents have a tendency to engage with farmers more similar to themselves, i.e., the principle of homophily and related communication behaviors (Rogers, 2003). As a consequence, knowledge transfer between agents and farmers is likely to expand the knowledge gap between the different groups comprising a social system, especially those less similar to change agents and early adopters (Rogers, 2003). It is prudent, therefore, that international extension professionals are sensitive to the potential pitfalls associated with widening inequalities stemming from adoption behaviors favoring the already advantaged in a society (Rogers, 2003).

Moreover, in developing countries, these systems are often only linked to
national governments instead of coordinated with and implemented through decentralized agencies, as organized in the United States (Swanson & Claar, 1984). In describing the national agricultural extension systems (NAES) of such nations, Swanson (2006) wrote:

In examining trends to date, it seems clear that public agricultural research and extension systems cannot compete effectively with major multi-national life-science companies that are supplying large-scale commercial farmers with highly productive, proprietary technologies. If national extension leaders continue to pursue this strategy, these national extension systems will likely follow the pattern of agricultural extension systems in Europe, North America and Oceania, either in being progressively downsized or disbanded altogether. (p. 15)

Most NAES in developing countries perpetuate the notion that adoption of sustainable agriculture techniques and modern technology will increase yields (Van den Ban & Hawkins, 1996), i.e., practices diffused commonly in more developed nations such as the United States. As a counterfactual, a move toward participatory, decentralized extension systems has been successful in China and India (Swanson, 2006). In participatory extension, “[t]he focus is less on what we learn, and more on how we learn and with whom” (Röling & Pretty, 1997, para. 27).

In the United States, the social science tradition of participatory-democratic, rural agrarian reform had a brief life span (Gilbert, 2015). This aspect of the New Deal was defeated by old-fashioned power politics, and many of its ideals ended with it, at least, regarding agrarian reforms (Gilbert, 2015). As such, partners in U.S. IAD efforts ought to learn from past mistakes while emphasizing the value of local knowledge and the exchange of information and ideas among extension/advisory service providers, other educators, researchers, and host-country nationals through participatory-democratic collaborations. Navarro (2008) called such efforts the co-creation of knowledge by and for agricultural extension agents, researchers, and farmers such that we move “toward a vision of agricultural extension as an interactive and integrative model of shared knowledge and joint discovery” (p. 75). Such practice could address the admonitions of Rogers (2003) and others regarding pro-innovation bias and issues of equality that so often accompany the introduction of new technologies and practices, including those having significance for the agricultural sector.

Implications and Recommendations

A number of countries have developed deeply rooted and philosophically moored environmental traditions and, in many cases, adopted principles espoused by the U.S. Government and other nations’ development agencies (Minteer, 2006). This study shone some light on the philosophical foundations of agricultural and extension education in regard to IAD, with a view toward influencing contemporary policies intertwining with environmentalism and traditional agricultural production practices in the United States and abroad (Brosnan, 2007). We recommend strengthening cross-cultural understanding and communication between academic traditions and with global partners by contextualizing environmental and agricultural ethics within their historical, intellectual, and geographical settings while “deemphasiz[ing] the most radical aspects” (Chamberlain, 2010, p. 90) of
Environmentalism ideology. Instead, we urge development specialists to embrace the earlier version, i.e., Bailey’s Nature Study Movement (Connors, 2012), and later understood as the third-way tradition taken abroad by Gilbert’s (2015) agrarian intellectuals.

The actors illuminated in this study that argued philosophical perspectives on participatory development and conservation of natural resources while calling for sustainable use of the same should be studied by all students in colleges of agriculture. For example, Pinchot’s works on conservation ethic and Leopold’s writings concerning land ethic have long been studied and recognized in the field of forestry; however, they are not as well known in other allied disciplines, including agricultural and extension education. It is also important for these concepts to complement the more sustainable traditions of production agriculture in the United States. We further recommend exploring foreign influences on American agriculture and environmentalism, including their philosophical primers. In addition, attention and clarity concerning high and low modernism as well as the relation of such to agriculture and an educated citizenry is warranted, including the period following the New Deal era and the technocratization of federal agencies advising and regulating U.S. agriculture. Inquiries could include the period beginning with the Green Revolution and move forward to more recent approaches to IAD and the longstanding involvement of U.S. agricultural and extension educators.

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Social Capital of Faculty within Haiti’s Agricultural Education and Training System

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Abstract
The purpose of this research was to identify how teaching at multiple institutions impacts social capital of faculty within the Haitian AET system. Putnam’s social capital framework was used in the current study. Social capital is developed based on relationships with others. Bonding social capital is homogenous; bridging social capital is heterogenous; linking social capital connects an individual with external resources. A mixed methods approach was used in order to accomplish the study’s objectives. Results from the quantitative portion of this research showed a low positive association between teaching at multiple institutions and bonding social capital. Similarly, a moderate positive association between teaching at multiple institutions and linking social capital was found. Conversely, data showed a negligible negative association between linking social capital and teaching at multiple institutions. The qualitative portion of this research showed that most educators were optimistic about teaching at various institutions; however, faculty indicated teaching at multiple institutions did not translate directly into an increase in their social capital. In fact, teaching at multiple institutions only increased the demands on their time caused by having multiple appointments. It is recommended that universities invest in platforms and strategies to increase faculty’s social capital. From a theoretical perspective, this research applies social capital theory in a new context. This research may also have value to development researchers working with higher education faculty in other countries.

Keywords: Haiti; agricultural education; Caribbean; social capital; university
Introduction

Agricultural development is a necessary prerequisite to securing economic growth and a prosperous future for many developing countries (United States Agency for International Development [USAID], 2015; World Bank, 2015a). Diamond and Ordunio (2005) attributed societal success to countries’ agricultural development throughout the centuries. Because Agricultural Education and Training (AET) systems are an integral part of strengthening the agricultural sector, they have become a focal point for many international research projects and investments (USAID, 2016). It is nearly impossible for a country to develop without these systems, which makes a strong AET system a vital prerequisite for securing a country’s economic growth and prosperity (Moore, Mutaleb, & Baharanyi, 2014).

Haiti is known as the economically poorest country in the western hemisphere and one of the poorest in the world (Arias, Leguia, & Sy, 2013). In 2015, Haiti’s per capita income was only one-tenth the Latin American average (World Bank, 2015b). Along with high levels of poverty, a lack of food security has continued to be rampant throughout the land (Arias et al., 2013). Food security can be defined as “when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life” (World Health Organization [WHO], 2012, para. 1). Approximately 3.3 million Haitians are food insecure, which prohibits them from maintaining a healthy and active life (World Food Program [WFP], n.d.).

Agricultural higher education institutions help to fight against food insecurity through their vital role within AET systems (USAID, 2011). Along with other institutions such as secondary and vocational schools, higher education provides an avenue for individuals to receive formal education and training within the agricultural sector (InnovATE, 2016).

Haitian agricultural faculty are prominent figures offering training and education to future leaders within the Haitian agricultural sector, agricultural students (Interuniversity Institute for Research and Development [INURED], 2010). Not only do Haitian faculty need to be effective for their students, but there is also a need to meet the high demands of their job tasks (INURED, 2010). The higher education environment calls for faculty members to be innovative and responsive to complexities and challenges in order to be successful (Carpenter, Coughlin, Morgan, & Price, 2010). Specifically, in the case of Haiti, higher education faces challenges such as: (a) lack of research priorities and funding, (b) minimal faculty training, (c) insufficient libraries, (d) outdated curriculum, and (e) absence of overarching governance and regulation (INURED, 2010).

Faculty in Haiti may have limited access to a variety of resources but they do have access to each other. The relationships and networks formed between faculty are potential assets despite other resource deficiencies in the system. Putnam (1995) used the term social capital to describe the networks and relationships shared between people which allow them to more effectively reach their goals. Accordingly, higher social capital could mean faculty have access to information, resources and networks that can help them increase their effectiveness as educators. A unique situation in Haiti is that many faculty hold part-time appointments at multiple institutions, sometimes teaching at three or more universities. The present research investigated levels of social capital, or personal connections, among faculty within Haiti’s AET system based on the number of universities in which they teach (Putnam, 1995).
Review of Literature and Theoretical Framework

The concept of social capital dates back to Durkheim’s (1893) work. Durkheim wrote about the positive impact that group life had on an individual’s life and the society as a whole (Portes, 1998). Social capital represented the advantages that came due to an individual’s social networks. Durkheim (1893) believed that social capital was an example of a nonmonetary form of capital that was an important source of power and influence in societies (Portes, 1998).

About 100 years after Durkheim (1893), Bourdieu (1986) became one of the first scholars to methodically analyze social capital. Bourdieu defined social capital in terms of the advantages that membership in a specific network offer individuals. Specifically, Bourdieu (1986) said that social capital is “the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance or recognition” (p. 248). Bourdieu believed the advantages offered to an individual through social networks are tied to economic capital and other privileges of the group.

Building off the work of Durkheim (1893) and Bourdieu (1986), political scientist Putnam (1995) offered a definition of social capital that serves as the operational definition for the present study. Social capital is the “networks, norms, and trust that enables participants to act together more effectively to pursue shared objectives” (Putnam, 1995, p. 665). This definition focuses on the social connections, norms, and trust that lead to benefits for an individual.

In order to measure social capital, it is necessary to understand the differences between the three types of social capital: (a) bonding, (b) bridging, and (c) linking (Putnam, 2000). Bonding social capital tends to “reinforce exclusive identities and homogeneous groups” (Putnam, 2000, p. 3). Bonding social capital connects individuals who are similar to each other. This type of social capital is the “sociological superglue” (Putnam, 2000, p. 3) of society as it works to strengthen social reciprocity and solidarity. In contrast, bridging social capital “connects individuals who are diverse” (Putnam, 2000, p. 3). According to Putnam (2000), bridging capital can be compared to a “sociological WD-40 lubricant” (p. 3). Bridging social capital works to link communities and individuals to resources, information, and connections. Community members can have both of the aforementioned social capitals, but they usually do in varying amounts (Putnam, 2000).

Larsen et al. (2004) commented on the differences between bridging and bonding social capital when they said that “all forms of social capital are not equal and important differences exist between bonding social capital and bridging social capital” (p. 65). For example, bridging social capital can be a more powerful form of social capital because it provides individuals with the opportunity to connect with heterogeneous groups that may have more access to resources, information, and connections that close family and friends may not have. Although bonding social capital may not provide similar access it is a necessary prerequisite to developing bridging social capital (Larsen et al., 2004).

The final type of social capital is linking social capital (Grootaert & van Bastelaer, 2001). This describes an individual’s ability to engage with external agencies or groups to influence their policies or obtain useful resources (Pretty, 2003). Linking social capital is often seen as an extension of bridging social capital, except instead of being horizontal connections with heterogeneous groups, it is a vertical
connection (Grootaert & van Bastelaer, 2001). Linking provides an individual the opportunity to connect with organizations or groups that can provide many resources that they would not have otherwise had.

Social capital was the variable of interest for this research because despite how one measures or categorizes it, academics agree that it can result in benefits for individuals and institutions both (Carpenter et al., 2010; Ferren, Kennan, & Lerch, 2001; Putnam, 1995; Woolcock & Narayan, 2000). Ferren et al. (2001) argued that social capital is equal to other assets such as financial and human capital in higher education, a particularly promising concept within the Haitian context. In its best form social capital is a beneficial component of higher education institutions because it contributes to economic, social, and political development. Social capital is able to contribute to society by: (a) encouraging the sharing of information, (b) discouraging opportunistic mindsets and behaviors, and (c) facilitating collective decision making (Woolcock & Narayan, 2000).

Literature examining the social capital of university faculty in agriculture could not be found after an exhaustive review of the literature. Other research in international agricultural and extension education has examined how a leadership development program impacted farmer social capital in Morocco (Rasmussen, Pardello, Vreyens, Chazdon, Teng, & Liepold, 2017) and confirmed the importance of social capital in rural advisory service networks (Lamm, Lamm, Davis, & Swaroop, 2017). Recent research on Haitian agriculture faculty explored their perceptions of how prepared they were for their teaching roles (Pierre et al., 2018). Faculty generally believed they were prepared for their academic roles. Faculty were mostly intrinsically motivated to engage in professional development but reported variable support from their institutions for professional development.

**Purpose**

The purpose of the present study was to identify how teaching at multiple institutions impacted the social capital of faculty within the Haitian AET system. The objectives of this research were as follows:

1. Determine if an association exists between bonding, bridging, and linking social capital and the number of institutions faculty work at. If so, describe the association.
2. Explore faculty reasons for teaching and perception of how the number of institutions they teach at impacts their social capital.

**Methodology**

This research took a mixed methods approach (Creswell, 2013). Data were collected face-to-face by the lead researcher using a paper questionnaire. The quantitative portion of instrument was adapted from the World Bank’s Measuring Social Capital Integrated Questionnaire (SC-IQ) (Grootaert, Narayan, Jones, & Woolcock, 2003). This instrument operationalized bonding social capital as membership in groups, participation in group activities, and number of close friends. Bridging social capital was operationalized as membership in heterogeneous groups (based on religion, gender, race, education, and occupation), phone calls made, and phone calls received. Linking social capital was operationalized as trust in the national and local governments. The 33-item instrument was translated to French, the official language of Haiti, and modified to make it appropriate for a higher education context in Haiti (Grootaert et al., 2003). Researcher-developed open-ended questions were added to the instrument to achieve the second research objective.
An expert panel of Haitian faculty members, U.S. university faculty members, and Haitian researchers examined the instrument for content validity. Based on that feedback, several questions were reworded. Next, the instrument was piloted by Haitian faculty and researchers. After piloting the instrument, it was estimated that faculty members would take between 15-30 minutes to complete the survey.

The target population was teaching faculty at Haitian agricultural universities. Membership in the Caribbean Council of Higher Education in Agriculture (CACHE) was used to identify the six major agricultural universities in Haiti (CACHE, n.d.). This included the Université d'Etat d'Haiti (UEH), Université Quisqueya (UNIQ), Université Caraïbe (UC), Université Episcopale d'Haiti (UNEPH), Université Notre Dame d'Haiti (UNPH), and American University of the Caribbean (AUC). Of these six institutions, four are located in the nation’s capital, Port-au-Prince, including; UEH, UNIQ, UC, and UNEPH. The remaining two institutions are located in Les Cayes, a city in southwest Haiti. UEH is the only public university of these institutions while the other five are private. The dean at each university was contacted and asked to identify faculty and to help facilitate the distribution of the final questionnaire.

Overall, 78 faculty were invited to participate in this study. A total of 65 faculty provided data for an 83.33% response rate. Data were collected face-to-face by the leader researcher, a Haitian American who speaks Creole, French, and English. An important feature of this sample lies within the distribution of faculty who taught at multiple institutions. Of the sample, 33.85% (n = 22) taught at one institution. Another 29.23% (n = 19) taught at two institutions. Finally, the largest group of faculty taught at three or more institutions, 36.92% (n = 24).

This distribution confirms that most Haitian agriculture faculty teach at multiple institutions.

Quantitative data analysis included frequencies and percentages to describe the sample (Gall, Gall, & Borg, 2007). Cross tabulation was then used to describe the association between bonding, bridging, and linking social capital and the number of institutions faculty work at. Kendall’s tau-c ($\tau_c$) and Cramer’s V ($\Phi_{\text{Cramer}}$) were used to describe associations. Strengths of associations were interpreted using Davis (1971) for Kendall’s tau-c and Rea and Parker (1992) for Cramer’s V.

Qualitative data analysis consisted of a thematic analysis using open coding to identify emergent themes (Merriam, 2009). Data were translated from French to English and the analysis was completed in English by the lead researcher. Participants were given a code based on their primary institution and the order in which their data was collected. Representative quotes were provided in the findings to give a voice to participants. The rigor of this research was established using Lincoln and Guba’s (1985) concept of trustworthiness, which includes four elements: credibility, transferability, dependability, and confirmability. To establish credibility, the lead researcher used triangulation of the information, and of the investigator. There was regular communication between the lead researcher, research team, and experts in the field. Member checking was also used to ensure that the data collected accurately depicted the thoughts and reflections of the informants. In order to establish transferability, the lead researcher provided thick descriptions of the methodological process and used purposive sampling in selecting the informants. To establish dependability, the lead researcher kept an audit trail that included the raw data, notes, and drafts of findings of this study. The lead
researcher also used a code-recode strategy to ensure dependability (Ary, Jacobs, Sorensen, & Walker, 2013). Finally, confirmability was established through the use of a reflexive journal, which included the weekly reasoning behind all methodological decisions made by the lead researcher.

Results

Bonding Social Capital

As mentioned previously, bonding social capital was determined based on membership in groups, participation in group activities, and number of close friends. A summary of the relationships between the number of institutions worked at and these three variables is provided in Table 1. There was a low positive association between teaching at multiple institutions and group membership \((r_{1} = .178)\). There was a negligible negative association between teaching at multiple institutions and participation in group activities \((r_{1} = -.021)\). There was a low positive association between teaching at multiple institutions and number of close friends \((r_{1} = .127)\).

Table 1
Bonding Social Capital Summary

<table>
<thead>
<tr>
<th>Bonding Social Capital Variable</th>
<th>Number of Institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Membership in Groups ((r_{1} = .178))</td>
<td></td>
</tr>
<tr>
<td>0 groups</td>
<td>2</td>
</tr>
<tr>
<td>1 group</td>
<td>4</td>
</tr>
<tr>
<td>2 groups</td>
<td>13</td>
</tr>
<tr>
<td>3+ groups</td>
<td>3</td>
</tr>
<tr>
<td>Participation in Group Activities ((r_{1} = -.021))</td>
<td></td>
</tr>
<tr>
<td>0 groups</td>
<td>2</td>
</tr>
<tr>
<td>1 group</td>
<td>7</td>
</tr>
<tr>
<td>2 groups</td>
<td>4</td>
</tr>
<tr>
<td>3+ groups</td>
<td>9</td>
</tr>
<tr>
<td>Number of Close Friends ((r_{1} = .127))</td>
<td></td>
</tr>
<tr>
<td>1-2 friends</td>
<td>3</td>
</tr>
<tr>
<td>3-4 friends</td>
<td>10</td>
</tr>
<tr>
<td>5-6 friends</td>
<td>7</td>
</tr>
<tr>
<td>7+ friends</td>
<td>2</td>
</tr>
</tbody>
</table>

Bridging Social Capital

Bridging social capital was determined by membership in heterogeneous groups, phone calls made, and phone calls received. Relationships between group memberships and number of institutions are summarized in Table 2. Moderate positive associations were observed for religion \((\chi^{2} = 10.017, \Phi_{\text{Cramér}} = .393)\), race \((\chi^{2} = 5.614, \Phi_{\text{Cramér}} = .294)\), and education \((\chi^{2} = 5.562, \Phi_{\text{Cramér}} = .294)\).
.293). Weak positive associations were observed for gender ($\chi^2 = 1.346, \Phi_{Cramer} = .144$) and occupation ($\chi^2 = 0.149, \Phi_{Cramer} = .048$).

Table 2

*Membership in Heterogeneous Groups*

<table>
<thead>
<tr>
<th>Were you a member of a group with people who differed from you based on _________?</th>
<th>1</th>
<th>2</th>
<th>3+</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequencies of Faculty</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Religion ($\chi^2 = 10.017, \Phi_{Cramer} = .393$)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>12</td>
<td>10</td>
<td>22</td>
</tr>
<tr>
<td>No</td>
<td>10</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>Gender ($\chi^2 = 1.346, \Phi_{Cramer} = .144$)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>18</td>
<td>14</td>
<td>21</td>
</tr>
<tr>
<td>No</td>
<td>4</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Race ($\chi^2 = 5.614, \Phi_{Cramer} = .294$)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>7</td>
<td>9</td>
<td>16</td>
</tr>
<tr>
<td>No</td>
<td>15</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Occupation ($\chi^2 = 0.149, \Phi_{Cramer} = .048$)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>15</td>
<td>14</td>
<td>17</td>
</tr>
<tr>
<td>No</td>
<td>7</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Education ($\chi^2 = 5.562, \Phi_{Cramer} = .293$)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>14</td>
<td>13</td>
<td>22</td>
</tr>
<tr>
<td>No</td>
<td>8</td>
<td>6</td>
<td>2</td>
</tr>
</tbody>
</table>

Results show that faculty who taught at two and three or more institutions made a higher number of phone calls made per week (Table 3). There was a moderate positive association between calls made and number institutions ($r = .302$). Faculty who taught at two or three or more institutions received the most phone calls per week. There was a moderate positive association between calls made and number institutions ($r = .329$).
Table 3
Phone Calls Made and Received

<table>
<thead>
<tr>
<th>Number of Institutions</th>
<th>1</th>
<th>2</th>
<th>3+</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequencies of Faculty</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Phone Calls Made Per Week (r = .302)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 11</td>
<td>8</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>11-20</td>
<td>6</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>21-30</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>31+</td>
<td>6</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td><strong>Phone Calls Received Per Week (r = .329)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 11</td>
<td>9</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>11-20</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>21-30</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>31+</td>
<td>6</td>
<td>10</td>
<td>17</td>
</tr>
</tbody>
</table>

Linking Social Capital

Trust in the national government was overwhelmingly low for all faculty regardless of the number of institutions taught at (see Table 4). No faculty member trusted the national government to a very great or great extent. In fact, 81.82% (n = 18) of faculty teaching at one institution, 57.89% (n = 11) teaching at two institutions, and 91.67% (n = 22) teaching at three or more institutions had small or very small trust in the government. There was a negligible positive association between institutions worked at and trust in the national government (r = .052).

Table 4
Trust in Governments

<table>
<thead>
<tr>
<th>How much trust do you have in the ________?</th>
<th>1</th>
<th>2</th>
<th>3+</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequencies of Faculty</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>National Government (r = .052)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very Small</td>
<td>14</td>
<td>2</td>
<td>15</td>
</tr>
<tr>
<td>Small</td>
<td>4</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>Neither</td>
<td>4</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Great</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Very Great</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Local Government (r = -.127)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very Small</td>
<td>12</td>
<td>2</td>
<td>11</td>
</tr>
<tr>
<td>Small</td>
<td>5</td>
<td>12</td>
<td>5</td>
</tr>
<tr>
<td>Neither</td>
<td>3</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Great</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Very Great</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>
The lack of trust faculty had towards the national government was similar to the lack of trust that faculty had in the local government (see Table 4). A total of 77.27% \( (n = 17) \) of faculty who taught at one institution, 73.68% \( (n = 14) \) teaching at two institutions, and 66.67% \( (n = 16) \) who taught at three or more institutions trusted the local government to a small or very small extent. There was a low negative association between institutions and trust in the local government \( (r = -.127) \).

**Qualitative Responses**

When asked about why they teach at multiple institutions, faculty members gave one of five reasons: (a) filling the need for qualified educators, (b) love for his or her subject area, (c) love for the students, (d) need for more financial income, or (e) love for Haiti. The two most common reasons for teaching at multiple institutions was a love for the subject and filling the need for qualified educators.

The most common reason for teaching at multiple institutions was that faculty members felt as if they needed to fill the need for qualified educators. E3 stated, “there lacks good teachers in entomology so, I must teach at various schools.” This is echoed by E5 who wrote, “there lacks qualified individuals in human resources, so I must travel and teach.” N4 stated, “I travel in order for me to share with the students quality information that will help them and our agriculture sector.”

The next most common reason for teaching at multiple institutions was a love for the subject area. Examples of having a love for the subject include F13 who said, “my love for teaching agronomy compels me to teach at as many institutions as I can.” And F21, who said, “there is no special reason for me teaching at multiple schools, I just really love my subject.”

When asked about the impact of working at multiple institutions on their social capital, every faculty member mentioned that he or she is able to meet new students and colleagues. F11 mentioned, “I get to broaden my horizons and meet new people, mainly colleagues and students, when I teach at various universities. It’s really good for me.” C5 also said, “it puts me in in contact with groups that are very different from me.” This was echoed by U2 who wrote, “I get in touch with a large amount of young people that can make an impact on the world.”

Although faculty commented on the benefit of meeting new people as they work at multiple institution, some faculty believed that meeting new people did not translate directly into social capital. F22 mentioned, “I meet many new people, but I don’t engage with most of them. I don’t have the pleasure of getting to know the many people I meet.” Another informant mentioned, “there is no impact on my social networks, I see many people but it does not benefit me in any way” (F14). Another informant stated,

Teaching at four institutions does not impact my social networks, my contracting work does that. If I lecture at [university], I meet new people but I wouldn’t necessarily network at the school since I have obligations at many other institutions. (N6)

Finally, one informant stated, “Sometimes less is more. If I worked at less institutions, I would have more time to invest in and benefit from encountering people” (E4).
Bonding, Bridging, and Linking Social Capital

Bonding social capital. Teaching at multiple institutions was found to positively contribute to bonding social capital, but the low strength of the association suggests that although some faculty were exposed to more students, faculty, and communities through their multiple teaching duties, they had not been reaping the full benefits of having many opportunities increased bonding social capital.

Bonding social capital can provide significant benefits to faculty members, like strong support groups with faculty who teach similar subjects, which would ultimately benefit students (Aldridge, Halpern, & Fitzpatrick, 2002; Ferren et al., 2001; Putnam, 1995; Woolcock & Narayan, 2000). Although there is a positive association between teaching at multiple institutions and bonding social capital, faculty and higher education institutions are not maximizing on the opportunity to increase faculty resources through increased bonding social capital (Aldridge et al., 2002). A lack of resources is one of the greatest challenges to the higher education system. The ability of social capital to change into other forms of capital can be used as a tool that mitigates the severity of lack of resources within higher education (Portes, 1998). For example, social capital can transform into financial capital when a faculty uses his or her networks to locate and borrow a $300 textbook that is needed for curriculum and content design of his or her course (Portes, 1998). This, in turn, would be expected to yield benefits for students. Because Haiti lacks financial capital, it is even more important for Haitian faculty to maximize on social capital.

Bridging social capital. Faculty who taught at more institutions were more likely to demonstrate indicators of bridging social capital, as based on membership in heterogenous groups. In particular, they were more likely to be members of groups in which they interacted with people of differing religious, racial, and educational backgrounds. This was true to a lesser extent for gender and occupation, suggesting there may cultural norms restricting interaction with the opposite gender and/or interacting with those above or below the faculty member in the academic hierarchy.

The data for bridging social capital ought to be understood in light of faculty’s need to teach at multiple institutions, which at times is caused because of a lack of personal financial capital (Dumay, 2010). Networking with heterogeneous groups can be greatly beneficial for faculty when bridging social capital is transformed into other forms of capital allowing the faculty member to be more productive (Aldridge et al., 2002; Ferren et al., 2001; Portes, 1998; Putnam, 1995; Woolcock & Narayan, 2000).

Linking social capital. Faculty who taught at more institutions had a slightly higher association with trusting the national government but distrusting the local government. Overall, regardless of the number of institutions faculty taught at, there was a culture of distrust towards the government. This distrust is the summation of a long history of political and social instability within the country (Arias et al., 2013). These findings are understood in light of historical turmoil Haitians have faced by those in power, specifically by the government.

The distrust that faculty have towards the government poses a problem for higher education institutions in Haiti. Although five of the six leading institutions are private institutions, the government still oversees all higher education policy and
activities throughout the country. Furthermore, agricultural students often end up working for the Haitian Ministry of Agriculture, Natural Resources and Rural Development (MARNDR). Despite faculty’s distrust towards the government there is a necessary connection between higher education and government in Haiti. A lack of linking social capital between faculty and government would mean that faculty would be less likely to be included in dialogue that directly impacts them and their students. Furthermore, agricultural students would not benefit from social networks faculty could have with the government.

Because of the importance of social capital, it would behoove institutions to invest in initiatives that would increase social capital among their faculty. To increase social capital agricultural institutions should build an academic culture which encourages a culture of togetherness beyond staff meetings by creating opportunities for faculty interactions built around faculty interests and needs. One such example would be routine opportunities for professional development. This would require better institutional support for faculty development, which faculty had previously identified as inconsistent but desired (Pierre et al., 2018).

Faculty’s Perception of Social Capital

The qualitative portion of this research showed that overall, faculty taught at multiple institutions for different reasons and most of the reasons were positive. Dumay (2010) stated that faculty teach at multiple institutions because of a desire to enjoy a decent standard of living, but this research showed that faculty taught at multiple institutions because of a sense of responsibility, patriotism, and love for students and the subject area. The discrepancy between Dumay (2010) research and this present research is perhaps due to the fact that in depth research on Haitian higher education faculty has not been conducted and parts of their stories have not been captured, but there is also the possibility that the faculty’s responses in this study were influenced by a desire to provide responses believed to be socially acceptable. The lack of comparable scholarly research focused on higher education in Haiti hampers efforts to confidently develop conclusions.

Although faculty are eager to continue supporting agricultural development through teaching at various institutions, many are only reaping basic benefits to their social capital through their multiple teaching appointments. Institutions and faculty both are not tapping into the full benefits of being able to be exposed to various colleagues, students, and communities. On the contrary, faculty mentioned that their social capital is not increasing because of the number of institutions at which they teach. The increased demands on time created by employment at multiple institutions prevented the faculty studied from developing meaningful relationships, although they had access to larger networks. These missed opportunities represent a real cost in terms of the lost potential for developing social capital, but the lack of qualified educators to fill Haiti’s teaching needs means faculty are likely to continue having multiple jobs for the foreseeable future.

Recommendations for Additional Research

This study examined social capital at a single point in time. Each day faculty have the potential to meet new people and build new relationships. The authors are also aware of a faculty development program sponsored by USAID that was open to faculty from all these universities that was
implemented just after this data was collected, which may have influenced the findings of this research. A re-examination of the social capital of Haitian faculty would be warranted to see how it may be different. Social capital is a complex phenomenon. The current study only begins to explore it in the context of Haitian agricultural universities. A more in-depth methodology like ethnography or case study research within the academic community at each university could really help advance the understanding of how social capital impacts the university, faculty performance, and ultimately student success.

References


Effective Advocacy for Extension Networks: An Evaluation of Critical Capacities

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B. Jyothi Swaroop
University of Florida

Abstract
Across the globe extension or rural advisory service (RAS) networks are experiencing dramatic changes. Rural to urban population shifts, climate variability, and increased competition for limited resources have created a challenging environment. When done effectively, advocacy is one of the most successful tool extensionists possess to increase understanding and visibility for the value and impacts RAS networks can have. Despite the importance of advocacy there has not been any research into the capacities necessary for RAS networks to advocate effectively. To address the gap researchers conducted a three-round Delphi process with an expert panel of 31 individuals from 24 different countries. The panel achieved consensus on 39 specific capacities necessary for RAS networks to advocate effectively. Additional recommendations are provided for RAS networks to develop capacities accordingly.

Keywords: Advocacy, Delphi, evaluation, capacity assessment
Introduction

A rapidly-growing global population is leading to environmental change that impacts agriculture around the world (Godfray & Garnett, 2014; Kitinoja, Saran, Roy, & Kader, 2011). There is a need for an agricultural systems transformation to meet the increasing demands on food resources that will be necessary to obtain sustainable production (Özerdem & Roberts, 2016). Farmers need to be able to adapt to changing situations so they are capable of working in agricultural systems necessary to achieve higher level of productivity (Anderson & Feder, 2004). Accessing updated information available on production and distribution technologies is an important factor in reaching sustainable productivity within the agricultural realm (Beckford & Barker, 2007). In order to achieve sustainable productivity, farmers and other agricultural stakeholders must have access to proper information sources (Okwoche, Asogwa, & Obinne, 2012). Access to information sources can be made possible by enhancing human capital that establishes and maintains strong connections (Cawein et al., 2017).

Rural advisory services (RAS), otherwise known as extension services, around the globe have a goal of enabling stakeholders by developing human capital and assisting in technology transfer from research-based institutions to the end user (Anderson & Feder, 2004). RAS operate as networks at the country, region, continental and global level with multiple actors working collaboratively (Davis & Sulaiman, 2014). Initially RAS were top-down, publicly funded, services confined to a geographical location (Swanson & Rajalahti, 2010). While local application methods improved production in the short term, the limited reach and applicability restricted the ability of RAS providers when assisting the agricultural industry in adapting to changing climates and market situations (Anderson, 2008).

RAS providers needed to be trained to address issues beyond their local areas (Swanson & Rajalahti, 2010). The training and expansion of RAS required funding beyond that provided by public sources leading to a pluralistic system (World Bank, 2012). However, the defined functions of the public and private contributors to RAS were not delineated and led to a complex system where many competing demands were placed on RAS providers (World Bank, 2012). The increasingly diverse nature of advisory services, due to changes in funding as well as leadership, resulted in a fragmented global system (Swanson & Rajalahti, 2010). Given the intricate nature of agricultural production, evaluating the impact of either form, public and private advisory services, became difficult (Anderson, 2008).

Trends including declining support for publicly-funded programs, criticism of inefficient models of publicly-funded programs, and an enhanced focus on accountability for publicly-funded programs represent a challenging context for RAS networks (Faure, Huamanyauri, Salazar, Gómez, De Nys, & Dulcire, 2017; Lamm, Israel, & Diehl, 2013). The lack of proven impact made it even more difficult for policy makers to support RAS and a decline in recognition and attention has been felt on a global scale (Davis & Sulaiman, 2014). These trends led to reforms in RAS along with calls to be more accountable to clientele and funders (Rivera & Alex, 2005). RAS along with other public or donor-funded institutions are thus eager to advocate regarding their important role in sustainable production (Huffman, 2016). In order to secure sustained funding for RAS there is a need for advocacy, at multiple levels, that focus on why RAS should be supported.
There are different types of advocacy based on the type of population served (Brandon, Brandon, & Brandon, 1995). Advocacy is broadly defined as a process of pleading for support of a certain cause or proposal (Lee, 1998; Merriam-Webster, 2017). Advocacy related to knowledge transfer is known to have a high amount of influence on global networks (Stone, 2002). In the field of counseling, Myers and Sweeney (2004) identified advocacy as an important factor for the advancement of a profession. In many professions, being skilled in advocacy is recognized as a responsibility rather than an add-on (Allen, 2017; Almog-Bar & Schmid, 2014; Taylor, 1987). As an illustration, an inclination to rely on government funds was observed to be an issue with various nonprofit service organizations (Smith & Lipsky, 1993). Thus, obtained funding was primarily invested in carrying out direct program services and less for advocacy (Kimberlin, 2010). However, advocacy has been recognized as an important aspect of organization to promote welfare and proper allocation of different resources within the organization (Snow, 2013).

With the global urban population growing every year (World Health Organization, 2017), one of the prominent characteristics of globalization is considerable growth in extent, intensity and velocity of social interactions (Held, McGrew, Goldblatt, & Perraton, 2000). Raynor, York, and Sim (2009) found that advisory organizations operating by networking with other organizations can be more efficient by utilizing collective resources and complementing assets. RAS providers, who currently operate individually, with low cooperation and a lack of common standards (Anderson & Feder, 2004), might be able to increase funding support globally, and reach the full potential of what RAS is capable of obtaining, by applying this concept of aggregating resources and voices to have greater impact through advocacy efforts (Davis & Sulaiman, 2014).

**Theoretical Framework**
Social capital enables connections between individuals through strong or weak ties (Lin 2008). Social capital is comprised of norms within networks that equip individuals to work cooperatively (Woolcock & Narayana, 2000). The network perspective of social capital helps us observe and understand patterns within a network (Lin, 2008). This view advocates that strong ties (intra-community) and weak ties (extra-community) are both equally beneficial for acquiring or sharing information (Granovetter, 1995). This is due to the fact that networks are flexible and dynamic, with the ability to expand by forming new connections with different networks that share common values (Hudson, 2001). Fischer and Jasny (2017) identified that organizations are more likely to collaborate with their parallels to obtain relevant information and resources if they feel connected.

Social capital is known to play a major role in human capital development (Coleman, 1988). This is possible as social capital comprises both networks and assets, which can be utilized individually or in combination (Burt, 2009). Davis and Sulaiman (2014) identified advocacy as one of the primary areas of strategic management functioning required for capacity development. A high level of advocacy capacity can be achieved by employing social capital to access networks and identifying essential capacities to be developed in the area of advocacy (Nahapiet & Ghoshal, 1998). Advocacy is a challenging activity to understand and apply as it is influenced by various factors like aims, timeframe and power structures within...
an organization (Coates & David, 2002). The scope of networks working on RAS advocacy efforts goes beyond domestic boundaries, extending into global conversations with funding agencies and networks (Keck & Sikkink, 1999). RAS networks identified this and began to pay attention to the need for advocacy at the global level (Davis & Sulaiman, 2014).

Unfortunately, knowledge about the level and nature of advocacy practices in different fields, including RAS, is limited within the literature (Pardeck, 1996; Sosin & Caulum, 1983). As previously identified, higher density ties would enhance resource sharing among members of a network (Lin, 2008); however, a great number of ties also results in increased complexity of a network and research has found that networks that build too many ties too quickly have trouble handling them effectively due to centrality (Bodin & Crona, 2009). For example, in a patient advocacy organization a conflict of interest was observed within the organization among individuals over decision making (Rose, 2013). It was recommended that policy development be directed toward fostering trustworthiness within and among the organizations prior to collective decision making (Rose, 2013). In the context of RAS, trust must be built locally in order to be effective in global settings (Anderson, 2008). This can be achieved by advocating for RAS networks collectively at the regional level and then coming together at the global level (Davis & Sulaiman, 2014). Social capital has the potential to assist the advocacy capacity identification process by enabling interactions within RAS networks (Bodin & Crona, 2009).

**Purpose and Research Objectives**

The purpose of this study was to identify the capacities needed for a RAS network to effectively advocate for RAS. The study was driven by the following research objectives:

1. Create a comprehensive list of potential capacities a network may need to effectively advocate for RAS.
2. Arrive at a global consensus on the specific capacities necessary for a RAS network to effectively advocate for RAS.

**Methods**

The methods associated with this research are identical with those described in detail in Lamm, Lamm, Davis, and Swaroop (2017). Data were collected simultaneously across multiple thematic areas as part of a larger project (Lamm & Lamm, 2017). Based on recommendations in the literature (Zhang, Jia, Lin, & Tan, 2013) a summary of the involved methods is included; however, readers are strongly encouraged to review the aforementioned manuscript for a more detailed description.

A modified Delphi method research design was employed to address the research objectives. Through the Delphi process experts’ opinions of the capacities needed for a RAS network to be effective in advocacy were collected and analyzed until consensus on the final list of capacities was achieved (Dalkey & Helmer, 1963; Garson, 2014; Ziglio, 1996).

The expert panel was composed of individuals actively engaged in RAS representing different geographies, levels of experience, and organizational structures. Specifically, panelists were nominated by the Global Forum for Rural Advisory Services organization (Garson, 2014, Okoli & Pawlowski, 2004). The expert panel was composed of a purposive sample of 31 RAS professionals. Specifically, the expert panel was composed of the following (Lamm et al., 2017):
The 31 experts that participated in the panel represented RAS practitioners, funding organizations, farmer and advocacy groups, academic institutions, research institutes, policy makers, and other affiliated RAS support organizations (for example consultants and agricultural supply companies). Panelists had a range of experience with RAS exposure ranging from four to 45 years, with an average tenure of 18 years. Panelists represented the following countries: Bangladesh, Belgium, Bulgaria, Ecuador, Fiji, Georgia, Ghana, Guyana, India, Ireland, Italy, Lao People's Democratic Republic, Malawi, Nicaragua, Nigeria, Pakistan, Philippines, Samoa, Solomon Islands, South Africa, Switzerland, Uganda, United States of America, and Uzbekistan. (p. 97)

There were three rounds of the Delphi method used to reach consensus using tools and instrumentation recommendations from the literature (e.g. Delbecq, Van de Ven, & Gustafson, 1975; Nistler, Lamm, & Stedman, 2011). In round one of the process, respondents listed up to five (5) of the most important capacities a RAS network should possess to be effective in advocacy (Gliddon, 2006). Responses from round one were analyzed and used to develop round two of the process (Garson, 2014; Gliddon, 2006).

In round two of the process respondents indicated their level of agreement with the capacities identified in the first round. Specifically, respondents were asked to indicate their level of agreement or disagreement that each item was an important capacity for RAS networks to have on a five point Likert-type scale (1 = Strongly Disagree, 2 = Disagree, 3 = Neither Agree nor Disagree, 4 = Agree, 5 = Strongly Agree). Scores for each item were then averaged with only those items with a mean score greater than 3.25 retained for round three (Garson, 2014).

Round three of the process was used to establish respondents’ consensus with the capacities retained from round two. Respondents were asked to “Please indicate whether or not the following knowledge management items should be kept or removed as it relates to the following statement. A country fora or regional RAS network should…”. Items that at least 75% of respondents agreed should be kept were retained (Garson, 2014).

The research was conducted based on a procedure approved by the University of Florida Internal Review Board. The Delphi process was completed using the Qualtrics online survey tool and was administered using the Tailored Design Method (Dillman, Smyth, & Christian, 2008). Data collected online were downloaded and analyzed using the Statistical Package for the Social Sciences (SPSS) version 21. Qualitative responses were analyzed and coded using the Dedoose qualitative analysis software (Dedoose, 2016).

Based on a panel of 31 experts, the first round of the Delphi process had a response rate of 94%, the second round of the Delphi process had a response rate of 87%, and the third and final round of the Delphi process had a response rate of 94%. Previously, Keeney, Hasson, and McKenna, (2011) established that response rates greater than 70% per round in a Delphi process were acceptable.

Results
Following the first round of the Delphi, including consolidation of items, there were 44 capacities identified by the expert panel (Table 1). The panelists were
then asked to indicate the level of importance they associated with each capacity in Round Two of the Delphi. Of the 44 capacities from the first round, all of the items achieved the post hoc threshold with a mean score greater than or equal to 3.25 to be retained in Round Two; therefore all 44 capacities were included in the third and final round. When analyzed, the mean values for the capacities ranged from 3.41 (Table 1). Experts associated the highest level of importance with the statement “A country fora or regional RAS network should...maintain strong partnerships with those involved in policy making to ensure RAS is visible.”

Table 1

<table>
<thead>
<tr>
<th>Capacity</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintain strong partnerships with those involved in policy making to ensure RAS is visible</td>
<td>4.30</td>
<td>0.82</td>
</tr>
<tr>
<td>Be able to clearly identify/define RAS stakeholders</td>
<td>4.22</td>
<td>0.70</td>
</tr>
<tr>
<td>Exhibit strong communication skills with policy/decision makers at all levels</td>
<td>4.19</td>
<td>0.88</td>
</tr>
<tr>
<td>Be able to articulate RAS stakeholder needs</td>
<td>4.19</td>
<td>0.68</td>
</tr>
<tr>
<td>Articulate key advocacy messages</td>
<td>4.19</td>
<td>0.74</td>
</tr>
<tr>
<td>Link RAS with ongoing priority government and private sector programs</td>
<td>4.19</td>
<td>0.88</td>
</tr>
<tr>
<td>Develop relationships with stakeholders</td>
<td>4.19</td>
<td>0.88</td>
</tr>
<tr>
<td>Have representation on national platforms/events</td>
<td>4.19</td>
<td>0.92</td>
</tr>
<tr>
<td>Show the role/potential role of RAS in addressing priority concerns (e.g. poverty alleviation, food security)</td>
<td>4.11</td>
<td>0.75</td>
</tr>
<tr>
<td>Be perceived as a positive influence on the decision making/policy process</td>
<td>4.11</td>
<td>0.85</td>
</tr>
<tr>
<td>Provide information in support of RAS efforts to policy/decision makers at all levels</td>
<td>4.07</td>
<td>0.83</td>
</tr>
<tr>
<td>Use creative ways to reach new and old audiences</td>
<td>4.07</td>
<td>0.87</td>
</tr>
<tr>
<td>Be recognized as a relevant/important actor</td>
<td>4.07</td>
<td>0.68</td>
</tr>
<tr>
<td>Exhibit strong communication skills with the public</td>
<td>4.04</td>
<td>0.94</td>
</tr>
<tr>
<td>Develop relationships with community partners</td>
<td>4.04</td>
<td>0.98</td>
</tr>
<tr>
<td>Effectively use social media to advocate for RAS</td>
<td>4.00</td>
<td>0.96</td>
</tr>
<tr>
<td>Have representation on international platforms/events</td>
<td>4.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Provide a deep knowledge of RAS including the impact of RAS initiatives and programs</td>
<td>4.00</td>
<td>0.83</td>
</tr>
<tr>
<td>Make advocacy materials available</td>
<td>4.00</td>
<td>0.88</td>
</tr>
<tr>
<td>Collaborate effectively to create liaisons and linkages externally in support of advocacy efforts</td>
<td>3.96</td>
<td>0.76</td>
</tr>
<tr>
<td>Develop public/private partnerships</td>
<td>3.96</td>
<td>0.94</td>
</tr>
<tr>
<td>Have stakeholders that hold RAS in high regard</td>
<td>3.96</td>
<td>0.87</td>
</tr>
<tr>
<td>Exhibit strong communication skills (e.g. presentation skills, writing skills, public relations skills)</td>
<td>3.93</td>
<td>0.96</td>
</tr>
<tr>
<td>Have beneficiaries that hold RAS in high regard</td>
<td>3.93</td>
<td>0.87</td>
</tr>
<tr>
<td>Articulate global trends and context in RAS</td>
<td>3.93</td>
<td>1.00</td>
</tr>
</tbody>
</table>
Collaborate effectively to create liaisons and linkages internally in support of advocacy efforts 3.93 0.78
Articulate an established advocacy strategy 3.89 0.89
Engage in discussions surrounding current policy trends 3.88 0.86
Use success stories when advocating for RAS 3.85 0.91
Develop relationships with universities 3.85 0.95
Organize support to create a common voice in support of RAS 3.81 0.79
Have network officers that are seen as credible sources 3.81 0.92
Identify champions for RAS 3.81 1.00
Have evidence of strong government support 3.78 1.15
Articulate global trends in agricultural innovation 3.74 0.98
Develop advocacy materials 3.74 0.94
Have evidence of strong grassroots support 3.74 0.98
Have representation on local platforms/events 3.67 1.00
Exhibit strong negotiation skills 3.63 0.88
Articulate the role of women extension workers in RAS 3.63 0.88
Effectively use social media to advocate for RAS 3.59 1.01
Conduct policy analysis 3.56 1.01
Have RAS network officers that are invited to be a part of the decision making process at all levels 3.48 1.09
Exhibit strong negotiation skills 3.63 0.88
Articulate key advocacy messages 3.74 0.98
Make advocacy materials available 3.74 0.94
Exhibit strong communication skills (e.g. presentation skills, writing skills, public relations skills) 3.74 0.93
Link RAS with ongoing priority government and private sector programs 3.41 1.34

For the third and final round of the Delphi, the panelists were asked whether each of the capacities should be kept or removed with the intended outcome to establish consensus. Across the 44 capacities from Round Two of the Delphi there were 39 capacities that received a level of consensus greater than the post hoc threshold of 75% (Table 2).

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Consensus %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have representation on national platforms/events</td>
<td>96.6</td>
</tr>
<tr>
<td>Maintain strong partnerships with those involved in policy making to ensure RAS is visible</td>
<td>96.6</td>
</tr>
<tr>
<td>Be able to articulate RAS stakeholder needs</td>
<td>96.6</td>
</tr>
<tr>
<td>Develop relationships with stakeholders</td>
<td>93.1</td>
</tr>
<tr>
<td>Effectively use social media to advocate for RAS</td>
<td>93.1</td>
</tr>
<tr>
<td>Show the role/potential role of RAS in addressing priority concerns (e.g. poverty alleviation, food security)</td>
<td>93.1</td>
</tr>
<tr>
<td>Organize support to create a common voice in support of RAS</td>
<td>93.1</td>
</tr>
<tr>
<td>Articulate key advocacy messages</td>
<td>93.1</td>
</tr>
<tr>
<td>Make advocacy materials available</td>
<td>93.1</td>
</tr>
<tr>
<td>Exhibit strong communication skills (e.g. presentation skills, writing skills, public relations skills)</td>
<td>92.9</td>
</tr>
<tr>
<td>Link RAS with ongoing priority government and private sector programs</td>
<td>89.7</td>
</tr>
<tr>
<td>Task</td>
<td>Percentage</td>
</tr>
<tr>
<td>---------------------------------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>Have stakeholders that hold RAS in high regard</td>
<td>89.7</td>
</tr>
<tr>
<td>Articulate the role of women extension workers in RAS</td>
<td>89.7</td>
</tr>
<tr>
<td>Collaborate effectively to create liaisons and linkages internally in support of advocacy efforts</td>
<td>89.7</td>
</tr>
<tr>
<td>Be able to clearly identify/define RAS stakeholders</td>
<td>89.7</td>
</tr>
<tr>
<td>Be perceived as a positive influence on the decision making/policy process</td>
<td>89.7</td>
</tr>
<tr>
<td>Exhibit strong communication skills with the public</td>
<td>89.7</td>
</tr>
<tr>
<td>Engage in discussions surrounding current policy trends</td>
<td>89.3</td>
</tr>
<tr>
<td>Collaborate effectively to create liaisons and linkages externally in support of advocacy efforts</td>
<td>86.2</td>
</tr>
<tr>
<td>Exhibit strong communication skills with policy/decision makers at all levels</td>
<td>86.2</td>
</tr>
<tr>
<td>Articulate global trends and context in RAS</td>
<td>86.2</td>
</tr>
<tr>
<td>Use success stories when advocating for RAS</td>
<td>85.7</td>
</tr>
<tr>
<td>Have representation on international platforms/events</td>
<td>82.8</td>
</tr>
<tr>
<td>Have representation on local platforms/events</td>
<td>82.8</td>
</tr>
<tr>
<td>Develop relationships with community partners</td>
<td>82.8</td>
</tr>
<tr>
<td>Effectively use traditional media to advocate for RAS</td>
<td>82.8</td>
</tr>
<tr>
<td>Develop relationships with universities</td>
<td>82.8</td>
</tr>
<tr>
<td>Articulate an established advocacy strategy</td>
<td>82.8</td>
</tr>
<tr>
<td>Be recognized as a relevant/important actor</td>
<td>82.8</td>
</tr>
<tr>
<td>Have network officers that are seen as credible sources</td>
<td>82.8</td>
</tr>
<tr>
<td>Provide a deep knowledge of RAS including the impact of RAS initiatives and programs</td>
<td>79.3</td>
</tr>
<tr>
<td>Have evidence of strong grassroots support</td>
<td>79.3</td>
</tr>
<tr>
<td>Develop advocacy materials</td>
<td>79.3</td>
</tr>
<tr>
<td>Use creative ways to reach new and old audiences</td>
<td>79.3</td>
</tr>
<tr>
<td>Have beneficiaries that hold RAS in high regard</td>
<td>79.3</td>
</tr>
<tr>
<td>Develop public/private partnerships</td>
<td>78.6</td>
</tr>
<tr>
<td>Have RAS network officers that are invited to be a part of the decision making process at all levels</td>
<td>75.9</td>
</tr>
<tr>
<td>Provide information in support of RAS efforts to policy/decision makers at all levels</td>
<td>75.9</td>
</tr>
<tr>
<td>Identify champions for RAS</td>
<td>75.9</td>
</tr>
<tr>
<td>Have evidence of strong government support</td>
<td>72.4</td>
</tr>
<tr>
<td>Conduct policy analysis</td>
<td>69.0</td>
</tr>
<tr>
<td>Articulate global trends in agricultural innovation</td>
<td>69.0</td>
</tr>
<tr>
<td>Exhibit strong negotiation skills</td>
<td>65.5</td>
</tr>
<tr>
<td>Conduct RAS impact studies</td>
<td>62.1</td>
</tr>
</tbody>
</table>

**Conclusions, Implications, and Recommendations**

The challenges facing RAS networks are well established. Shifts in global population (Godfray & Garnett, 2014), changes to the delivery of extension services (Swanson & Rajalahti, 2010), and an increase in competing demands for limited resources from other institutions (World Bank, 2012) all contribute to a challenging
However, when institutions, such as RAS networks, use advocacy effectively they can greatly improve their potential for visibility and support (Allen, 2017). Despite the challenging environment, and the known value advocacy can provide, there had been very limited research into what capacities are necessary for RAS networks to advocate effectively. The purpose of this research was to address this deficiency and to provide RAS networks a very concrete set of capacities upon which to develop (Davis & Sulaiman, 2014; Lamm et al., 2017).

Consistent with previous capacity focused research within a RAS context (e.g. Lamm et al., 2017), the results of this study indicate that a Delphi panel composed of RAS experts is an effective way to identify the most important capacities for a RAS network to be effective at advocacy (Bodin & Crona, 2009). Specifically, an expert panel composed of individuals representing a diverse set of RAS environments from around the globe helps to ensure the findings are not limited to a specific context where environmental conditions may drastically impact the utility of the results when applied in practice (Lamm et al., 2017).

Nevertheless, the use of a purposively selected panel of experts must also be acknowledged as a potential limitation. Although steps were taken to mitigate bias by inviting a diverse panel of experts to participate (Garson, 2014), the results of the study are limited to the knowledge and insights of the participating experts (Bodin & Crona, 2009).

Thematically, RAS networks and individual providers tend to share many similar characteristics (Davis & Sulaiman, 2014); however, prior to this study there has not been a common definition or understanding of advocacy capacities for these groups. A recommendation from this research is for RAS networks to actively engage with the findings and to begin to develop a common language around advocacy. When networks and organizations have a common language and understanding around a particular topic, including specific capacities that constitute the foundation of an otherwise abstract concept, they can be more effective in communicating, supporting, and sharing best practices. (OECD, 2006).

After analyzing the results of the study, there were three capacity items that the expert panel almost unanimously agreed were necessary for RAS networks to be effective at advocacy. The first capacity is to have representation on national platforms/events. The second capacity is to maintain strong partnerships with those involved in policy making to ensure RAS is visible. The third capacity is to be able to articulate RAS stakeholder needs. These results imply that the most critical capacities that RAS networks need to advocate effectively is to be present, be known, and be clear. These fundamental capacities are necessary to ensure RAS networks have a platform to work from, an audience that is receptive, and a message that is compelling. These are the fundamental criteria for effective advocacy and a recommendation is for RAS networks to ensure they have these three capacities well established. If any of these capacities are absent, developing the capacity should be a priority. Although there were 36 other advocacy capacities that reached an acceptable level of consensus, these were the top three and should receive particular attention.

Interestingly, when the remaining capacities are reviewed there were three primary thematic areas that emerged that were very consistent with the three specific capacity items. The first theme that emerged was that the network should be a visible actor for RAS. From an advocacy perspective one of the requirements for
success is to be recognized as institution, and more importantly to be recognized as a representative of the institution (Allen, 2017). Without acknowledgement from others, it will be very difficult for a RAS network to advocate effectively. A preliminary recommendation is for RAS networks to examine whether they are participating in events where stakeholders are present. For example, if there are opportunities to connect with policy makers at conferences, meetings, or events RAS networks are strongly encouraged to attend and to work on increasing their visibility.

The second thematic area that emerged among the identified capacities is that the network should understand RAS clientele. Although the practical functioning of RAS is important to understand, from an advocacy perspective being able to articulate the impacts of RAS on clientele is generally much more compelling. Therefore, a recommendation is for RAS networks to understand the impacts and outcomes associated with their activities. A further recommendation is to collect not only quantitative results, but also qualitative case studies and anecdotes.

The third thematic area that emerged is that advocacy messages should be communicated effectively. This theme is closely related to the preceding two because it represents the packaging and messaging that is ultimately shared. Specifically, understanding RAS clientele is necessary but not sufficient for effective advocacy. Effective advocacy includes the development of compelling narratives and impact statements and are intended to command the attention from the audience. A recommendation is for RAS networks to work on aggregating and reviewing clientele insights and then identify the most compelling items or case studies. Only the most compelling information should be shared, those situations with the largest impact or that are most closely aligned to political and funding priorities. A second recommendation is to develop succinct and memorable communication plans and actions associated with the most impactful items. As an added benefit, compelling communication plans that are clear and consistent can be shared with the RAS network to help ensure messaging consistency and effectiveness.

In addition to the specific capacity related results associated with this study an additional recommendation is to extend the results and to develop a scale appropriate for assessing advocacy capacity across RAS networks. This recommendation is consistent with suggestions within the literature to use Delphi process results as a baseline for new scale development (Cheng, Kuo, Lin, & Lee-Hsieh, 2001). A standardized scale should help to provide a common measure of capacity among RAS networks and to facilitate knowledge sharing using a standard set of capacity items.

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Filling in the Gap: A Hermeneutic Phenomenological Study of the Lived Experiences of Agricultural Change Agents in Northern Haiti

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Abstract
In order to better understand the lived experiences of change agents in the North Department of Haiti, a hermeneutical phenomenological study was conducted. Change agents must work against a variety of barriers in order to help influence change within their spheres of influence in rural Haiti. The change agent experience in this study is collaborative, mutually benefitting, deeply cultural, and built out of necessity. Change agents in this study have found that by working together, they are able to fill in the gaps left by unequal distributions of resources within their communities such as tools, money, advisory services, or even basic agricultural knowledge. Despite holes within the agricultural support services in their areas, the change agents have mobilized community members to work together to move their communities forward. Understanding the lived experiences of change agents will help inform ongoing and future agricultural development efforts in the North Department of Haiti.

Keywords: community-based organizations, perspectives, capacity-building, sustainable development
Introduction/Review of Literature

Change agents immerse themselves within the social system they aim to influence by bridging gaps between the proposed change and the individuals they hope will adopt the innovation. A change agent “is an individual who influences client’s innovation-decisions in a direction deemed desirable by a change agency” (Rogers, 2003, p. 27). Haiti is a target for foreign change agents who wish to impact the country and essentially lift its people out of poverty (Smith, 2001). The effect of these foreign change agents has not been without controversy (Katz, 2013). Corruption, misuses of donor money, and inappropriate actions within local communities are some of the controversies surrounding international NGOs (Spencer, 2012; Themudo, 2014). Despite the overwhelming influx of aid within the poverty-stricken country, little change has been seen in the economic status of its population (Katz, 2013). As an alternative to foreign assistance, Smith (2001) argued that effective change agents already reside in the rural areas of Haiti. Similarly, Trouillot (1990) claimed “any solution to the Haitian crisis must find its roots in the resources of the peasantry” (p. 229).

Over 80% of the country’s poorest individuals reside in rural Haiti and many of the Haitians in these regions are involved in agriculture (Philius, 2013). The North Department of Haiti provides a snapshot of the agricultural divide within the country of Haiti. Located in the northernmost region of the country, the North Department is separated by six to eight hours of travel by land to the capital. The majority of government and aid agencies have their headquarters in and around the capital (Dubois, 2012), rather than in the rural Departments.

The lack of resources and physical distance from larger agencies creates a unique situation for change agents located in the North of Haiti. Change agents within the North are closely associated with grassroots organizations (Smith, 2001), which are created by community members for their particular community (Uphoff, 1993). Grassroots organizations are typically smaller in scope of mission and more targeted in population served as compared to larger international nonprofit organizations. The presence of grassroots organizations in Haiti has grown significantly since the 2010 earthquake (Edmonds, 2012) as a result of a need to fill in the gaps left by governmental agencies. The leaders of grassroots organizations are motivated to be self-sufficient and desire to bring much needed resources to their communities (Edmonds, 2012).

Change agents in rural communities engage in formal, informal, or voluntary roles (Rogers & Bhowmik, 1970). In some communities, change agents can be seen as community organizers pushing for social reform (Pearce, 1993). Change agents within grassroots organizations can act as links to support in areas with little access to outside resources (Mazzeo & Chierici, 2013). Additionally, change agents can act as links between local communities and larger change agencies (Rogers, 2003). The varying roles change agents play within rural communities are cohesively linked together by the desire to elicit change, but change agents can run into difficulties when faced with cultural barriers inhibiting acceptance within local communities (DeYoung, 1995). Change agents can also be impacted by limited resources to make lasting impacts in rural communities (Mazzeo & Chierici, 2013). A hermeneutical phenomenological study was conducted in order to better understand the lived experiences (van Manen, 1997) of Haitian change agents in the North Department. Exploring the lived experiences of Haitian
change agents will help inform ongoing and future agricultural development efforts.

**Theoretical Framework**

Phenomenology’s aim is to describe a phenomenon (Kafle, 2011). Phenomenology focuses on the way meaning is constructed through experience. Therefore, phenomenology is concerned with how individuals interpret their lives and “what it means to them” (Landridge, 2007, p. 4). Heidegger (1996) argued consciousness was not able to be separated from other facets of life. Since individuals cannot separate their interpretations from their history and experiences, Heidegger (1996) moved to combine the thought-processes of hermeneutics with phenomenology. Hermeneutics is a process that takes human experiences and views the experiences through language as text (Laverty, 2003). The experiences are texts which can be examined to derive deeper meaning. Hermeneutic phenomenology is then a practice in which the researcher’s and subject’s interpretation is combined to generate meaning.

The foundation of phenomenological studies is grounded in the exploration of lived experiences (van Manen, 1997). Lived experiences are unique in nature and must be defined. As van Manen (1997) noted, “lived experience first of all has a temporal structure: it can never be grasped in its immediate manifestation but only reflectively as past presence” (p. 36). Lived experiences are therefore the materialization of past experiences as an individual has lived through them, whether aware or unaware of their significance.

Studies of lived experiences have been used to gain deeper understanding of individuals. Studies of the practices of indigenous educators and the exploration of the perceptions of entrepreneurship among farmers use hermeneutic phenomenology to gain meaning from these experiences (Hennon, 2012; McInnes, 2013). Analyzing lived experiences allows unraveling the nuances of a person’s experience and deriving meaning from these moments in time. Studies on the lived experiences of others using hermeneutical phenomenology can also be used to influence practices which may help those in similar situations. In a study by Joshi, Chelliah, and Ramanathan (2015), researchers explored the lived experience of a grassroots innovator in India. The findings of this study could “serve as an aid for future research” (Joshi, Chelliah, & Ramanathan, 2015, p. 27). The lives of change agents have been documented using various methodologies (van Manen, 1997), but the use of hermeneutic phenomenology is little to be seen.

**Purpose and Objectives**

The purpose of this study was to explore the lived experiences of change agents in the North Department of Haiti. The following research objectives guided the study: (a) identify the self-perceived experiences of change agents, and (b) describe the manner in which the experiences of change agents were influenced by governmental assistance.

**Methods**

This descriptive study was qualitative in nature since hermeneutic phenomenology places importance on analyzing lived experiences as text, spoken by individuals (Merriam, 2009). Hermeneutic phenomenology “avoids methods for method’s sake and does not have a step by step method” (Kafle, 2011, p. 191) for data collection or analysis. The aim of hermeneutic phenomenology, therefore, is to produce “rich textual descriptions of the experiencing of selected phenomena in the life world of individuals that are able to
connect with the experience of all of us collectively” (Smith, 1997, p. 80). The methods were drawn from the objectives of the study in order to keep the phenomenological essence. Within this framework, the lead researcher played a key role in producing the meaning from the lived experiences.

Participants

A combination of purposive and snowball sampling (Merriam & Tisdell, 2016) was used to recruit 16 participants who actively worked within grassroots change agencies in the North Department of Haiti. Each individual in this study was identified as a change agent by self-identification or peer identification. The individuals in this study worked directly with small-scale farmers in the North Department in various capacities. Twelve of the participants worked with konbits, cooperative agricultural organizations based in their relative communities. Three of the participants were local agronomists working within their home communities, with no formal affiliation with the government. One participant was the regional leader of a large-scale agricultural grassroots organization with offices throughout the country. Participants who were involved in konbits held informal positions within the konbits. The agronomists were voluntary service providers within their communities. The participant who was involved in the large-scale grassroots organization was a paid change agent.

Change agent responsibilities for the participants in this study varied. Those who worked with konbits focused on organizing group members to assist specific farms on certain days of the week. They were also responsible for recruiting members, resolving conflicts within their konbits, and offering advice and assistance to their group members. Agronomists in this study were informal sources of advice within their communities and offered their services to neighboring farmers. One participant organized trainings for farmers within his area several times a year. The leader of the larger grassroots organization was in charge of overseeing the training of extension service providers in his organization, providing oversight to agricultural programs in the region, and creating partnerships with other in-country organizations.

The participants in this study represented four different arrondissements, or districts, within the North Department. In total, there are seven arrondissements in the North. The zones represented in this study were Acul-du-Nord, Cap-Haïtien, Grand-Riviere du Nord, and Limbé. These specific zones were selected based off of the accessibility to change agent populations and the willingness of change agents to be a part of this study. The majority of this study’s participants were male with only one female in the population. The ages of the individuals ranged from 29-85 years of age, with 8 individuals over the age of 50.

Sampling Methods

For this study, it was imperative to find change agents within the North Department. In order to achieve this purposive sample, a native-born Haitian research assistant was employed to gain access to the population of interest. The research assistant used a key informant in the specified regions to identify potential participants who fit the criteria of a change agent. The process of identifying a key informant varied by region. For two regions (Cap-Haïtien, Grand-Riviere-du-Nord), the key informants were previous classmates of the research assistant. The classmates were asked to identify agricultural change agents within their communities. In one region (Limbé), the key informant was identified by asking the farmers in the area who is
actively involved in grassroots organizations. The individual was then asked to help introduce the researchers to change agents within these organizations. In the final region (Acul-du-Nord), the change agent was identified by an acquaintance of the lead researcher.

Data Collection Procedures

Data collection occurred June - July 2016. The research process involved individual interviews, hermeneutical interviews with the participants, and reflective journaling by the lead researcher. The research process in hermeneutical phenomenology is a longitudinal process which begins prior to the participant interviews (McInnes, 2013). Pre-reflection is helpful in identifying the biases and historical experiences of the researcher prior to interacting with the participants in the study (Kafle, 2011).

Interviews. Interviews consisted of open-ended questions which aimed to explore the ways in which change agents work with small-scale farmers, describe their experiences with small-scale farmers, and explore change agents’ view of resources available for the communities they assisted. The aim of the conversations was “not to understand individual people, but to understand that about which they speak” (Wilke, 2002, para. 19).

The individual interviews were conducted by both the research assistant and the lead researcher in Haitian-Creole. Although the lead researcher has worked extensively in Haiti, the lead researcher is not a native Haitian, which presented difficulties in reaching the desired populations. By interviewing the participants together, the lead researcher was able to gain legitimacy within the change agent population. The initial questions were asked by the research assistant and clarifying questions which emerged from the conversation were posed by the lead researcher. During the interviews, the lead researcher took field notes.

Hermeneutic interview reflection. Once the interviews concluded, the lead researcher summarized the contents of the conversation with the participant. This allowed the lead researcher to ask “is this what the experience is really like?” (van Manen, 1997, p. 99). The conversation allowed the lead researcher to ensure a level of confidence with the emerging themes in the interview. The contents of these conversations were also audio-recorded with participants’ permission to ensure that text was available to analyze, which is consistent with hermeneutic orientations (van Manen, 1997).

Reflective journal. The lead researcher kept a reflective journal throughout the data collection process to document emerging interpretations, perspectives, and biases during the data collection process. The reflective journal was handwritten within the field notes of the study. There is no fixed amount of reflections recommended by hermeneutical phenomenology practitioners, therefore, the lead researcher used a total of three journal entries throughout the data collection process.

Data Analysis and Interpretation

While there is no delineated step-by-step process to follow when analyzing data collected using hermeneutic phenomenology, van Manen (1997) identified six research activities which can be used as guidelines when conducting this type of research. The guidelines are as follows: (a) turn to the phenomenon of interest within the study, (b) investigate the phenomenon as it is lived not as it is understood, (c) reflect on the emerging themes which help to describe the phenomenon, (d) describe the phenomenon
through writing and rewriting, (e) remain connected to the phenomenon as a pedagogical source, and (f) balance the research context by analyzing individual experiences and relating them back to the entire picture.

**Preparation for analysis.** The interviews were transcribed into Haitian-Creole by a native-born educator in Haiti. The interviews were kept in their original language to uphold the integrity of the lived experiences. The lead researcher, who speaks Haitian-Creole, analyzed the data in their original language. Translation of the quotes into English was completed by the lead researcher. Interpretations from the texts as well as translations were then confirmed with the individual who transcribed the data to confirm accuracy of the interpretations. Participants were given pseudonyms to protect their identities.

**Thematic analysis.** Data is recommended to be analyzed using thematic analysis (van Manen, 1997). van Manen (1997) suggested identifying themes by using a sentence approach, selective approach, or line-by-line approach. For the purposes of this study selective highlighting of key elements which related to the focal phenomenon were pulled and categorized. Themes which emerged from the data were categorized by commonalities and then overarching themes and sub-themes were selected (Merriam, 2009).

Merriam (2009) addressed the need for imaginative variation within phenomenological studies. Imaginative variation “has to do with trying to see the object of the study - the phenomenon- from several different angels or perspectives” (Merriam, 2009, p. 158). Similarly, the hermeneutic circle as proposed by Gadamer (1997) allows for a continual movement from interpreting, reflective writing, and reading of the text. The lead researcher was also able to implement imaginative variation during the interpreting phase of hermeneutical analysis by following the guidelines of the hermeneutic circle. The process of data analysis, therefore, took on the following process: (a) read the text, (b), highlight selected text which relate back to the phenomenon, (c) reflectively write about the text, and (d) interpret the lived experiences using imaginative variation. This process was repeated continuously throughout data analysis.

**Trustworthiness**

Lincoln and Guba (1985) addressed trustworthiness when conducting qualitative research. Credibility and dependability were established through triangulation of the data and peer debriefing with the research assistant as well as the other researchers. Transferability was established through thick description and confirmability was established through an audit trail. Additionally, van Manen (1997) suggested using orientation, strength, richness, and depth as quality markers for conducting hermeneutic phenomenology. When referring to orientation, the researcher should be involved in the participant’s world and stories. Strength refers to the ability of the text to represent the intended meanings of the participants. Richness refers to the text which describes the meaning of the participants and depth refers to how the interpretation accurately matches the intention of the participant. The four criteria outlined by van Manen (1997) were achieved through reflective practices, hermeneutic interviews with the participants at the conclusion of the interview, and the use of the hermeneutic circle during data analysis.

**Subjectivity Statement**

The lead researcher has extensive experience in Haiti through involvement in an NGO which works to provide educational
and vocational experiences to both youth and adults in the Cap-Haitien area in the North Department of Haiti. Through these experiences, the lead researcher perceived unequal distributions of aid between different socio-economic classes, many caused by governmental policies or disorganized NGO work. Dialogue with the research team throughout the analysis and interpretation process was used as a tool for limiting the influence of personal bias.

Findings/Results
Data collected from the interviews, hermeneutic interviews, and lead researcher reflective journal were analyzed using thematic analysis. From the data sources, 24 initial themes emerged and were summarized to create four essential themes. The themes will be further explained through anecdotes and significant statements in the following sections.

Necessity Breeds Collective Action
Throughout the interviews, change agents in the study made mention to the path which led them to their current positions within their organizations. A common theme throughout these narratives was how change agents perceived a need and desired to fill the need through a collaborative manner. Ermano described his path to becoming a change agent as a logical next step. He stated, “I finished school recently and we found that we were not doing anything even though there were a lot of needs within our community, we decided to form a group, a small collaboration.” Ermano continued to describe how this organization was created to bring other men together to mete tet ansanm, a popular Haitian-Creole saying meaning to work together.

Other change agents were motivated to engage in their current positions since no one else was going to step in and help them and they recognized the need for help. Isaac mentioned, “when you’re alone you cannot do anything, but when you work together everything goes well.” Similarly, David stated, “You do not have the government that is your parent, you need to find help.” The necessity he saw drove him to create his konbit.

Emiles, the leader of a larger grassroots organization, was led into his position from the needs he saw within his community. The injustices moved him to help found the organization he helped lead. Emiles shared the following anecdote:

Well ever since my youth, I’ve been in the community. I was a poor child, needy poor, a peasant. When we observed an injustice occurring during the time of Duvalier in 1984, we saw a lack of solidarity. They considered peasants like animals. We gathered together and created a movement, we did not realize the dimension of how it would grow.

The perceived needs of the peasant class within Emiles’ community caused him to act. It is important to note that the logical steps for the change agents were to work together to address the needs they perceived. In a final reflection, the lead researcher noted, “their instincts led these individuals to work together rather than try to accomplish anything individually.”

Collaborative and Mutually Beneficial Environments
Change agents within this study identified various experiences which described collaborative and mutually beneficial environments. Participants continually made reference to a well-known proverb, “men anpil chay pa lou” or many hands make light work. As change agents within grassroots organizations, the participants were well acquainted with the
difficulties of poverty. The participants all had their own lands to tend to and through their involvement as change agents, the participants were able to share in the benefits of working in konbits.

The konbit system which a majority of the participants were involved with was described as a process where “everyone in the group gathers to help one farmer on the farmer’s land” (Marc) each designated day. The change agents were responsible for recruiting members to the konbits and orchestrating the organization for tending to each other’s lands. Change agents were able to themselves benefit from the group’s work. When commenting on the mutually beneficial nature of his work, Marc stated “what we do is something that makes a round trip, you come help me, we help someone else.” Another change agent, Jean, commented, “well, [konbits] allows you to work faster and work more. You, yourself with your parcel of land cannot do a lot of work, but when you have a konbit, you work more.”

In addition, change agents commented on the emotional benefits of working with small scale farmers in the grassroots environments. Working together afforded the change agents an opportunity to benefit from help and also to enjoy the company of like-minded individuals from their communities. These experiences were accented with music, jokes, and singing. Participants noted that gathering together to eat added to their experiences. The resulting feeling was one of “happiness” (Jean). Jenny, the only female in the study, said it was a “beautiful thing” when her konbit worked together. Participants spoke about the light-hearted environment when they worked together in the fields with the other farmers. Wilner stated:

We will talk, we will eat together, we will tell jokes, we sing. It’s good because we know we are making money, for everyone in the group. …… Everyone takes part. We feel more relaxed because we know we are working faster when we work together.

Change agents within the study also took on the role of creating these collaborative environments even in the midst of problems. Change agents mentioned moments of discord between members in their organizations. These moments of discord were addressed through dialogue and parties were allowed to share their grievances. Jean mentioned how it was “important to appreciate every person” in their konbit. One participant, Ronald, recollected an instance between two members of his organization and stated the following:

Well, for example, there was this one time, one person was upset about the lack of members present for the day when they were going to help him on his farm. He was angry at everyone and it made it difficult to work. I had to stop everyone and bring them together to talk about it. When we finished talking about it everyone was calm and went back to work. That’s how I solve the problems in our group – talking.

The hope for the future of Haiti through collaborative processes reflects the cultural ideals even found on the Haitian flag, which states unity creates strength. The experiences of change agents within grassroots organizations allowed for a glimpse into what could be possible for the country as a whole. As Michel stated, “if Haitians become conscious and we return to the affairs of working in konbits, that could
help organize the country in order to advance.”

**Lack of Appropriate Support**

The difficulties faced by change agents ranged from lack of resources, no educational support, lack of infrastructure for agricultural services, inadequate tools to deal with weather, and unequal distributions of services within their communities. The overarching theme pulled from these experiences is the lack of support for change agents. The common thread throughout the interviews was an absence of governmental services. Change agents in this study used phrases such as “they do not care for us here” (Samson), “they do not see us” (Emiles), and “you try to find someone to come, but you cannot find them” (Pierre).

Change agents in this study were also aware of the resources they were lacking in order to complete their tasks within their organizations. Some participants were aware of help happening within their community, but felt slighted by the way they were treated. Participants felt ignored by larger organizations and even the government. Many participants desired to have support through agricultural knowledge as they were farming. Yvenel mentioned the following instance when describing how he felt towards government workers:

> There is this man who is responsible for giving advice. When he walks everywhere in every area, he gives great advice. I know this. One day I encountered him at my church and he didn’t look at me at all. I said to myself, why don’t you look at me? (Yvenel).

Yvenel described how the government does the same to the *peyizan*, the peasant.

According to Ronald, “the government does not have any effect on me, it is primarily God that we have.”

Other organizations, which include large international NGOs, are among those offering help in the region. These NGOs have not yet reached many change agents in this study. Luckson mentioned, “I am always looking for NGOs to come help, but I do not find them.” Another change agent, Jacques, explained:

> There are some NGOs that I know of that work in the area. I do not see what good they do, instead all I see is negative effects for the country. They make the peasants neglect their work and give peasants money, they [the peasants] begin to think that if they do not work, they will always touch money. These organizations have a negative effect.

From this statement it is apparent that even if some organizations are providing financial resources, it is not what the change agents perceive as helpful to their roles in their organizations.

**Family History**

Past familial experiences losing loved ones, influences to pursue agriculture, educational pursuits, and poverty. These experiences had an impact on the role change agents played in their communities, were shared by all participants, and were included in narratives outlining paths to current roles as change agents.

The hardships faced by many change agents while growing up led them to choose agricultural paths. For example, Pierre stated expressed his desire to attend school but lack of funds kept him from pursuing his education. He instead went to work on his grandfather’s land:
When I came to [location], I started to work on the small piece of land because I was my mother’s firstborn. We went through a lot of hardship and could not attend school. I continued to work the land even until this day I still desire to go to school (Pierre).

Lack of resources to attend school was a past struggle for many change agents within the study. Ronald similarly stated, “when I couldn’t continue school, I entered into agriculture.” Yvenel reflected a positive outlook on his life in spite of the absence of thorough schooling:

My parents did not teach me how to write well, but they did teach me something. They taught me how to watch, they taught me how to farm, how to be a farmer. The money I have now is because of what they taught me. That is what I have seen.

Not all change agents in this study lacked education. Some change agents attributed the opportunities they had to attend school as assisting them in their current roles. Jonny was able to attribute his education to allowing him to view small-scale farmer practices in a new light. Jonny noted, “I now see how the traditional behaviors of farmers in the community need to change.”

Education was not the only past experience which impacted the current roles of change agents within this study. In addition to educational levels, family involvement in agriculture was a constant presence throughout the interviews. Many participants grew up working the land with their parents. The influence of agriculture in their youth had lasting effects on their current role as a change agent in their community. When referring to his current educational pursuits, Michel stated, “I learned I loved agriculture from working with my parents on our land everyday.” His current pursuit to become an agronomist can be traced back to his family’s influence. Similarly, Ermano noted how his father’s involvement in a konbit system led him to start his own:

My integration into this system came while I grew up and saw our parents in the same activity. It is now also my own necessity. Agriculture is an activity that I love very much. I remember since I was a child working with my father and this is why I love agriculture.

Similarly, Samson noted that his current role in agriculture came from his parents’ influence but is now a journey of necessity. Samson said, “I followed my parents, but now I am obligated to continue.” The role of parental influence in current change agency positions of the participants, as displayed in these examples, reveals that although some participants chose their role as a desire, others came into their role out of necessity.

**Conclusion, Recommendations, and Implications**

The change agent experience in this study is collaborative, mutually benefitting, deeply cultural, and built out of necessity. The difficulties experienced by the change agents served to create a foundation for collaborative action to impact the lives of those in their communities. The lived experiences of the individuals in this study reveal strength and resilience in the face of difficult situations. Despite their lack of resources or support, the change agents in this study work together to improve livelihoods. Change agents in this study have found that by working together, they
are able to fill in the gaps left by unequal distributions of resources within their communities such as tools, money, advisory services, or even basic agricultural knowledge. Despite holes within the agricultural support services in their areas, the change agents have mobilized community members to work together to move their communities forward.

The findings from this study affirm various research studies surrounding the function of grassroots organization within rural communities. Uphoff (1993) found that grassroots organizations filled in governmental service gaps. Although the government did provide some resources to address the needs of agricultural workers in Haiti, these services were not reaching all members of this population. Change agents within this study collaborated with other small-scale farmers in order to provide services for each other and meet their needs as a collective, community-based group. The actions of the change agents in this study affirm the conclusions of Smith (2001) where community-based groups in Haiti formed on the basis of collaboration and mutual help while providing a needed service within the community. Although the grassroots organizations were meeting needs within their communities, change agents still experienced lack of resources to adequately provide needed assistance. The lack of resources experienced by the change agents in this study affirms the findings of Mazzeo and Chierici (2013), where grassroots organizations in Haiti experienced lack of money and access to tools as a barrier.

The perception of change agents as being ignored or forgotten by NGOs and governmental agencies found in this study is notable. Although change agents had knowledge of organizations offering support to farmers in communities in the North Department, they felt as though these organizations did not want to interact with
which benefitted multiple members in their communities.

The needs of change agents within the North Department of Haiti should be taken into account when planning for the allocation of services and resources. Change agents in any community are better equipped to meet the needs of community members when given appropriate resources (Rogers, 2003). The negative perception of NGO impacts within the region is also an important aspect to address. Trust needs to be established in order for future partnerships to emerge between agencies and change agents in community-based organizations. Partnering with change agents within the North Department of Haiti would provide motivated individuals with the knowledge and resources to impact more lives and, ultimately, improve the livelihoods of rural Haitians.

The use of hermeneutic phenomenology was helpful in gaining a deeper understanding of the lived experiences of change agents in the North Department. Further use of hermeneutic phenomenology to understand the lived experiences of small-scale farmers in the North Department may add to the research presented in this study. Additionally, further research can be done with small-scale farmers in different departments throughout Haiti in order to address similarities and differences among the regions within Haiti. Replication of this study can also provide for greater understanding of the attitudes, perspectives, and experiences of small-scale farmers in the North Department of Haiti.

References


Evaluating Agricultural Extension and Advisory Services through a Governance Lens

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Abstract
Demand-driven extension services have been promoted as a potential mechanism to improve governance quality and lead to better-served farmers. In this paper, we evaluate i) the extent to which demand-driven elements are present in extension services in developing countries, and ii) whether governance problems persist and why. We accomplish so by performing a qualitative analysis of the Modernizing Extension and Advisory Services (MEAS) country assessments, and find that, despite the adoption of demand-driven features, extension services are not fully participatory, transparent, accountable, equitable and responsive to needed farmers.

Keywords: extension and advisory services; demand-driven, good governance

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Introduction and Review of Literature

According to international organizations such as the World Bank and the United Nations, governance refers to the process by which state and non-state actors interact to design and implement (or not implement) policies (United Nations, 2009; World Bank, 2017). Moreover, good governance exists when these processes are “participatory, consensus oriented, accountable, transparent, responsive, effective and efficient, equitable and inclusive and follow the rule of law” (United Nations, 2009, p. 1). In other words, when the interaction between state and non-state actors presents these characteristics, we have good governance.

Agricultural extension services, nonetheless, typically face numerous governance challenges, especially in developing countries. Feder, Willet, and Zijp (2001), Anderson and Feder (2004), and Birner and Anderson (2007) claim that extension is frequently characterized by low political support, persistent funding difficulties, political capture by influential farmers and extension workers’ involvement in non-agricultural activities that hardly benefit farmers. Similarly, Birner and Anderson (2007) emphasize failures at the community level, which relate to farmers’ lack of collective action as well as to Non-Governmental Organizations’ (NGOs) accountable relations to funding organizations as opposed to farmers. These works, therefore, reflect that extension services are plagued with instances of weak accountability, lack of transparency on funding allocations, unequal treatment of all types of farmers and, generally, poor governance. Put differently, the interaction between state and non-state actors in extension services typically lacks good governance. As a result, a mismatch often exists between what many farmers need to feed their families and what extension services deliver.

The reasons behind poor governance in extension services are multiple and largely related to the inherent characteristics of extension service provision, the incentives of decision makers and the absence of farmers’ coordination. For example, the scale and complexity of reaching numerous farmers with varying agricultural needs and across a wide territory explain in part the lack of responsiveness and effectiveness in service provision (Feder, Willet, & Zijp, 2001; Anderson & Feder, 2004). Of course, this high dimensionality of extension services also raises issues around how to monitor and evaluate the performance of extension workers and establish accountable relationships between these workers and their farmers (Feder et al., 2001; Anderson & Feder, 2004). Additionally, the difficulty of connecting extension input (cause) with agricultural productivity and outcomes (effect) also hinders the emergence of political support and funding commitment towards these services (Feder et al., 2001; Anderson & Feder, 2004). Instead, politicians looking for electorally profitable activities often invest in more tangible goods such as seeds and fertilizer (Anderson & Feder, 2004; Chinsinga & Poulton, 2014).

Relatedly, the fact that extension services frequently fail to be equitable and inclusive to all kinds of farmers relies not only on the preferential treatment given sometimes to rural elites and wealthier farmers, but also on the challenge of smallholders to act collectively to demand these services. This reasoning is present in Bates’ (1981) seminal piece where he explains that, after independence, African politicians implemented policies (for example, distorted exchange rates, low prices for agricultural products) that favored urban dwellers and rural elites at the
expense of demobilized rural workers. Moreover, as Olson (1965, 1985) explains, because smallholder farmers spread across large areas, the costs of coordination, coalition formation and communication are hard to overcome. Consequently, smallholder farmers often lack bargaining power and the capacity to advocate for much-needed policies, while large-scale and influential farmers end up benefiting from policy interventions and extension service provision.

In response to some of these challenges, scholars, development practitioners and policymakers have advocated for making extension services more bottom-up and demand-driven. Demand-driven extension services are those that respond to the expressed needs of various stakeholders and different farmers, including those who typically receive little attention such as women, poor and marginalized farmers (Rivera & Alex, 2005; Neuchatel Group, 2006; Birner & Anderson, 2007). More precisely, according to the Neuchatel Initiative (an international donor community for extension services), demand in the context of agricultural extension can be defined as: “what people ask for, need and value so much that they are willing to invest their resources, such as time and money, in order to receive the services” (Neuchatel Group, 2006, p. 3). Furthermore, the defenders of this approach expect that by becoming more demand-driven and participatory and by giving “clients” a voice, extension services can improve governance aspects such as responsiveness, accountability and transparency and hence lead to better-served farmers (Rivera & Alex, 2005; Neuchatel Group, 2006; Birner & Anderson, 2007).

**Purpose and Objectives**

This study aims to understand how the demand-driven concept has impacted agricultural extension in developing countries. More specifically, we evaluate i) the extent to which demand-driven elements are present in extension services in developing countries, and ii) whether or not governance problems still persist. Then, we explore *why*, despite the adoption of demand-driven elements, extension services are still facing governance challenges. We set these goals because international donors and organizations have promoted the adoption of demand-driven approaches as a potential solution to improve governance and bring better extension services to farmers.

**Conceptual Framework**

We rely on Birner et al. (2006, 2009) to build our conceptual framework. These authors propose a framework for analyzing the performance and impact of pluralistic agricultural advisory services by distinguishing between contextual factors and the characteristics of extension services. Contextual factors are those that are beyond the direct influence of policymakers and extension managers (frame conditions) such as the political environment, community aspects and the agricultural system, while the characteristics of extension services are those factors that policymakers and extension managers can directly influence (choice variables) and include: institutional structures, capacity and management, and advisory methods.

Institutional structures refer to the set-up for extension service provision and financing and relate to the level of decentralization and partnerships. The
capacity and management of extension services include human and financial resources (e.g., staff, training, skills), infrastructure, and organizational style (e.g., planning processes, monitoring and evaluation mechanisms). Advisory methods pertain to how extension services interact with farmers such as the number of clients (e.g., individuals, groups), the type of engagement (e.g., top-down vs. participatory), the content specificity (e.g., specific crop), and the technologies used (e.g., ICTs).

Other authors have previously used this conceptual framework. Faure, Rebuffel, and Violas (2011), for instance, analyze Advisory Services for Family Farms (ASFFs) in West Africa and conclude that the interaction of the different components is essential to understanding the functioning of ASFFs. Prager, Creaney, and Lorenzo-Arribas (2017) use the framework to establish evaluation criteria for functional advisory services and then assess these services in the UK. Although we follow a similar approach, our paper differs because we use this framework to identify elements that help make extension services demand-driven. As the previous studies, we focus on the characteristics of advisory services (choice variables), but acknowledge that contextual factors are also relevant and thus discuss some of them in the findings section.

With respect to the institutional set-up, we identify decentralization as the condition to give farmers the opportunity to express their voices and demands. That is, decentralization, or “the transfer of power and resources from higher tiers to lower tiers of government” (Jutting et al., 2005, p. 629), could be an important element in making extension services demand-driven by bringing the government closer to the people. Moreover, decentralized approaches can increase the capacity to serve local farmers and improve management and financial performance (Swanson & Samy, 2003; Swanson & Rajalahti, 2010). By transferring the decision-making process to the local level, farmers can have a say in the planning, priority setting and monitoring of services. This potentially leads to not only extension messages that adapt to local agro-ecological conditions, but also to a closer inspection in the use of funds (Swanson & Samy, 2003; Swanson & Rajalahti, 2010).

Furthermore, decentralization can increase political commitment toward extension because of the higher proximity between the users and the decision-makers (Anderson & Feder, 2004). Certainly, this is not to say that decentralization delivers all these benefits, but that at least the possibility for them to materialize exists.

We define the capacity and management of demand-driven extension services in terms of i) these services reaching farmers and being responsive to farmers, and ii) farmers being able to articulate their demands (Biner et al., 2006; 2009; Neuchatel Group, 2006). We argue that for extension services to be demand-driven it is necessary to have not only extension services capable of reaching farmers, but also farmers capable of requesting needed advice and training. Moreover, while extension services need to manage requests responsively, farmers should effectively organize and aggregate varied demands. Importantly, understanding this capacity and management requires looking into funding streams and farmer organizations.

Funding affects the number of extension workers available as well as the number of farmers reached by these workers. For example, resources to cover transportation costs are key to serve farmers across the territory. Funding for farmer organizations also plays a crucial role in these groups’ formation as well as in their capacity to negotiate better services. Farmer
organizations give farmers a voice, increase their bargaining power and decrease the costs of communicating extension agents their needs (Neuchatel Group, 2006; Poulton, Kydd, & Dorward, 2006; Kruijssen, Keizes, & Giuliani, 2009; Thompson, Teshome, Hughes, Chirwa, & Omiti, 2009). That is, acting collectively helps farmers co-ordinate their demands and perform an advocacy role that facilitates influencing extension processes and improving service quality.

We capture the last characteristic of extension, advisory methods, by looking at the adoption of bottom-up approaches that incorporate farmers’ voice, input and feedback into extension service provision. We refer not only to methodologies that use farmers’ participation such as Participatory Rural Appraisals (PRAs) and Farmer Field Schools (FFSs), but also to the presence of other approaches that get farmers involved in decision-making processes such as participatory committees, stakeholder panels, and extension platforms. As the Neuchatel Group (2006, p. 4) claims when referring to PRAs and FFS: “the tools in themselves do not solve the major constraints that farmers face in becoming the ‘drivers’ of these services.” Hence, the need to consider a broader notion of bottom-up extension approaches.

Through the adoption of participatory frameworks, farmers can comment on extension workers’ performance and question the use of public funds and service quality, which potentially improves responsiveness and accountability (Speer, 2012). Put differently, bottom-up mechanisms can create empowerment from below and serve as a forum for farmers to talk to extension workers and other stakeholders about agricultural priorities, changing needs, market access and actions plans for the different agricultural seasons. Within a pluralistic extension environment, participatory committees can help farmers find the best provider (e.g., NGO, public, private) to satisfy certain needs, encourage coordination in service provision and identify unattended geographic areas. Table 1 provides a summary of our conceptual network.

**Methodology**

We rely on the Modernizing Extension and Advisory Services (MEAS) country assessments to conduct this paper’s analysis since they provide thorough descriptions on how pluralistic extension services operated in a variety of developing countries between 2010 and 2014. Briefly, the USAID-funded MEAS project ran between 2010 and 2016 and aimed to define and disseminate good extension management strategies as well as to establish efficient, effective and financially sustainable extension systems in developing countries (for more information: www.meas.illinois.edu). As part of this project, the MEAS reports analyzed pluralistic extension systems in the following 11 diverse countries: Bangladesh, Egypt, Ghana, India, Liberia, Malawi, Mali, Nepal, Rwanda, Tajikistan and Zambia.

In each assessed country, the MEAS teams evaluated the roles and capacities of extension service institutions and examined the strengths and weaknesses of the pluralistic system. While the composition varied slightly by country, international development and extension specialists such as academics from different disciplines, consultants and NGOs’ professionals formed the assessment teams. These experts met with, for example, ministries and departments of agriculture, extension education institutions, major international and national NGOs and private firms to discuss topics that ranged from funding,
extension models and training to the use of ICTs and the relevance of nutrition and women farmers. Subsequently, these teams presented their findings to relevant stakeholders and recommended measures to address main deficiencies.

Table 1. Conceptual Framework for the analysis of Demand-Driven Services

<table>
<thead>
<tr>
<th>Characteristics of Extension Services</th>
<th>Demand-Driven Elements</th>
<th>Brief Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institutional Set-up</td>
<td>Decentralization</td>
<td>Brings extension services closer to farmers</td>
</tr>
<tr>
<td>Capacity and Management of Extension Services</td>
<td>Extension workers reach and are responsive to farmers</td>
<td>Based on funding and farmer organization, responsiveness to and articulation of demands are essential for demand-driven extension.</td>
</tr>
<tr>
<td>Capacity and Management of Farmers</td>
<td>Farmers are able to formulate and aggregate demands</td>
<td></td>
</tr>
<tr>
<td>Advisory Methods</td>
<td>Bottom-up approaches and methods</td>
<td>Via these methods, farmers’ voice, input and feedback is part of extension service provision</td>
</tr>
</tbody>
</table>

Note: Authors’ contribution based on the framework of Birner et al. (2006; 2009).

Although these assessments provide valuable information, some shortcomings are worth mentioning. First, they reflect the reality of extension in a given country at a particular time. Thus, some aspects of these services could be different now due to, for example, the MEAS recommendations or other changes in that country. Second, these data do not provide a representative sample. That is, the MEAS teams assessed those countries, in most cases, upon requests by the USAID missions, and so, given this self-selection, these sources share insights that might not apply across the developing world. Finally, although the MEAS teams shared the same objectives, the fact that their members varied led to personal influences on the writing and the emphasis on different extension aspects. Varying circumstances in the assessed countries also added disparities in terms of the interviewed stakeholders and the topics described. Consequently, it is difficult to analyze the same factors in every country and perform systematic cross-country comparisons that would lead to, for example, a typology of extension services or a ranking of countries in terms of demand-driven characteristics and governance quality.

Nonetheless, none of these concerns presents a major drawback for this paper’s objectives. Our methodology consisted in, first, analyzing the content of the MEAS assessments to identify the extent to which demand-driven elements existed in the assessed countries. Across the reports, we did so by narrowing down the information to those themes that refer to elements of our conceptual framework, including decentralization (institutional set-up),
responsiveness to farmers, articulation of demands, farmer organization/s (capacity and management) and bottom-up approaches (extension methods). Related terms and concepts for these elements were also considered such as local government institutions, capacity to reach farmers, farmer involvement, and participatory processes. Second, we followed the same approach to identify governance challenges. Building on the definition of good governance described in the introduction, we analyzed the content of MEAS assessments to find instances where the elements of our conceptual framework illustrated, were connected or explained aspect of poor governance (e.g., lack of transparency, no accountability, and irresponsiveness to farmers’ needs). The process of analyzing the content was repeated multiple times to guarantee that no important part was missing as well as to ensure meaning, fit to key themes, relevance and accuracy of results and conclusions drawn. Throughout the findings section, we also present quotations from the MEAS reports in order to give voice to the authors. Presenting verbatim quotations from research participants is common in qualitative research about agricultural issues (see, for example, Nyantakyi-Frimpong, 2017). Moreover, this approach brings transparency and credibility to the data analysis since it allows the readers not only to follow the authors’ interpretations of the data (Morrow, 2005), but also to make their own judgements on the presented findings.

Undoubtedly, this analysis does not exhaust all the potential demand-driven features nor addresses all the possible governance issues that might emerge in extension. Yet, guided by our framework, we underscore those present in our data. Additionally, although our study could be subject to bias via the influence of the reports’ authors. We anticipate this bias to be minimal and not affect our evaluations. These authors were extension and development professionals who shared the common interest of conducting an assessment that would help improve extension in the analyzed countries. Providing an accurate and truthful analysis was the best way to accomplish so. The objective of such reports was also different from this paper’s purpose, which makes it difficult for the authors to exert influence on this paper’s evaluations.

Findings: Demand-Driven Elements and Governance Challenges

Institutional Set-Up: Decentralization

The adoption of decentralized services that incorporate farmers’ input is not widespread. At the time of the MEAS assessments, extension systems in, for instance, Bangladesh, Liberia and Tajikistan were dominantly top-down (McNamara, Swanson, & Simpson, 2011; Swanson, 2011; Swanson, Meyer, & Weperen, 2011b). Yet, some countries such as Ghana, Nepal and Rwanda have taken steps toward decentralization. In Ghana, the goal of increasing accountability between the government and local residents led to decentralization and the allocation of funding to district offices (McNamara, Dale, Keane, & Fergurson, 2014). According to this report:

The Government of Ghana (GoG) is in the middle of a drive to decentralize government services and channel funds directly through District Assemblies and link staff directly to Districts. The overall goal of this program is to create a greater level of accountability of
government officers in line roles to the local people they serve. (p. 5)

Similarly, the Rwandan government decentralized extension activities to the local government to better address diverging farmers’ needs and make these services “more participatory and farmer-driven” (Swanson, Mutamba, Remington, Adedze, & Hixson, 2011a, p. 20). In addition, Nepal’s decentralization measures included the planning and implementation of development programs at the local government level by Village Development Committees and District Development Committees (Suvedi & McNamara, 2012).

While decentralization could make extension more responsive to farmers’ needs, the MEAS assessments find significant deficiencies in some of the decentralized countries. In Ghana, although decentralization aimed to increase accountability, the promised funds for extension had difficulties reaching the districts and farmers (McNamara et al., 2014). That is:

in District Offices we spoke with in the Northern Region, MoFA [Ministry of Food and Agriculture] staff reported that while their salaries had been paid and were current, funds that were supposed to have been received at the District level to support transportation and programmatic costs had not been received. (p. 3)

In Rwanda, despite the move toward decentralization and the emphasis on addressing farmers’ needs, local extension workers lacked adequate training and needed operating expenses and some of these district agronomists also had to perform non-agricultural assignments (Swanson et al. 2011a), which limited their interaction with farmers and their responsiveness to local agricultural priorities.

These findings are not surprising given that decentralized extension could still be subject to political influences (Anderson & Feder, 2004, Birner et al. 2007) and fit with the motivation of controlling power. That is, governments might transfer power and resources to lower levels when it is in their best interest (Crook, 2003). Put differently, decision-makers invest in decentralization if they benefit from empowering local extension agents and farmers. Unfortunately, this is not always the case. In Africa, decentralization has often been a mechanism to challenge political competitors and extend the power of the ruling groups to widespread localities (Cabral, 2011). Electoral reasons also affect fund distribution from the central government to other offices by favoring key voters and certain ethnicities (Crook, 2003; Devas & Grant, 2003; Ahmad, Devarajan, Stuti, & Shekhar, 2005). As a result, and as the MEAS assessments illustrate, despite decentralizing measures, extension services still lack transparency (in terms of where resources go) and effectiveness in addressing varying farmers’ needs.

**Capacity and Management: Extension Services**

Although reaching and responding to farmers’ needs is crucial for demand-driven extension, the MEAS reports indicate numerous instances of limited capacity and deficient management. In other words, the data show low demand-driven aspects in this dimension of our framework. In connection with funding, the MEAS reports find extension services having low operational funds, high vacancy rates, and high farmer-to-extension officer ratios in, for example, India (Bihar state), Malawi, Mali and Zambia (Simpson & Singh, 2013; Simpson
et al., 2012; Simpson & Dembélé, 2011; Tucker, Dolly, Phiri, & Chisi, 2015). In Malawi, for instance:

Staffing levels within DAES [Department of Agricultural Extension Services], across all levels, were reported to be approximately 70 percent of the established positions, or a 30 percent vacancy rate (Simpson et al, 2012, p. 5).

The high vacancy rates at the EPA [Extension Planning Area] level of DAES result in reporting of skewed staff/farmer ratios - in some cases, more than 2,700 per frontline worker. (Simpson et al, 2012, p. 20)

In relation to management, the MEAS reports point out how the absence of performance measures (quality audits, reward schemes, evaluations) leads to unmotivated and non-committed extension agents that undermine responsiveness to farmers in, for example, Ghana, Nepal and Zambia (McNamara et al., 2014; Suvedi & McNamara, 2012; Tucker et al., 2015). In Nepal: “33% of the JTs [Junior Technicians] and JTAs [Junior Technical Assistants] work hard and are well motivated, while the rest are low productivity employees who are protected by political allies within the agricultural bureaucracy” (Suvedi & McNamara, 2012, p. 26).

Given these circumstances, it is not surprising that extension fails to reach different types of farmers and respond to diverse agricultural needs in a demand-driven fashion. Moreover, it is possible to claim that these services present poor governance around the lack of accountability, responsiveness and inclusiveness of varying farmers’ needs. Of course, the lack of political commitment could be one reason behind this poor governance. Either because of an underestimation of extension’s development impact or the desire to invest in more electorally profitable activities such as seed and fertilizer (Chinsinga & Poulton, 2014), the reality is that funding extension services and investing in performance measures are frequently not top priorities for decision-makers in developing countries, which then results in poor governance.

Capacity and Management: Farmers

Farmers’ capacity and management ability to aggregate demands and request needed advise is a critical component of demand-driven services, yet the presence of well-functioning farmer organization and groups is not a given. In fact, the MEAS assessments show not only substantial variation on the extent to which organized farmers exist, but also on the reasons behind the presence of this demand-driven component. For example, the factors that facilitate group formation are sometimes inherent to group members and internal to organizations such as individual leadership in Egypt (Christiansen, Swelam, Hill, Gasteyer, & Swanson, 2011) and traditional authorities in Malawi (Simpson, Heinrich, & Malindi, 2012). For instance, in Egypt:

While the associations do provide technical assistance for agriculture and rural development, delivery is variable, fragmented and inconsistent … We often found that a key component in association success was the leadership of a strong individual. In some cases, this person was an extension agent, a recently retired extension agent, an accountant or a teacher. The association provided a venue for that person to genuinely help farmers and others in the community. The key
was that this person had capacity and connections that s/he built upon in delivering services. (p. 7-8)

Other farmers start cooperating because of the external influence of governments, NGOs and donors. That is, funding for farmer organizations plays a crucial role in the existence of groups and in their capacity to advocate for better services. According to the MEAS reports, in Bangladesh, the Danish International Development Agency (DANIDA) organized Integrated Pest Management (IPM) and Integrated Crop Management (ICM) clubs (Swanson, 2011), and in Nepal and Bangladesh, NGOs were the driving force behind the various groups representing farmers’ interests (Swanson, 2011; Suvedi & McNamara, 2012). In Malawi, the National Small Holder Farmers’ Association of Malawi (NASFAM) emerged out of an initially USAID-funded project and later benefited from multiple donor-financed projects (Simpson et al., 2012).

Nonetheless, funding sources raise questions about governance since the involvement of governments, NGOs and donors to promote and finance farmer groups can limit these groups’ advocacy impact, political relevance, and ultimately the establishment of accountable extension services. Governments’ motivation to create these groups can range from the sincere attempt to improve farmers’ lives to the more self-interest reasons of pushing their agendas and serving influential people through these organizations (Agrawal & Gupta, 2005; Poulton et al., 2006). This second option is a reality in contexts where farmer associations are useful to connect with rural elites, exert political control across the territory and silence critical opinions toward the government. When farmer groups become sufficiently large, politicians might also use these associations for electoral purposes and voter mobilization (Birner & Anderson, 2007). In such cases, farmer associations serve primarily a political purpose, while helping poor farmers becomes mostly secondary. Also, when farmer groups depend on governmental resources, they might be reluctant to raise criticism about how extension is run and public finances used. The MEAS team actually emphasized that, in Malawi, the funds for farmer organizations’ attendance to stakeholder panels had to be separated from the government so that these farmers could have a “truly independent voice” (Simpson et al., 2012, p. 18). That is, expressing an independent opinion is key to holding politicians accountable for the provision of quality extension services.

Similarly, donors and NGOs’ interventions to make extension more responsive to farmers’ needs via the financing of farmer groups can also be detrimental to establishing accountable services. Essentially, the fact that NGOs and donors are primarily responding to their funding agencies weakens overall accountability (Feder et al., 2001, Birner & Anderson, 2007). For example, the MEAS assessment from Bangladesh indicates the incentives of working with progressive farmers because of the easiness of showing impact (Swanson, 2011):

There was limited time … to actually assess the effectiveness and impact of the different USAID projects … However, based on conversations with the leaders of each project and after making limited observations in the field, there seemed to be more focus on small and medium-scale progressive farmers who are already marketing their products, rather than focusing on the rural poor (i.e. the small and marginal men and women
farmers with <0.5 acres). The obvious reason is that these USAID projects must empirically document specific outputs and impacts of these projects; therefore, they are able to achieve and measure more rapid and significant impacts by focusing on these more progressive farmers, most of whom seem to be male farmers. (p. 8)

Relatedly, the geographic focus and timing of projects also follow donors and NGOs’ goals and do not incorporate farmers’ input. The MEAS team in fact identified Ghana as a clear example of this so-called ‘projectization’ (McNamara et al., 2014). Consequently, if farmers have limited input in designing and evaluating projects, extension remains irresponsible and unaccountable to their primary users and thus subject to poor governance characteristics.

**Advisory Methods: Bottom-up Approaches**

When looking at bottom-up approaches that incorporate farmers’ voice, input and feedback, the MEAS reports find the use of PRAs and FFSs (with a greater or lesser success) in a multitude of countries. Interestingly, these assessments also suggest that the adoption of participatory committees is not a common practice and signal that governance issues are present in the few cases that have ventured into such forms of participation from below.

Malawi and Zambia are two examples of countries adopting participatory committees. In Malawi, the Department of Agricultural Extension Services created local stakeholder panels (or extension platforms) to enable collaboration between farmers and front line extension staff (Simpson et al., 2012; Sigman, Rhoe, & Peters, 2014). In Zambia, the Ministry of Agriculture and Livestock, with the initial support of the Swedish International Development Cooperation Agency (SIDA), adopted Camp Agricultural Committees as a strategy for local coordination, planning and monitoring of camp activities (Tucker et al., 2015).

Importantly, this evidence does not mean that extension services in Malawi and Zambia have local ownership and are fully responsive to farmers’ needs since, for example, participatory committees might exist in paper but not in practice and poor farmers might lack the time, funds and transport necessary to attend. Furthermore, *elite capture* is another reason why participatory approaches might not always promote everyone’s interests. Simply, elite capture means that the interests of the overall community are secondary to those of a powerful group. For example, politicians might fill meetings with supporters and set policies based on their own priorities (Sheely, 2015). In extension, while participatory committees can help farmers have their needs heard, these panels can be subject to elite capture and political influences. In Malawi, the MEAS report indicated that “for the panels to fully serve their purpose, smallholder participation in these panels needs to be financially separated from government to establish a truly independent voice” (Simpson et al., 2012, p.18). In Mali, the MEAS report points toward some farmers being more relevant than others in certain participatory processes (Simpson & Dembélé, 2011), which preserves existing hierarchies and discourages open participation from below. Specifically:

The DNA [Direction Nationale de l’Agriculture] maintains that it collaborates with the *Institut d’Economie Rurale* (IER) through an annual bottom-up planning process
starting at the commune level (annual plan de commune), which involves representative farmers. Interviews with the IER, on the other hand, provided a contrary view that extension representatives do not participate in these bottom-up planning sessions, and that the “representative farmers” involved tend to represent their own interests in these sessions. (p. 3)

In addition to elite capture and political influences affecting governance quality, donors and NGOs’ promotion of bottom-up approaches can also hinder the emergence of transparent, participatory and accountable extension services. First, if NGOs and donors become the main extension providers (as in many needed countries), farmers might not demand these services from elected representatives. Yet, having high expectations about public services is essential for organizing relevant elections and establishing well-functioning democracies. In other words, good quality institutions rely on taxpayers that hold politicians accountable for providing valuable public services. When this connection is missing, political development is at risk.

Second, NGOs occasionally take extension workers away from their public jobs to employ them in their projects, as observed by the Liberian MEAS team (McNamara et al., 2011). In contexts with limited funding and deficient staffing, this practice has a significant impact on public extension quality since it takes away the most experienced and capable agents. Thus, farmers might develop low expectations about public extension quality relative to those of NGOs. Yet again, holding public extension to high standards is the essence behind farmers’ mobilization to demand robust extension systems.

Finally, donors and NGOs sometimes give away attendance handouts (e.g., free inputs and tools) to farmers, as the MEAS teams reported in Liberia and Nepal (McNamara et al., 2011; Suvedi & McNamara, 2012). These practices, driven by donors and NGOs’ incentives to accomplish key goals, foster an environment where farmers’ participation is conditional on receiving something in return, which is something that public finances in most developing countries can barely afford. Most importantly, promoting a culture and expectations of ‘free gifts’ hinders an active civil society that mobilizes to demand good quality public extension services and builds governance processes around participation and transparency.

**Conclusion, Recommendations and Implications**

This paper has identified that control for power, elite capture, low political commitment, varying external funding sources, deficient farmers’ advocacy, and inadequate expectations hinder the emergence of good governance in extension services. As a result, extension services in developing countries are characterized for not being fully participatory, transparent, accountable, equitable and responsive to all farmers, including marginalized ones. Thus, this paper emphasizes the relevance of using governance lens to understand extension services quality.

Nonetheless, further research is necessary. To start, while the MEAS reports provide valuable information, analyzing the connection between demand-driven elements and governance quality would benefit from more detailed measures of the key elements in our conceptual framework. In other words, exploring different features around decentralization, capacity to reach farmers and participatory processes could explain what works and does not work to
improve governance. For instance, future research could explore how the design of participatory committees (e.g., location, participation rules and funding rules) influences farmers’ attendance and affects transparency and accountability in extension service provision.

Similarly, when exploring why governance challenges persist, it is necessary to conceptualize key ideas such as elite capture, lack of political commitment, and farmers’ advocacy. Once these concepts are clearly operationalized, research could, for example, explore how politicians, wealthier farmers or even the connection between the two cause elite capture in participatory platforms. Importantly, these key concepts might vary from country to country and be subject to context-specific attributes. Moreover, the context might influence certain demand-driven elements being successful in bringing good governance to extension services. Hence, exploring cross-country variation would be an important contribution to this research agenda. Undoubtedly, future research also requires identification strategies able to establish causal relationships that relate the presence of demand-driven features with improvements in the identified governance outcomes. This research agenda will eventually help draw lessons on how to strengthen extension services worldwide. This strengthening work is necessary to improving food security and reducing rural poverty across the developing world.

References


A Narrative Review of the Assessment of Extension and Advisory Services on an Agricultural Development Project in North-West Province, South Africa

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Abstract
The effectiveness of agricultural extension work relies upon the accessibility of staffs that are qualified, roused, conferred and receptive to the consistently evolving social, financial and political condition. This narrative seeks to highlight the role that extension and advisory services play on a specific Agricultural Development Programme Project in North-West Province of South Africa. It also explores how best the provincial government can ensure that policies are developed and timely interventions are delivered with the needs of the farmers being considered first. Recommendations for rapid growth in the cattle and livestock industry in the province were also suggested.

Keywords: Advisory services, Assessment, Extension services, Nguni Cattle Development Project
Introduction

The agricultural area is integral to rural improvement and can contribute essentially to activities to mitigate neediness. Strong extension and advisory services are therefore needed, these being led by the government in collaboration with the relevant role players. McCole et al. (2014) stated that the knowledge of agriculture is vital for food security. In many developing countries (South Africa as a case study), farmers still don't have approaches by growth and warning administrations because there still exist poor agricultural practices. The Department of Agriculture (2005) stated that "during the past ten years, agricultural extension in South Africa has undergone a fundamental change from a dualistic service (separate services for commercial and small-scale farmers) to a single amalgamated service, focusing on the needs of both the previously disadvantaged small-scale farmers and the large-scale commercial farmers". The Department of Agriculture (2005) expressed that amid the previous ten years, rural development in South Africa has encountered a noteworthy change from a dualistic organization (disengage organizations for business and little scale farmers) to a singular amalgamated organization, focusing on the necessities of both the as of now prevented little scale agriculturists and the huge scale business agriculturists. It is, in this way, vital to separate amongst expansion and warning administrations. The most widely recognized definition utilized for "agricultural extension" alludes to a 'procedure that enables farmers to end up mindful of enhanced advancements and embrace them with a specific end goal to enhance their productivity, wage, and welfare' (Purcell & Anderson, 1997).

Extension and advisory administrations are intended to improve the living standards, agricultural productivity, and livelihood of farmers by introducing appropriate technology and the use of proper and effective communication and information channels. David and Samuel (2014) highlighted that in South Africa, gaps in the extension and advisory services were evident in a number of provinces. In addressing the gaps, measures and regulations for extension and advisory services were developed by the government. It is largely the responsibility of the South African government to deliver extension services to farmers through the provincial departments.

However, such services are also provided through the private sector and NGO's such as LIMA to farmers to improve production. It can likewise be noticed that the extension and the advisory delivery system is essential towards changing the little scale burdened agricultural division of South Africa, and legitimate guidance must be offered to farmers productively and routinely. Agholar et al. (2012) expressed that the utilization of expansion training in decreasing neediness in South Africa is vital given the vast assets accessible in the agricultural area. Moreover, the arrangement of advisory administrations increases agricultural production and the utilization of appropriate correspondence through extension administrations impacts the selection of new or enhanced innovation.

Agholar et al. (2012) noted that the provision of reliable and timely advisory services is particularly advantageous for the livestock and cattle sector. Agholar (2012) contended this sector has been neglected by policymakers and researchers, despite its growing importance in the economy through addressing poverty alleviation, land redistribution and so on. South Africa has different cultivating regions, extending from serious harvest generation in winter precipitation and high summer precipitation regions to steers farming in the bushveld,
much of the land surface being suitable for grazing, which is the main farming technique for cattle rearing and farming. The arrangement of dairy cattle raising has contributed around 25-30 percent of the aggregate cultivating yield per annum (Ijatuyi, 2016).

The Agricultural Development Project (Nguni Cattle Development Project) was introduced and funded by the government and has been placed in the hands of the Department of Agriculture to render extension administrations to agriculturists, helping them turn out to be more production inclined in order to increase their income. However, barriers to improved productivity such as poor funding, lack of technical expertise and proper infrastructure have been identified as weaknesses in the agricultural extension and advisory services. These services should be affordable, if not free, easy to access and readily available for farmers, but in the absence of the extension officers being properly trained or even, farmers seek advice and services from private organizations or NGO's. Extension services are generally more expensive in the private sector but are provided on time due to the availability of adequate infrastructure, resources, and trained personnel. However, very few farmers and farming communities can access them due to the need to pay for their services, the absence of access to any support services putting these farmers at a clear disadvantage. Those farmers who are able to pay for the private services are generally in a position of benefiting more as a result of the services afforded to them, leaving out the majority of the poor cattle rearers with no access to agricultural advice, marketing opportunities, general herd management and other information sources related or relevant to livestock farming due to their financial disadvantage. This narrative seeks to highlight the role that extension and advisory services play on a specific Agricultural Development Programme in North-West Province of South Africa, and also communicate through its recommendations, improved policies to assist both extension agents and farmers.

**Study Context**

The theoretical background on agricultural extension approaches and a description of the agricultural development programme is provided to contextualize the study followed by extension being a development concept, the support which extension and advisory services rendered to agriculture together with its challenges. The theoretical framework on Agricultural Extension Approaches as indicated by Akpalu (2013), Bergevoet and van Woerkum (2006), the diverse methodologies utilized as a part of rural expansion benefit conveyance have been characterized under four ideal models, to be specific, the exchange of innovation, critical thinking, learning and adult education, and human development.

**Exchange of Innovation Approach (Transfer of Technology)**

The Exchange of Innovation approach has been portrayed as a restricted model, from science to home, in which the client is the inactive recipient, subsequently; information is viewed as a thing that streams from science to the customer. Bergevoet and van Woerkum (2006) talked about that the exchange of innovation demonstrate has been scrutinized on the grounds that the innovation prescribed isn't really adjusted to or reasonable for the particular circumstance that an individual farmer is stood up to with. Regardless of every one of these reactions, exchange of innovation is as yet a usually utilized expansion worldview (Coutts, 1994).
Critical Thinking Methodology

Critical thinking is a fundamental piece of extension benefits, the design being to help farmers to discover answers for innovative or administration issues. In farmers' training, critical thinking is a regularly utilized configuration to exchange learning, with skill being given to farmers by people or a gathering of counselors (Hogeveen et al., 1992).

Learning and Adult Education Methodology

Madukwe (2006) communicated that learning in an investigation bunch is a proactive easygoing technique for preparing that urges individuals to better appreciate their condition. To have the ability to get information into the learning technique that happens, grown-up learning theories may be of help, with learning cycles and styles having been used to delineate the examination gather learning forms. In any case, while in the meantime being used as a hypothetical framework for adult taking in, the strategy for learning cycles and styles has not been used as a piece of agribusiness. The learning strategy has been viewed as a reliably rehashing process that is managed by one's needs and destinations, with individuals developing their own particular learning cycles. Four learning styles, specifically, unique, assimilation, centered and accommodative learning have been recognized as identified with the unmistakable periods of the learning cycle (Kolb, 1984).

Human Improvement Approach

In human improvement, Coutts (1994) and Madukwe (2006) all talked about that extension and advisory system is a way to encourage and empower people or gatherings to step up with regards to characterizing issues and looking for answers for individual and societal concerns, including openings (Ijatuyi, 2016). This extension worldview comprises of participatory methodologies that are received because of the expanding multifaceted nature of agricultural and environmental issues. These methodologies have merits, including: guaranteeing the acknowledgment of neighborhood methods for knowing; supporting nearby development and adjustment; including partners in investigations that has a financial and moreover social impact on the developing group; perceiving the advantage of sharing information and considerations among farmers; enabling maker ownership both of issues and replies, and making utilization of the group for learning. Akpalu (2013) featured that these methodologies have been censured, as farmers may not perceive issues (for instance, environmental issues), in which case non-participatory methodologies might be added to their human development. Besides, Black (2000) expressed that "there may likewise be the predominance of circumstances that may make thoughts be rejected, and the spread of information created in gatherings might be restricted to the gathering itself".

Methodology

This paper was developed using information from published and unpublished primary, secondary and tertiary sources.

Study Area

The North-West Province (NWP) is the fourth-smallest province in the Republic of South Africa. Nationally, the province borders the Northern Cape, Free State, Gauteng and Limpopo Provinces with the Republic of Botswana in the North-east. With a total area of 106 512 square kilometers and a mid-2010 population of 3.2-million (7.1%), it is mostly rural in nature. The Province is divided into four districts, namely, Ngaka Modiri Molema,
Bojanala Platinum, Dr. Kenneth Kaunda and Dr. Ruth Segomotso Mompati with Mahikeng (previously Mafiking) as the capital (Statistics South Africa, 2010). The dominance and locality of agricultural activities were the main reasons for selecting the study area.

**Results & Discussion**

A number of themes emerged from reviewing the literature regarding the role that extension and advisory services play on a specific Agricultural Development Programme in North-West Province of South Africa. The study showed the relationship between the ADP, the description of the breed, and the importance of the livestock to the environment. Furthermore, extension as a function, development, and concept was discussed together with its challenges to agriculture.

**Extension as a Function and Development Concept**

The Ethical Tea Partnership (2014) stated that "agricultural extension is the function of providing need and demand-based knowledge in agronomic techniques and skills to rural communities in a systematic and participatory manner, with the objective of improving their production, income and, by implication, quality of life". Extension can be sub-divided into three groups: the public, the private profit and the non-profit sector. The need for agricultural extension was addressed in studies by Picciotto and Anderson (1997), Anderson (2007), Ngomane (2006), Eicher (2003), World Bank report (2000), Zwane (2012) and David and Samuel (2014), in which they all featured the fundamental focal point of extension work as being expanded food sustenance and spreading the advantages of enhanced cultivating methods.

David and Samuel (2014) further stated that agricultural extension and advisory services confront various difficulties in adequately responding to and achieving their objectives. The key challenge remains how to develop and implement strategies and approaches to ensure the optimum participation of farmers. According to Oladele et al. (2004), agricultural advisory and extension services have been changing over the past few decades. These changes are attributed to many factors that include policy and political changes, and more recently, the participation of the non-governmental organizations (NGOs) in farmer support services.

Despite the fact that as a formative idea extension is in wide utilize particularly in the rural and rural advancement sectors, extension benefit means diverse things to various individuals. Agricultural extension is intended to enhance farm efficiency in order to empower individuals to enhance their way of life and personal satisfaction. Extension can, thus, be an education; its point being to realize positive behavioral changes among farmers. In this way, extension administrations are characterized in this investigation as an administration of information, information and expertise advancement to upgrade the selection of as good as ever agricultural advances, and to encourage linkages with other institutional help administrations (input) supply, yield showcasing, and credit those farmers can profit by.

The Department of Agriculture, South Africa (2008) demonstrates that rural extension and advisory administrations are occupations that adjustment because of the earth in which they work, and their customer base needs and prerequisites. Extension and advisory services hence require a workforce that is prepared, devoted, and gifted. Figure 1 delineates that Agricultural Information
System (AIS) for rural advancement ought to interface individuals and associations to advance learning and create, offer and utilize agriculture-related innovation, learning, and information to the best-preferred standpoint.

Figure 1. Agricultural extension as part of Agricultural Knowledge System/Agricultural Knowledge Information System (AKS/AKIS) 
Source: Department of Agriculture, Forestry, and Fisheries (2008/9-2010/11)

**Extension and Advisory Services' Support and Challenges to Nguni Cattle Farmers**

According to Ijatuyi et al. (2017), the place of extension and advisory administrations in improving farmer's learning, aptitudes and in addition advances can't be overemphasized. Extension and advisory services encourage word of mouth passage of information, physical demonstrations of innovations and improved methods. Extension helps in the passage of information and innovations from the scientist to the farmers, thereby assisting farmers in taking decisions, as well as setting and clarifying their goals. Rivera et al. (2001) stated that "agricultural extension also is concerned with providing information on other crucial issues, such as food storage development, processing, farm management and marketing". Insufficiently trained workers are a major challenge to the extension and advisory service system. When there are workers, lack of proper infrastructure and enabling the environment to mitigate against the will to work. Extension workers are not fully equipped the technical know-how, proper efficient training, and infrastructure. If extension workers are well empowered, the expectation would be that each and every extension agent who benefited from this empowerment would be a specialist in no less than one field of specialized agriculture in order to be fruitful in conveying extraordinary administrations to the farmers with every one of its obligations which are altogether capsulated in correspondence.

Extension is regarded as a bridge between farmers and researchers; one of the purposes is to transfer information. According to Mbo'o-Tchouawm and
Colverson (2014), many factors have contributed to the challenges of extension and advisory services to be rendered. These incorporate deficient assets for supporting extension endeavors, poor resourcing, confused structures bringing about the poor foundation for drawing in agricultural organizations, the constrained inclusion of rural farmers in the extension processes, and the absence of fitting techniques for powerful research and sufficient extension strategies. The impact of the extension and advisory service to the Nguni project has been minimal due to the limited extension service provided to the farmers since the project inception. Additional challenges include: poor road infrastructure, the distances extension agents need to cover, limited training centres that are adequately equipped, the high proportion of extension workers to farmers, the level of commitment to the programme by the extension agents, the salary package, lack of the basic amenities in the society, and poor extension programme funding.

Gwala (2013) highlighted that extension services failed to tackle challenges such as cattle production in general with only about 37.8% and 32.1% of the farmers in his study area having access to extension services. In which case, the services rendered were of low quality because of the correspondence systems used to give these administrations. Ijatuji et al. (2017) recorded that extension and advisory services rendered to Nguni cattle farmers was average and contributed greatly to the livelihood of the farmers. But at the same time, an average service is not the target of the government on the Agricultural Development Project (ADP). Davis (2016) also highlighted that extension service remains a critical institution for supporting rural livelihoods and the sustainable development goals. Furthermore, Davis and Sulaiman (2014) stated that extension services delivery perform a vital part in agricultural advancement and it decreases hunger and poverty.

According to Cwale et al. (2012), participants of the ADP indicated an upward growth since they started accepting extension and advisory service that was being rendered. The majority (67%) of participants in their study area has recorded increase in financial, physical, natural, and social capital. In a study by Gwala (2013), most of the farmers that were interviewed showed extension services had more relationship with the male farmers instead of the service cutting across all gender equally. Nguni Cattle, Description and the project

According to FAO (2006), livestock generates and contribute approximately 18% of greenhouse gas emission (CO₂) into the environment, equivalent to more than the transport system. The FAO (2006) featured that the expanded flourishing in the livestock area has prompted individuals devouring more meat and dairy items consistently anticipating the generation of overall meat from 229 million tons in 1999/2001 to 465 million tons in 2050, while milk yield is set to move from 580 million tons to 1043 million tons in the midst of a comparative period. The effect of the livestock division on the economy is becoming quicker than some other agricultural sub-area. Domesticated animals cultivating gives a wellspring of occupations to around 1.3 billion individuals comprehensively and contributes around 40% to the worldwide farming yield. Domesticated animals are likewise a wellspring of the sustainable power source and a basic wellspring of natural manure for some poor farmers in creating nations for their yields. Domesticated animals cultivating involves roughly 30% of the whole land surface, generally for the lasting field, 33% of the worldwide arable land being utilized to deliver sustain for animals.
Ntshpepe (2013) further stated that a "smallholder livestock farmer in South Africa is in a difficult position, not only grappling with a changing global environment but at the local front without access to domestic markets". Ntshpepe (2013) further stated that "the lack of marketing information limits adequate access to livestock markets by smallholder farmers due to the very limited knowledge of buyer requirements originating". Statistics released by the North-West Department of Agriculture (2003) demonstrates that an expected 1.816 million herds exist in the North-West Province, which is around 12% of the total in the country. As developing countries have many smallholder family farmers, it is important that livestock developments benefit these poor rural families. According to Pathak (2014), smallholder farmers, especially the women, stated that livestock helps them earn their own regular income and provides food, specifically protein, with the manure being used to fertilize crops.

Nguni cattle are an indigenous South-African breed and therefore suited to various local environments, which, until recently, faced considerable discrimination of cross-breeding with the imported breed (Bester et al., 2003). Its adaptive traits have more recently led to it being regarded as a highly suitable beef breed in both intensive and extensive farming systems, hence the birth of a programme to develop it as a national breeding herd. The Nguni breed was able to enter the developing business segment, and broad research encouraged breeds upgrades. These occurred in the commercial sector, which began to appreciate their resistance to disease and local adaptability with the benefits not being made available to community farmers who had ensured the survival of the breed (Bester et al., 2003).

According to Bester et al. (2003), "it is small to medium in size depending on the prevailing nutritional conditions; the depth is good and is accompanied by a moderate width. Mature cows have fairly short legs with good feet. The dewlap is medium-sized and thin. The cervicothoracic hump is hardly noticeable in the mature cow but is fairly well developed in the full-grown bull. The barrel of the Nguni cattle is of good length and strength, the rump is inclined to droop towards the tail and the rear quarter is light. The head is of good size with a flattish poll. It has a broad dished forehead, widest between the eyes. The face is wide and straight to slightly convex in profile. The muzzle is broad and the ears have a refined look, being small with a sharp apex. The horns are usually round are noticeably lyre-shaped in mature cows. Coats are soft, fine and glossy with the udder and teats small to moderate". In summary, the Nguni cattle has shown that it is created through a procedure of normal determination in an exceptionally difficult condition and that it has the hereditary potential to perform well under ideal generation situations. It is additionally a medium-outline creature with a measure of tick resilience and illness protection.

The goal of the project is to re-introduce the indigenous breed to rural community farmers in North West Province. The targets of the project are to empower and ensure the upliftment of emerging livestock farmers to become commercial Nguni cattle producers. It is furthermore intended to transfer skills and the capacity necessary to establish black commercial livestock farmers and, lastly, to create jobs for the rural poor. The project envisages training beneficiaries in financial management, computer literacy, infrastructure maintenance, value adding and processing. The Nguni cattle development project is a collaborative initiative participatory between three
organizations, these being the North-West Department of Agriculture and Rural Development, the Industrial Development Corporation (IDC) and the North-West University (Mafikeng Campus). The aim is to re-introduce the indigenous Nguni cattle to the mainstream of the livestock Industry (SA News, 2013), these farmers assuming a noteworthy part in economic development, work creation, sustenance security and change in the industry.

A grant of around R 45 million was made accessible by the IDC to actualize the Nguni cattle venture, which included setting up the core of enlisted Nguni herds in shared towns over a time of five years. The project brought together traditional farmers who rear, breed and have conserved both the indigenous and commercial livestock in order to ensure the survival of this breed (IDC, 2007). The accomplishment of this venture depends to a great extent on giving extension administrations, preparing livestock supervisors and actualizing venture administration. This is vital to guarantee that the unadulterated breed that were sourced from community farmers retain their genetic value. The Nguni cattle development was launched jointly in the North-West and Limpopo Provinces in February 2006. Certain assumptions were made, among which were that the animals produced would be of market quality and that there would be sufficient resources on the ground to maintain production leading to improved meat supplies on the market. However, a number of problems were encountered; including the lack of qualified extension staff to monitor the project, minimal infrastructural development on communal lands, lack of record keeping and rights to possess or to use that is land tenure systems.

The introduction of the Nguni cattle, particularly the bulls, to the community farmers was an exertion by the Department of agriculture and the University of Fort Hare as a team with a few NGOs who are knowledgeable about communal farmers (Mapiye et al., 2007). The bulls were intended to bring new genetic stock to the cowherds to enhance livestock production, while the extension support was intended to develop community institutions, and farming opportunities in rural areas (Bester et al., 2003). To enhance the introduction of the cattle in rural zones, sustainable models need to be developed to boost their productivity, improve the productivity of communal areas, and assess the quality of the existing stock (Bester et al., 2003). Nguni cattle development has the potential to create economic growth in rural areas, generate job opportunities in adding value to the food processing industry, and improves the standard of living of the farmers (Sikwela & Mushunje, 2013).

Agholar (2012) showed that a major way to develop agriculture in the livestock sector is to provide extension services that will increase and improve production. Through effective services, agriculture extension service can assist in alleviating poverty, improve the standard of living, and improve food security. They can possibly diminish rural poverty, which likewise relies upon education and training opportunities healthcare provision in many rural areas (Organization for Economic Co-operation and Development [OECD] 2006) as cited by Agholar, 2012).

For the services to have an impact, they must embrace current research and involve farmers in their extension programme (Agholar, 2012). Muchenje (2015) stated that the Nguni cattle development venture has additionally observed branches and coordinated efforts rising, particularly the South African Research Chair Initiative (SARCHi) in meat science, which is bestowed to Stellenbosch University and the Technological and Human Resource for Industry Programme.
(THRIP) in animal science and meat science in relationship with the Red Meat Research and Development of South Africa (RMRD-SA).

**Nguni Cattle as an Agricultural Development Programme**

Agricultural development programmes are schemes established by the government to improve farmers’ productivity, environmental status, and farming skills and knowledge. Agricultural development programmes are envisaged to reduce poverty through rural development, enhance food security, and improve access to both local and international markets. An example of the development programme is the Nguni cattle project, which is intended to improve the productivity of livestock holders and encourage those farmers who are yet to start and participate in the programme to learn about the advantages of the Nguni development cattle programme. The aim is to teach the Nguni cattle farmers how to breed and maximize their returns from the cattle. As a result, the North West provincial government, together with the Provincial Rural, Environmental and Agricultural Department (READ) introduced the North-West Nguni Cattle Development Project. Farmers who participated in the development programme were to work with extension and advisory officers in order to get the maximum output from the programme. The Project started in February 2006 as a partnership between the Industrial Development Cooperation (IDC), Department of Rural, Environment and Agricultural Development (READ) and the North-West University (NWU), with the aim of reintroducing Nguni cattle into the province by providing deserving beneficiaries with heifers and bulls on a grant-loan basis.

**Access to Extension and Advisory Services for an Agricultural Development Programme**

Israel et al. (2011) defined an extension programme as, "a comprehensive set of activities that are intended to bring about a sequence of outcomes among targeted clients". Some of the Agricultural Development Projects that are overseen by extension services in the province include Household Agricultural Livelihood Development, People group run Indigenous Nurseries, Agricultural Crop production Infrastructure, Fundamental administrations and Infrastructure, Livestock Project Undertaking and Family unit Poultry Cultivating Venture. Extension agents have always engaged the community in training, and this is always followed up by monitoring and mentoring.

In an investigation did by Gwala et al. (2016), Agricultural Development Project did not record much participation due to the lack of exposure. Nguni Cattle Development Project had just about 17% of youth participation. A poor youth participation record thus implies a breakdown in the transfer of indigenous cattle rearing skills from the aged populations to the young and able youth as suggested by Lesoli (2011). There are stages that extension programmes go through before their advice are adopted and accepted. These include awareness stage (when the innovation or technology is made known to the farmer); knowledge stage (when the introduced technology is understood by the farmer); adoption stage (when the farmer decides to accept the introduced innovation) and practicing stage which is when the farmer finally put the adopted technology or information to use.

Interest in extension administrations is an imperative instrument for enhancing rural profitability and expanding farmer's wage (Anderson, 2007). Ejembi et al. (2006) demonstrated that training and visit (T&V)
extension has been censured for being top-down, top-overwhelming, wasteful and insufficient. Furthermore, Ejembi et al. (2006) stated that the training and visit approach was introduced by World Bank Agricultural Development Programme (ADP) to understand the problems of poor organization, dilution of efforts, impropriety, and untimeliness of messages intrinsic in the traditional extension framework. Mohammed et al. (2015) expressed that the training and visit approach is more compelling than the utilization of information innovation or media, successful and opportune conveyance of messages, regular extension farmer contact, and training, these being pre-imperatives for a viable agricultural improvement programme.

Ejembi et al. (2006) opined that despite the fact that information diffuses considerably speedier among farmers through relational correspondence channels, their capacity to get convenient information to take care of particular creation issues relies upon guide access to extension operators. It urges farmers to examine the difficulties they experience on their farms with the extension agents amid visit and to show off new or enhanced systems.

Agricultural education and rural extension have been echoed by development specialists as essential to achieving agricultural change, destitution abatement and sustenance and food security (Ragasa et al., 2013). Ragasa et al. (2013) additionally expressed that there is a precise and measurably critical gender distinction as far as access to different channels and kinds of extension administrations. Jiggins et al. (1997) express that gender is a critical variable for investigating the roles, duties, requirements, openings, motivations, expenses and advantages in agriculture.

Also, the need to improve women's entrance to agricultural research and extension administrations must begin with an examination of people's enthusiasm for the cultivating creation process in regards to this components. According Nambiro et al. (2006), these were the separation from towns and access to methods for communications and essentially affected access to extension benefits particularly in rural areas. These authors additionally expressed that the nearer the client is to the wellspring of extension, the more probable he/she is to look for its services. Many other factors have also been identified as influencing access to extension services, such as income and literacy level, wealth status, access to media (radio, television), resources (including fuel) age and gender, resulting in extension agents spending time in locating farms. The willingness to pay for services that were previously free of charge is another factor that affects the access to extension services.

Innovations that have been initiated into the extension and advisory administrations conveyance framework to help and create enhanced outcomes incorporate farmer support groups that emphasis on rural resource centers, networking and marketing frameworks, volunteer advisory administration projects and ICT-based methodologies (Mbo'o-Tchouawm & Colverson, 2014).

**Conclusions**

The literature reviewed indicated that extension and advisory service comprises trained staffs that are required to support farmers by passing on information about different parts of farming, including innovation, to build efficiency. Extension and advisory administrations assume an indispensable part in guaranteeing the achievement of all parts of agriculture, empowering association amongst farmers and the extension and advisory specialists. The literature additionally uncovered that
Agricultural Extension and Advisory services in the field of agricultural advancement have seen numerous adjustments in the previous decades. The main pattern is the adjustment in theory and method of the reasoning behind extension services towards more participatory methodologies. This paper suggested that for the success of agriculture, the government should ensure that extension and advisory services are readily available, accessible and affordable by all farmers whether rich or poor.

Several aspects of improving cattle production have been discussed including improving the relationship between the farmer and researcher through extension, the challenges of livestock and the effect on the environment, improving the livelihood of the smallholder farmers and the access to extension and advisory services by the farmers.

**Recommendations**

From the reviewed articles, the government should continue to provide basic training and infrastructure needed for the agricultural extension agents available so that they can continue to disseminate timely ideas and innovations to farmers regarding the Agricultural Development Project. It is also recommended that government should subsidize the cost attached to extension and advisory service delivery so that all farmers in the province would be able to afford this service from the Department of Agriculture. Furthermore, it is recommended that better communication strategy between extension officers and farmers be developed to allow and foster better interaction.

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Determinants of Student Persistence in Completing BS Agriculture Degrees in the University of the Philippines

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Abstract
The study used descriptive research design to identify factors that explain persistence of BS Agriculture (BSA) students in the University of the Philippines Los Baños during their first year of college as they moved on to the next year level towards degree completion. In addition to self-administered questionnaire, Key Informant interviews were also conducted. Findings reveal that institution-related factor particularly the institution’s commitment to academic excellence constitutes most to the experiences of agriculture students. Analysis of Variance reveals a significant difference in the persistence of BSA students across year levels. The results of the study point out that, as per responses of the students as well as the faculty and administrators interviewed, the University has not gone far enough to ensure that BSA students are supported in an efficient manner. The University of the Philippines, being the National University has much opportunity to make positive changes in persistence of these special populations of agriculture students. Thus, it needs to take steps toward making more of a commitment to student success.

Keywords: agriculture education, degree completion, determinants, persistence, Philippines

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Introduction
The agricultural sector plays a crucial role in the economic progress of the Philippines despite the plan to make it an industrialized economy since year 2000. As an agricultural country, the Filipinos cannot ignore the importance of agriculture. Inasmuch as most of its citizens still live in rural areas and support themselves through agriculture. But sadly, agriculture is becoming the least appealing career choice among young people nowadays. The students want jobs that are urban in nature, into information technology, arts and science. In short, those that can land them in any office work. Truly they do not find agricultural studies interesting.

Agriculture education is just one of dozens of "undersubscribed" courses, or those college programs that have low enrolment and graduation rates, as opposed to "oversubscribed" courses such as nursing, business administration, and teacher education (CHED, 2016). Data from the Commission on Higher Education (CHED) for school years 2001-2002 to 2013-2014 showed that courses on disciplines such as Agriculture and its related fields have consistently low enrolment figures. All consistently below 100,000 annually (CHED, 2015).

The Philippine government-hosted Southeast Asian Regional Centre for Graduate Study and Research in Agriculture (SEARCA) confirmed that enrolment in agriculture and related courses has been declining by an average of 1.5 percent every year (Fernandez, 2015). For instance, the enrolment in agriculture courses at the University of Philippines Los Baños has declined over the past 30 years. A decrease from 51% of the total student population in 1980 to only 4.7% in 2012 (Pedroza, 2015).

How to attract the best young people to this industry is one such challenge. In fact, increasing food production in this country over the next few years and producing some of the renewable energy needed is quite attainable. We can do this whilst continuing to care for the environment and preserving our precious landscapes and wildlife. We can encourage more people to spend time and money enjoying and learning about the countryside and what it has to offer. But it will be a big question on how to get them interested in this field. We surely need the best people managing our crops and our livestock to achieve all this. We need fresh ideas from new generations of agricultural practitioners. As what we have learned in the last few months is an uncertain financial future.

Besides, the need to cope with climate change, how to make certain that agriculture and its related industries attract the best potential entrants out of a decreasing pool of young people is more serious problem that we need to address. How can we help this special population of students who find interest in the field of agriculture to pursue their chosen degree until completion? We will not succeed unless we put our best effort to explore the best possible option to face up these challenges ahead of us now.

Purpose and Objectives
The purpose of this study is to unearth the determinants of student persistence in completing their bachelor’s degree in agriculture in a state university in the Philippines. It specifically determined the factors that explain persistence of BS Agriculture students; identified the issues connected to the persistence of BS Agriculture students; and analyzed the difference in persistence of BS Agriculture students across year levels.

Models of Student Persistence
Student persistence has been the subject of academic investigation since
1960s (Braxton, 2009). The following theories explain some of the factors that are instrumental to student persistence:

**Alexander Astin’s input-environment-outcomes model** explains how various environmental factors influence the student persistence that is whether their academic aspiration increases or decreases under varying environmental conditions (Astin 1991, in Ortega-Dela Cruz, 2015-2016). Input refers to student attributes during the time of entering college. These input characteristics further explain how students’ attributes and backgrounds contribute to their ability to persist. Environment refers to institutional interventions, including educational programs and student scholastic experiences (Astin in Murray, 2006). Environmental variables that might influence student success include: institutional characteristics, type and quality of students' peer group, faculty traits, the entire curriculum including formal and hidden curriculum, availability of financial aid services, major field of choice, residence, and student involvement; whereas, outcomes are the student's characteristics after exposure to the environment, which in this study is referring to the student persistence in completing their BS Agriculture degree.

**Vincent Tinto’s theory of student departure** asserts that integration into formal (academic performance) and informal (faculty/staff interactions) academic systems and into formal (extracurricular activities) and informal (peer-group interactions) social systems are keys to student persistence. Tinto argues that the institution shares this responsibility for helping students achieve academic and social integration (Tinto, 1993 in Tinto 2006-2007). Therefore, positive encounters in both formal and informal academic and social settings lead to a greater likelihood of retention. Tinto uses the term integration to describe the extent to which students ‘fit’ into the institution’s community. As the integration increases it strengthens the student’s commitment to both their personal goals and to the institution through which these goals may be achieved (Pascarella and Terenzini, 2005 in Reisinger, 2016). Conversely, negative interactions and experiences inhibit integration and may prevent students from becoming members of the academic or social community.

**Conceptual Framework**

The following framework, based on the work of Astin (1991), and Tinto (1993; 2006-2007), provides an all-inclusive model for studying student persistence.

Figure 1 shows the determinants of student persistence which comprise three categories: student-related factors, institution-related factors, and classroom-related factors. These student-related factors including demographic characteristics, academic performance, as well as personal, academic and career disposition determine students’ succeeding experiences upon entering the college through their interactions with the institution-related and classroom-related factors. The institution-related factors include the type (i.e., the level of degree accreditation of the State University as determined by the Commission on Higher Education such as Level IV) and processes being implemented by the institution as well as academic and co-curricular procedures. Whereas, the classroom-related factors add up to the individual student experience in relation to the quality of instruction and curriculum they receive from their educational institution. All of these interplay in the persistence of agriculture students towards degree completion.
Figure 1. Conceptual framework of the determinants of student persistence

Methodology

Research Design
This study used the descriptive research design to address determinants that explain why agriculture students persist in pursuing their Bachelor of Science in Agriculture course towards degree completion. It utilized interviews and survey questionnaire to gather data regarding students’ demographic characteristics and their perceptions on the factors that relate to their persistence.

Study Participants
The sample consisting of the BS Agriculture students for the second semester of the academic year 2014-2015 were randomly selected. This study seeks to identify determinants of student persistence during their first year of college as they moved on to second year, third year and fourth year by the selected demographic characteristics including age, sex, enrolment status and major.

Sampling Procedures
The study employed the stratified random sampling with proportional allocation of the respondents. The student respondents from second year to fourth year level represent 47.7 percent of the total research population. This was done to give opportunity for the population considered in the study to be selected randomly.

Table 1 shows the proportional distribution of 210 student respondents with a total research population of 441 students from second year to fourth year level.
Table 1  
**Distribution of Research Participants**

<table>
<thead>
<tr>
<th>Year Level</th>
<th>Population of BS Agriculture</th>
<th>Respondents of the Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd</td>
<td>121</td>
<td>58</td>
</tr>
<tr>
<td>3rd</td>
<td>147</td>
<td>70</td>
</tr>
<tr>
<td>4th</td>
<td>173</td>
<td>82</td>
</tr>
<tr>
<td>Total</td>
<td>441</td>
<td>210</td>
</tr>
</tbody>
</table>

Source: Office of the Registrar, UPLB 2nd Semester, AY 2014-2015 (Excluding freshmen and transferees)

**Data Gathering Instrument and Procedure**

The study utilized perception survey questionnaire to measure the student persistence. In particular, persistence refers to the student aspiration to complete a four-year bachelor degree in agriculture. Persistence factors are composed of fifteen-item (15) student-related, seventeen-item (17) institution-related, and eighteen-item (18) classroom-related factors, a total of 50 perception statements in all. These indicators were all based on the theories, models particularly of Astin and Tinto and other pertinent literatures that explain why student persist in college. The instrument was validated by experts and was pilot tested to 10 BS Agriculture students who were not part of the respondents.

Aside from the student’s self-administered questionnaire, which received a 100 per cent response rate, a survey was also administered to the faculty, research and extension professional staff (REPS) and administrative staff. A total of 105 members of the academe and administration answered the questionnaire. The sample was based on the number of respondents who actually returned the questionnaire to the researcher. The survey got about 95 per cent response rate.

Key informant interviews using structured open-ended questionnaires were also conducted. The interviews were based on the availability of the identified respondents. The study include 25 program graduates, selected faculty members and administrators including the course adviser, college secretary, institute directors, dean, as well as the office of student affairs director. The interviews ask for their perspectives on the factors that support and hinder persistence of students in completing BSA degree.

**Data Analysis**

The study used the Statistical Package for the Social Sciences (SPSS) software version 16 in analysing the data. This study employed descriptive statistics (i.e., frequencies) to analyse the items related to personal, academic and career disposition and also the perceptions of student-respondents regarding institutional processes, academic and co-curricular procedures, faculty traits and curricular experiences. The study also used the analysis of variance (ANOVA) to analyse the differences in persistence of BS Agriculture students across year levels. Content analysis was done to analyse qualitative data gathered from the KI interviews.
Results and Discussion

This section presents the detailed discussion of results. Quantified data were tabulated, analysed and interpreted. For better understanding, the data are presented in tabular form and generalizations were developed to determine the factors that explain persistence of BS Agriculture students towards degree completion.

Table 2 shows the demographic characteristics of the student respondents in terms of age, sex, major, enrolment status, and self-assessment of academic performance in terms of grade point average. There are 210 student-respondents in all; 96 or 46 percent are male and 114 or 54 percent are female. Majority of these full-time students are between 18 to 20 years of age. Three (3) students or 1.4 percent are specializing on Agricultural Systems, 42 or 20 percent on Agronomy, 57 or 27 percent on Animal Science, 24 or 11.4 percent on Crop Protection and Plant Pathology, 20 or 10 percent on Entomology, 32 or 15 percent on Horticulture and another 27 students or 13 percent on Soil Science. Only 5 students or 2 percent belong to other specialization including Agricultural Extension and Weed Science. In terms of college academic performance, 127 students or about 60 percent of the respondents’ grade point average fall on the grade range between 2.01-2.49. This means that most agriculture students have good perception of their academic performance.

<table>
<thead>
<tr>
<th>Age</th>
<th>2nd</th>
<th>3rd</th>
<th>4th</th>
<th>All Levels</th>
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</thead>
<tbody>
<tr>
<td>17</td>
<td>6</td>
<td>0</td>
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<td>0</td>
<td>48</td>
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<tr>
<td>19</td>
<td>10</td>
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<th>4th</th>
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<td>3</td>
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<tr>
<td>Agronomy</td>
<td>5</td>
<td>21</td>
<td>16</td>
<td>42</td>
</tr>
<tr>
<td>Animal Science</td>
<td>16</td>
<td>15</td>
<td>26</td>
<td>57</td>
</tr>
<tr>
<td>Crop Protection and Plant Pathology</td>
<td>5</td>
<td>10</td>
<td>9</td>
<td>24</td>
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<tr>
<td>Entomology</td>
<td>4</td>
<td>9</td>
<td>7</td>
<td>20</td>
</tr>
<tr>
<td>Horticulture</td>
<td>16</td>
<td>6</td>
<td>10</td>
<td>32</td>
</tr>
<tr>
<td>Soil Science</td>
<td>12</td>
<td>6</td>
<td>9</td>
<td>27</td>
</tr>
<tr>
<td>Others</td>
<td>0</td>
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<td>4</td>
<td>5</td>
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<td>n</td>
<td>58</td>
<td>70</td>
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<td>210</td>
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</tbody>
</table>
Table 3 presents the determinants of student persistence in completing BS Agriculture degree in the University of the Philippines. These persistence factors are composed of fifteen-item (15) student-related, seventeen-item (17) institution-related, and eighteen-item (18) classroom-related factors, a total of 50 perception statements in all. The results were presented based on the order of overall frequencies from the highest to lowest value/s to facilitate analysis and interpretation.

Findings reveal that institution-related factor regarding institutional processes, as well as academic and co-curricular procedures got the highest frequency value among the student-respondents. In particular, the institution’s commitment to academic excellence (I16) amounts most to the experiences of agriculture students. Their positive attitude towards academic success is supported by some of the classroom-related factors, which according to the agriculture students and even program graduates are really helpful in pursuing their degree. They affirmed how the contents of their course are valuable and sufficient for the requirements for entrance into the profession such as licensing or certificate (C42). Having knowledgeable course advisers (C41) really help them to perform the fundamental skills and acquire knowledge (C49). Indeed, agriculture students experience intellectual growth inside the classroom (C50). This supports findings from various studies that put emphasis on the role of student satisfaction and program relevance as a facilitator of persistence. Persistent students voice satisfaction with the quality of the program, interactions with students and peers, the relevancy of the course to individual needs, and with the learning environment itself (Ivankova and Stick, 2007; Levy, 2007, Müller, 2008, Park and Choi, 2009). Indeed overall life experience was identified as the most agreed motivator of agriculture students (Bunch, et al, 2015).

Factors related to student personal, academic and career disposition are notable to agriculture students. They are quite optimistic that they would be successful (S14) in their chosen school (S6). Their supportive family (S3) motivates them to do their best to be able to complete their degree (S11). Though majority of them are experiencing financial constraints and are living in urban areas. Yet they never think of it as something that will hinder their desire to complete their chosen degree.
Table 3
Determinants of Student Persistence

<table>
<thead>
<tr>
<th>ITEM#</th>
<th>Persistence Factors</th>
<th>2nd Frequency</th>
<th>3rd Frequency</th>
<th>4th Frequency</th>
<th>Overall Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>I16</td>
<td>This campus has a commitment to academic excellence.</td>
<td>41</td>
<td>47</td>
<td>62</td>
<td>150</td>
</tr>
<tr>
<td>S11</td>
<td>I am trying my best to be able to complete this degree.</td>
<td>35</td>
<td>46</td>
<td>60</td>
<td>141</td>
</tr>
<tr>
<td></td>
<td>I have a family who are supportive of my educational goals.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S3</td>
<td>I am studying in the school of my choice.</td>
<td>38</td>
<td>43</td>
<td>57</td>
<td>138</td>
</tr>
<tr>
<td>S6</td>
<td>I think I would be successful.</td>
<td>36</td>
<td>46</td>
<td>56</td>
<td>138</td>
</tr>
<tr>
<td>S14</td>
<td>The contents of the course within my major are valuable and sufficient for the requirements for entrance into the profession such as licensing or certificate.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C42</td>
<td>I am able to experience intellectual growth here.</td>
<td>20</td>
<td>41</td>
<td>40</td>
<td>101</td>
</tr>
<tr>
<td>C50</td>
<td>Faculty, particularly course advisers are knowledgeable about the program requirements for registration and graduation.</td>
<td>28</td>
<td>40</td>
<td>32</td>
<td>100</td>
</tr>
<tr>
<td>C41</td>
<td>The course helps me to perform the fundamental skills and acquire knowledge.</td>
<td>21</td>
<td>40</td>
<td>38</td>
<td>99</td>
</tr>
<tr>
<td>C49</td>
<td>I am aware that applicable jobs are present in my community.</td>
<td>21</td>
<td>36</td>
<td>34</td>
<td>91</td>
</tr>
<tr>
<td>S12</td>
<td>I want this job for it does pay enough.</td>
<td>29</td>
<td>21</td>
<td>33</td>
<td>83</td>
</tr>
<tr>
<td>S15</td>
<td>The course demonstrates the ability to anticipate and adapt to changes in society and technology.</td>
<td>29</td>
<td>20</td>
<td>32</td>
<td>81</td>
</tr>
<tr>
<td>C48</td>
<td>I am physically fit for the kind of job this education demands.</td>
<td>23</td>
<td>39</td>
<td>19</td>
<td>81</td>
</tr>
<tr>
<td>S5</td>
<td>This campus emphasizes the teaching of undergraduates and undergraduate learning.</td>
<td>13</td>
<td>24</td>
<td>38</td>
<td>75</td>
</tr>
<tr>
<td>I25</td>
<td>Faculty have mastery of the course content.</td>
<td>19</td>
<td>25</td>
<td>26</td>
<td>70</td>
</tr>
<tr>
<td>C33</td>
<td>The contents of the course are applicable to the work.</td>
<td>22</td>
<td>12</td>
<td>36</td>
<td>70</td>
</tr>
<tr>
<td>C44</td>
<td>I am knowledgeable about career opportunities.</td>
<td>22</td>
<td>18</td>
<td>29</td>
<td>69</td>
</tr>
<tr>
<td>S13</td>
<td>This campus makes every student feel welcome at all times.</td>
<td>22</td>
<td>14</td>
<td>27</td>
<td>63</td>
</tr>
<tr>
<td>I17</td>
<td>The contents of the course keep abreast with the latest information from related field.</td>
<td>18</td>
<td>13</td>
<td>28</td>
<td>59</td>
</tr>
<tr>
<td>C43</td>
<td>This campus provides opportunities for students to establish social networks (e.g. clubs, sporting activities, etc.).</td>
<td>18</td>
<td>11</td>
<td>29</td>
<td>58</td>
</tr>
<tr>
<td>I29</td>
<td>Faculty are approachable and available for academic discussions and advising.</td>
<td>16</td>
<td>9</td>
<td>32</td>
<td>57</td>
</tr>
<tr>
<td>C39</td>
<td>Faculty members treat students with respect.</td>
<td>17</td>
<td>12</td>
<td>28</td>
<td>57</td>
</tr>
<tr>
<td>C40</td>
<td>I am taking the right courses.</td>
<td>20</td>
<td>15</td>
<td>19</td>
<td>54</td>
</tr>
<tr>
<td>S7</td>
<td></td>
<td>17</td>
<td>14</td>
<td>22</td>
<td>53</td>
</tr>
</tbody>
</table>
This campus has honors programs available for academically advanced students. The objectives of the course comply with the purpose for which they are intended/develop self-reliance and variability in entrepreneurship.

When asked to talk about the qualities of successful BS Agriculture students, interviewees cited some of the basic skills that help agriculture students succeed in this course. These include planning, analytical and critical thinking skills that will help them deal with the toughest situations; gather new information and formulate a strategic plan. For they won’t be able to solve every organic farm problem with just a textbook, for instance. As explained by the Goal Setting Theory (Locke, 1960s) performance is influenced by the individual’s commitment to the goal (degree completion). Belief that they can accomplish the goal, and possessing the requisite skills to complete the task at hand (Demetriou and Schmitz-Sciborski, 2011).

But along with these skills are the important traits of a successful student. Interviewers pointed out the intrinsic motivation that drives students to succeed in their academic endeavour. Students with determination, sense of purpose and have the passion for what they do, in particular, the love for manual labour and for the outdoors. Interviewees believe that if a student loses all these three crucial attributes, finishing his or her degree will become meaningless and will be “just a chore”. A person with determination can weather any challenge that is set before him/her in reaching his/her goal. The sense of purpose comes in when a student finds meaning in his/her work. That is what s/he is doing has a deeper purpose beyond mere academics. Their passion for what they do will enable them to see a bigger goal in spite of the myriad distractions. This intrinsic motivation of pursuing a dream according to Ivankova and Stick (2007) is often coupled with personal challenge, an appreciation of learning, and personal responsibility.

Truly, motivational orientations can influence college student ability and desire to stay in college. Using Deci and Ryan’s theory of motivational orientations, Lin and McKeachie (1999 in Demetriou and Schmitz-Sciborski, 2011) found that students with a balance of both extrinsic and intrinsic motivation tend to perform best in college-level coursework. In their study of college students in multiple academic domains, students who combined high intrinsic motivation with a medium-level of extrinsic motivation were most likely to achieve academically. Allen (1999 in Demetriou and Schmitz-Sciborski, 2011) examined whether a strong desire for achievement influences student persistence in college. Allen found that background variables including precollege characteristics and desire to finish college influenced persistence.

Based on the interviews, graduates of the BSA program confirmed how their family served as source of inspiration in completing their degree despite that some did not prefer agriculture education in the first place. They acknowledge their parents with inculcating in them the worth of a college education in a premier university. This supports findings from Barbatis (2010) and Ortega-Dela Cruz (2015) who have discussed the influence of the study participants’ cultural self-identification, particularly the emphasis their families placed on the importance of an education.
Parents who are morally supportive; despite not always able to financially support the students’ academic pursuits were cited as a major factor in encouraging persistence (Arana et al., 2011).

While an institution-related factor got the highest frequency value among other persistence factors, but, it brought in the so-called demotivators or persistence barriers to most of the student-respondents. Students highlighted their experiences with the institutional procedures for regularly communicating student satisfaction and important data (I21), for internal and external evaluations of the student life programs and services (I22), for students’ satisfaction survey (I24), as well as for ease of student registration processes (I20) as the least among persistence factors that they experience in the campus. These are some of the issues which were also pointed out by the program graduates during their stay in the university. Ten (10) out of 25 graduates who were interviewed even specified the need for gathering the students’ feedback concerning institutional issues on registration processes and other services. This substantiates findings from Aragon and Johnson (2008) and Bunn (2004) who stressed out incomplete or ineffective communication as one of the barriers to persistence. Another study confirmed how lack of information is perceived as the greatest barriers among freshman agriculture students (Danjean, Bunch, Blackburn, 2015). For instance, communication problems may stem from late, inadequate, or lack of notification of changes to the program, slow or contradictory feedback from faculty, and an inability to contact staff or support services.

Result of Analysis of Variance in Table 4 reveals a significant difference in the persistence of BS Agriculture students across year levels ($F = 4.134, p < .05$). This implies that factors that explain why students persist are quite distinct to their year level. Therefore, second year students may or may not experience the same factors that support their persistence as third year or fourth year students have. In particular student perception rating varies in relation to their personal, academic and career disposition, their experiences towards faculty traits, some institutional processes, as well as academic and co-curricular procedures.

<table>
<thead>
<tr>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
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<td>Persistence</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Between Groups</td>
<td>.624</td>
<td>2</td>
<td>.312</td>
<td>4.134</td>
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<tr>
<td>Within Groups</td>
<td>15.614</td>
<td>207</td>
<td>.075</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>16.238</td>
<td>209</td>
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</table>

**Conclusions**

The results of this study point out that, as per responses of the students as well as the faculty and administrators interviewed, the university similar to other State Universities in the Philippines, such as Cavite State University, Laguna State Polytechnic University and Southern Luzon.
State University (Ortega-Dela Cruz, 2015) has not gone far enough to ensure that BS Agriculture students are supported in an efficient manner. Efficiency speaks about the need to address students’ major concern on registration processes and other services. There has to be a way of gathering student’s feedback or their satisfaction on institutions’ educational and learning resources, especially on the effectiveness of implementing new online platform for communication related to all institutional procedures.

Although factors crucial to student persistence have been satisfied, nonetheless, these specific concerns that students raised clearly indicate the areas that require prompt action and aspects of the institution that need to be strengthened. Therefore, the junior and senior university officials need to become more responsive to them as Agriculture serves as the university’s major thrust.

Students who persist beyond their sophomore years are often highly motivated individuals with the ability to adapt to the challenging system of the degree program. The determinants that were presented in this study are just few among myriad explicit and implicit factors that in one way or another have positive or negative effects on the student persistence in completing their degree. For agriculture students, all possible effort should be made to support those who have found the right choice in an agriculture field.

The University of the Philippines, being the National University has much opportunity to make positive changes in the persistence of these exceptional groups of agriculture students. Like any other agricultural colleges and universities around the world, its goal towards progressive and sustainable agricultural development for the country is something that needs to be taken seriously. For this goal will never be realized without well-trained and equipped agriculture graduates. Thus, it needs to take concrete steps toward making more of a commitment to student success.

References


Agricultural Livelihoods and Climate Change: Employing the Livelihood Vulnerability Index in Bluefields, Jamaica

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Taniya Jayani Koswatta  
Gary Wingenbach  
Texas A&M University

Abstract
The purpose of this quantitative study was to examine agricultural livelihood vulnerability to climate change in Bluefields, Westmoreland, Jamaica based on the Livelihoods Vulnerability Index (LVI). Random sampling was used to select participants. Personal interviews were conducted with farmers using an instrument consisting of LVI components representing livelihood strategies, natural and physical assets, socio-demographic profile, social networks, water issues, food issues, natural disasters, and climate variability. LVI data were aggregated using an indexing approach to create scores for comparison across vulnerability components. The results showed farmers in Bluefields had the most amount of vulnerability in social networks and water issues. Low numbers of farmers owned their land, had contact with extension services, or used irrigation. Most farmers reported having problems with access to seeds and planting material, depended on their farms for food, and experienced frequent crop failure. Development organizations and local change agents should target the areas of greatest vulnerability illuminated by this study. Vulnerability and its contributing factors of exposure, sensitivity, and adaptive capacity, should be reassessed with the LVI and other methods to monitor changes in Bluefields over time. Implications for extension educators to assist subsistence farmers in understanding better the effects of climate change are noted.

Keywords: Agricultural livelihood vulnerabilities; climate change; Jamaica
Introduction

Adaptation is a response meant to reduce vulnerability (Smit & Wandel, 2006). Vulnerability is defined as “the degree to which a system or unit (such as a human group or place) is likely to experience harm due to exposure to perturbations or stresses” (Kasperson, Kasperson, Turner, Hsieh, & Schiller, 2005, p. 249). This definition encompasses the internal and external components of vulnerability expressed by the Intergovernmental Panel on Climate Change (IPCC) and represented elsewhere in the literature (Brooks, 2003; Chambers, 1989; Turner et al., 2003). The IPCC definition of vulnerability includes the internal component adaptive capacity as well as external components exposure and sensitivity (McCarthy, Canziani, Leary, Dokken, & White, 2001). Climate change vulnerability assessments recently incorporated these IPCC vulnerability components (Hahn, Riederer, & Foster, 2009; Shah, Dulal, Johnson, & Baptiste, 2013).

The ability of persons, regions, or systems to adjust to potential disturbances, capitalize on opportunities, or respond to effects of climate change defines adaptive capacity (Ebi, Kovats, & Menne, 2006). Exposure and sensitivity are viewed as interrelated factors of vulnerability (Reid, Smit, Caldwell, & Belliveau, 2007; Smit & Wandel, 2006). Smit and Wandel posed exposure and sensitivity as the “conditions or risks a community may be facing” (p. 289). Kasperson et al. (2005) defined exposure as “the contact between a system and a perturbation or stress” (p. 253). Sensitivity is explained as “the extent to which a system or its components is likely to experience harm, and the magnitude of that harm, due to exposure to perturbations or stresses” (Kasperson et al., 2005, p. 253).

Studies by Campbell et al. (2011) and Gamble et al. (2010) explained adaptive capacity components of vulnerability such as coping and adaptation strategies of farmers in St. Elizabeth, Jamaica. Campbell et al. (2011) paraphrased the coping strategies identified as planting methods, moisture-loss reduction, during-drought mitigation, and recovery. Farmers who employed these coping strategies were considered more resilient. However, coping strategies serve a specific population’s response to their problems, whereas adaptive capacity creates strategies and policies with the potential to address future climate changes (Ebi et al., 2006).

Several studies assessed the vulnerability of systems to climate change (Füssel & Klein, 2006; McCarthy et al., 2001). These studies are important because vulnerability must be understood before planned adaptation is undertaken (Smit & Wandel, 2006). Turner et al. (2003) offered a comprehensive framework that presented vulnerability as a function of many human and environmental factors in a complex system of different processes and scales. Given this complexity, Smit and Wandel developed a participatory assessment approach as a mode for identifying functional adaptation strategies at the community level. With this approach, researchers used qualitative techniques to identify risks, how they were managed, and what limited participants’ abilities to choose. Furthermore, effective solutions for adapting to climate change must be community-based (Beckford, Barker, & Bailey, 2007).

Another approach, implemented by Hahn et al. (2009), quantified components of exposure, sensitivity, and adaptive capacity using a Livelihoods Vulnerability Index (LVI). Hahn et al. posited that generating more primary vulnerability data at the community-level was beneficial for policymakers and climate change adaptation research. Community level data helps monitor vulnerability in data-scarce regions...
by introducing scenarios into the LVI model for baseline comparison. It can be used to assess program resources for assistance and/or evaluate potential program/policy effectiveness (Hahn et al., 2009).

This study employed the quantitative LVI approach, as adapted by Hahn et al. (2009). Many authors (Campbell, 2014; Can, Tu, & Hoanh, 2013; Etwire, Al-Hassan, Kuwornu, & Osei-Owusu, 2013; Panthi et al., 2016; Shah et al., 2013) have adapted the LVI approach to assess vulnerability in limited resource settings. The LVI is a pragmatic approach to monitor vulnerability in data-scarce regions and provide baselines for comparison between communities and changes over time (Hahn et al., 2009). The LVI approach “uses multiple indicators to assess exposure to natural disasters and climate variability, social and economic characteristics of households that affect their adaptive capacity, and current health, food, and water resource characteristics that determine their sensitivity to climate change impacts” (Hahn et al., 2009, p. 75). The primary components in the original LVI were (a) socio-demographic profile, (b) livelihood strategies, (c) health, (d) social networks, (e) food, (f) water, and (g) natural disasters and climate variability (Hahn et al., 2009). Hahn et al. (2009) improved the LVI by determining which secondary components contributed to IPCC’s identified components of climate change vulnerability: exposure, sensitivity, and adaptive capacity.

In Campbell’s (2014) LVI study, food imports and natural and physical assets were added as additional components while health factors were not assessed. The current study was modeled after Campbell’s LVI framework with the exception of food imports. According to Campbell (personal communication, June 3, 2014), food imports were a vulnerability factor in St. Elizabeth, Jamaica because farmers were largely engaged in commercial farming. Primarily engaged in subsistence agriculture, farmers in Bluefields had minimal market participation where competition with imported food existed.

In the LVI-IPCC framework, the primary components natural disasters and climate variability contributed to exposure, food issues and water issues contributed to sensitivity, and socio-demographic profile, livelihood strategies, natural and physical assets, and social networks contributed to adaptive capacity (Campbell, 2014). The theoretical framework applied by the LVI approach in this study is shown in Figure 1. In a collaborative effort between researchers at CARE-Mozambique and Emory University, the LVI framework was used to compare impacts of climate change on two districts in Mozambique (Hahn et al., 2009). The Campbell (2014) study also employed the LVI framework in four communities in St. Elizabeth, Jamaica. St. Elizabeth is adjacent to Westmoreland parish, where the current study was conducted.

Figure 1. The LVI-IPCC Theoretical Framework depicts how LVI secondary components (far right) relate to primary components (second from right) that determine scores for LVI-IPCC contributing factors (second from left), which make up the overall LVI-IPCC Vulnerability (left) for the study area.

**Purpose**

The study’s purpose was to examine farmer vulnerability to climate change in Bluefields, Westmoreland, Jamaica based on the LVI (Hahn et al., 2009). The research objectives were to

1. Assess factors affecting livelihood vulnerability to climate; and,
2. Determine farmers’ levels of adaptive capacity, exposure, and sensitivity to climate change.

**Methods**

This study used a quantitative design with a questionnaire administered through personal interview (Ary, Jacobs, Sorensen, & Razavieh, 2010). Personal administration of the questionnaire was an important design feature because it allowed the researcher to observe respondents and surroundings, control the order in which questions were asked, and increase the response rate (Ary et al., 2010). Quantitative data were needed to calculate the LVI and statistically measure relationships between variables.

A random sample of 52 farmers was drawn from the population (N = 112; farmers in the sub-districts of Belmont, Bluefields, Mount Airy, Mount Edgecombe, Robins River, and Shafston from Bluefields communities) to achieve a 95% confidence interval at 10% margin of error (Dillman, 2007). Twelve persons were either unreachable or declined to participate, producing a response rate of 77%. The sample (n = 52) was identified using a list of registered producers from the Ministry of Agriculture (Rural Agricultural Development Authority [RADA], 2013), and with input from local farmers (i.e., snowball sampling method). Random sampling techniques (Ary et al., 2010) of the master list were used to derive the sample.
Indicators used in the LVI questionnaire were predominantly theory-driven (Vincent, 2007), with the exception of data-driven meteorological information, such as historical rainfall and temperature. Most questions were worded to elicit categorical responses, including Male/Female, Yes/No, or indicating a range of responses (e.g., 1…4). Open-ended questions (i.e., types of crops grown) allowed participants to list one or multiple items. The LVI for this study employed a balanced weighted average method (Sullivan, Meigh, & Fediw, 2002). The LVI consisted of seven primary components and 34 secondary components (Table 2). Primary and secondary components were adopted from the Hahn et al. (2009) and Campbell (2014) studies. According to the Organisation for Economic Co-operation and Development (OECD, 2015) nearly 900 thousand Jamaicans live abroad, and remittances consist of about 15% of GDP (OECD, 2015). Therefore, an additional secondary component (i.e., remittances) was added to the social network portion of this study.

All secondary components contributed to the overall LVI equally (Hahn et al., 2009). Each secondary component was assessed on a different scale; therefore, it was necessary to standardize each as an index (Hahn et al., 2009). The study adapted the standardized formula from Hahn et al. (2009) without any modification. For this study, district \((d)\) should be considered as representing Bluefields as a whole. Variables represented as percentages had a minimum value of zero and maximum value of 100. For indicators such as the average crop diversity index, a higher crude score indicated less vulnerability. In these cases, an inverse value was calculated.

After all secondary components were standardized, each were averaged with the following equation to determine the value of each primary component:

\[ M_d = \frac{\sum_{i=1}^{n} \text{index}_{si}}{n} \]

In this equation, \(M_d\) represented one of seven primary components for the district \(d\) (Socio-demographic profile [SDP], Livelihood strategies [LS], Social networks [SN], Water issues [W], Food issues [F], Natural disasters and climate variability [NDCV], or Natural and physical assets [NPA]). Secondary components were represented by the variable \(\text{index}_{si}\), indexed by \(i\), which made up each of the listed primary components, and \(n\) was the number of secondary components in each primary component (Hahn et al., 2009).

After values for each of the seven primary components for a district were computed, they were averaged with the following equation to determine the district-level (Bluefields) LVI:

\[
\text{LVI}_d = \frac{[w_{SDP}(SDP_d)]+[w_{LS}(LS_d)]+[w_{SN}(SN_d)]+[w_{W}(W_d)]+[w_{F}(F_d)]+[w_{NDCV}(NDCV_d)]+[w_{NPA}(NPA_d)]}{w_{SDP}+w_{LS}+w_{SN}+w_{W}+w_{F}+w_{NDCV}+w_{NPA}}
\]
The $LVI_{d}$ equals the weighted average of the seven primary components for Bluefields. The weights of primary components, $w_{M_i}$, were determined by the number of secondary components that made up each primary component (Hahn et al., 2009). The weights were included to ensure that all secondary components contributed equally to the overall LVI (Sullivan et al., 2002). To compute the LVI-IPCC score, the primary components were categorized into the vulnerability contributing factors (exposure, sensitivity, or adaptive capacity) in accordance with the LVI-IPCC framework (Figure 1). The final composite LVI-IPCC score for each contributing factor was calculated using the formula (Hahn et al., 2009):

$$CF_d = \frac{\sum_{i=1}^{n} w_{M_i} M_{di}}{\sum_{i=1}^{n} w_{M_i}}$$

where $CF_d$ represents one of the IPCC-defined contributing factors to vulnerability for district $d$ (Bluefields). $M_{di}$ represented the primary components for the district $d$ indexed by $i$, the weight of each major component was $w_{M_i}$, and $n$ was the number of primary components that constituted each contributing factor. After each contributing factor (exposure, sensitivity, and adaptive capacity) score was calculated, it was combined using this equation:

$$LVI-IPCC_d = (e_d - a_d) * s_d$$

in which $LVI-IPCC_d$ was the LVI for Bluefields, and within the IPCC framework, $e$ represented the score for exposure, $a$ was the score for adaptive capacity, and $s$ was the score for sensitivity. Before calculating $a_d$, the standardized scores for adaptive capacity were inversed using $(1 - n)$. The scale for the LVI-IPCC is -1.0 to 1.0 (Hahn et al., 2009).

Sijtsma (2009) found the Greatest Lower Bound (GLB) method was one of the most powerful estimators of reliability, as deduced by Woodhouse and Jackson (1977), when considering the total score on a test comprising non-homogeneous items (i.e., dichotomous choices such as yes/no). GLB was used to derive reliability scores for scales measuring adaptive capacity (0.83), exposure (0.88), and sensitivity (0.81).

It is important to note the average receive:give ratio (i.e., financial assistance to family or friends), as used by Hahn et al. (2009), was modified in the current study. For cultural reasons, the researcher did not ask respondents about receiving or giving financial assistance to friends or family. The researcher only asked if the respondent thought that he or she could receive or give financial assistance, rather than if they had done so in the past month. The average receive:give assistance was determined with scores of 0.00 to those who thought they could both give and receive financial assistance to friends or family in emergencies. A score of 0.33 was attributed to those who thought they could receive financial assistance, but not give. Those who thought they could not receive, but could give financial assistance were scored 0.67. Those who thought they could neither give nor receive financial assistance in emergencies received a vulnerability score of 1.00.

Unlike the Campbell (2014) study, the scope of this study precluded the researcher from conducting focus groups to assess the relevance of LVI factors because Bluefields’ farmers were preoccupied with subsistence farming tasks during the spring of 2014. However, the researcher lived in Bluefields for an extended time (~20 months) before collecting data. This extended time allowed the researcher to gain insights necessary to observe and understand conditions affecting the population of interest (Mack, Woodsong, MacQueen, Guest, & Namey, 2005).
The instrument was administered during May of 2014 by the researcher, who was familiar to many Bluefields’ farmers before the data collection period. This familiarity encouraged farmers to be comfortable and provide more forthright answers (Rogers, 2003). The LVI survey questionnaire was administered via personal interview. Prior to interviews, an information sheet detailing research participants’ rights was read to respondents, signed by interviewees, and given to participants to keep. After receiving a participant’s verbal consent, a structured questionnaire was used to collect data. Interviews lasted 30 to 45 minutes. Languages used during interviews included English, Jamaican Patois, or a mixture of these languages. No personally identifiable information was collected to ensure privacy and confidentiality for participants. Descriptive statistics including frequencies, means, percentages, and standard deviations were used to analyze and report data.

### Results

Respondents were predominantly male (80%) and averaged 52 years of age. Most (67.5%) lived in households of four or less and had an average of 28.8 years of farming experience (Table 1). Most (47.5%) viewed their income as below the community average, while 31.5% considered their income to be average and 21% above average. Seventy percent farmed less than 2.5 acres. Fifty percent reported having access to farm credit while 35% said they had no access and 15% were unsure. It is unknown how many respondents have used credit in the past or would take out a loan if available. One-half of the respondents reported zero contacts with extension services, while others had contacts less than annually (30%), annually (10%), and multiple times annually (10%). The average distance to a permanent market was 4.99 miles.

| Table 1 | Demographic Profile (n = 40) of Study Participants in Bluefields, Jamaica |
|---|---|---|---|
| Variable | Category | f <i>n</i> | % |
| Head of Household Gender | Male | 32 | 80.0 |
| | Female | 8 | 20.0 |
| Farmer Age | ≤ 34 | 2 | 5.0 |
| | 35-44 | 8 | 20.0 |
| | 45-54 | 13 | 32.5 |
| | 55+ | 17 | 42.5 |
| Household Size | 4 or less | 27 | 67.5 |
| | 5 or more | 13 | 32.5 |
| Education Level | None | 2 | 5.0 |
| | All-age (1-9) | 21 | 52.5 |
| | Secondary (10-12) | 12 | 30.0 |
| | Tertiary (13+) | 5 | 12.5 |

The first objective was to assess factors affecting farmers’ vulnerability to climate change in Bluefields, Jamaica. The indexed results for primary and secondary LVI components provided insights into Bluefields’ vulnerability context. Quartiles...
were determined for secondary component index scores (excluding temperature and rainfall data): $Q_1 = 0.32; Q_2 = 0.48; \text{ and } Q_3 = 0.66$. Table 2 shows indexed scores for contributing secondary components.

**Table 2**

*LVI Scores for Agricultural Livelihoods in Bluefields, Jamaica*

<table>
<thead>
<tr>
<th>Primary Component</th>
<th>Secondary Component</th>
<th>Index Score$^a$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socio-demographic Profile</td>
<td>% household heads with less than 10 years of education</td>
<td>.58</td>
</tr>
<tr>
<td></td>
<td>Dependency ratio</td>
<td>.54</td>
</tr>
<tr>
<td></td>
<td>% households with more than four members</td>
<td>.33</td>
</tr>
<tr>
<td></td>
<td>% households in which no member has off-farm employment</td>
<td>.31</td>
</tr>
<tr>
<td></td>
<td>% female-headed households</td>
<td>.20</td>
</tr>
<tr>
<td>Livelihood Strategies</td>
<td>% households lacking access to assistance from outside community</td>
<td>.68</td>
</tr>
<tr>
<td></td>
<td>Average agricultural livelihood diversification index (range: 0.13-1.0)</td>
<td>.54</td>
</tr>
<tr>
<td></td>
<td>% farmers who operate independently</td>
<td>.40</td>
</tr>
<tr>
<td></td>
<td>Income diversification index (range: 0-1) (Inverse of number of alternative income sources)</td>
<td>.32</td>
</tr>
<tr>
<td></td>
<td>% households dependent solely on agriculture as a source of income</td>
<td>.28</td>
</tr>
<tr>
<td>Social Networks</td>
<td>% households who do not receive remittances</td>
<td>.70</td>
</tr>
<tr>
<td></td>
<td>% farmers not owning farmland</td>
<td>.70</td>
</tr>
<tr>
<td></td>
<td>Average receive:give ratio</td>
<td>.64</td>
</tr>
<tr>
<td></td>
<td>Number of farm plots (inverse)</td>
<td>.62</td>
</tr>
<tr>
<td></td>
<td>% households without any member in any community group or organization</td>
<td>.53</td>
</tr>
<tr>
<td>Natural &amp; Physical Assets</td>
<td>% households reporting problems with getting adequate water for farming</td>
<td>.70</td>
</tr>
<tr>
<td></td>
<td>Farm technology usage (inverse)</td>
<td>.50</td>
</tr>
<tr>
<td></td>
<td>% households that do not practice water harvesting</td>
<td>.35</td>
</tr>
<tr>
<td></td>
<td>% farmers not having access to enough farmland</td>
<td>.05</td>
</tr>
<tr>
<td>Water Issues</td>
<td>% households dependent on farm for food</td>
<td>.88</td>
</tr>
<tr>
<td></td>
<td>% farmers primarily dependent on rainfall</td>
<td>.87</td>
</tr>
<tr>
<td></td>
<td>% farmers having trouble obtaining planting material</td>
<td>.73</td>
</tr>
<tr>
<td></td>
<td>% households that buy water for farming</td>
<td>.23</td>
</tr>
<tr>
<td>Food Issues</td>
<td>% farmers with four or more production failures in the last 10 years</td>
<td>.62</td>
</tr>
<tr>
<td></td>
<td>Average crop diversity index (diversity index $= 1/(n+1)$)</td>
<td>.47</td>
</tr>
<tr>
<td></td>
<td>% farmers who do not practice drought mitigation</td>
<td>.40</td>
</tr>
<tr>
<td></td>
<td>% households experiencing one month or more annual food insecurity</td>
<td>.28</td>
</tr>
<tr>
<td></td>
<td>% farmers who do not save seeds</td>
<td>.13</td>
</tr>
</tbody>
</table>
Table 2 (continued)

LVI Scores for Agricultural Livelihoods in Bluefields, Jamaica

<table>
<thead>
<tr>
<th>Primary Component</th>
<th>Secondary Component</th>
<th>Index Scorea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Disasters &amp; Climate Variability</td>
<td>% farmers who never received assistance from RADAb following a weather-related crop failure</td>
<td>.88</td>
</tr>
<tr>
<td></td>
<td>Mean standard deviation of the daily average maximum temperature by month</td>
<td>.52</td>
</tr>
<tr>
<td></td>
<td>Mean standard deviation of average precipitation by month</td>
<td>.47</td>
</tr>
<tr>
<td></td>
<td>% farmers taking more than six months to restore production levels</td>
<td>.38</td>
</tr>
<tr>
<td></td>
<td>Mean standard deviation of the daily average minimum temperature by month</td>
<td>.36</td>
</tr>
<tr>
<td></td>
<td>% farmers not receiving early warning information about drought</td>
<td>.28</td>
</tr>
</tbody>
</table>

Note: aIndex Scores were on a 0.0 to 1.0 scale. A higher index score indicates a higher level of vulnerability. bRural Agricultural Development Authority (RADA), Ministry of Agriculture, Kingston, Jamaica.

Table 3 displays indexed scores for each of the three IPCC-designated components of vulnerability and the index score for each primary component. The primary components showing the greatest amount of vulnerability were Livelihood Strategies (0.36) and Socio-demographic Profile (0.41). The overall LVI score generated from the weighted averages of each primary component yielded 0.48, a number against which future LVI studies in Bluefields can be compared.

Table 3

LVI Composite Scores by Primary Component for Farmers in Bluefields, Jamaica

<table>
<thead>
<tr>
<th>IPCC components</th>
<th>Index Scorea</th>
<th>LVI Primary Components</th>
<th>Primary Component Index Scorea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure</td>
<td>.46</td>
<td>Natural disaster and climate variability</td>
<td>.49</td>
</tr>
<tr>
<td>Adaptive capacity</td>
<td>.51</td>
<td>Social networks</td>
<td>.59</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Natural and physical assets</td>
<td>.47</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Socio-demographic profile</td>
<td>.41</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Livelihood strategies</td>
<td>.36</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>.49</td>
<td>Water issues</td>
<td>.54</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Food issues</td>
<td>.50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bluefields LVI score</td>
<td>.48</td>
</tr>
</tbody>
</table>

Note: aIndex Scores were on a 0.0-1.0 scale. A higher index score indicates a higher level of vulnerability.
The second objective was to determine farmers’ level of adaptive capacity, exposure, and sensitivity to climate change through the LVI-IPCC method. The IPCC identified three contributing factors to climate change vulnerability: (a) exposure, (b) adaptive capacity, and (c) sensitivity (McCarthy et al., 2001). Secondary components of the LVI contributing to each of these factors were illustrated in Table 2. The weighted averages of LVI secondary components were calculated to create LVI-IPCC scores, as listed in Table 4.

### Table 4

**LVI-IPCC Scores for Agricultural Livelihoods in Bluefields, Jamaica**

<table>
<thead>
<tr>
<th>LVI-IPCC components</th>
<th>LVI-IPCC Score¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure</td>
<td>.49</td>
</tr>
<tr>
<td>Adaptive Capacity</td>
<td>.54ᵇ</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>.51</td>
</tr>
<tr>
<td>LVI-IPCC: [(Exposure – Adaptive Capacity) x Sensitivity]</td>
<td>-0.03ᶜ</td>
</tr>
</tbody>
</table>

*Note*: ¹Scores were on a scale of 0.0-1.0. ᵇAn inverse of adaptive capacity is used in the calculation of overall LVI-IPCC. ᶜLVI-IPCC Score is on a scale of -1.0 to 1.0. The closer to 1.0, the greater the vulnerability; the closer to -1.0, the greater the resiliency.

### Discussion and Implications

The LVI measured vulnerability based on seven primary components. Social Networks (i = 0.59) and Water Issues (i = 0.58) were primary components with highest scores for vulnerability; Livelihood Strategies (i = 0.36) was the primary component with the lowest vulnerability score. Results provided insight into factors affecting vulnerability of agricultural livelihoods in Bluefields and uncovered opportunities to improve the LVI for future research.

The eight secondary components in the upper quartile for vulnerability provide focus for policies or programs to improve resiliency of agriculturists’ livelihoods in Bluefields. Most farmers in this study were dependent on their farms for food, which increased their risk from natural disasters and climate variability (Selvaraju, Trapido, Santos, Del Mar Polo Lacasa, & Hayman, 2013). Additional risk was demonstrated by the finding most Bluefields farmers have never received recovery assistance following a weather-related crop failure. Efforts to increase farm incomes and provide crop insurance could reduce this risk and improve food security (Lotze-Campen & Schellnhuber, 2009).

Water is a key component of productive tropical agriculture (Rockström, Barron, & Fox, 2003). However, most Bluefields producers reported they depended on rainfall and did not have adequate water for farming. When rainfall creates conditions suitable to plant crops, farmers reported they had trouble finding or affording planting material. Agriculture-specific financial services could allow farmers to invest in water harvesting infrastructure, drip irrigation, and planting material. However, most farmers in Bluefields did not own their land, which could be a constraint to the use of some financial services such as credit (Graham & AgDarroch, 2001). Farmers are more likely to invest in agriculture when they have secure tenure (Lim, Spanger-Siegfried, Burton, Malone, & Huq, 2005).

LVI studies used different primary and secondary components depending on
what is appropriate for the local vulnerability context (Campbell, 2014; Hahn et al., 2009; Shah et al., 2013). The varied use of components and the standardization of scores limit the ability to compare results across studies, unless said studies employ the same methods (Hahn et al., 2009). This study used several of the same components and methods as Campbell’s (2014) investigation with a similar population in Jamaica, which consequently provided an opportunity for comparison. Bluefields exhibited greater vulnerability in nine of the 14 secondary components that lend themselves to direct comparison with Campbell’s (2014) results.

Secondary components differing—based on non-statistical comparisons—in LVI scores between Bluefields and the St. Elizabeth communities studied by Campbell (2014), were in (a) land ownership, (b) dependence on rainfall, (c) dependence on farm for food, and (d) receiving assistance from RADA after a weather-related crop failure. Bluefields’ farmers had the higher vulnerability score for each of these secondary components. St. Elizabeth parish had high soil fertility, commercial farming, and was referred to as Jamaica’s breadbasket (“St Elizabeth still the bread basket parish,” 2004) because of high agricultural productivity. These characteristics may have contributed to lesser dependence on farms for food, more assistance from agricultural extension, the ability to invest in irrigation, and higher rates of land ownership among St. Elizabeth’s farmers.

Many of the untenured farmers in Bluefields were growing crops on a large tract of land belonging to the Urban Development Commission (UDC), a government-owned corporation that planned and developed urban and rural areas in Jamaica. Many Bluefields farmers had been on UDC land for decades. Though farmers grew crops rent-free, their plots offered no collateral to invest in improved technology, and they were subject to displacement if the UDC developed the land for other purposes. The displaced farmers would have to move to more marginal lands or seek alternative livelihoods. Threat of displacement caused by man or nature was not investigated in this or previous LVI studies, but may be an important factor for untenured farmers in communities such as Bluefields.

Hahn et al. (2009) developed the LVI approach primarily for development planners to study vulnerability at the community level and design targeted programs. Areas of elevated vulnerability warranting intervention in Bluefields have been discussed in this study. This study should be conducted in the future to measure longitudinal changes in Bluefields’ vulnerability. Governmental and non-governmental organizations (NGOs) in Jamaica could also employ the LVI approach before and after a developmental program to measure program impact. The LVI is frequently applied to compare vulnerability between communities (Campbell, 2014; Hahn et al., 2009; Shah et al., 2013), but because Jamaica often organizes its communities by sub-districts, the LVI could be used to measure differences within communities (Hahn et al., 2009).

The lack of extension service contacts noted by Bluefields’ farmers was a clear indication that extension education in Jamaica may need more resources or improved methods to help subsistence farmers prepare for and manage their vulnerability to climate change. Oladele (2012) noted, “climate change would have high impact in terms of extension services … [as educators] change from [a] generalist approach to [more] specialist” (p. 48). The strategies proposed by George, Clewett, Wright, Birch, and Allen (2007) might be applicable in the Bluefields situation.
Factors affecting low-income households in the developing world are local, complex, diverse, dynamic, and unpredictable (Chambers, 1997) and compound the challenges of using this type of index approach for comparisons of vulnerability across communities, regions, or countries. In Jamaica, Campbell (2014) determined 86.5% of farmers owned the land they farm, whereas this study concluded only 30% of Bluefields farmers owned theirs. A difference likely exists in how tenured farmers and untenured farmers view availability of additional land. A tenured St. Elizabeth farmer may make his or her determination based on if additional farmland is available for lease or purchase, whereas the untenured farmer in Bluefields may see available land for cultivation without considering leasing or purchasing it. This difference in perception could explain differences in scores for access to additional farmland between farmers in this study and those in Campbell’s (2014) study. Campbell (2014) reported 33% of St. Elizabeth’s farmers lacked access to enough farmland, compared to only 5% of Bluefields’ farmers. Using qualitative methods such as focus groups to understand farmers’ perceived vulnerability factors, as used in other studies (Campbell, 2014; Masere & Worth, 2015), may be an improved research design.

Studies that use index scores derived from the aggregation of equally weighted factors are limited by the assumption each factor is of equal importance (Eakin & Bojórquez-Tapia, 2008; Hahn et al., 2009; Shah et al., 2013; Vincent, 2007). This oversimplification of reality has led some to apply methods of research aimed at determining a weight for each factor based on local conditions. For example, Eakin and Borjorquez-Tapia (2008) used a methodology involving multi-criteria decision analysis (MCDA) and fuzzy logic to determine weights for vulnerability factors. Participatory rural appraisal (PRA) techniques (Chambers, 1994) such as matrix ranking and scoring (Narayanasamy, 2009) also could be used to derive empirical weights with community input. The use of PRA may be more appropriate than MCDA in areas where minimal or no baseline data exists.

A limitation of this study was a relatively small sample (n = 52). A larger sample size may provide the ability to compare results between categories such as gender. The LVI instrument is limited in its ability to generate data that can be used by other researchers for vulnerability research. Future LVI studies should incorporate interval, rather than dichotomous variables to improve measurement of low-income farmers’ vulnerabilities to climate change. For example, increased use of interval scale variables could measure important differences between those who harvest sufficient water to sustain full production, versus those who harvest inadequate or no water.

The LVI approach is an effective method to measure vulnerability in a community, but it does not assess farmers’ attitudes, beliefs, and/or values regarding how they interpret vulnerability to climate change. It will be important for future research to identify levels of vulnerability, but also to study how farmers perceive their ability to respond through adaptation. Through the combination of the LVI and qualitative assessments of vulnerability, change agents will be better informed about how to assist farmers with decisions to adopt technologies for climate adaptation (Campbell, 2014). One possible way to combine the LVI with a qualitative approach is to incorporate Smit’s and Wandel’s (2006) participatory vulnerability assessment (PVA) framework. The LVI and PVA were designed to identify areas where interventions are needed to reduce
vulnerability (Hahn et al., 2009; Smit & Wandel, 2006). Researchers could investigate effective ways to integrate PVA and LVI to generate data that provides rich descriptions (Creswell & Miller, 2000), which are quantifiably measurable over time. This mixed-method research approach could be useful to policymakers needing to measure the impact of programs and policies.

Conclusions

The study’s results provided information to support the work of agricultural development and extension personnel in Jamaica, specifically focusing on the factors affecting vulnerability of agricultural livelihoods in Bluefields. George et al. (2007) noted that Australian farmers improved their understanding of climate change/risk after participating in agricultural extension agents’ workshops on strategic approaches to managing climate risk. Disseminating knowledge and supporting farms with necessary skills and new technologies on land preparation methods and irrigation (Baloch & Thapa, 2016) helped reduce weather-related crop failure in Balochistan, Pakistan. Davis and Spielman (2017) concluded that agricultural extension services should improve, strengthen, and change to accommodate locals’ needs. As such, we believe future extension-led efforts should include development and enactment of localized strategic plans and locally-tailored extension solutions (Davis & Spielman, 2017) pursuant to farmers’ needs in Bluefields.

Most farmers in Bluefields did not own their land and depend on rainfall for farming. The primary sources of food come from their farms; however, farmers reported they have trouble finding or affording planting material. Overall, these factors increased their risk for natural disasters and climate variability. In comparisons of LVI scores between Bluefields and St. Elizabeth communities, it was confirmed that Bluefields’ farmers had higher vulnerability scores. We assert potential solutions lie in creating opportunities for farmers to secure land ownership or in developing financial services for untenured farmers. Similar to St. Elizabeth communities, we believe Bluefields’ farmers also need capacity-building activities on adaptation options (Campbell, 2014) to reduce vulnerability. Improving out-of-community social and financial connections for farmers may be difficult to target through policies or programs, but are important components of vulnerability to consider in Bluefields. The increased use of improved agricultural technology and rainwater harvesting would reduce the overall LVI-IPCC score accordingly. Development planners would then be able to predict the potential impact of their intervention on vulnerability in Bluefields based on the change in the LVI-IPCC score. However, the validity of using these data for sensitivity analysis would degrade over time as changes occur in the vulnerability of farmers in Bluefields.

In addition to agricultural extension officers, other agricultural advisory service providers assist farmers. Recognizing private sector, nongovernmental, and civil society actors involved in agricultural extension and advisory services (Davis & Spielman, 2017) could be a helpful resource for farmers and extension offices. A collaborative effort with agricultural extension service and advisory organizations could be a cost-effective strategy to address the livelihood vulnerability of Bluefields’ farmers.

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Extension Agents’ Use and Acceptance of Social Media: The Case of the Department of Agricultural Extension in Bangladesh

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Abstract
Information and Communication Technologies (ICTs) have been considered as key driving forces for enabling agricultural development – the sector which provides livelihoods for majority of the population in Bangladesh. The Department of Agricultural Extension (DAE), the largest public sector agricultural extension service provider in Bangladesh, has recently enacted a new organizational policy for its staffs to use ICTs such as social media to provide better services. However, there is little or merely anecdotal evidence about how extension agents of DAE have been accepting and using social media for their professional work. Drawing on the theoretical underpinnings of the Technology Acceptance Model (TAM), this study is a first attempt to investigate social media use and acceptance among extension agents in Bangladesh. Data was collected using semi-structured questionnaires from 140 extension agents of DAE who work in the eastern region of Bangladesh. Both descriptive and inferential statistics were used to analyze the data. The findings indicate that most extension agents (51.4%) used social media for half an hour to one hour every day. Perceived ease of use (PEoU) and Perceived usefulness (PU) are the most influential elements that determine DAE staff acceptance of social media for performing professional functions. Social media was perceived by extension agents as a means for improving professional performance, such as disseminating agricultural information; garnering support for new agricultural policy; networking with clients and colleagues and enabling coordination of services provided by colleagues. Overall, the findings indicate potential uses of social media in an ICT-based agricultural development strategy in Bangladesh.

Keywords: social media, agricultural extension workers, Department of Agricultural Extension, ICTs, communications

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Introduction

The revolutionary aspects of social media (SM) are apparent from the recent growth of 2.56 billion mobile social media users worldwide who constitute approximately 68% of global internet users (Kemp, 2017). Social media has become an essential means of communication because of increased use of Smartphones and mobile internet users worldwide (Stanley, 2013). As a parliamentary election manifesto, “Digital Bangladesh” Information and Communication Technology (ICTs) has been considered the essential development tool for up-scaling the economic and social status of the citizens of Bangladesh (Malone, Akbar, Bell, & Bohn, 2013). Emphasis and investment is driven toward infrastructural development of ICTs. There has been an exponential growth pattern (2% annual increase) of new social media users in Bangladesh (Shohrowardhy & Hassan, 2014). There are an estimated more than 21 million current social media users in Bangladesh (Internet World Stats, 2017). Facebook is the highest usage social media tool in Bangladesh accounting 99.3% usage. Besides, Twitter (0.34%), Tumblr (0.11%) and YouTube (0.09%) secured second, third and fourth position (Stats Monkey, 2016). The current potential of social media is further exemplified by the 800 government offices using social media for their departmental purposes (GoV, 2016).

Agriculture plays a key role in Bangladesh’s development, contributing to 20% of the nation’s GDP and accounting for the livelihoods of 80% of the population. However, the agricultural sector continuously faces the challenges of securing food for 160 million people. As the population growth swells the demand for food increases and the agricultural sector faces the burden of producing 0.3 million tons more food to feed approximately two million new faces every year (MoA, 2012). The agricultural sector is also under the threats of climate change (Stern, 2007). It follows that sustaining agricultural growth is extremely important for sustainable development in Bangladesh. The Department of Agricultural Extension (DAE) is one of the leading agencies that implements agricultural policy in Bangladesh (Uddin, 2008). The mission of DAE is to improve the technological knowledge and skills of farmers at all levels by providing skilled, effective, decentralized, region-dependent/adapted, demand-based and integrated extension services with a focus on ensuring sustainable and profitable increase in crop production (DAEa, 2016).

The Ministry of Agriculture (MoA) formulated the New Agricultural Extension Policy in 1996 and further updated in 2012, renamed as the National Agricultural Extension Policy (NAEP). The NAEP emphasized structural and strategic reforms of DAE and highlighted the deployment of electronic, virtual and online services for agricultural extension services (MoA, 2012). Therefore, interest in the use of virtual knowledge and services is growing. Knowledge mobilization and networking are important elements of agricultural innovation—a process aimed at higher productivity, better adaptability and progressive economic growth in agro-based countries like Bangladesh (Swanson & Rajalathi, 2010). As in other tropical countries, agricultural innovation in Bangladesh requires effective collaboration and coordination among different actors of agricultural development (Tropical Agriculture Platform, 2016). The recent policy i.e., NAEP focuses on collaboration, partnerships among agri-stakeholders for synchronizing extension services, and linking producers, entrepreneurs with probable markets, consumers, and other
actors in the agricultural value chain to support mutual learning (MoA, 2012).

Social media augments quick communication over geographic distances through networking opportunities and collaboration among its users (Stanley, 2013). In recent years, social media is credited with supporting agricultural and rural development innovation processes, herein enabling interaction, knowledge sharing, and supporting agricultural development (EU SCAR, 2013). The important functions of social media for supporting agricultural innovation are, specifically, peer-to-peer communication, farmer-industry networking, and community engagement (Kaushik, Chowdhury, Hambly Odame, & van Paassen, 2017; Saravanan, Suchiradipita, Chowdhury, Hall, & Hambly Odame, 2015). Following the contemporary policy and practices of ICTs and social media, DAE has prescribed its staff to use social media for their professional purposes. Since 2014 extension agents of DAE have been using social media to build and maintain connections with colleagues and clients, share experience and activities in the field, and follow up departmental notices (DAEb, 2016; DAEc, 2016; MoA, 2016).

**Purpose of the Study**

Social media has been used as a new means of communication among extension agents of DAE in Bangladesh but there has not been any systematic research on how extension agents have accepted and used social media for professional purposes. This raises the question of if and how extension agents have accepted and used social media to support various organizational activities. Therefore, this study aims to analyze acceptance and use of social media by extension agents of DAE.

**Theoretical Framework**

Information system (IS) researchers used the behavioral intention model taken from social psychology as an essential theoretical groundwork to determine user behavior (Swanson, 1982; Davis, Bagozzi, & Warshaw, 1989). The Theory of Reasoned Action (TRA) proposed by Fishbein and Ajzen (1975) is a well-researched behavioral intention model. According to the model, a person’s use of a system is determined by their behavioral intention (BI) towards using the system. BI is informed by the person’s attitude (A) and subjective norms (SN) about the behavior. Attitude (A) is conceptualized as a person’s positive or negative feelings (evaluative effect) about a specific behavior. Subjective norms (SN) epitomize a person’s perception about the peer pressure to follow a certain behavior or not.

Davis (1986) adopted TRA as a theoretical foundation to develop the Technology Acceptance Model (TAM) as shown in Figure 1. TAM is a widely used theoretical model for studying the adoption of ICTs in the agricultural sector, such as the use of ICTs by the Caribbean extension officers (Strong, Ganpat, Harder, Irby, & Linder, 2014) or computer utilization for extension personnel in India (Sivakumar, Parasar, & Anantharaman, 2013). The model was used to study the acceptance of different ICTs tools such as email (Gefen & Straub, 1997), online shopping (Vijayasarathy, 2004), e-government services (Carter & Bélanger, 2005), and adoption of mobile services (Wang, Lin, & Luarn, 2006; Meso, Musa, & Mbarika, 2005).
It has been extensively used for studying social media acceptance and use, for instance, on Social Networking Sites (SNS) (Leng, Lada, Muhammad, Ibrahim, & Amboala, 2011; Sago, 2013; Al-Ghaith, Sanzogni, & Sandhu, 2010; Al Ghaith, 2015; Nah & Saxton, 2012; Rauniar, Rawski, Yang, & Johnson, 2014; Nasri & Charfeddine, 2012).

Figure 1. Technology Acceptance Model (TAM), Davis (1989)

According to the model, Perceived Ease of Use (PEoU) and Perceived Usefulness (PU) are considered as fundamental determinants of information technology acceptance and usage (Davis, 1989). PEoU is “the degree to which a person believes that using a particular system would be free of effort.” In the model, ease is conceptualized as “freedom from difficulty or great effort.” PEoU contributes to intention of behavior and usage of a system in two ways: self-efficacy and instrumentality. The easier it is to interact with a system and to follow certain behaviors, the more self-efficacy the system will be perceived as having by the potential users (Bandura, 1982). The relationship between PEoU and attitude captures the intrinsically motivating aspect of PEoU (Davis, 1986). A significant positive relationship between PEoU and A was evident in number of studies, such as mobile banking (Amin, Baba, & Muhammad, 2007), online shopping (Vijayasarathy, 2004), software use (Morris & Dillon, 1997), acceptance of internet banking (Ramayah & Suki, 2006), and social media (Facebook) acceptance and use (Nasri & Charfeddine, 2012; Al-Ghaith, 2015).

Instrumentally, PEoU indicates that the less effort and time needed to perform a behavior with a certain tool, the more work the individual can achieve with the same amount of effort and time. As per previous studies, PEoU has a significant and positive effect on PU. The direct relationship between PEoU and PU was reported in several studies, for example, internet acceptance by undergraduate students in the USA (Yi & Hwang, 2003), SNS acceptance (Leng et al., 2011; Nasri & Charfeddine, 2012; Al-Ghaith, 2015), personal digital assistance for adults in Germany (Arning & Ziefle, 2007), acceptance of short message service (Lu, Deng, & Wang, 2010), and use of mobile-based ICTs (Meso et al., 2005). The following hypotheses have been proposed based on the above studies:
Hypothesis-1: PEoU has significant positive influence on PU of social media.

Hypothesis-2: PEoU has significant positive influence on A for social media

An individual forms positive attitude (A) towards the system if they evaluate the system with a positive output (Davis et al., 1989). According to Davis (1989), PU is defined as “the degree to which a person believes that using a particular system would enhance his or her job performance.” The term ‘useful’ is conceptualized as a system that can be used advantageously. A study on foreseeing consumers’ intention to practice online shopping found that consumers’ perceived usefulness of the internet medium to get information about products and compare prices is positively associated with their attitudes towards online shopping (Vijayasarathy, 2004).

Hypothesis-3: PU has significant positive influence on A for social media

In TAM, the direct relationship of PU and behavioral intention (BI) illustrates that when people find the potentiality of increasing their job performance by using a computer system, they form cognitive appraisal. Thus they develop intention to use the desired computer system over and above the feelings they have towards the behavior (Davis et al., 1989). Thus PU has been found to be a potential driver to form BI towards a technology in both online and offline context (Venkatesh & Davis, 2000). Al-Ghaith (2015) executed TAM to conceptualize the usage of SNS and found that users’ perceived usefulness positively influenced their behavioral intention to use SNS. Likewise, a research investigation on the acceptance of Mobile Banking by Malaysian clients elucidated that customers’ perceived usefulness of Mobile Banking had a significant effect on their behavioral intention to use Mobile Banking (Amin et al., 2007).

Hypothesis-4: PU has significant positive influence on BI to use social media

Attitude has been considered as a cause for intention (Lu, Yu, Liu, & Yao, 2003). The attitude (A) and BI relation in TAM depicts that all things being equal, people have the intention to perform a behavior when they hold positive attitudes towards the behavior. Cheng, Lama, and Yeung (2006) adopted TAM to understand customers’ intention of adopting Internet Banking in Hong Kong. They concluded that Attitude is an intervening variable and clients’ attitude positively influenced their intention. Hence, for Tunisian university students in a different study, attitude had the strongest effect on their Facebook use intention (Nasri & Charfeddine, 2012).

Hypothesis-5: A has significant positive influence on BI to use social media

According to TAM, computer usage is eventually determined by the BI of the user (Davis, 1989). Previous studies, for instance, Wireless Application Protocol (WAP) adoption for mobile commerce in Taiwan (Hung, Ku, & Chang, 2003), customers' intentions and usage of Short Message Services (SMS) in Singapore (Lai, 2004), and exploring the regulating effects of gender in the intention of mobile chat service use (Nysveen, Pedersen, & Thorbjørsen, 2005) have concluded that intention has a positive effect on behavior towards a technology. Ajzen (1991) mentioned that intention is considered as the last antecedent of behavior.

Hypothesis-6: BI to use has significant positive influence on AU of social media.
Methods

The Comilla region was randomly selected out of fourteen agricultural regions in Bangladesh. This region comprises of three districts: Comilla, Chandpur and Brahanmanbaria. The sub-districts (called Upazilla) within a district are headed by Upazilla Agriculture Officers (UAO). The sub-district consists of several blocks headed by Sub Assistant Agriculture Officers (SAAO). At first, each of the districts and sub-districts offices was requested to identify staff who use social media. Thus, 523 staffs were identified as social media users. From that list, 25% of social media using staff (total 140) were randomly selected as respondents of the study.

The items for each of the constructs of the TAM model (PEoU, PU, A and BI) were adopted from previous research that established their validity and reliability (Davis et al., 1989; Venkatesh & Davis, 1996). For this research the structure and meaning of those items were modified based on the research context and ultimately four items for each of the constructs were formulated. In order to measure the constructs, a 5-point Likert scale for the items with response options ranging from strongly agree to strongly disagree was adopted, the same methodology followed by Nasri and Charfeddine (2012) and Leng et al., (2011). Respondents indicated Actual Use (AU) of social media by the number of minute social media used per day. The AU data were then categorized into six groups, such as use of social media up to 30 minutes per day, 31 to 60 minutes per day, 61 to 120 minutes per day, 121 to 180 minutes per day and more than 180 minutes per day.

The study followed a mixed method strategy i.e. combination of qualitative and quantitative method. At first, informal and unstructured interviews were conducted to obtain an overview of social media use. Informal discussion and participant observations were conducted during professional events (e.g. weekly meeting of extension agents). Following this phase, a structured questionnaire was prepared which included items for the constructs of TAM. The questionnaire was pre-tested with fifteen (15) respondents. Based on the pre-
test, the chronologies of the questions were adjusted and phrasing of the questions was modified to ensure understanding and intended meaning of the respondents.

Figure 3. Red dot on a map of Bangladesh indicating the study locale

The research was conducted during the period of August to November 2016. The researchers participated in every weekly Upazilla agricultural meeting at the various Upazillas. After the weekly meeting of a particular Upazilla, the selected respondents were requested to take part in the survey. Data from the district level officers was collected based on individual appointment.

Two focus group discussions (FGD) were conducted, one with administrative staff (from Agricultural Extension Officer, AEO to higher level officers) and the other with frontline staff (SAAOs). The FGD with administrative staff was held at Deputy Director’s (DD) office of Brahamanbaria and the FGD with frontline extension staff (SAAOs) was conducted at Muradnogor Upazilla and. In addition, field notes were collected during informal discussions, surveys and interviews. Thus, to ensure the validity of the data, triangulation of data sources was implemented.

The quantitative survey data was analyzed using software from the Statistical Package for Social Science (SPSS) version IBM SPSS statistics V-23. The responses of the items of TAM constructs (i.e. PEOU, PU, A, BI) were coded as 1 for strongly disagree, 2 for disagree, 3 for neither agree or disagree, 4 for agree and 5 for strongly agree and the scores for each item were entered in
the software. Both descriptive and inferential (regression) statistical analyses were performed for all the constructs. The data from informal discussions and focus group discussion (FGD) were recorded and transcribed. Then the transcriptions were manually coded according to some themes, such as usefulness, attitude, job performance, resources, internet facility, skill and the codes were used according to their relevance to the findings of the research.

According to Wixom and Watson (2001), convergent validity is adequate when the item loading value is greater than 0.50. For the TAM model, two items from PEoU, one item from the PU and A constructs each were dropped due to their failure to load in their respective construct with greater than 0.50 values. Thus two items for PEoU, three items for PU and A construct each and four items for BI construct were included for analysis. Again, convergent validity is also fulfilled when the constructs have an Average Variance Extracted (AVE) value of at least 0.50 (Wixom & Watson, 2001). Accordingly all the constructs fulfilled the minimum AVE value ranged from 0.586 to 0.717 for the TAM model (Table 1).
Table 1

Construct Reliability and Convergent Validity of TAM Constructs

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Items</th>
<th>Factor loading</th>
<th>Average variance extracted (AVE)</th>
<th>Chronbach’s alpha</th>
<th>Kaiser-Myere-Olkin (KMO)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived Ease of Use (PEoU)</td>
<td>PEOU1</td>
<td>0.862</td>
<td>0.717</td>
<td>0.705</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>PEOU2</td>
<td>0.803</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived Usefulness (PU)</td>
<td>PU1</td>
<td>0.711</td>
<td>0.586</td>
<td>0.739</td>
<td>0.661</td>
</tr>
<tr>
<td></td>
<td>PU2</td>
<td>0.885</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PU3</td>
<td>0.749</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitude towards Using (A)</td>
<td>A1</td>
<td>0.763</td>
<td>0.623</td>
<td>0.803</td>
<td>0.708</td>
</tr>
<tr>
<td></td>
<td>A2</td>
<td>0.809</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A3</td>
<td>0.806</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behavioral Intention to use (BI)</td>
<td>IU1</td>
<td>0.880</td>
<td>0.716</td>
<td>0.850</td>
<td>0.780</td>
</tr>
<tr>
<td></td>
<td>IU2</td>
<td>0.825</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IU3</td>
<td>0.908</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IU4</td>
<td>0.867</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Chronbach’s alpha of the TAM model constructs satisfy the minimum value (0.70) as suggested by Bagozzi and Yi (1998) and ranged from 0.705 to 0.850 (Table 1). Thus, all constructs demonstrate an acceptable reliability level. To establish the discriminant validity, Hair, Black, Babin, Anderson, and Tatham (2006) suggested a conservative approach where AVE for each of the constructs is compared with the inter-construct correlation square of the associated constructs. Table 2 shows that all the AVE values were greater than the correspondent squared correlation value of inter-constructs of the TAM model.

Table 2

AVE and Squared-correlation (n=140)*

<table>
<thead>
<tr>
<th></th>
<th>PEOU</th>
<th>PU</th>
<th>A</th>
<th>IU</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEOU</td>
<td>0.717</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PU</td>
<td>0.165</td>
<td>0.586</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>0.154</td>
<td>0.462</td>
<td>0.623</td>
<td></td>
</tr>
<tr>
<td>BI</td>
<td>0.197</td>
<td>0.31</td>
<td>0.403</td>
<td>0.716</td>
</tr>
</tbody>
</table>

Note: * Diagonal shows the AVE and the values below the diagonal are values of correlation square

Findings and Discussion

Of the items of Perceived Ease of Use (PEoU) “learning to use social media is easy for me” received the highest score followed by the statement, “it is easy for me to become skilful at using social media” (Table 3). Table 3 shows that the item of Perceived Usefulness (PU) that received the highest score was “I get various agricultural information from social media” and the
The lowest scored item was “I can follow the activities of my colleagues on social media”.

The statement “social media are effective means of presenting professional achievement” obtained the highest score among other items of Attitude towards Using (A) and “Social media are helpful to get connected to different stakeholders” received the lowest score (Table 3).

The next construct was Behavioral Intention to use (BI) and the items that

Table 3

Descriptive Statistics of Statements Related to TAM Constructs

<table>
<thead>
<tr>
<th>Statements</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Perceived ease of use of SM</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learning to use social media is easy for me</td>
<td>140</td>
<td>4.529</td>
<td>0.704</td>
</tr>
<tr>
<td>It is easy for me to become skillful at using social media</td>
<td>140</td>
<td>4.229</td>
<td>0.771</td>
</tr>
<tr>
<td><strong>Perceived usefulness of SM</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I get various agricultural information from social media</td>
<td>140</td>
<td>4.407</td>
<td>0.586</td>
</tr>
<tr>
<td>Social media provide me opportunities to perform various professional activities</td>
<td>140</td>
<td>4.393</td>
<td>0.571</td>
</tr>
<tr>
<td>I can follow the activities of my colleagues on social media</td>
<td>140</td>
<td>4.386</td>
<td>0.489</td>
</tr>
<tr>
<td><strong>Attitude toward using SM</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social media are effective means of presenting professional achievement</td>
<td>140</td>
<td>4.321</td>
<td>0.603</td>
</tr>
<tr>
<td>Social media help navigating effective sources of agricultural information</td>
<td>140</td>
<td>4.200</td>
<td>0.590</td>
</tr>
<tr>
<td>Social media are helpful to get connected to different stakeholders</td>
<td>140</td>
<td>4.143</td>
<td>0.685</td>
</tr>
<tr>
<td><strong>Behavioral intention to use SM</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I intend to use social media to get updated agricultural information</td>
<td>140</td>
<td>4.321</td>
<td>0.626</td>
</tr>
<tr>
<td>I intend to use social media for expressing my professional activities to others</td>
<td>140</td>
<td>4.336</td>
<td>0.531</td>
</tr>
<tr>
<td>I intend to use social media as a quick communication tool</td>
<td>140</td>
<td>4.286</td>
<td>0.732</td>
</tr>
<tr>
<td>I intend to use social media to get connected with people that matter to me</td>
<td>140</td>
<td>4.257</td>
<td>0.723</td>
</tr>
</tbody>
</table>

The last construct of the TAM model is Actual Use (AU). Table 4 depicts that the highest percentage (51.4) of DAE personnel used social media between “31 to 60 minutes per day”. The next highest proportion (25.0%) of the respondents used social media “up to 30 minutes per day”.

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Table 4
Descriptive Statistics for Actual Use of SM

<table>
<thead>
<tr>
<th>Statements</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 30 minutes per day</td>
<td>35</td>
<td>25.0</td>
</tr>
<tr>
<td>31 minutes to 60 minutes per day</td>
<td>72</td>
<td>51.4</td>
</tr>
<tr>
<td>61 minutes to 90 minutes per day</td>
<td>15</td>
<td>10.7</td>
</tr>
<tr>
<td>91 minutes to 120 minutes per day</td>
<td>10</td>
<td>7.2</td>
</tr>
<tr>
<td>More than 120 minutes per day</td>
<td>8</td>
<td>5.7</td>
</tr>
<tr>
<td>Total</td>
<td>140</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The Acceptance of Social Media by Agricultural Extension Workers

The results of the hypotheses testing are shown in Figure 5. Hypothesis 1 was tested by regressing PEoU on PU. PEoU had a moderate significant (p<0.001) positive influence on PU. PEoU explained 16.5 percent of variance ($R^2 = 0.165$) for PU with co-efficient Beta ($\beta$) 0.406. The findings indicate that the easiness to use social media is an influential factor for the respondents to perceive it useful.

![Figure 5. Hypotheses result of TAM model (\(*\ast p<0.001 \text{ and } \ast p<0.05 \text{ significance level)*)](image)

In the cases of hypotheses 2 and 3, PEoU had significant (p<0.05) positive influence and PU had weak but significant (p<0.001) positive influence on Attitude (A) towards social media. PEoU and PU together explained almost half (47.8%) of the variance ($R^2 = 0.478$) of Attitude (A) towards using social media. Although both constructs (PEoU, PU) were significant PU had a strong influence on A than PEoU in forming a favorable attitude of agricultural extension workers of DAE towards using social media.

For hypotheses 4 and 5, both PU and Attitude (A) had a significant (p<0.001) positive influence on BI to use social media.
PU and Attitude (A) together explained 43.2 percent ($R^2 = 0.432$) variance of BI to use social media. In case of hypothesis 6, BI to use social media had a moderate ($\beta=0.520$) significant ($p<0.001$) positive influence on AU of social media by extension agents. The finding indicate that 27.0 percent of variance ($R^2 = 0.270$) for AU was explained by BI to use social media.

The findings indicate an acceptance of social media by agricultural extension workers of DAE to accomplish their professional purposes. The hypotheses formulated for the TAM model were supported in this research. The research findings confirm that PEoU instrumentally influenced PU of social media. Agricultural extension workers of DAE considered that use of social media for professional purposes did not require much effort. They found that learning to use social media and to become skillful at using it was easy for them. A recent study in the United States indicates that a significant relationship exist between agricultural communicators’ use of Instagram and PEoU (Hawley, Hall, & Chowdhury, 2018). Previous research on the TAM model (Nasri & Charfeddine, 2012; Leng et al., 2011; Rauniar et al., 2014) also concluded that PEoU is an important predictor of PU for social media.

According to Davis (1986), the self-efficacy function of PEoU influences A towards using ICT tools. Literature regarding the research on other ICTs acceptance showed mixed results in this aspect. For instance, the research of Nasri and Charfeddine (2012) for Social media (Facebook) acceptance, Vijayasarathy (2004) for online shopping, and Morris and Dillon (1997) for software use reported significant influence of PEoU on A towards use of ICT tools. On the contrary, Leng et al., (2011) reported that PEoU of SNS for university students in Malaysia had no significant influence on A towards use of SNS. In the last decade Bangladesh witnessed a significant advancement of internet facilities and availability of affordable Android smartphones. Mobile operating companies in Bangladesh are now offering affordable internet packages. Furthermore, there are now several Bengali typing softwares for Android versions available in Google Play. Considering that staffs of DAE have at minimum a Diploma degree, it should be easy for them to operate, command and type on social media given the above technological solutions.

The professional usefulness of social media has formed favorable attitudes among agricultural extension workers of DAE towards use of social media. They have found social media to be a beneficial tool to increase their job performance in line with the task requirements. Senior officers have started using social media to send short official notes and instructions to the frontline extension officers. This medium reduced barriers of communication in terms of physical distance and time. As a result, it enhanced timely execution of instructions. Furthermore, the senior officers of DAE often followed up with junior officers to get updates on their daily activities (e.g. field visits, demonstrations, trainings, meetings, etc.) via social media. Social media therefore served two purposes: for the junior and field officers to articulate and demonstrate their performance and for the senior officers to monitor the job activities and performance of their subordinates. These findings are in line with Treem (2015) who noted that social media provided an account for individuals to assess the work of others in organizations. Other studies on the TAM model (Nasri & Charfeddine, 2012; Vijayasarathy, 2004; Morris & Dillon, 1997) also confirmed the result that usefulness is a major determinant in forming attitudes towards using ICT tools.
Conclusions, Implications and Recommendations

The acceptance of social media by agricultural extension workers is a significant step for enhancing the performance of the extension services of DAE. The extension workers’ ease of using social media indicates that they require less effort in learning to use social media and to be skillful in using social media for professional purposes. Therefore, they have been using it to reach out to a larger number of clients and to collaborate with their colleagues timely and effectively. Furthermore, social media enabled them to readily share professional accomplishments with their reporting officers and other colleagues. Social media, therefore, offered opportunities for extension agents to build network both within and beyond their organizational circles. Enhancing inter- and intra-organizational networks and sharing of experiences are essential elements for supporting agricultural innovation and development (Tropical Agriculture Platform, 2016).

Overall, the findings indicate potential use of social media in an ICT-based agricultural development strategy in Bangladesh. Concerning the use of ICT-based services for development in Bangladesh, this research provides useful insights into improving the extension service system. Social media has helped extension service providers to perform professional activities better. It has offered a virtual window to share and disseminate agricultural information and learn from the accomplishments of other colleagues. Although the research focused on the current use of social media on intra-organizational activities and interactions (within DAE staff), there are opportunities to support conversations beyond the boundaries of organizational circles and widen the network to reach other agricultural stakeholders.

Strong et al., (2014) found that Caribbean extension workers were more likely to use ICTs to expand their professional knowledge and improve service delivery than customary communication approaches. ICTs played a vital role in satisfying their personal benefits (e.g. personal tasks, knowledge, contact etc.) and increasing their professional performance. Sivakumar et al., (2013) concluded that the TAM model has provided an essential management tool for extension managers in India to identify perceptual complexities among their staff and enable staff to use computer technologies properly.

The professional use and acceptance of social media has to be augmented among the DAE staffs. Initiatives should be taken to encourage social media non-users of DAE staffs to be part of the virtual network of social media users. It is necessary to offer various institutional supports for extension agents, for example, sharing the good practice of social media in agricultural extension, professional appreciation, training, awareness building and highlighting benefits of social media use in professional practices. This research only used the typical constructs of the TAM model to explore the acceptance and use of social media by the extension agents of DAE. Other authors modified the model and included other variables, such as perceived enjoyment and social influence. Therefore, based on the contexts, other pertinent external variables could be explored and included in the TAM model to achieve a more thorough and accurate explanation of acceptance. Furthermore, the online networks of social media are sources of user generated content, offering beneficial as well as controversial and misleading information. Further study should be conducted to analyze agricultural information and knowledge flows in social media and how to reduce negative
consequences while using the media for strengthening extension services. In addition to these, it would be interesting to investigate why some DAE staffs did not accept social media and what support systems might facilitate their use of social media in professional practices. Social media was used for communication amongst colleagues with little reference about use of the media to improve communication with farmers. Also, it is not evident that social media enabled farmers to express their needs. This issue deserves attention as farmers will likely use social media intensively in future.

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Manuscript Submission Guidelines

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