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 = 18%. Volume 25 = 9%. Volume 26 = 26%. Volume 27 = 17%.

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.

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A Feature Article should focus on philosophy, current or emerging issues, and the methodology and practical application of specific research and appropriate technologies, which have implications for developed and developing countries. Conceptual/Theoretical and Methodological manuscripts are also encouraged as submission for feature articles. If applicable, a feature article should report the findings from a fully investigated study. Feature articles are no longer than 20 double-spaced pages, excluding references.

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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

Dr. Norman Borlaug once said “If you desire peace, cultivate justice, but at the same time cultivate the fields to produce more bread; otherwise, there will be no peace.” Agricultural educators and extensionists seek to assist in creating peace across the globe, in our own nations, in our communities, in our homes, and inside ourselves. The research you will find in the April 2021 issue of the JIAEE strive to inform the practice of agricultural education to promote peace through cultivating the fields agriculture uses to produce food, disseminate knowledge to ensure sustainability, and focus on cultivating justice around the world through education and enhancing critical thinking. The power of the knowledge transferred through agricultural leaders, educators and communicators should not be overshadowed during trying times and this issue showcases some of the best of our work.

To begin, the research note examines the role extension plays in assisting youth in Uganda in finding careers in agriculture. While it provides a practical application of a single program, Bragoli et al. expand the literature further by examining the impact of a professional development on entrepreneurial fellows (also in African countries) a year after its conclusion. Both showcase examples of evaluation efforts applied in short and long-term contexts.

Cultivating justice and peace, Wilcox et al. provided a voice to women empowered by the INGO Field of Hope in Northern Uganda. I encourage you to take the time to read the words of these women as they express how their educational experience helped them overcome their concerns, fears and dependence. It goes on to showcase how empowerment can lead to greater levels of agricultural production as the women involved emerged stronger; focused on feeding their families and communities. Food security and nutrition education were also explored in El Salvador, South Africa and Myanmar in this issue. All three articles showcase and promote agricultural and extension education efforts using innovative research methods. I encourage you to think about the connections emerging from the implications within these three pieces despite their foci being on different parts of the world; each wrestling with its own challenges.

Two Delphi studies are also included in this issue. One showcases what experts consider the potential of luxury niche agricultural products in Mexico. The other identifies the organizational functioning capacity needs of rural advisory networks around the globe. Both provide insights into industry and government needs as we strive to support the advancement of agricultural production as agricultural educators. Finally, Baker et al. provide a timely and important review of the critical thinking literature by testing the UFCTI in Chinese. Their work is an important reminder that culture plays a role in measurement, and how, as researchers, we must strive to thoroughly test scales before using them to ensure they are culturally appropriate while remaining contextually accurate across languages and cultures.

The JIAEE editorial team is here to support you in publishing your valuable research. Please contact us at any time if you have questions. We wish you all peace, safety and health.

Sincerely,

Alexa J. Lamm, PhD
Executive Editor, Journal of International Agricultural and Extension Education
**Model of Success: Extension Services Helping Ugandan Youth Find A Career in Agriculture**

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**Abstract**

As the world continues to experience a population boom amidst growing food insecurity concerns, the need for well-trained and competent youth in agriculture-related industries is on the rise in Sub-Saharan African countries, specifically Uganda. With 78 percent of Uganda’s population below the age of thirty, the number of unemployed and unskilled workers presents a challenge to a country that relies heavily on jobs within the agricultural sector to thrive. Due to the increased number of unskilled youths, extension-based services such as the National Agriculture Advisory Services (NAADS) and the Uganda Forum for Agricultural Advisory Services (UFAAS) are needed to connect with youth organizations to provide training and direction for those seeking careers in agriculture. This study sought to better understand the phenomena of competency development through various communication channels used to facilitate leadership development and agricultural literacy within a youth organization known as Nokia Farming Agricultural Innovation Platform (NOFAIP). A single instrumental case study was conducted to assess the career preparedness of youth within the NOFAIP group and opportunities that exist for employment within agriculture-related industries. Results found that upon receiving training from UFAAS, the NOFAIP group had increased their credibility amongst Ugandan farming communities and supported the growth of agricultural competencies, such as soil testing, using backpack sprayers to spread fertilizers, and managing citrus groves. Through hands-on experiences and engagement with appropriate training, the NOFAIP group established communication channels that were critical to experience personal growth and the invigoration of an entrepreneurial spirit within agriculture.

**Keywords**: international agriculture, youth development, career opportunities, extension

**Funding**: This study was supported by African Forum for Agricultural Advisory Services.
Introduction

Uganda is a rapidly growing country with a population comprised of youth who lack the training and exposure to agriculture (FAO, 2015). With 78% of the current population below the age of thirty, Uganda faces an increasing challenge of unemployed and untrained youth who are unable to find careers within agriculture and related industries (Ahaibwe, Mbowa, & Lwanga, 2013). Young adults over the age of 18 account for 64% of Uganda’s unemployment (Uganda Bureau of Statistics, 2012). As challenges with food security continue to rise in Uganda, creating a connection between sustained food output and young adults finding careers within agriculture is limited (Uganda Bureau of Statistics, 2012).

Furthermore, the literature suggests that youth interest in agriculture is declining amidst the rising youth unemployment, undermining the efforts of the Ugandan government to drive economic growth through increasing agricultural production (Ahaibwe et al., 2013). The countrywide phenomena of unemployment further necessitate the need for well-trained youth to be versed in agricultural production, while appeasing the escalating need for increased employment opportunities throughout Uganda (Ahaibwe et al., 2013).

Therefore, a cross-disciplinary approach to providing increased employment opportunities for youth exists within the current extension model sustained by the government of Uganda (Benin, Nkonya, Okecho, Randriamamonjy, Kato, Lubade, & Kyotalimye, 2011). However, current extension efforts maintained by the Ugandan National Advisory Agricultural Services (NAADS) and the Uganda Forum for Agricultural Advisory Services (UFAAS) lack the appropriate communication methods and resources to effectively provide the hands-on services that are expected to be maintained through the extension-farmer-youth relationships (McCole, Culbertson, Suvedi, & McNamara, 2014). Examining novel extension outreach models within Uganda is important to properly assess how investments in education and training of the next generation youth from rural agricultural communities to fill the unemployment gap is critical to predicting the success of Ugandan agriculture (Semana, 1999). With a gap in the literature investigating the role of extension networks, the aim of this study was to illuminate how extension networks are actively used to improve agricultural training for youth while continuing to make agriculture a viable and attractive industry for employment.

Theoretical Framework

The theoretical framework used to guide this study was developed by Rogers (2003) and is known as the theory of diffusion of innovations. Rogers described diffusion as “a kind of social change, defined as the process by which alteration occurs in the structure and function of a social system. When new ideas are invented, diffused, and adopted or rejected, leading to certain consequences, social change occurs” (Rogers, 2003 p. 120). With an emphasis on co-creation of new knowledge, change agents and potential adopters must work together to fully employ the efforts of Diffusion of Innovation (Moriba, Kandeh, & Edwards, 2011).

In addition to using Diffusion of Innovation theory, community-based social marketing was employed to complement the efforts of Diffusion of Innovations (McKenzie-Mohr, 2011). This strategy assisted the research team in discovering “the actual barriers to inhibit individuals from engaging in the activity, as well as what would motivate them to act” (McKenzie-Mohr, 2011, p. 22). By combining both theories together, the aim of the study was to learn how extension services develop and sustain norms within communities of youth who are interested in agriculture (McKenzie-Mohr, 2011). By examining how youth within the Nokia Farming Agricultural Innovation Platform (NOFAIP) group respond to specific, pre-existing social norms,
this research applied the experiences shared and observations made while conducting the single instrumental case study in order to clarify how diffusion of innovations will realize more effective approaches working to enhance youth competencies in Ugandan agricultural efforts (Creswell & Poth, 2016).

**Purpose and Research Questions**

The purpose of this study was to develop an understanding of the influence that extension and outreach efforts of the UFAAS, a local extension and rural advisory service provider, have on Ugandan youth with an interest in agriculture, with a particular focus on the experience of individuals associated with NOFAIP. The study was guided by the following research questions; 1) What is the background of the UFAAS network and how does it serve as a change agent regarding youth in agriculture; 2) What were the change process actions initiated by UFAAS that were relevant to NOFAIP; 3) What is the level of impact, or adoption, seen through outcomes associated with the interaction between UFAAS and NOFAIP?

**Methods**

Utilizing qualitative case study techniques, the researchers aim to empower marginalized individuals to share their stories and be represented in the literature by observing the variables of a case study with a holistic stance (Creswell & Poth, 2016). Therefore, the researchers employed the use of a single instrumental case study as a method to “focus on an issue or concern,” while further illustrating the issue highlighted by individuals, groups and programs (Creswell & Poth, 2013, p. 99) from a post-positivist perspective. At the core of conducting case study research lies the key to gathering “current, real-life cases that are in progress, so they can gather accurate information not lost by time” (Creswell & Poth, 2013, p. 98).

Based on the recommendations of the literature, the program that was assessed through the single instrumental case study was identified as the NOFAIP of the Zirobwe Agaliawamu Agribusiness Training Association. The NOFAIP group was further examined to assess the value and capacity building components while training youth for service-oriented careers while helping farmers in Uganda. The case study was focused on a single work team of four individuals plus the NOFAIP director, as well as the UFAAS leadership team. The single instrumental case study allowed for in-depth observations and analysis (Creswell & Poth, 2013). Seidman (1998) suggests that case studies provide an opportunity to establish contemporary phenomena to be observed through examining focus groups and expose the boundaries between phenomena and context that are often difficult to observe.

Therefore, the intent of this study was to provide an initial level of insight from an exploratory perspective that enhances future inquiry of youth who are interacting with extension-based services in Uganda. Data were collected while on-site in Uganda. Key informant interviews, artifact collection, observations, and reflective journaling was completed by the researcher to gather data. Field notes, interview transcriptions, artifact reviews, and journal entries were later thematically analyzed to identify findings (Creswell & Poth, 2016).

**Subjectivity Statement**

In qualitative research, it is essential to recognize the bias that may exist from a researchers’ previous experience and its contribution to the data analysis and interpretation. Therefore, it is important to note that at the time data were collected and analyzed the primary researcher was conducting an evaluation of the continental African Forum for Agricultural
Advisory Services network as part of a larger study. Furthermore, the primary researcher has previous experience working with extension networks in over 50 countries from all six permanently inhabited continents.

Results

Background of UFAAS

The UFAAS network was launched in 2011 with a focus on engaging in numerous projects and activities, primarily centered around five themes: policy, climate-smart agriculture, youth in agriculture, food and nutrition, and income. UFAAS works to serve as an opinion leader and promote an effective, efficient, and innovative agricultural advisory service system in Uganda.

Like many African nations, Uganda has experienced many changes to their government-based extension system over the past decade. One such change has been due to the establishment of the National Agricultural Advisory Services (NAADS) Act. Under the act, the public extension system was phased out and replaced by a more privatized system. With a ratio of one extensionist to approximately 2000 farmers in the country there has been an expressed need for organizations such as UFAAS to provide supplementary support.

UFAAS has been engaged as a recognized actor in supporting new extension related policy. For example, the UFAAS objective to promote professionalism, and ethical conduct in the agricultural extension and advisory services (AEAS) system in Uganda was recognized by the Minister for Agriculture, Animal Industry and Fisheries (MAAIF). According to the UFAAS leadership team, in 2017 UFAAS was invited to support the development of a set of Extension Guidelines and Standards, Ethical Code of Conduct and Proceedings for Registration and Accreditation of AEAS providers. Through the UFAAS network of professional members, UFAAS was able to successfully draft the requested documents. The proposed documents were reviewed and approved by the MAAIF top management team and the program was launched in June 2017.

UFAAS involvement in the front-line of agricultural advisory services (AAS) policy in Uganda has positioned the organization well to serve the industry in many capacities. One such area is UFAAS’ support for youth in agriculture. Based on high levels of youth unemployment and challenges with maintaining food security there has been a weak logical connection between trying to engage unemployed youth in agriculture and provision of training and direction to those seeking careers in agriculture. However, the challenge of meeting needs at the individual level is most difficult to understand. For instance, UFAAS leaders indicated three primary challenges as it relates to attracting youth to agriculture: First, for many individuals, agriculture is considered dirty [emphasis added to indicate key informant language] work with few parents supporting their children to pursue it as a career. Second, for those youth interested in agriculture, it is very challenging to acquire land, materials, and the capital to be successful. Third, many youths do not have any exposure to agriculture, nor knowledge about the industry, thus they cannot make an informed decision. Therefore, moving from a public to a privatized extension system has created both challenges and opportunities for organizations. From a youth engagement perspective, some groups have emerged that have sought to address this challenge through creative enterprises. However, many of these enterprises are limited in their ability to begin and sustain success.
UFAAS Action

The NOFAIP group has been very successful in building their membership and services on offer to farmers. Growing from less than twenty registered members when they were established in 2010 to over 300 in 2017 when the study was completed. However, as the group continued to grow it found it necessary to engage new partners that were able to add value and build the capacity of its members. The NOFAIP group identified UFAAS as a recognized leader in AAS in Uganda. The UFAAS organization was viewed as a key actor by MAAIF and the training and capacity development opportunities with UFAAS were exceptional.

For these reasons, NOFAIP decided to join UFAAS as a dues paying member. By doing so they were provided access to many of the services and knowledge the UFAAS had available. The following steps were outlined by UFAAS: 1) Engaged with the NOFAIP group to better understand the needs of the organization; 2) Discussed existing capacities as well as desired capacities; 3) Identified training and support materials that UFAAS had available, or would be able to source on behalf of NOFAIP; 4) Coordinated training opportunities for NOFAIP members; 5) Provided ongoing support and capacity development opportunities as NOFAIP members required new or supplemental support; 6) Maintained relationships with NOFAIP leadership to collect best practices and information from NOFAIP extensionists that could be used to improve future training.

Outcomes from Action

The NOFAIP group has over 300 registered members, of which 84 are active in the operations and working to make a living in agriculture by providing services to farmers. The group has a wide range of services that are offered with crop spraying and agronomic feedback being the most frequently requested. Other services include plowing, planting, weeding, irrigation and water management, fertilizing, threshing, and providing market support are sought by farmers in Uganda. The plan of NOFAIP is to focus on crops and field services and to eventually expand into other areas, such as livestock. Many of the registered but currently inactive members are associated with the organization in anticipation of expansion into areas that are more suited to their background and interest.

Most of the active members do not necessarily come from a farm; however, several have had some experience with very small household gardens. The group is very inclusive with the only requirement being that members must have a willingness to learn and to work hard. Some of the members already have a university degree, others have not received any post-secondary education. Those with university degrees typically do not have a degree in agriculture. The result is the organization is exposing youth to agriculture, providing experience and applied knowledge, helping youth to earn a living, and teaching members the skills necessary to buy and operate their own farms. Furthermore, the farmers that engage the youth through employment are seeing positive results. Most farmers indicate that the youth are able to complete the work more efficiently using the best management practices they have learned through the efforts of organizations like UFAAS. Overall, youth are developing invaluable skills and knowledge that will help to ensure the sustainability of Uganda agriculture in the future, while the farmers they are working with are reaping the benefits of best practices, hard work, and greater success.

Impact of Action

In the field, the NOFAIP are applying the knowledge they have acquired from groups such as UFAAS. One example that was observed was the impact of working with a motorized
sprayer to apply inputs. One member of the NOFAIP can cover over four acres of orange trees in one day. In the past, using a manual hand pump sprayer would have only been able to cover one acre per day. The youth are also able to identify diseases and share this new information among other members rapidly. For some youth, there had been a challenge of citrus canker noted on one farm. As a result, the youth were able to quickly relay their newfound knowledge to other farmers they work with to counteract the citrus canker. Therefore, the farmers could use the youth to spray their crops before they suffered losses due to the disease. In the past, such an issue might have caused the whole crop in the area to be lost.

After seven years of experience, learning what works and what new members are interested in, the NOFAIP group has established itself as a viable alternative to other forms of traditional employment. Rather than work for large agricultural organization after graduating with a bachelor’s degree, the group is actively recruiting members to assist farmers. The NOFAIP group offer hands-on experiences, a supportive capacity to develop youth, and a platform to support entrepreneurial efforts. Providing youth opportunities to develop a passion for agriculture should support the sustainability of the agriculture industry in Uganda. Based on their credibility with farmers, the NOFAIP group believe their approach can be replicated throughout the country and ultimately the continent of Africa.

Conclusions, Implications, and Recommendations

The NOFAIP group views their membership with UFAAS as a critical component of their growth and success. UFAAS provides legitimacy to the group and gives them access to valuable capacity building tools and techniques. Additionally, UFAAS provides a linkage to agricultural policy in Uganda. As the group needs these insights to improve their viability or marketability, they indicated their confidence that UFAAS will be there to support them.

For UFAAS the challenge will be to continue to support groups such as NOFAIP and to look for opportunities to where the UFAAS network can be leveraged. For example, a network of representatives across the country would be very valuable for groups like NOFAIP that are looking to expand but do not have the contacts or capacity to do so. Having the appropriate network and knowledge would be invaluable in making these connections.

Although the results of this case study provide insights into the experience of the NOFAIP and UFAAS individuals involved in this research, the results are not intended to be generalizable, rather the study is intended to be a starting point for additional research. An associated limitation with the study is the small number of individuals included. Observations among more than one work team would add to the study trustworthiness and rigor.

References


Do Smallholder Farmers Need Nutrition Education? A Case Study from KwaZulu Natal, South Africa

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Abstract
South Africa (SA) is considered as the second largest economies in Africa with well-developed agricultural food production system. But food security is still a challenge at household level. Currently, in Africa, smallholder agriculture is recognized to contribute food security at household level. This study investigates the prevalence of food insecurity and nutritional knowledge of 78 local smallholder farmers in KwaZulu Natal (KZN) province of South Africa. The results from this study indicated that nutrition knowledge was poor and food insecurity was prevalent at >40% at the household level. It is therefore recommended that future agricultural training should include nutrition education based on FBDG (Food Based Dietary Guidelines) in their respective programs so as to attain a balanced diet for healthy and productive smallholder farmer communities.

Keywords: smallholder farmers, food security, nutrition knowledge, South Africa.

Funding: Funding for this project described in this study was funded by Oilseeds Advisory Committee in South Africa under Grant (M20/142).
Introduction

South Africa (SA) has the second largest economy on the African continent. It is thus regarded as a food secure nation - a country that reportedly produces enough staples as well as import the necessary additional food products to meet the nutritional needs of its population (Statistics South Africa, 2019; Republic of South Africa [RSA], 2015; Shisana et al., 2013). However, this is not necessarily the case at household level. In 2017 it was estimated that about 20% of all South African households’ experienced hunger and 22% had inadequate to severely inadequate access to food (Statistics South Africa, 2019).

Food security, in many countries across the world, is strongly supported by smallholder farmers. Traditionally, the agricultural sector has been divided by subsistence farmers and large-scale commercial farmers. The concept of smallholder or small-scale farming has been usually regarded as “non-productive, non-commercial, subsistence farming... [which] contributes very little to the economy as a whole and the to the welfare and livelihoods of rural dwellers” (Kirsten & van Zyl 1998). But, studies have demonstrated that small-scale farming can be profitable and viable (Ngqangweni et al., 2001). Smallholder farmers are classified as subsistence farmers and emerging farmers. Subsistence farmers are those whose agricultural production is intended only for food consumption. Emerging farmers are those inclined to produce commercially and/or producing a surplus that reaches markets. The proportion of farmers classified under the category of emerging are reported to be a minority (Pienaar, 2013).

The government of SA has recognized the value of smallholder farming as a mechanism to minimize food insecurity and poverty (Baiphethi & Jacobs, 2009). Smallholders contribute to the nations’ food supplies in terms of quantity and quality of the food demand. In addition, this type of farming represents a safety net in many rural economies worldwide (High Level Panel of Experts [HLPE], 2013). It is estimated 80% of African farmers are smallholders (HLPE, 2013). In the specific case of SA, approximately 20% of the households are involved in the agricultural sector and 65% are considered to be subsistence farmers (RSA, 2015). This is approximately four million people (Statistics South Africa, 2012). Now, smallholders are considered important contributors to nations’ economies, environment, and cultural and social structures, especially in developing countries such as SA (High Level Panel of Experts [HLPE], 2013).

Unfortunately, smallholder farmers are characterized as living in poverty and experience food insecurity throughout their lives despite producing food supplies. They often have limited food production and/or lack purchasing power to meet their food needs (HPLE, 2013). Previous studies in SA explored the food insecurity experience of households in rural and urban areas. While, authors indicated male-headed households in urban areas were more likely to be food secure than female-headed households, both male- and female-headed households are more prone to experience food insecurity in rural areas. Considering most Africans in rural areas are involved in the agricultural sector, it is likely they have experienced hunger at some point in their lives (Tibesigwa & Visser, 2015). In the KwaZulu Natal province of South Africa, an estimated 20% of the households are involved in agricultural activities as additional sources of income and food. Coincidently, 19% of households in the province are classified as having an inadequate access to food and 5% with severely inadequate access to food (Statistics South Africa, 2019). Several studies have been conducted in SA to determine the prevalence of food insecurity, determinants of food insecurity, and coping strategies, among others (Walsh & van Rooyen, 2015; Frayne et al., 2009; Kepe & Tessaro 2014; Kruger et al., 2006; Lemke, 2005; Lemke et al., 2000). But there are limited studies investigating smallholders’ food security. The existing
literature has found many smallholder farmers in the country are food insecure (Maziya, et al., 2017; Altman et al., 2009).

**Conceptual Framework**

Food insecurity is often associated with malnutrition and both have important consequences for individuals’ health and well-being (Walsh & Rooyen, 2015). According to the UNICEF conceptual framework for malnutrition, households experiencing food insecurity immediately experience an inadequate dietary intake and diversity leading to hunger and undernutrition. The issues of malnutrition and hunger can result in mortality, morbidity, and disability and it has important long-term implications for nations, such as hindering citizens’ cognitive abilities, economic productivity, reproductive performance, and increasing the prevalence’s of metabolic and cardiovascular diseases (Herforth et al., 2012; UNICEF, 2013). A lack of nutritional knowledge of food insecure and undernourished people has been considered as one of the potential factors that hinders individuals’ ability to choose the most appropriate foods and beverages to have an adequate diet that meets their nutritional needs to lead a healthy and active life (Vorster et al., 2013).

**Purpose and Objectives**

The context provided and the paucity of information about food insecurity and nutrition knowledge of smallholder farmers in SA, guided the purpose of this study, to investigate smallholder/subsistence farmers’ basic nutrition knowledge and their household’s food insecurity access. The objectives of this study were to:

1. Describe the food access of farmers from the KwaZulu Natal (KZN) province based on HFIAS classification.
2. Determine the basic nutritional knowledge of smallholder farmers from KwaZulu Natal (KZN).
3. Ascertain farmers’ nutritional knowledge based upon their household food security prevalence.

**Methods**

**Study Design and Sampling**

This study was descriptive in nature. Data used in this study come from a survey conducted among a convenience sample of 78 black smallholder farmers, who attended the Grain SA Farmer days during the winter season of 2017, was used. Farmers indicated their willingness to participate by signing an informed consent form after the study objectives were explained. The study protocol was approved by the Vaal University of Technology and the Institutional Research Board at Texas Tech University.

**Data Collection**

During the survey, a structured questionnaire was completed with the assistance of a trained fieldworker, where needed. The questionnaire had two main sections: food security and general nutritional knowledge. The food security part of the questionnaire was the Household Food Insecurity Access Scale (HFIAS) to measure food security and coping strategies. The instrument allows identifying anxiety related to food access, perceptions of quantity, quality, and reduction of food intake, as well as consequences or actions of reduced access to food (Coates et
The instrument has nine dichotomous questions where households were asked to indicate whether they have experienced any of the food insecurity conditions or applied any of the coping strategies (0 = no, 1 = yes). It also has nine follow-up questions for each of the original questions respectively. Households were asked to indicate if they have experienced a condition related to food insecurity and hunger and the frequency in which they experience the condition (1 = rarely, once or twice; 2 = sometimes, three to ten times; 3 = often, more than ten times). Participants were asked to answer the questions considering their experience in a time frame of the last four weeks. These questions allow the researchers to identify the household’s food insecurity access prevalence, the severity of the condition, and the coping strategies used to compensate the reduced food consumption (Coates et al., 2007). The instrument has been validated and it is widely used to assess food insecurity prevalence across the world (Deitchler et al., 2010).

The basic nutrition knowledge section included questions asking farmers their perceived nutritional knowledge, and knowledge of food functions, recommended servings, and the SA Food-Based Dietary Guidelines (FBDGs). The instrument used in this study was a modified version of an instrument used previously by the authors (Oldewage-Theron & Egal, 2012) with face and content validity, and internal consistency (α = .73) determined as acceptable (Nunnally & Bernstein, 1994). An overall basic knowledge of nutrition was determined based upon a set of 33 questions instead of 59 questions from the original instrument due to the nature of the study characteristics. Farmers were asked initially to indicate their perceived level of nutritional knowledge in a Likert-type scale ranging from excellent to poor/bad responses (excellent = 6 to poor/bad = 1). Farmers were asked to select the correct answer among the possible options. Knowledge results were then recorded as correct or incorrect answers with a binary code of 1 and 0, respectively. The sum of correct answers resulted in an overall basic knowledge of nutrition with a maximum possible score of 33 points. An initial question asked farmers to indicate their perceived level of nutritional knowledge. The internal consistency of the reduced instrument was found be similar the original instrument and therefore deem acceptable for analysis (α = .77).

Data Analysis

All the data were captured and a complete dataset of 78 farmers was used for analysis (100% response rate). Data were analyzed using IBM SPSS®, version 25. Descriptive statistics of central tendency and variability were used to describe the farmers in terms of the food security and basic nutritional knowledge. Food security prevalence was determined following the scoring parameters established by the authors (Coates et al., 2007) and the adjusted classification parameters made by Chakona and Shackleton (2018) at a recent study in South Africa. The estimation of the parameters by the authors (Coates et al., 2007) is determined by an if-then process depending upon the affirmative responses to certain items in the scale by each category. While the adjusted parameter is based on a classification by the obtained scored. Both classifications suggest that a higher score indicates a more severe food insecurity state. Individual/Household food insecurity levels were analyzed and grouped according to four ordinal categories; 1 = Food Secure, 2 = Mildly Food Insecure Access, 3 = Moderately Food Insecure Access, 4 = Severely Food Insecure Access (Coates et al., 2007). Frequencies were further calculated to indicate prevalence of the various food security levels. A further dichotomous food secure (group 1) and food insecure (groups 2, 3 and 4) was done. Knowledge
scores were calculated by adding all the correctly answered questions (1 = correct answer, 0 = wrong answer).

An independent t-test and Analysis of Variance (ANOVA) were conducted to ascertain farmers’ nutritional knowledge based upon their household food security prevalence. An independent t-test was conducted to compare farmers’ nutritional knowledge scores based upon their food security status (secure or insecure). The null hypothesis states, food secure farmers’ nutritional knowledge is not significantly different than food insecure farmers’ nutritional knowledge. A one-way ANOVA was used to compare the mean scores of food insecure farmers’ nutritional knowledge based upon the severity of their food insecurity: mild, moderate, and severe. The null hypothesis stated: food insecure farmers’ nutritional knowledge is not significantly different based upon the severity of the food insecurity status. An alpha level of .05 was established a priori for both statistical analyses.

Results

Prevalence of Food Insecurity and Coping Strategies

The prevalence of food insecurity was assessed using the Household Food Insecurity Access Scale (HFIAS). The results were evaluated using the parameters established by the authors of the scale (Coates at al., 2007) and the adjusted classification criteria made by Chakona and Shackleton (2018) in South Africa. Based on the authors criteria, 55.1% of farmers’ households were classified as having adequate food access (food secure). The remaining 44.9% were classified as food insecure at different levels of severity, namely moderately food insecure (19.2%), mildly food insecure (14.1%), and severely food insecure (11.6%). Based on the adjusted classification criteria, and slightly higher amount of stallholder farmers were classified as food secure (56.4%) and a slightly less were classified as food insecure (43.6%). The classification at different levels of severity also varied: 20.5% were classified as mildly food insecure and, 15.4% and 7.7% were classified as moderately and severely food insecure, respectively (Chakona & Shackleton 2018). Table 1 shows the classification of the farmers households food security condition using the HFIAS measurement and the scoring criteria established by the authors and the adjusted criteria for South Africa.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Authors criteria (Coates et al., 2007)</th>
<th>Adjusted criteria (Chakona &amp; Shackleton, 2018)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Food Secure</td>
<td>43</td>
<td>55.1</td>
</tr>
<tr>
<td>Food Insecure</td>
<td>35</td>
<td>44.9</td>
</tr>
</tbody>
</table>

Severity level of food insecure households

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mildly food insecure</td>
<td>11</td>
<td>14.1</td>
</tr>
<tr>
<td>Moderately food insecure</td>
<td>15</td>
<td>19.2</td>
</tr>
<tr>
<td>Severely food insecure</td>
<td>9</td>
<td>11.6</td>
</tr>
</tbody>
</table>
Food insecure households, at any level of severity (mild, moderate or severe), reported the use of coping strategies while food secure farmers did not use any coping strategies in their households. Figure 1 shows the frequency percentage of coping strategies employed by the food insecure farmers and their households within the timeframe of the study. Both classification criteria, Coates et al. (2007) and Chakona and Shackleton (2018) reported, similarly, to most frequently use the coping strategies of not being able to eat preferred foods (82.9% and 82.4%, respectively), consuming fewer kinds of foods (71.4% and 73.5%, respectively), and consuming foods they did not really want (65.7% and 64.7%, respectively) due to limited resources. They also reported cutting portion sizes (31.4% and 32.4%, respectively), consuming fewer meals (28.6% and 26.5%, respectively), and going to sleep hungry (14.3% and 11.8%, respectively), and a whole day without food (8.6% and 8.8%, respectively) due to lack of food available in the household. Almost a quarter of the farmers reported that they did not have food available in the household (22.9%; 20.6%) at some point due to lack of resources to purchase food (Figure 1).

Figure 1
Coping strategies reported by smallholder farmers at their households.

Note. Comparison based on the HFIAS classification criteria of authors (Coates et al., 2007) and adjusted for South Africa (Chakona & Shackleton, 2018).

Nutrition Knowledge
Farmers were asked initially to indicate their perceived level of nutritional knowledge in a Likert-type scale of excellent to poor/bad. The majority of the farmers perceived themselves to have a good (48.0%), very good (14.7%) or excellent (18.7%) nutritional knowledge. While
14.6% considered having fair nutritional knowledge, and only 4.0% believed they have poor nutritional knowledge (Table 2).

**Table 2**

*Farmers’ perceived nutritional knowledge (N = 75)*

<table>
<thead>
<tr>
<th>Items</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>14</td>
<td>18.7</td>
</tr>
<tr>
<td>Very good</td>
<td>11</td>
<td>14.7</td>
</tr>
<tr>
<td>Good</td>
<td>36</td>
<td>48.0</td>
</tr>
<tr>
<td>Fair</td>
<td>11</td>
<td>14.6</td>
</tr>
<tr>
<td>Poor/bad</td>
<td>3</td>
<td>4.0</td>
</tr>
</tbody>
</table>

Farmers’ nutritional knowledge was determined by the sum of correct answers. Overall, the farmers had a moderate basic nutritional knowledge with a mean score of 14.3 (SD = 4.6) out of a maximum score of 33. This represents an average knowledge of 43.4%. Results of questions regarding farmers’ basic nutritional knowledge varied by topic: nutrition, identification of fortification on food products, hygienic preparation of foods, meaning of malnutrition, and the South African Food Based Dietary Guidelines (FBDG), as seen in Table 3. The majority of farmers (71.8%) correctly identified breakfast as the most important meal of the day. Only 17.9% could describe malnutrition correctly and knowledge of nutrients were poor. Only 2.6% and 6.4% of the farmers could identify nutrients and functions of nutrients in the body, respectively. The fortification logo was unknown to the majority of farmers (80.8%) and only two indicated they had seen it on bread, and three on maize meal. Similarly, knowledge of the FBDGs was poor overall. Only 9.0% of the farmers indicating that they have heard about the FBDGs before.

**Table 3**

*Nutrition knowledge results (N = 78)*

<table>
<thead>
<tr>
<th>Knowledge topics</th>
<th>Respondents with zero correct answers</th>
<th>Respondents with 100% correct answers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Breakfast is the most important meal of the day</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Nutrients</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Classification of nutrients as macro- and micronutrients</td>
<td>3</td>
<td>3.8</td>
</tr>
<tr>
<td>Functions of nutrients</td>
<td>15</td>
<td>19.2</td>
</tr>
<tr>
<td>Fortification</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have you seen the logo before?</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Food items on which the logo appears? e
Meaning of the logo e
Malnutrition
Meaning of malnutrition e
FBDGs
Heard about the FBDGS? e
Different FBDGs a
Hygiene
Preparation of food d

Note. a number of questions asked = 11; b number of questions asked = 7; c number of questions asked = 6; d number of questions asked = 3; e number of questions asked = 1.

Farmers’ Nutritional Knowledge by HFIA Prevalence

The classification criteria set by Coates et al. (2007) was used for these analyses. The farmers who were food secure had a knowledge mean score of 14.9 (SD = 5.2) while farmers who were food insecure had a mean score of 13.6 (SD = 3.9). An independent t-test was conducted to compare farmers’ nutritional knowledge scores based upon their food security status (secure or insecure). The null hypothesis states, food secure farmers’ nutritional knowledge is not significantly different than food insecure farmers’ nutritional knowledge. An alpha level of .05 was established a priori. The assumptions of parametric tests were met. Based on the results, the t-test was found to be non-significant, t = -1.24, p = .22. Therefore, food secure farmers’ knowledge was not significantly different than food insecure farmers’ knowledge.

A one-way Analysis of Variance (ANOVA) was used to compare the mean scores of food insecure farmers’ nutritional knowledge based upon the severity of their food insecurity: mild, moderate, and severe. Farmers households classified as mildly food insecure had a knowledge mean score of 14.7 (SD = 4.65), while moderate and severe households had a mean score of 12.87 (SD = 3.48) and 13.56 (SD = 1.88), respectively. The null hypothesis stated, food insecure farmers’ nutritional knowledge is not significantly different based upon the severity of the food insecurity status. An alpha level of .05 was established a priori. The assumptions of parametric tests were met. Based on the results, the ANOVA was significant, F(2, 32) = .85; p = .44. Therefore, the null hypothesis is failed to reject in favor of the alternative hypothesis. No significant differences in nutrition knowledge were observed between the mildly, moderately and severely food insecure groups.

Conclusions, Implications and Recommendations

Smallholder farmers are mainly located in the poorest rural areas of SA where persistent chronic food insecurity and malnutrition is evident (Gwebu & Matthews, 2018; Oyo et al., 2018; Sibhatu & Qaim, 2017). The smallholder farming sector is thus a good entry point for improving food security and nutrition (Sibhatu & Qaim, 2017). There is a paucity of data about the food security level of smallholder farmers in SA and this study aimed to investigate rural
smallholder/subsistence farmers from a district in KZN’s basic nutrition knowledge and their household’s food insecurity access.

It is assumed that because farmers produce food, they would be food secure. The findings of this study showed that almost half of the smallholder/subsistence farmers were food insecure, showing a lower prevalence compared to rural households in the District of iLembe in KZN (Drysdale et al., 2019), but a higher prevalence than smallholder farmers in Tongaat (Khumalo & Sibanda, 2019) and Msinga (Maziya et al., 2017), as well as the national and KZN prevalence of 21.3% and 23.4% respectively (Statistics South Africa, 2019). Various reversible and irreversible coping strategies were employed by the food insecure groups that could worsen the impact on food insecurity in the short and long term (Ngidi & Hendricks, 2014). Worrying about not having enough food in the household was experienced by a large percentage (40.0 %) of the farmers. The majority of the food insecure farmers consumed only a few kinds of foods, were not able to consume the preferred foods and consumed foods they did not really want. These findings were consistent with other studies undertaken in the iLembe District (Drysdale et al., 2019) and Msinga (Maziya et al., 2017) in KZN. These coping strategies can be reversed as soon as resources become available.

The prevalence of food insecurity among the smallholder farmers in this study was higher than the national prevalence (23.9%) for black headed households (Statistics South Africa, 2019). This may partially be explained by the fact that the SA measurement did not include the two questions about going to bed hungry and not having had any food in the household that was included in this study. However, this large food insecurity prevalence indicates a serious problem amongst smallholder farmers in particular with 11.6% being severely food insecure, meaning that, they were not only employing reversible coping strategies like cutting meal sizes and the number of meals in a day, but they also experienced times when they would have no food available in the house and going a whole day without food (Coates et al., 2007). Although only 8.6% of the farmers indicated going without food for a whole day, which was consistent with the households in iLembe District (Drysdale et al., 2019) and Tongaat (Khumalo & Sibanda 2019), however, this is a worrisome finding as these “irreversible strategies” can have serious consequences if used on a regular basis (Drysdale et al., 2019).

Farmers are the backbone of the agriculture industry throughout the world. Small landholding farmers have been especially recognized in SA for the last decade as instrumental to minimize poverty and food insecurity (Baiphethi & Jacobs, 2009). These views are reinforced by the United Nations in 2019 where family farming has been declared a mean to reach the Sustainable Development Goals as it “offers a unique opportunity to ensure food security, improve livelihoods, better manage natural resources, protect the environment, and achieve sustainable development, particularly in rural areas” (FAO, 2019). However, small landholding farmers cannot reach their potential within their occupation if they are food insecure which can have important implications for nation’s production. A farmer, and family, with food insecurity, like the farmers in this study, is likely to experience food shortages and limited dietary diversity that may result in malnutrition (nutrient deficiencies and obesity) (Khumalo & Sibanda, 2019; Onyutha, 2018) as a result of consuming more affordable energy-dense, high sugar- and salt containing foods (Drewnowski 2005; Drewnowski & Darmon, 2005). Regular consumption of the previously described food types is a known risk factor of chronic non-communicable diseases (Herfort et al., 2012; Rustad & Smith, 2013; UNICEF 2013). These conditions have detrimental long-term implications: it may decrease the adults’ ability to work, reduced their agricultural productivity and increase their health care bills (Khumalo & Sibanda, 2019). On the other hand,
it may compromise children’s cognitive, motor and socio-emotional development (Grantham-McGregor et al., 2007).

The SA FBDGs is an evidence-based tool that can be used to educate the public about nutrition and motivate people to make good food choices, that can result in optimal nutrition and protect against under and over nutrition diseases related, thus improving individuals overall health conditions (Vorster et al., 2013). Limited data, however, exist about the nutrition knowledge of smallholder farmers and this is the only study that the authors are aware of that focused on nutrition knowledge of smallholder farmers in KZN. Although the majority of the smallholder farmers thought they had good or even very good to excellent nutrition knowledge, the overall nutrition knowledge score was only 46.1%. This is lower than the national nutrition knowledge score of 53.0% (Shisana et al., 2013). The results indicated the farmers’ knowledge was fair with respect to hygienic preparation of food. The majority (71.8%) also knew the importance of consuming breakfast, but reflected poor knowledge in terms of food groups, nutrients, and the meaning of malnutrition. Only 19.2% of the farmers had seen the fortification logo before and only 5.1% knew what it meant. In addition, only 9.0% of the farmers had heard about the FBDGs despite the FBDGs being adopted by the Department of Health as early as 2002. The poor nutrition knowledge was consistent with a Kenyan study among smallholder farming households (Ng’endo et al., 2018). Although no association between food insecurity and nutrition knowledge could be established in this study, the number of farmers with poor nutrition knowledge is high, similarly to a high percentage of the farmers being categorized as food insecure. These results suggest that, in order to achieve sustainable food and nutrition security, all agricultural interventions should include health awareness and nutrition education (Ng’endo et al., 2018). Although many studies have reported the impacts of agricultural interventions, limited studies are available on the impact of interventions on household diets and nutrition and those that are available, focus mainly on dietary diversity (Si bhatu & Qaim, 2017). However, this study results also point to the importance of educating smallholder farmers not only on how to improve production and consumption, but also on why it is important to consume a healthy diet and how it can be achieved through the implementation of FBDGs. Nutrition education can further be employed to assist farmers in healthy food choices on a limited budget (Kerr et al., 2019) as nutrition knowledge is an important predisposing factor for positive dietary and health changes (Rustad & Smith, 2013). An example is a study undertaken among rural Kenyan farm women where a nutrition education positively influenced nutrition knowledge, dietary intake practices and diet quality (Walton et al., 2017). In addition, a food production, combined with a behaviour change communication intervention in Burkina Faso significantly improved child health (de Jager et al., 2018).

The nature of this study led to two limitations in the sampling method, namely: 1) A convenience sampling method was used, and the results thus have low external validity and should not be generalized to any larger smallholder farmer population; and 2) The HFIAS was a self-reported measure, and it has been found that self-reported measures may overstate food insecurity (Devereux & Tavener-Smith, 2019; Kennedy, 2002). Another limitation is that this study was undertaken during the winter season and seasonal variations that have been observed among smallholder farmers (Devereux & Tavener-Smith, 2019), have not been taken into account.

It can be concluded that the prevalence of food insecurity, as determined by food access, was high among the smallholder farmers in the Bergville area of KZN and that they employed various coping strategies to deal with the situation. In addition, although the smallholder farmers
thought they had good nutritional knowledge, this was not the case. Nutrition knowledge is an important predisposing factor for behavior change. The results of this study justify the need for continued, targeted efforts to ensure food and nutrition security among smallholder farmers in KZN. It is recommended that all agricultural training interventions for smallholder farmers should not only focus on production, but should also include nutrition education, based on the FBDGs to educate them about the health impact of producing and consuming a balanced diversified diet.

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https://www.unicef.org/publications/index_68661.html


Interpreting the Impact of a Professional Development Program: Views of Entrepreneur Fellows from Kenya, South Africa, and Uganda One Year Later

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Shida R. Henneberry
Craig E. Watters
Oklahoma State University

Abstract
We conducted a qualitative study that examined the experiences of entrepreneurs who participated in a five-week-long professional development and cultural exchange fellowship program. The Entrepreneur Fellows represented three Sub-Saharan African nations and an array of enterprises, including agriculture and its allied fields, youth development organizations, and social ventures. The study assessed the post-fellowship experiences of the participants, especially regarding their enterprise-related goals, motivations and challenges, community-level impacts, as well as networking and communication practices. Analysis of data derived from 11 semi-structured interviews revealed three overarching themes and nine subthemes. The Entrepreneur Fellows were committed to life-long learning and sharing information, gained new business skills, and expanded their global networks. The Fellows valued their program participation and viewed it as a mark of success. Further, participants were motivated not only by the growth of their enterprises, but also the potential to positively impact their communities. Our findings imply the need for multi-year, longitudinal research, including economic impact data from the Fellows’ enterprises. We also recommend that similar programming be supported and delivered in the future.

Keywords: enterprise development; entrepreneurship; fellowships; Sub-Saharan Africa
Introduction/Review of Literature

In 2015, the United Nations released its Sustainable Development Goals (SDGs) with special focus on the alleviation of poverty worldwide (United Nations, n.d.). The United Nations, as a tool to measure poverty at the outset of the SDGs, also developed the 2015 Human Development Report: Work for Human Development (United Nations Development Programme, 2015). This report provided the Human Development Index (HDI) to evaluate “long-term progress in three basic dimensions of human development: a long and healthy life, access to knowledge and a decent standard of living” (United Nations Development Programme, 2015, p. 3). Many nations with the lowest HDI scores are in Sub-Saharan Africa (SSA). For instance, Kenya and Uganda were classified as “low human development,” and South Africa was listed as a “medium human development” nation (United Nations Development Programme, 2015, pp. 49 & 209).

Regarding economic development, “[t]raining, or capacity building, is just as important as infrastructure. Appropriate levels of higher and technical education allow entrepreneurs to use existing technologies in new ways to address local problems” (Juma, 2011, p. 11). Moreover, micro, small, and medium size enterprises are integral parts of the economy, especially throughout the developing world (International Finance Corporation, n.d.) and accounted for up to 90% of businesses and 50% of employment worldwide in 2012.

To strengthen the human capital of SSA entrepreneurs, the U.S. Department of State funded a grant project proposed and delivered by faculty members of Oklahoma State University. This project brought 23 Entrepreneur Fellows from Kenya, South Africa, and Uganda (see Figure 1) to the United States for a professional development fellowship program. Most of the Fellows had agricultural or related rural development ventures. While in the United States during either 2014 or 2015, the Fellows engaged in entrepreneurial training, short-term internships/job shadowing placements for three weeks of the four-week-long portion of the program held in Oklahoma, including entrepreneurial mentoring, and a variety of cultural experiences (Bragoli, 2016; Taylor et al., 2020). The fifth week of the fellowship program was spent at a conference in Washington, DC with participants of similar programs that had occurred simultaneously.

Problem Statement

A lack of knowledge existed about the Entrepreneur Fellows’ views on the fellowship’s impact after returning home, especially regarding their business enterprises and social ventures. This was the rationale for conducting a follow up study that provided qualitative data for analysis and reporting.

Conceptual and Theoretical Lenses

We conceptualized our study using the lens of human capital theory (HCT). According to Salamon (1991), “the skills, knowledge, and abilities of human beings” (p. 3) is known as human capital. Becker (1962) noted that human capital is linked to “activities that influence future real income through the imbedding of resources in people” (p. 9). Becker (1993) also posited that the impact of human capital can extend outside an individual’s professional life. He stated: “. . . investing or disinvesting in human capital often alters the very nature of a person: training may change a life-style from one with perennial unemployment to one with stable and good earnings . . .” (p. 392). Further, the economic benefits of investing in human capital have the potential to permeate a society (Sweetland, 1996).
The theoretical lens through which we interpreted our findings was Ajzen’s (1991) theory of planned behavior (TPB) [see Figure 2]. TPB posits that human behaviors, or intentions to act, are informed by three factors: attitudes toward a behavior, subjective norms, and perceived behavioral control. Ajzen (1991) asserted that an individual’s perceptions and attitudes surrounding a behavior may be affected by a behavioral intervention. The fellowship experience served as both an investment in the human capital of and a behavioral intervention for the participating entrepreneurs.
**Purpose and Research Questions**

This qualitative study’s purpose was to explore the experiences of select Entrepreneur Fellows regarding their business and social venturing enterprises approximately one year after participating in an entrepreneurship development program in the United States. The inquiry sought to identify themes expressed by the entrepreneurs about how participation in the fellowship program impacted their enterprises after returning home. This study was guided by four research questions: 1. What were the Entrepreneur Fellows’ views regarding the fellowship program’s impact on their enterprises after returning home? 2. What were the enterprise-related motivations, challenges, and accomplishments of the Entrepreneur Fellows? 3. In what ways had the Entrepreneur Fellows’ enterprises impacted their communities? 4. What were the communication and networking practices of the Entrepreneur Fellows?

**Methods**

We employed a qualitative inquiry approach to create case studies which would “. . . provide detailed description of the themes within each case, followed by thematic analysis across cases” (Bloomberg & Volpe, 2012, p. 31), i.e., our study’s participants. The cases were used “to discover important patterns and themes” (Patton, 2015, p. 13). According to Stake (2006), this approach is used “to study the experience of real cases operating in real situations” (p. 3).

Of the 23 Entrepreneur Fellows, 11 were purposefully selected to take part in the research study (see Table 1). The Fellows selected were chosen using criterion-based sampling because it “works well when all the individuals studied experienced the same phenomenon” (Bloomberg & Volpe, 2012, p. 104). Participants were chosen based on five criteria: select members of both cohorts, i.e., Fall and Spring; females and males would be interviewed; all three participant countries, Kenya, South Africa, and Uganda, were represented; a variety of entrepreneurial enterprises were part of the sample by including owners of farms, agro-input suppliers, educators, and social entrepreneurs in the group interviewed; different levels of socioeconomic status were also taken into account when selecting the Entrepreneur Fellows to interview. The interviewees included four women and seven men, i.e., four Kenyans, three South Africans, and four Ugandans (see Table 1). Altogether these individuals had enterprises in agricultural media, agro-inputs and mechanics, production agriculture, retail food sales, social ventures, and textile design and manufacture.

From October 2015 to May 2016, the lead researcher conducted the study’s semi-structured interviews. These interviews were guided by 14 open-ended questions (Bragoli, 2016) which prompted the respondents to answer specific, predetermined items but also allowed space for spontaneous anecdotes or descriptions to be shared (Brinkmann, 2014; Lincoln & Guba, 1985). The questions were reviewed and critiqued by a panel of experts at Oklahoma State University, including an agricultural educator, an agricultural economist, and an entrepreneurship educator, to ensure face and content validity. The 45 to 60-minute interviews were recorded, transcribed verbatim, and returned to the interview participants for clarifications or corrections, i.e., member checking occurred (Bloomberg & Volpe, 2012).

During data analysis, the lead researcher identified specific codes which were “most often a word or short phrase that symbolically assigns a summative, salient, essence-capturing, and/or evocative attribute for a portion of language-based or visual data” (Saldaña, 2016, p. 4) from each case. We initially employed open coding and memo writing to reveal theoretical leads within the data. Next, to better understand the linkages and differences revealed by the initial coding processes, we applied axial and theoretical coding by using NVivo 11 Pro, a qualitative
data analysis software, to explicate connections between data, themes and subthemes, and the study’s conceptual and theoretical lenses.

**Table 1**

*Summary of Study Participants by Country, Gender, and Project Phase (N = 11)*

<table>
<thead>
<tr>
<th>Participant Pseudo Name</th>
<th>Country</th>
<th>Gender</th>
<th>Project Phase (Spring or Fall)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matthew</td>
<td>Kenya</td>
<td>Male</td>
<td>Fall</td>
</tr>
<tr>
<td>Charlotte</td>
<td>Kenya</td>
<td>Female</td>
<td>Spring</td>
</tr>
<tr>
<td>Nicholas</td>
<td>Kenya</td>
<td>Male</td>
<td>Spring</td>
</tr>
<tr>
<td>Roger</td>
<td>Kenya</td>
<td>Male</td>
<td>Fall</td>
</tr>
<tr>
<td>Nancy</td>
<td>South Africa</td>
<td>Female</td>
<td>Fall</td>
</tr>
<tr>
<td>Penelope</td>
<td>South Africa</td>
<td>Female</td>
<td>Fall</td>
</tr>
<tr>
<td>Malcolm</td>
<td>South Africa</td>
<td>Male</td>
<td>Spring</td>
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<td>Martin</td>
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<td>Simon</td>
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<td>Cara</td>
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According to Tracy (2010), high quality research is distinguished by factors such as rich rigor, ethics, sincerity, and credibility. To ensure the study’s credibility, the lead researcher engaged in reflexivity by disclosing her related assumptions, beliefs, and attitudes surrounding the phenomenon investigated and bracketing such to reduce the potential for bias (Moustakas, 1994). The researcher was raised in an agricultural community of northern California. She earned a Bachelor of Science degree in agricultural business with a minor in international relations from California Polytechnic State University. After her undergraduate studies, she pursued a Master of Science degree at Oklahoma State University. The other researchers were full-time faculty members at the lead researcher’s university who represented agricultural education, agricultural economics, and entrepreneurship. All had traveled to SSA to work with entrepreneurs in the agriculture and food sectors and had taught and mentored graduate students from that region.

The criteria outlined by Tracy (2010), along with data triangulation, assisted in gleaning transparent and meaningful findings. The analysis of 11 interview transcripts yielded 35 codes, three overarching themes, and nine underlying subthemes. We interrogated and derived the meaning of such using the lenses of human capital theory [HCT] (Becker, 1962; Salamon, 1991) and Ajzen’s (1991) TPB (see Figure 2), the study’s conceptual and theoretical frameworks, respectively. Interpreting our findings through these lenses revealed the impact of the human capital investments made in the Entrepreneur Fellows, including their perceived changes in attitudes, intentions, and behaviors (Ajzen, 1991) approximately one year after the fellowship experience had occurred.

**Results**

**Research Question #1: The themes impact of the fellowship and the entrepreneurial spirit and the related subthemes of new global network and seeking and sharing information**
While in the United States, the Entrepreneur Fellows were exposed to new information, gained new skills, and expanded their professional and social networks. During their interviews, they discussed leveraging newly formed connections and adopting new practices. Martin, a Ugandan agro-inputs dealer who worked with smallholder farmers stated: “[M]ost of the entrepreneurs from the U.S., team Uganda, we are still together. I can always call on them. We compare notes and see how far we are going. And we recently met [online] last week.” Matthew, a Kenyan dairyman, said of his mentor at Oklahoma State University: “I really appreciate what he was able to do for me. . . . I learnt a lot and that even compelled me to even want to succeed even further.” The Fellows also noted successfully implementing new business practices learned during the fellowship. Martin shared: “. . . the growth has been a rapid growth. This is because I have been implementing things I was not using before.” Further, Roger, a Kenyan agricultural engineer, said: “I have applied about 99% of what I learned in the U.S. . . . [and] I am pulling more people to come to my business, because they are seeing a different or a new product or way of operating in our business.”

In addition to technical information and knowledge, the Fellows were exposed to the benefits of collaborative relationships. Charlotte, a pork supply chain manager, discussed this as applied to her enterprise. She stated: “. . . what I did get was the idea that, ‘wow, I don’t have to have everything on my own. I just probably need to partner with the right people and get moving from there.’” This contact with a new, diverse network of entrepreneurs was of great benefit to the Fellows. Penelope, a South African Fellow, also described her experience with the network. She noted: “I was given the opportunity to meet with other African Fellows and be exposed to what other young people are doing around the world.” Through the fellowship, the entrepreneurs described gaining new knowledge, skills, and contacts that enhanced their businesses.

Research Question #2: The themes impact of the fellowship, interpersonal connections, and the entrepreneurial spirit, and the related subthemes of growth and goal-oriented, community engagement, seeking and sharing information, accessing capital, and Oklahoma State University as a measure of success

Several motivating forces were revealed that impacted the Entrepreneur Fellows’ actions regarding their enterprises after returning home. This included job creation, desires to meet business-related needs, capacity building for themselves and others, opportunity recognition, and strengthening their communities. As such, the fellowship program was a direct investment in the human capital (Becker, 1993; Sweetland, 1996) of its participants. This investment resulted in growth of the Fellows’ enterprises and the employment of not only themselves but also other members of their communities. These economic impacts, such as reducing unemployment and increases in revenue experienced by the Fellows as related to participating in the fellowship program, align with the Becker’s (1962, 1993) and Sweetland’s (1996) assertions that individuals and communities derive benefits from investments in human capital.

As for starting his own business in South Africa, Malcolm stated: “the idea behind that was really to focus on development agriculture, because South Africa is actually a very commercially driven and focused agricultural sector. And I felt that small farmers are left out of the equation.”

The opportunity to empower underrepresented populations served as a driving force behind several of the Fellows’ business ventures regardless of their status as social enterprises. Nancy, through her farm, which is a traditional for-profit venture, also sought to deliver learning and economic development opportunities to youth and smallholder farmers in her community.
She discussed this aim: “We’re going to have quite a big rabbit production that will employ a lot of youth and also assist smallholder farmers to have their own youth projects.” As such, the entrepreneurs emphasized community engagement through the operation of their enterprises.

During his interview, Jacob, a Ugandan agriculturist, discussed the Entrepreneur Fellows-founded organization Global Partnership for African Youth in Agriculture [GLO-PAYA] (see Figure 3). Having originated from the Fellows’ desires to promote the agricultural sector to youth in their communities, GLO-PAYA seeks to “turn that perspective of the youth [about agriculture]. We want to turn it from agriculture is dirty to, you know, it needs a lot of strength, and it is good.”

Figure 3
GLO-PAYA’s Facebook Page at the Time of the Study (Bragoli, 2016)

Jacob continued:
Our engagements will be focused on turning the attitudes of the youth towards the [agriculture] sector. When they learn about it, they will appreciate it much more. And they will gain from it and see that there are jobs for them in the sector.

The focus on engaging future generations was a priority of many of the Entrepreneur Fellows, including those not specifically conducting social ventures. Nicholas, a Kenyan Fellow, discussed his aspirations to start a foundation to train and empower at risk youth in his community. He said:
So that foundation [which Nicholas aimed to launch with profits from his business] will not only rehabilitate them [youth], but it will give them life skills. They will be able to
stand on their own feet. They will be able to start their own projects and actually be able to be self-sufficient.

Cara, a Ugandan gender equity specialist in the coffee industry, working to promote smallholder farmers and their contributions to the Ugandan coffee market, noted: “We are also trying to promote the youth. We have youth that have come up with their own enterprises, like coffee liquors and other items. So, we sell those for them.” The desire to support, develop, and empower, i.e., *engage with their communities*, was a core motivation conveyed by the Fellows, especially regarding youth.

Those interviewed also expressed *a deep desire for new information and the opportunity to share that with their peers, colleagues, and communities*. Malcolm, a South African who specializes in agricultural communications, founded his business “to do something for [smallholder farmers], [to] at least create something that can in a more sustainable way disseminate information and create content, all those kinds of things.” And Roger, after having been laid off by his employer, noted an opportunity to serve small- and medium-scale farmers in his area through opening his own equipment fabrication shop. He explained:

They [local farmers] didn’t have anyone to assist them in carrying out making their implements, showing them what to do, how to go about [using such]. And because I had done much in the workshop in the company, I had a lot of experience. Plus, because of that experience I had trained for, I was better placed to assist the farmers. That is what made me move in that direction.

Matthew also addressed the impact of access to information on small farmers and local economies. He shared: “[T]hese are people who, if well taught and well trained, and given information, they can really, really change their lives through those small farms.” Matthew said of his home country, Kenya: “[W]e have the land, but information is lacking, we don’t have the machinery. So, I thought I could act as a bridge and to bridge that gap that is missing.”

Regardless of scale, industry, or nation, a main challenge faced by the Entrepreneur Fellows was *accessing capital*. Nancy, a farmer and rancher from South Africa, left her job with a financial firm to manage her family’s agribusiness. Though the company is well-established and registered to receive government support, Nancy expressed a continuing need for increased cash flows:

So, the challenge that we still face is the management of cash flow. Understanding that, we can’t sell every month, the beef cattle. . . . But, things like our salaries have to be paid every month. It doesn’t matter if what other expenses we’ve got. So, juggling those expenses is probably my biggest issue.

Malcolm had also left his salaried position to pursue his enterprise full-time. However, due to financial constraints he had shifted from his original plan. At the outset of launching his business, Malcolm planned to produce regular publications and materials geared toward farmers. But he soon realized “. . . that was a very costly route and was going to need a lot of financial muscle and support. So, what I’m doing is, I’m providing information or complementary content for existing publications.”

Charlotte also voiced the need for more capital. Even though the quality of the pork she brings to market is high, she is still unable to afford Hazard Analysis and Critical Control Points certification. Charlotte expressed her frustration: “. . . while I know I qualify for everything in terms of standards, I can’t pay for that license. It’s about $2000 annually. So that’s too much for a small-scale person. Yet, you know your product is good.”

In addition, the participants regarded their status as Entrepreneur Fellows as a *major*
achievement or mark of success. Martin, who wore a shirt from the Oklahoma State University during his interview, shared:

. . . my greatest achievement, I must say, was when I was invited to the U.S. and the African entrepreneurship program. That was the biggest achievement because it was a very big opportunity. . . . [t]he people who applied—there were so many. . . but because of my entrepreneurship skills and my innovation, I was selected . . . [to] participate . . .

And Malcolm expressed that participation in the fellowship program bolstered the credibility of his enterprise. He said: “I feel comfortable presenting my case to [potential clients] precisely because of the entrepreneur fellowship, which I think was a very good foundation to give credibility to what I’ve always wanted to do.”

Research Question #3: The themes interpersonal connections and impact of the fellowship and the related subthemes of community engagement and creation of a youth development organization

After returning home from the fellowship, the entrepreneurs had served as sources of information, training, employment, and leadership in their communities. A primary motivating factor some of the Entrepreneur Fellows expressed was the opportunity for additional community engagement after their return. As a result, the Fellows’ enterprises lifted not only their own households but also the livelihoods of community members in their home countries. Martin’s enterprise, which markets appropriately scaled agricultural inputs to previously underserved farmers in Uganda, supplies about 45 farmers a day. Further, Martin also provides training to his clients “. . . [and] goes to farmers directly to show what does work and what doesn’t work.”

Charlotte’s enterprise had also impacted small-scale pork producers in her area. In addition to the training she provided, Charlotte described the progress made by the producers with whom she worked: “. . . they will get market access through me because I have contacts who would be interested to buy from me because of my expertise. So, they are sure of my standards.” And Roger expressed pride in the training his enterprise was providing. He said: “. . . we are giving training to the college students on lots of farm equipment. Because we train the college students who come to the business and we train them after that period of internship programs in the shop.”

After returning from the United States and establishing her team, Penelope’s organization provided mentorship and coaching “for a group of about 40 teen girls that [they] work with on a regular basis.” Along with emotional support, Penelope’s group facilitates capacity development which she described: “[W]hether that be spending time teaching them the basics of computer, how to compile a CV, for example, or how to knit, or how to conduct an interview.”

Another way in which the Fellows had impacted their communities was through creation of a youth development organization. Jacob, a Ugandan entrepreneur, described the initiative: “[F]ollowing our engagement in the fellowship, we started something called GLO-PAYA—the Global Partnership for African Youth in Agriculture.” GLO-PAYA (see Figure 3), which was modeled after 4-H, aims to engage youth through agricultural programming and the Entrepreneur Fellows’ shared vision to change the perceptions of African youth about agriculture and its allied sectors. At the time of this study, GLO-PAYA had been formally registered in two of the three participant nations. Jacob noted that registering with each government was very important “[b]ecause once we have the structures off the ground and once we are legally existing, then we can be pushed to do things.”
Research Question #4: The themes interpersonal connections and impact of the fellowship and the related subthemes of importance of relationships, networking and communication, and new global network

The Entrepreneur Fellows valued open and consistent communication, transparency, and collaboration among themselves and with their contacts made during the fellowship, and regarding colleagues and employees. The Fellows engaged in social media, networking events, and described leveraging the new network created by the fellowship program. Paramount to the Fellows’ enterprises were their connections with family, friends, clients/customers, neighbors, mentors, and colleagues. These relationships were permeated with social capital, including investments in and returns from such.

Cara stressed the importance of forming relationships with her customers at the coffee shop: “. . . our customers . . . are the middle-income earners, and the emerging youth in Kampala. . . . but they are also our friends. They are returning customers. We know them. When he or she comes, we know what they are going to order.” Many of the Fellows described family members and teachers who influenced them as well as mentors with whom they interacted during their stay in the United States and afterward. During his interview, Martin indicated that he could always reach out to individuals who mentored him during the fellowship. He stated: “They have been so useful to me. It is even like we are with each other every now and then. We are so close to each other.”

After returning from the United States, Charlotte said she had engaged in networking via trade shows. She stated: “[w]hen there is a special group that I feel would benefit from knowing me, then I attend such trade fairs as an exhibitor. . . . So, for me that’s something that I didn’t really conceptualize from the start.” In addition, Nancy described membership in several professional organizations and relying on a local fruit and vegetable packing house that buys and markets her produce for industry information and connections to other growers. Nancy noted that through these channels she has “. . . been able to get in touch with the other producers. They put together courses for the producers. . . . the communication with the pack[ing] house is really, really active.” After the fellowship, the entrepreneurs described being a part of new and broader networks that were benefitting their enterprises.

Conclusions, Implications, and Discussion

Comprised of three subthemes, the theme interpersonal connections refers to the relationships cultivated by the intervention, i.e., the fellowship program. These connections spanned from between and among the Entrepreneur Fellows themselves to their families, friends, mentors, co-workers, and community members. This theme is also supported by the relationships formed by Fellows with U.S. participants during the fellowship programming, especially regarding mentors (Taylor et al., 2020). One of the three subthemes within interpersonal connections was community engagement. This subtheme reflected the Fellows’ desires to positively affect their communities through the operation of their enterprises, especially by job creation. Several of the ventures sought to employ youth, and some worked primarily as youth development organizations. Further, several Entrepreneur Fellows served other marginalized groups such as smallholder farmers and women. The subtheme importance of relationships indicated how much the Fellows valued connections with the individuals who supported and benefitted from their enterprises.

The theme interpersonal connections was also undergirded by the subtheme networking and communication. This subtheme illuminated the communication behaviors and professional
activities in which the Fellows engaged. Among these behaviors was the facilitation and maintenance of open lines of communication surrounding their enterprises. In addition, to stay well-informed regarding all facets of their businesses, the entrepreneurs leveraged social media platforms, professional associations, and industry-related events.

The theme entrepreneurial spirit included three subthemes: accessing capital, growth and goal-oriented, and seeking and sharing information. These subthemes were supported by codes closely linked to HCT (Becker, 1962; Salamon, 1991), and in particular the impacts of behavioral interventions and the benefits of investing in human capital. Together these subthemes encapsulated the motivations, goals, and challenges shared by the Entrepreneur Fellows. The difficulties expressed by the Fellows when securing and sustaining funding for their enterprises fomented the subtheme accessing capital, i.e., their attempts to negotiate and overcome the subjective norms they faced (Ajzen, 1991; see Figure 2). Moreover, this subtheme exposed the ways in which the entrepreneurs addressed financial constraints through cost-cutting measures, fundraising efforts, and by using government initiatives and the services of lending agencies.

The subtheme of growth and goal-oriented exemplified the goal-seeking behaviors of the Fellows, as well as their abilities to distinguish and seize opportunities. Many of the Fellows shared plans for future expansion and new projects. These intentions and actions evinced the Entrepreneur Fellows having increased their perceived behavioral control (Ajzen, 1991; see Figure 2). The subtheme seeking and sharing information was derived from the Fellows’ dedication to lifelong learning and their willingness to share new information with their peers, colleagues, clients, and customers.

The broad outcomes of the fellowship experience, as viewed by participants one year after the program’s conclusion, are highlighted by the theme impact of the fellowship and its related subthemes. Several of the Fellows expressed that being selected for the fellowship was a mark of validation and achievement. These statements led to developing the subtheme Oklahoma State University as a measure of success. Further, the subtheme new global network reflects the connections that Fellows established between members of the two fellowship cohorts, three SSA nations, faculty and students of Oklahoma State University, and members of the institution’s community. The impacts of the fellowship were also shown by the subtheme creation of a youth development organization. Fellows from all three participant countries engaged in the creation and launch of an organization with the aim of changing the perceptions of young people about agriculture and its viability as a livelihood opportunity worthy of SSA youth pursuing.

**Recommendations for Practice**

We recommend that future programming devote significant time to developing and delivering strategies regarding the acquisition of financing. Insufficient access to capital was a pervasive challenge for the entrepreneurs regardless of their scale of operation, socio-economic status, or enterprise. As such, discussion of funding sources, e.g., private micro-credit, savings and lending institutions, granting agencies, and governmental actors, should be prioritized.

Our findings emphasized the value of professional development opportunities such as the fellowship program. The Entrepreneur Fellows, after their participation, were equipped with new ideas, practices, strategies, and technologies to bolster their entrepreneurial pursuits, i.e., they expressed an increase in perceived behavioral control (Ajzen, 1991; see Figure 2). One of the most significant benefits noted by the Fellows was the formation of a new network resulting from the fellowship program, including their use of social media platforms to create...
and sustain relationships (Maroney, 2015). Therefore, we recommend that future programs facilitate consistent and sustained communication and networking opportunities for their participants. Further, our findings emphasize the importance of ongoing mentorship relationships. Upcoming fellowship programs should encourage and facilitate the establishment and continuance of relationships between mentors and their Entrepreneur Fellow protégés (Taylor et al., 2020). Resources from the original funding source could be sought or other potential donors solicited to support this ongoing mentorship (Taylor et al., 2020).

**Recommendations for Research**

We recommend that future investigations include an economic impact study to further explore the effects empowered entrepreneurs have on their communities. In addition to assessing the economic impacts of entrepreneurs, we recommend that future inquiries follow up on the progress of these Entrepreneur Fellows in a multi-year, longitudinal study (Rogers, 2003). Additional research should also assess the Fellows’ progress toward the goals they outlined during and after their fellowship experiences. We further recommend that future research evaluate the long-term impacts of the youth development organization established by the Entrepreneur Fellows. GLO-PAYA (see Figure 3) was founded to address the need for more youth to enter the agricultural sector in SSA and to pursue careers in agriculture and its allied fields (Mukembo et al., 2014, 2015). However, additional research should be conducted regarding the impact of youth development efforts on the agricultural sphere of SSA, including the human capital of aspiring agricultural and food entrepreneurs.

**References**


Assessing the Dimensional Validity and Reliability of the University of Florida Critical Thinking Inventory (UFCTI) in Chinese: A Confirmatory Factor Analysis

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Abstract
The importance of assessing critical thinking has been emphasized extensively by numerous administrators and educators in higher education worldwide. In a contemporary agricultural sustainable development environment, agricultural students need to develop critical thinking to manage complex situations and to deal with controversial issues in international agriculture settings. From psychological points of view, thinking varies cross-culturally. In other words, people from different cultures think differently. With the increasing number of Chinese students studying in the U.S., educators need to be aware of the importance of supporting these Chinese students within the intercultural classroom environment. Thus, it is necessary to explore and understand the way Chinese students think to help them more easily adapt to a culturally diverse educational environment. The purpose of this study was to evaluate the validity and reliability of a Chinese version of the University of Florida Critical Thinking Inventory (UFCTI). The UFCTI measures critical thinking styles using two constructs: engagement and seeking information. Confirmatory Factor Analysis (CFA) was applied to examine the hypothesized measurement model based on the theoretical foundations of the original UFCTI (English version). The CFA findings indicated the UFCTI measurement model between the two versions is equivalent. Specifically, the results confirmed the two-factor measurement of critical thinking style: engagement and seeking information. The findings also indicated adequate validity and reliability for the UFCTI Chinese version.

Keywords: critical thinking style, Chinese students, confirmatory factor analysis, agricultural education
Introduction

Critical thinking is a purposeful, self-regulatory thinking aimed at solving problems, addressing questions, forming judgments, and making decisions (Bailin et al., 1999; Facione, 1990; Rudd et al., 2000). Critical thinking is often regarded as a core competence needed by graduates in an era of globalization (Durkin, 2008; Egege & Kutieleh, 2004). College students have been required to think critically to process a vast amount of information in today’s learning environment. In such context, countries across the globe try to improve their citizens’ critical thinking in order to meet the challenges of the changing world (Shaheen, 2016; Turner, 2006). Due to the increasing global population, agriculture is facing even greater challenges, such as feeding the growing world population, food safety, water conservation, biotechnology and climate change. The importance of agricultural students being able to think critically has permeated the international educational literature (Akins et al., 2019; Roberts et al., 2018) because they must be able to manage complex situations and to deal with the controversial issues impacting global agricultural development (Bisdorf-Rhoades et al., 2005; Duncan et al., 2016).

Critical thinking has been identified as a set of skills (Paul, 1992), dispositions (Facione, et al., 1994), and style (Lamm, 2015a, 2015b). Lamm (2015a, 2015b) described critical thinking style as one of the cognitive thinking preferences of calculating outcomes and solving problems by using rational or logical thoughts. Previous research has indicated that cognitive thinking style varies across individuals from different cultural backgrounds (Brown, 1998; Ten Dam & Volman, 2004; Zhang & Sternberg, 2001). Several studies have revealed that international students from Asian countries generally score lower on critical thinking assessments. For example, Yeh and Chen (2003) compared critical thinking dispositions between Chinese and American graduate nursing students, revealing Chinese students reflected lower critical thinking dispositions. Similarly, Tiwari et al. (2003) compared critical thinking dispositions of nursing students from Australia and Hong Kong. The findings indicated that students from Hong Kong scored lower than Australian students. The incongruence of cognitive thinking preference among students from different cultural backgrounds poses challenges for educators to teach critical thinking (Lun, 2010; Tan, 2017).

Thinking critically has been one of the most important academic standards in Western countries (Gu & Hayhoe, 2001; Ho, 2001). Educators observed that Asian students expressed less critical thinking because they do not frequently engage in classroom discussions (Hu & Grove, 1999; Zhang & Zhang, 2013). In particular, some faculties have found that international Chinese students have challenges when demonstrating critical thinking compared to their western counterparts (Chen, 2017; Dong et al., 2008; Durkin, 2008). These observations could be attributed to cultural differences. Cultural distinctions are inevitably manifested in educational practices in the classroom (Zhang & Zhang, 2013). Instruction in China is typically a teacher-centered environment, with Chinese students receiving direct guidance from their teachers (Watkins & Biggs, 2001). Content is delivered by instructors in a clear and information-packed structure (Chang, 2000; Gollnick & Chinn, 1998; Williams, et al., 2001). This educational environment likely leads students to be passive learners or less-critical thinkers (Facione et al., 2009). The unfamiliar academic standard and different educational environments in Western countries therefore pose challenges for Chinese students.

Although the literature has emphasized the importance of improving Chinese student critical thinking, the availability of valid instruments for measuring critical thinking within the Chinese-speaking population is lacking. Additionally, the reliability and validity of critical thinking instruments in a Chinese-language version has been questioned (Luo & Yang, 2001;
The California Critical Thinking Disposition Inventory (CCTDI) has been translated to Chinese and applied to compare the critical thinking dispositions among nursing students with different cultural backgrounds (Salsali et al., 2013; Tiwari et al., 2003; Yeh & Chen, 2003; Yeh, 2002). However, the internal consistency measured by Cronbach’s alpha for the subscales of the Chinese version of the CCTDI ranged from .34 to .47, revealing the translated instrument is not adequately reliable.

According to Kimberlin and Winterstein (2008), using an existing instrument is more cost-effective than developing a new instrument. Researchers developed the University of Florida Critical Thinking Inventory (UFCTI) to measure critical thinking style (Lamm & Irani, 2011). The UFCTI has been used for about 10 years in agricultural fields in higher education, and it has sound psychometric properties (Lamm & Irani, 2011). Rather than developing a new instrument requiring a long and expensive development process, this study aimed to translate the UFCTI to Chinese and examine its validity and reliability. Lamm (2015a), who is one of the developers of the UFCTI original version, described critical thinking style as “the way an individual goes about thinking and reaching solutions to a problem” (p. 1). Each critical thinker has an individual style of processing information regarding a specific issue that be measured on a continuum between engagement and seeking information (Lamm & Irani, 2011). The UFCTI consists of 20 Likert-type items of which responses can range from 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree. Thirteen of the items are designed to measure the construct of seeking information, and seven items are used to measure engagement. Students with overall UFCTI scores 79 or higher are identified as seekers, and those with 78 or lower are identified as engagers (Lamm & Irani, 2011).

Individuals with a preference for engagement are highly engaged with their surroundings when applying thinking critically. Engagers prefer to attend to others’ discussions, and look for opportunities to showcase their reasoning and problem-solving process. Engagers are confident with their communication ability and are proficient in showing how they arrive at a decision (Lamm & Irani, 2011). Individuals with a seeking information critical thinking style prefer to seek out a large amount of information. Seekers are hungry learners, and they desire to understand complex problems for which many aspects of solutions exist. Seekers pursue the truth about a subject, even if the truth conflicts with their own opinions or beliefs (Lamm & Irani, 2011). There is no right or wrong critical thinking style but an ideal critical thinker would possess qualities expressed by both preferences and choose to engage in a specific preference given the context of a situation when they are being asked to process information that requires critical thinking (Lamm & Irani, 2011).

Previous studies in agricultural disciplines have utilized the UFCTI to investigate the relationship between critical thinking style and water conservation behaviors (Gorham et al., 2014), food safety behavior (Leal et al., 2017), and opinion leader’s communication behavior (Putnam et al., 2017). Akins et al. (2019) investigated the enhancement of critical thinking after integrating case studies into educational settings. These studies have reported that the overall UFCTI reliability measured by Cronbach’s alpha ranged from .79 to .95. With respect to the two constructs, Cronbach’s alpha for the seeker construct ranged from .87 to .92, and Cronbach’s alpha for the engager construct ranged from .87 to .90. Although the UFCTI has been widely used in the U.S., there is no study that attempted to translate the UFCTI English version to Chinese.

In the U.S., Chinese students are the largest group of international students, accounting for 33% of the total international student population (Institute of International Education Open
Doors Report, 2018). Considering international Chinese students are from culturally and linguistically different backgrounds, emphasis should be placed on understanding Chinese students’ critical thinking style to increase their engagement with the learning environment and cultivate their truth-seeking attitudes. Identifying an appropriate instrument to measure critical thinking style is one of the crucial prerequisites to improve critical thinking. However, the absence of appropriate instruments in Chinese makes it difficult to assess Chinese agriculture students’ critical thinking style. The aim of this study was to fill the research gap by validating an instrument to assess critical thinking style for Chinese students pursuing degrees in Western countries.

**Theoretical Framework**

Psychometric Theory serves as a theoretical framework to guide this study. Psychometric Theory describes how psychological measurement (e.g. intelligence, attitudes, and personality traits) relate to a set of observable variables, such as items in questionnaires, assessments or tests (Nunnally, 1994). Psychological measurement includes the interest variables represented as latent constructs. Psychometric measurement “consists of rules for assigning numbers to objects to represent quantities of attributes” (Nunnally, 1994, p. 2). The “rules” assign the numbers using a given scale that can be explicitly formulated to reflect the properties of the attributes (Nunnally, 1994). The interpretation of the psychometric instrument scores are used to measure the validity and reliability of the instrument (Nunnally, 1994). Validity is the extent to which an instrument represents the underlying concept that it purports to measure; reliability is the extent to which an instrument yields consistent result (Ary et al., 2018). When translating and/or adopting a measurement from an original language or culture to a different language, it is necessary to evaluate the psychometric properties to ensure adequate validity and reliability of the newly translated instrument (Geisinger, 1994).

In this study, the overall critical thinking style score was acquired by asking participants to rate their level of agreement with observable variables representing critical thinking style: seeking information and engagement. The observable variables underlying the seeking information latent construct were represented by statements such as: “I enjoy learning about many topics” or “I ask many questions when making a decision”. Likewise, the items underlying the engagement construct are represented by statements such as: “I am able to relate to a wide variety of issues” or “I am interested in many issues”. These observed items reflect the concrete behavior that represent the psychological characteristics of critical thinking style. The overall critical thinking style inventory coordinates the relationship between observable items and the theoretical measurement model. Thus, the two latent constructs are combined to represent a psychometric measurement of critical thinking style. In this study, identifying the psychometric stability of the instrument was viewed as an essential step ensuring the cross-cultural equivalence of measurement. In other words, this study was conducted to ensure the UFCTI Chinese version continues to measure the same constructs that were intended or expected to be measured in the original English of UFCTI.

**Purpose and Objectives**

The purpose of this study was to translate the UFCTI from the English (its original language) into Chinese, and to ascertain the psychometric properties (validity and reliability) of the UFCTI Chinese version for broader adoption among the Chinese speaking population.
Methods

The UFCTI was translated from English to Chinese by a panel of bilingual educators after acquiring permission from the developers of the UFCTI to use the English version inventory. Six Chinese experts from universities in China and the U.S. participated in the translation process. These six experts represented the fields of Agriculture, Education, and English to ensure content validity of the translation process. They were all fluent in both English and Chinese, knowledgeable about both cultures, and familiar with the content of critical thinking style measured by the instrument. A sample of 148 undergraduate agricultural students in China were invited to complete the Chinese version UFCTI through an online survey software, Qualtrics. Hair et al. (2019) stated that the minimum sample size for CFA is 100 if the number of constructs in a model is less than five. The measurement model UFCTI has two constructs, so the sample size for this study was determined to be adequate. Confirmatory Factor Analysis (CFA), implemented in Mplus Software (Muthén & Muthén, 2008), was used to examine the hypothesized two-factor structure measurement model derived from the UFCTI original version. Specifically, the CFA was performed to describe the associations of each item with the latent constructs as well as the correlations between the latent constructs (Milfont & Fischer, 2010).

With CFA, the researcher can test the measurement theory. The measurement theory identifies “how measured variables logically and systematically represent constructs involved in a theoretical model” (Hair et al., 2019, p. 661). Measurement theory specifies the pattern of theoretical variables loadings on prespecified constructs. CFA cannot be performed properly without a measurement theory. CFA is used to examine how well the theoretical pattern of the factors matches the actual data (Hair et al., 2019). Thus, CFA is a method that confirms or rejects the prespecified measurement theory. The measurement theory of the UFCTI Chinese version is the same as the UFCTI English version, which specifies that critical thinking style is represented by engagement and seeking information preferences. The engagement construct was measured by seven items, while the seeking information construct was measured by thirteen items.

Measurement Model-fit

CFA is used to examine the measurement theory that specifies a series of relationships between measured items and latent constructs (Hair et al., 2019). CFA allows researchers to assess the measurement model fitness based on the measurement theory. Practically, CFA is used to examine a prior number of factors or latent constructs, as well as which items load on those constructs (Hair et al., 2019). As reported in Table 1, the indices of assessing the hypothesized measurement model fitness include the comparative fit index (CFI), the Tucker-Lewis Index (TLI), and the Root Mean Squared Error of Approximation (RMSEA). CFI is an index to assess the model fit by assessing the discrepancy between the sample data and the hypothesized measurement model (Hu & Bentler, 1999). A CFI value greater than .90 suggests acceptable fit to the model (Hu & Bentler, 1999). Schumacker and Lomax (2004) asserted that values of TLI values above .90 are considered an acceptable fit, and values greater than .95 are deemed to an excellent fit. The RMSEA is an average of the residuals between the observed correlation/covariance from the sample and the expected model estimated for the population (Hair et al., 1999). An RMSEA is relatively independent of sample size (Browne & Cudeck, 1992). A RMSEA value of .08 or less is recognized as an acceptable fit, and a value less than .05 represents an excellent fit (Browne & Cudeck, 1992).
Table 1
Diagnostic Measurements and Cut-off Values Used to Examine Measurement Model Fit

<table>
<thead>
<tr>
<th>Measurements</th>
<th>Diagnostic measurements and cut-off value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model-fit</td>
<td>CFI, TLI, RMSEA</td>
</tr>
<tr>
<td></td>
<td>CFI &gt; .90 (Hu &amp; Bentler, 1999)</td>
</tr>
<tr>
<td></td>
<td>TLI &gt; .90, acceptable fit;</td>
</tr>
<tr>
<td></td>
<td>TLI &gt; .95, excellent fit (Schumacker &amp; Lomax, 2004)</td>
</tr>
<tr>
<td></td>
<td>RMSEA &lt; .80 acceptable fit;</td>
</tr>
<tr>
<td></td>
<td>RMSEA &lt; .05, excellent fit (Browne &amp; Cudeck, 1992).</td>
</tr>
<tr>
<td>Construct validity</td>
<td>Convergent validity</td>
</tr>
<tr>
<td></td>
<td>Factor loadings &gt; .50, (Hair et al., 2019).</td>
</tr>
<tr>
<td></td>
<td>AVE &gt; .50, adequate convergent validity (Hair et al., 2019).</td>
</tr>
<tr>
<td>Discriminant validity</td>
<td>Correlation among constructs &lt; .85 (Hair et al., 2019).</td>
</tr>
<tr>
<td>Reliability</td>
<td>Composite reliability</td>
</tr>
<tr>
<td></td>
<td>Composite reliability &gt; .60 (Awang, 2015).</td>
</tr>
<tr>
<td>Cronbach’s alpha (α)</td>
<td>Cronbach’s alpha (α) &gt; .80 (Cronbach, 1951).</td>
</tr>
</tbody>
</table>

Construct Validity

Assessing the construct validity of a hypothesized measurement model is the primary objective of CFA. Evidence of construct validity indicates good measurement model fit. Construct validity is “the extent to which a set of measured items actually reflects the theoretical latent constructs those items are designed to measure” (Hair et al., 2019, p. 675). Construct validity includes convergent validity and discriminant validity (Hair et al., 2019). Once good model fit is established, convergent validity and discriminant validity were evaluated to determine the psychometric properties of the UFCTI Chinese version.

Convergent Validity

Convergent validity refers to the fact that items underlying the same associated latent construct should “converge or share high proportion of variance in common” (Hair et al., 2019, p. 675). Factor loadings and average variance extracted (AVE) are used to estimate convergent validity (Hair et al., 2019). With regard to factor loadings, high factor loadings indicate the items that are underlying a specific latent construct converge or share a common variance (Hair et al., 2019). The rule of thumb for factor loading is standardized loading estimates “should be .5 or higher, and ideally .7 or higher” (Hair et al., 2019, p. 676). AVE is computed “as the mean variance extracted for the items loading on a construct and is a summary indicator of convergence”, a value of AVE for each construct greater than .50 indicates adequate convergent validity (Hair et al., 2019, p. 619).

Discriminant Validity

Discriminant validity refers to the fact that the construct should be distinct from dissimilar, unrelated constructs (Hair et al., 2019). High discriminant validity provides evidence that a construct is unique and explains the variance that other unrelated constructs do not explain (Hair et al., 2019). Discriminant validity is tested by examining the correlation among constructs. Correlation among constructs must be less than .85 (Hair et al., 2019). Adequate discriminant validity indicates individual items only represent the corresponding latent construct (Hair et al., 2019).
Reliability

Reporting and interpreting reliability of a measurement is necessary for investigating the accuracy of measurement (Warmbrod, 2014). Cronbach’s alpha (α) is commonly used in evaluating internal consistency of an instrument. With CFA, composite reliability (CR) is also used to report the reliability of latent constructs and overall reliability for the entire measurement model. CR value for each construct should be greater than .60 (Awang, 2015).

Results

The purpose of this study was to examine the validity and reliability of the Chinese version of the UFCTI using a CFA. The UFCTI consists of two constructs, with 20 items assessing critical thinking style. Table 2 presents the findings from the CFA. Overall correlations for the items had small to large positive linear relationships (r = .21-.67) (Davis, 1971). All of the relationships among the items had positive correlations and were significant at .001 alpha levels (Table 3).

Measurement Model-fit

A CFA was conducted to assess the two-factor hypothesized measurement model of the UFCTI Chinese version. According to the CFA results, the two-factor hypothesized measurement model showed adequate fit (CFI = .95, TLI = .94, and RMSEA = .05). These findings indicated that the UFCTI Chinese version complies with the hypothesized measurement model of the original UFCTI English version according to the cut-off values of the CFI, TLI, and RMSEA. Therefore, the UFCTI Chinese version appears to be stable when compared to the English version. It appears that the UFCTI Chinese version and English version assess the same constructs of critical thinking style, and the scores are equally meaningful in both versions.

Construct Validity

The construct validity for the UFCTI Chinese version measurement model was evaluated using convergent validity and discriminant validity. For the convergent validity, factor loadings for each item should be greater than .50. Table 2 displays the standardized loadings. The lowest loading is .55, linking the engagement construct to item 2. Other items’ factor loadings ranged from .56 to .90. The AVE value for the engagement construct was .41, and AVE for the seeker construct was .48. AVE was used to test the convergent validity that estimates the amount of variance explained by the construct related to the amount of variance attributable to error (Hair et al., 2019). The AVE values for both constructs were less than the recommended value of .05. However, based on the recommendation of Fornell and Larcker (1981), if the composite reliability is greater than .60, the convergent validity of the construct is still adequate. In this study, the composite reliability for engagement and seeking information were .89 and .92, respectively, which were higher than .60 for each construct. These findings support the establishment of convergent validity of the UFCTI Chinese version.

The way to establish discriminant validity is to examine the correlation between the engagement and seeking information constructs. The correlation between the two constructs is .78, which was less than the cut-off value of .85. Therefore, the results support the discriminant validity of the UFCTI Chinese version measurement model. Figure 1 displays 20 items and two latent constructs of the measurement model. The construct validity was support by the model fit, convergent validity and discriminant validity. Therefore, no changes need to be made to the UFCTI Chinese version based on the model fit and construct validity.
Figure 1
Hypothesized factor structure of UFCTI English Version

Note. Item 1 = Opportunities to solve problems, Item 2 = Interest in many issues, Item 3 = Relate to a wide-variety of issues, Item 4 = Finding answers to questions, Item 5 = Good problem solver, Item 6 = Confident in conclusion, Item 7 = Present issues clearly, Item 8 = listen carefully, Item 9 = Enjoy learning, Item 10 = Importance to be well-informed, Item 11 = Ask lots of questions, Item 12 = Willing to change opinion, Item 13 = Consider facts without biases, Item 14 = Enjoy learning, Item 15 = Get along with people, Item 16 = Search for truth, Item 17 = Find right answers, Item 18 = Find multiple solutions, Item 19 = Ask questions in decision-making, and Item 20 = Problems have numerous solutions.
Table 2
Factor Loadings and Reliability Measures of UFCTI English and Chinese Versions

<table>
<thead>
<tr>
<th>Construct</th>
<th>Item</th>
<th>M</th>
<th>SD</th>
<th>SFL</th>
<th>AVE</th>
<th>CR</th>
<th>α</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engager</td>
<td>1. I look for opportunities to solve problems. 我会努力寻求解决问题的方案。</td>
<td>4.12</td>
<td>.82</td>
<td>.79</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. I am interested in many issues. 我对很多问题都感兴趣。</td>
<td>3.78</td>
<td>1.02</td>
<td>.55</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. I am able to relate to a wide variety of issues. 我具备处理各种问题的能力</td>
<td>3.46</td>
<td>.89</td>
<td>.64</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. I enjoy finding answers to challenging question. 我喜欢解决具有挑战性的问题。</td>
<td>3.65</td>
<td>.84</td>
<td>.59</td>
<td>.41</td>
<td>.89</td>
<td>.84</td>
</tr>
<tr>
<td></td>
<td>5. I am a good problem solver. 我是解决问题的高手。</td>
<td>3.37</td>
<td>.90</td>
<td>.56</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. I am confident that I can reach a reasonable conclusion. 我相信我能得出合理的结论。</td>
<td>3.70</td>
<td>.81</td>
<td>.68</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7. I present issues in a clear and precise manner. 我能清晰并准确地表述问题。</td>
<td>3.66</td>
<td>.89</td>
<td>.70</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seeker</td>
<td>8. I listen carefully to the opinions of others even when they disagree with me. 我总是认真地听取别人的意见，即使他们的观点和我的不一致。</td>
<td>3.78</td>
<td>.94</td>
<td>.65</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>9. I enjoy learning about many topics. 我喜欢解决具有挑战性的问题。</td>
<td>3.72</td>
<td>.97</td>
<td>.70</td>
<td>.48</td>
<td>.92</td>
<td>.92</td>
</tr>
<tr>
<td></td>
<td>10. It is important to be well informed. 消息灵通是重要</td>
<td>3.57</td>
<td>.90</td>
<td>.59</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>11. I ask lots of questions in a learning environment 在学习过程中，我会问很多问题。</td>
<td>4.22</td>
<td>.89</td>
<td>.72</td>
<td></td>
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</tbody>
</table>
12. I am willing to change my opinion when I am given new information I find to be credible. 我愿意改变我的观点。
   当我获得新的可信的信息时，
   
   3.91 .91 .64

13. I try to consider the facts without letting my biases affect my decisions. 我尽力尊重事实，不让主观偏见影响我的判断。
   
   3.95 .83 .72

14. I enjoy learning even when I am not in school. 即使课后，我也乐于学习。
   
   3.61 .88 .56

15. I can get along with people who do not share my opinions. 我能跟与我观点不一致的人和睦相处。
   
   3.67 .90 .70

16. I search for the truth even when it makes me uncomfortable. 我努力寻找真相，即使真相让我感觉不舒服。
   
   3.77 .90 .69

17. I will go out of way to find the right answers to a problem. 我会竭尽全力寻找解决问题的正确方案。
   
   3.84 .82 .78

18. I try to find multiple solutions to problem. 我尝试寻求多种方案去解决问题。
   
   3.70 .81 .73

19. I ask many questions when making a decision. 在我做决定之前，我会问很多问题。
   
   3.80 .89 .72

20. I believe that most problems have more than one solution. 我相信大多数问题都不止有一个解决方案。
   
   4.09 .84 .75

Note. ¹SFL = standardized factor loading; ²AVE = average variance extracted; ³CR = composite reliability; ⁴α = item reliability of each measure for Cronbach’s α.
### Table 3

*The Correlations of the UFCTI Chinese Version Items*

<table>
<thead>
<tr>
<th>Item 1</th>
<th>Item 2</th>
<th>Item 3</th>
<th>Item 4</th>
<th>Item 5</th>
<th>Item 6</th>
<th>Item 7</th>
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<td>Item 3</td>
<td>.48*</td>
<td>.35*</td>
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<td>Item 4</td>
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<td>.37*</td>
<td>.45*</td>
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<td>Item 5</td>
<td>.24*</td>
<td>.26*</td>
<td>.58*</td>
<td>.42*</td>
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<td>Item 6</td>
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<td>.38*</td>
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<td>Item 7</td>
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<td>.41*</td>
<td>.53*</td>
<td>.51*</td>
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<td>.43*</td>
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<table>
<thead>
<tr>
<th>Item 8</th>
<th>Item 9</th>
<th>Item10</th>
<th>Item11</th>
<th>Item12</th>
<th>Item13</th>
<th>Item14</th>
<th>Item15</th>
<th>Item16</th>
<th>Item17</th>
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<td>.60*</td>
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</tbody>
</table>

*Note.* *Correlation is significant at the 0.001 level (2-tailed).*

Item 1 = Opportunities to solve problems, Item 2 = Interest in many issues, Item 3 = Relate to a wide-variety of issues, Item 4 = Finding answers to questions, Item 5 = Good problem solver, Item 6 = Confident in conclusion, Item 7 = Present issues clearly, Item 8 = listen carefully, Item 9 = Enjoy learning, Item 10 = Importance to be well-informed, Item 11 = Ask lots of questions, Item 12 = Willing to change opinion, Item 13 = Consider facts without biases, Item 14 = Enjoy learning, Item 15 = Get along with people, Item 16 = Search for truth, Item 17 = Find right answers, Item 18 = Find multiple solutions, Item 19 = Ask questions in decision-making, and Item 20 = Problems have numerous solutions.
Reliability

The Cronbach’s α for the overall instrument was .96. The Cronbach’s α for the engagement dimension was .84, indicating good internal item consistency, and the Cronbach’s α for the seeking information dimension was .92, indicating excellent internal item consistency. The composite reliability value for the engagement dimension was .89, and for the seeking information dimension was .92. Both composite reliability values were greater than the recommended value (> .60), indicating good reliability (Hair et al., 2019).

Conclusions and Discussions

The diversity of students worldwide demonstrates a great need for cross-culturally validated measurements or instruments for assessing critical thinking. Therefore, researchers should ensure the translated version of an instrument continues to measure the same constructs as before the adaptation. The existing instruments for assessing Chinese students’ critical thinking emphasized measurement of disposition components with little or no consideration given to critical thinking style. The UFCTI is an established instrument for assessing critical thinking style that has been used in agricultural disciplines for over a decade (Gorham et al., 2014; Leal et al., 2017; Putnam et al., 2017). This study translated the original UFCTI into Chinese and assessed the validity and reliability of the UFCTI Chinese version by using a sample of Chinese agriculture undergraduate students. According to the model fit indices (CFI = .95, TLI = .94, and RMSEA = .05), the results supported a good model fit for the UFCTI Chinese version. Thus, this study indicated the UFCTI Chinese version was valid and measures the same underlying characteristic of critical thinking style as the original English version.

A CFA was performed to examine the psychometric properties. The CFA findings indicated that the measurement model between the English version and Chinese version of the UFCTI were equivalent. Specifically, the results confirmed the two-factor measurement model of critical thinking style: engagement and seeking information. The internal consistency reliability for the engagement construct is .84, and .92 for the seeker construct. The two factor-model showed that all the items of the instrument significantly loaded (p < .001) on the respective two factors. All the factor loadings were greater than .50, which is considered an adequate level of construct validity. The findings supported the reliability and two-factor structure of the UFCTI Chinese version. This study provided the first evidence for the reliability and validity of the UFCTI when administered to a sample of Chinese agricultural students in China. Therefore, future critical thinking cross-cultural research becomes more feasible because of the presence of the validated UFCTI Chinese version.

Implications and Recommendations

Improving critical thinking has been a major concern for educators worldwide. It is important for researchers to have a valid instrument to explore critical thinking style for students from different cultural backgrounds. Construct validity is associated with how well a dimension measurement conforms to the original construct’s theoretical definition. The establishment of construct validity allows one to use the same factorial construct between the two versions while providing meaningful interpretation and valid inferences for a future cross-cultural comparison. The results of this study indicated that the translation of the UFCTI Chinese version is appropriate for recording critical thinking skills of Chinese students.

This study would also be helpful for Chinese educators to understand students’ critical thinking style. Previous studies highlighted the need for nurturing Chinese students’ critical
thinking. Thus, this instrument could identify which aspect of critical thinking style needs to be improved, and then assist Chinese educators as they strive to develop their students’ critical thinking. With a better understanding of the style of thinking students are expressing, educators will be able to efficiently incorporate diverse teaching strategies and methods to help students actively engage in the learning environment as well as encourage their truth-seeking attitudes. The sampling bias is a limitation of this study because the samples were collected at a single university. Further research is needed using different samples of Chinese university students to establish broader validity and reliability of the instrument. Acknowledging this limitation, the results indicate the instrument can be important to developing a deeper understanding of critical thinking style. For example, researchers and program evaluators could use the instrument in longitudinal studies that seek to explore the relationships between critical thinking style and learning performances or other cognitive factors, such as dispositions or attitudes. This is in line with the statement that investigating the attitudinal and cognitive style components is essential to providing a holistic evaluation of critical thinking performances (Ku, 2009). Additionally, this translation and validation proved the possibility of translating the original instrument into other languages and validation for broader application. The CFA method used in this study can provide a useful strategy for future studies intended to translate and adopt measurement tools. Specifically, CFA can be used to ensure a valid instrument for cross-cultural measurement equivalence.

The valid Chinese version of the UFCTI will allow researchers to conduct cross-cultural comparison studies about critical thinking style. With the increasing complexity of global agricultural issues, agricultural students are required to be more engaged in learning and utilizing professional knowledge to solve problems. By understanding how students approach complex issues, it is hoped that educators will bring different resources, perspectives, and knowledge to the internationalization of agricultural education. Future findings may provide insights about how to incorporate useful perspectives into international or multicultural agricultural education programs based on students’ critical thinking style. Embedding appropriate teaching strategies into the intercultural learning environment is very important to facilitating effective international agricultural education development.

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A Phenomenological Study of Individual Strategies for Rebuilding Food Production Ability in Resource Poor Post-Conflict Farming Communities in Myanmar

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Abstract

The impact of armed conflict on small-holder agricultural production recently became a closely studied topic (Verwimp, 2011). In post-conflict, or perpetual low intensity conflict, situations policy makers have identified agricultural rehabilitation of small-holder food production as vital for preventing economic collapse, encouraging internally displaced persons (IDPs) to return to their rural communities, and to reintegrate former insurgents into viable rural livelihoods (Christoplos, Longley, & Slaymaker, 2004). This issue has been studied at the regional and country level, but few studies have looked at this issue from resource poor small-holder farmers’ perspective (Shinn, 2010; Verwimp, Justino, & Bruck, 2007). This qualitative study documented the experience of resource-poor farmers who experienced armed conflict in northern Shan State, Myanmar. Thirty-four resource-poor farmers and six agricultural advisors were interviewed using semi-structured interview methods. The study was conducted over a three-month period in 2013. The study revealed eight themes, which described the reality of the post-conflict environment and small-holder strategies to cope and recover food production capacity. The themes were, armed conflict is always with the farmers; loss of animals and seed stock; loss of local markets; forest as refuge; fear of government and militias was mitigated by family networks; large agribusiness control land and employment; prolonged conflict causes movement to safe areas and neighboring countries; rebuilding food production. These findings reveal the need for policy makers and agricultural advisory services to modify their assistance strategies and services to better match upland resource-poor farmers realities and adaptation strategies.

Keywords: post-conflict, resource-poor, farmers, extension
Introduction

Development agencies, realize the vital role agricultural development plays in assisting rural communities stabilize and rebuild food production systems during post-conflict recovery (Kock, Harder, & Saisi, 2010; Bhatia, Goodhand, Atmar, Pain, & Suleman, 2003). Organizations like the United States Department of Agriculture (USDA) and the United States Institute of Peace (USIP) have affirmed the role of agricultural extension in peace building (USIP, 2009).

Agricultural development has been in place since the first agricultural extension system was developed in the U.S. (Swanson & Rajalahti, 2010). Attempts to assist lesser-developed countries in growing their agriculture has been a component of development assistance efforts since the 1950s (Christoplos, 2010). It was believed development of industrialized nations followed a linear progression from an agrarian society to an industrial production economy (Peet & Hartwick, 1999). An effective agricultural extension system maintained and funded by the government was understood as an integral part of this development (Christoplos, 2010).

Additionally, agricultural extension has been a necessary component of agricultural development with Western aid for lessor-developed countries since the 1950s, but the extension systems have faced several issues (Swanson, 2010; Christoplos, 2010). Christoplos and Farrington (2004) described some of these challenges as: decreasing funds for maintenance and expansion; difficulty engaging marginalized producers; and effectively providing assistance to agrarian societies devastated by armed conflict.

Theoretical Framework

Rogers (2003) diffusion theory has traditionally been the theoretical base undergirding agricultural extension practice. The theory is particularly useful in describing the role opinion leaders have in the diffusion and adapting of new innovations. It is the starting point for this issue, but as experiences emerge other theories will be explored to help explain the phenomenon.

A second theoretical insight is a “key player” from Borgatti (2006). The key player is a vital connecting node within a social network (Borgatti, 2006). The term key farmer could also encompass the term “innovation brokers” or “catalytic agents,” which describes the building of agricultural innovation networks for developing agriculture (World Bank, 2012, p. 46). The definition of the key farmer used in this study are farmers who have developed influential recovery strategies to rebuild post-conflict community and food production systems.

A third theory is Dual Concern Theory (Blake & Mouston, 1964). The theory says in dealing with interpersonal conflict people have two primary motivations (Mohammed, 2007). The “desire to obtain one’s own goals (concern for production) versus the desire to retain interpersonal relationship (concern for people)” (2007, p. 3884).

Several additional theories come from the disaster literature (Dronberger, 2013). Couch and Kroll-Smith (1994) described the Consensus Crisis Reactions, where crisis brings about consensus within a community and galvanizes the community towards positive action to alleviate a crisis (Dronberger, 2013). Non-economic shocks can lead to community social capital enhancement where quality of life improves or returns to the status quo (Coach & Kroll-Smith, 1994; Drabek, 1986). Closely connected in the opposite direction is the Corrosive Community Reactions theory (Freudenberg & Jones, 1991; Besser, Recker, & Agnitsch, 2008). In this case, shocks to the community create corrosive community reactions where there is a decrease in community quality of life and a decrease in social capital after shock (Besser, Recker, & Agnitsch, 2008). Also, in the disaster literature is Mayunga’s (2007) discussion of resilience and
vulnerability. These theories related to consensus crisis, corrosive community, resilience, and vulnerability apply to communities facing the hazard of conflict or persistent low-level conflict.

A final theory of importance is Conflict Management Theory (Hamad, 2005). Conflict management theory makes the assertion conflict, whether at the individual or community level, is always present and can only be managed. It is opposed by interpersonal conflict resolution theories assuming conflict can be resolved and, essentially, nonexistent (Mohammed, 2007).

**Problem & Purpose**

Literature shows armed conflict is a disruptive force to agricultural communities (Verwimp, 2007; Jorgensen, 2006; Green, 2012). Examples from sub-saharan Africa show impacts have lasting effects on marginalized farmers (Marijke, 2009; Bozzoli & Bruck, 2009). Agricultural extension and private advisory services have an essential role in assisting communities recovering from armed conflict. The research helps further food security and conflict management initiatives of several organizations concerned with improving post-conflict recovery. The organizations include the Howard Buffet foundation, which specifically focuses on meeting the needs of agricultural resource development for underserved smallholder farmers (Howard Buffet Foundation, 2013). The United States Institute of Peace is another organization emphasizing the importance of assisting rural populations recover from conflict (USIP, 2009). Understanding how to more efficiently work with and facilitate food production recovery after conflict is crucial for communities after the devastation of armed conflict (Goodhand, 2006).

The purpose of this phenomenological study was to understand the experiences of resource-poor individuals adapting recovery strategies to rebuild their food production systems after disruption by armed conflict. A secondary purpose was to add additional information about a poorly understood area of human experience. A third purpose was to make the voice of marginalized farmers heard (Smith, 2012). This research was conducted to faithfully represent the concerns of the marginalized farmer (Chilisa, 2012).

**Research Questions**

The following research questions were formulated to guide this research:

1. What are the experiences of farmers when adapting food production systems after conflict in northern Shan State?
2. What influences the experiences of farmers when adapting food production systems after conflict in northern Shan State?

**Methods**

This research follows a qualitative research design and the principles of emergent design (Creswell, 2007). Creswell (2007) described emergent design as a research framework where the format and structure of inquiry and data collection are flexible to capture data emerging from the research. This flexibility in the design structure is what enables a qualitative researcher to better describe poorly understood phenomenon. The use of phenomenology in studying issues related to conflict situations was used by other researchers (Minami, 2011; Murphy, 2011).

The study does not attempt to be prescriptive of what occurs with farmer adaptation. This means the consumers of this research cannot assume to take the themes from this phenomenology and state all other farmers have these same experiences when they experience recovery from armed conflict. The readers of the research findings will be encouraged to make application to their own experience and context (Patton, 2002).
The subject farmers who were identified by government officials, businessmen, and
development workers as a key farmer. Trust was developed through ongoing relationships with
the partnering non-government organizations and agribusiness. Because the researcher was also
providing agricultural extension expertise to the organizations the research was seen as part of
the work of the NGO and agribusiness. The key farmers were found within communities in one
administrative area in Shan State, Myanmar.

Thirty-four farmers were interviewed for this study. Five women and twenty-nine men
were interviewed. Of the men, most were older, approximately 50 – 90 years old, who had years
of experience farming and often were former members of a conflict force. A second group
ranged from 35 – 48 years of age, and they were key farmers who also held leadership positions
in different civil society organizations or were part of non-government aid and development
organization development programs. A third group were younger people who had not migrated
to other countries like China or Thailand for work. They relied on farming as their livelihood. In
addition to the 34 farmers, six individuals who worked closely with farmers were interviewed to
depth the understanding of the farmers’ experiences. These individuals included a village
schoolteacher in a farming community, agricultural advisors working for NGOs, a college
student, forestry officer, and a local agribusiness person.

Phase 1: Project surveys, reports, and evaluations were gathered by the researcher to
provide background information through a web-based search. This data was synthesized into a
report before arriving in-country. This informed the researcher to modify the interview protocol.
Once the researcher arrived in-country and received all necessary initial approvals, one research
assistant was selected and trained by the researcher and expatriate agribusiness advisor using

Phase 2: Through discussions with the agribusiness and NGOs a list of key farmers
spread throughout the administrative region was made. Using the relationship built by the
development organization the 15 key farmers were interviewed in depth using a semi-structured
interview guide. Using the snowball method additional influential farmers were identified. This
method yielded 34 individual farmer interviews for the study, which covered ten villages.

Phase 3: In order to provide background data on the community history of armed conflict
and post-conflict recovery, village oral histories were developed where possible through
interviews with the key farmer. This provided information, in combination with the background
data, in order to better understand the context, the phenomenon was experienced.

Data Analysis Procedures

The phenomenological method relies on rich description describing the essence of lived
experience for select individuals (Moustakos, 1994). The main source of data was generated
from 34 interviews with farmers affected by armed conflict and considered innovative by locals.
The interviews were taped, transcribed, and coded according to modification of the Stevick-

Supporting data consisted of interviews with ten individuals who provided triangulation
and confirmation of data from the farmers’ interviews. These data were also analyzed through
the same method and utilized to develop themes. Additional supporting data were gathered
through analyzing recurrent themes in newspaper articles.

These transcriptions were analyzed using NVIVO10® and coded for significant themes.
These codes were compared across interviews in order to find the recurrent themes of the
experience. The constant comparative method by Strauss and Corbin was used (Creswell, 2007).
Results

Theme 1: Armed Conflict is Always with Us
It quickly became apparent participants experienced conflict throughout their life. Major events moving families were remembered. Conversely, the daily intermittent conflict, or adjustments made daily to avoid potential conflict, were seen as everyday occurrences. It was also evident the participants could identify the armed conflict events, actors and threats around them. However, because they had always known this existence, it was not seen as unusual. It was as if they were talking about the weather. One participant said, “I think it’s just normal and very simple for us to recognize the battle since, we, the villagers here have so many experiences of the battle.” This comment shows the coping and adapting ability of the farmers to this environment.

Theme 2: Forest is Our Refuge
An essential part of experiencing and recovering from conflict for the farmers in this study was finding an immediate refuge to flee. Sometimes the farmers received a warning ahead of the conflict. This warning came from family members in insurgent militia groups, local traders, government officials, or military members and the farmers had to judge when to leave. One participant stated, “It’s depended on the battles,” when they would run from the farms.

Other times farmers had no warning and had to flee immediately. The overall theme for the small-holder farmers in northern Shan State was they would flee. They would take whatever they could grab and go to the nearby forest to escape. The effort was on escaping as quickly as possible. There was a danger if they did not leave soon enough, as evidenced by the comment, “Some people escaped and run to the safe place. Some were arrested and forced to be a porter to carry things.” Hence, there was urgency for the farmers and their families to flee as soon as the perceived threat was critical.

Theme 3: Fear of the Government and Militias Mitigated by Familial Networks
Discussion of fears brought on by insurgent militia actions and government military actions was a sensitive subject. As study participants discussed their experience of recovering and adapting their farms after armed conflict it became evident networks were the main mode farmers used to manage risk inherent in intermittent conflict zones. The connections were not limited to family and included friends and other relationships.

One participant said, “Villagers or farmers are always afraid of not only the ethnic troops but also the military government.” Another said, “We are more afraid of (insurgent militia) than the military government. As if the government found them guilty, we would go to jail but the (insurgent militia) killed those who they don’t want or who they think is guilty.” Farmers in remote villages were usually in buffer areas, where the government military was willing to go and where the insurgent militias had their areas of control.

In managing their situation, the farmers talked about connection to family members or relatives they had in the military. One farmer said, “Yeah, some villagers have their relatives in the military. So then, they hear and know when they can come back to their village.” Another farmer described using personal connections to insurgent militia members to protect villagers.

Theme 4: Loss of Animals and Seed Stock
A strong theme was difficulty recovering from armed conflict because of the loss of animals and seeds. This theme speaks to the destruction of the physical resource base farmers
relied on. In addition, the inability to attend to timely tending, preparation, and harvesting of field crops added to the resource issue. One farmer said, “So they don’t have time to get their rice. They don’t have time to get their buffalo. They just had to run.” When the farmers returned to the village after it was deemed safe there was the overwhelming realization, “…they could not see their raising animals. Just their farm fields were left. All the animals were shot and made food by the soldiers – yeah, government soldiers and rebellion soldiers.”

Another farmer described this experience, “The farmers have to abandon their fields when the battle takes place. They leave all their prosperity and try to find another safe place. But when they came back, some of their fields and food stores were destroyed. If the battle took place in the growing season, there would be nothing to do for the farmers.”

Not only was there loss of animals, rice stores, and seeds, there was a loss of communal resources like important hard woods and the prized hardwood species of teak. A forestry officer with familial connections on both the government military side and insurgent militia side said, “There was side effect on the forest when the battles took place. Because they could not look after the forest and then some groups are already in the forest that cut down and steal some wood and teak illegally, you know. And they sell to the China or Thailand.”

Theme 5: The Market is Gone

Market opportunities disappeared as a result of conflict. Resource poor farmers living in villages struggle to engage in markets. Armed conflict can cause farmers to lose their cash crops or excess grain they planned to market. One farmer said, “We, the villagers, got big trouble as the military government organized and controlled all the products and goods. The only reason was they were afraid of the villagers supporting the --- (insurgent militia). Moreover, we had to be afraid of --- (insurgent militia) because if we didn’t supply the rice or other foods such as meat and vegetables something like that, we could be killed. So, we didn’t show all the rice and food to the military and we hid the food in the ground in order to supply --- (insurgent militia). The villagers could not even eat freely.” This experience illustrates how the villagers are stuck between two armed sides and had to give away all their marketable produce.

Farmers deal with prices dropping as traders who come to the village realize farmers must sell their produce quickly or risk losing it. The traders take advantage of the situation. The fear of conflict also means buyers/traders will not risk traveling rural roads to purchase produce.

Theme 6: Big Agribus/Govt. Military/Insurgent Militia Control Land and Employment

Participants cited issues associated with large agribusinesses and the government military control of the best agricultural land. The local and regional Myanmar government encouraged this practice. The common theme discussed by farmers was they did not have access to land. Many farmers also were constrained because they lived in areas where the government military appropriated land for security reasons and concentrated the farming populations into villages near the main roads. These farmers then rent land from the military. Study participants explained the armed conflict was the precursor for their displacement from their traditional farming lands.

A farmer shared, “The upland land is also borrowed from the military. But in the past, all that land was owned by the villagers. The military seized all the land.” This situation was similar to another area where a farmer said, “There’s no farming for the local people in this area since the Chinese businessmen came and bought almost all the land.” This farmer explained now the farmers in the area work on the Chinese business farms.
Theme 7: Prolonged Conflict Causes Movement to Safe Areas and Neighboring Countries

This theme focused on the difficulty of maintaining productive farms with recurring conflict. Some farmers found it difficult to move to safe areas. A farmer said, “It’s difficult to find a new land. As my experience, we asked other villages to share their land. But they are not supposed to get the land and to stay there. Finally, some people just went back to their old place. But some people went to a refugee camp.” This trend of movement is evidenced when a study participant said, “Mostly in (neighboring administrative region), the villagers were traumatized about not going back to their village. So that, they go and find other places and built the new village.” Another farmer shared, “We migrated one place to another in search of food and tested crops like rice and corn. But nothing was implemented as the villagers were afraid of war.”

There is also difficulty finding an outlet for productive employment for the young people. The trend is for young men and women to leave northern Shan State and move into neighboring countries like Thailand and the border region with China to seek employment. They then send earnings back to the families remaining in the country.

Finally, some farmers became involved in political processes, which meant they could no longer remain in the rural area between the government military and the insurgent armed forces.

Theme 8: Rebuilding Food Production

This theme emerged as farmers described their practices and efforts to rebuild food production during times of post-conflict and intermittent conflict. The general components of this theme were animals, crops grown, new methods, preserving the resource base, beneficial social structures, and market interaction.

Farmers faced the struggle of rebuilding food production by borrowing money to buy animals. A second important component of recovering food production is having seeds and planting material to begin crop production. Few farmers still had their original heirloom seeds. One participant said, “For example, if this village was destroyed by conflict, the other villages would help and look after the villagers from this village by supplying seeds and some foods to eat.” The farmer added, “They just grow whether the seed is good or not. They don’t know and they don’t care.” As the situation stabilized farmers became more concerned about seed quality. Farmers often began growing new crops after armed conflict uprooted them. A study participant who worked closely with the farmers emphasized those facing intermittent conflict are reluctant to plant anything long term. “They (farmers) are not so sure about their land. For example, when shall they have to flee? So, they don’t dare plant fruit trees or long-term plants. But we, the facilitator, have to be good at persuading or presenting for them why they should grow long term fruits,” the non-farmer participant said.

In this example, farmers are expressing the need for preservation of the little resource base they have left. Even as farmers are aware of pressing environmental and food security issues, the years of conflict have eroded the traditional social structures, which helped provide communal preservation of forest resources or management of water resources.

Conclusions, Implications, and Recommendations

This phenomenological study recorded the lived experiences of resource poor farmers in northern Shan State who experienced armed conflict. The research questions asked about experiences of farmers when adapting food production systems after conflict; and what factors influenced the experiences of farmers when adapting food production systems after conflict.
The reality armed conflict is always with the farmers in northern Shan State is reflected in the almost calm response to ongoing persistent low-level conflict. It is similar to the outlook of individuals in places of the world who experience regular occurrences of severe weather (Freudenberg & Jones, 1991). Many farmers learned to cope with persistent conflict from their parents. Many experienced conflicts, but it occurred mainly in the forest and the farms. Opportunities for agricultural rebuilding are made more difficult as the farmers are reluctant to risk new opportunities because of increasing vulnerability. However, through the persistent threat of intermittent conflict farmers have shown a resilience to survive.

Development workers and extension personnel should seek to understand the vulnerability felt by farmers through participatory methods and begin working toward agricultural activities respecting the persistent resilience. Research should be conducted to quantify the vulnerability farmers face, as this study revealed many themes but not a prioritization of the greatest vulnerabilities’ farmers face.

Farmers see the forest as their refuge. Anderson (1993) described the forest as a provider of many food items, building supplies, medicinal plants, and refuge during times of armed troubles. At the same time the forest was the place where insurgent militias found their refuge (Scott, 1990; Scott, 2009). The forest has been, and is still, an important part of the marginalized farmers’ resource base. This position marginalized, resource poor farmers as viable partners in preserving forest resources. Although the farmers have a growing awareness of the forests as being a finite resource, armed conflict means all actors, including marginalized farmers, have unsustainably harvested from the forests as a way to keep each of their causes/livelihoods alive.

Careful implementation of community forestry management is a way to engage these farmers in preserving their resource base, which would be a way of preserving both the cultural traditions of the marginalized ethnic people and also the forests. Additionally, an important area to further understand is marginalized farmers understanding of the forest as a resource base and what actual forest resources are still available for such preservation.

The people of northern Shan State are guarded and careful about their comments concerning the government military and the insurgent militia groups. With conflict ever-present in their lives, there is always a concern/fear of negative impacts from any of the warring parties. The fear of both government military and armed insurgent militias means farmers have a high amount of distrust toward outsiders attempting to develop new projects through the government. Farmers who are opinion leaders are vital to involve farmer participation in projects and developing equitable business ventures involving marginalized farmers (Rogers, 2003).

Agricultural development experts and government agricultural planners should consider what trust building activities might encourage engagement with marginalized farming communities. Key farmers should be identified and engaged in the early stages of agricultural program development in order to develop local enthusiasm and support for program activities. The loss of animals and seed stock was a particularly devastating theme emerging from interviews. The resiliency of marginalized farmers regarding their animal stocks is not very high. This is true because of the difficulty of moving livestock quickly during the quick onset of armed conflict. Carrying sufficient seeds to replant for the season can also be problematic. Without their traditional seeds and livestock, marginalized farmers have lost an important resource they preserved for hundreds of years. Post-conflict development practitioners have recognized farmers recovering from armed conflict often need seed for replanting. This point was noted by Christoplos, Longley, and Slaymaker (2006). Assistance needs to be carefully considered because the wrong seed can be provided at the wrong time.
Further research should be conducted to look at the viability of using traditional seeds and heirloom varieties as seed assistance after armed conflict. Several non-government organizations are encouraging the development of seed saving groups among marginalized farmers. Further research should focus on the proper time to provide seed resources to farmers recovering from armed conflict. Research is also needed to quantify the extent of livestock loss and the local breeds essential for marginalized farmers cultural and farming system activities.

The markets in northern Shan State are not stable because of the ebb and flow of conflict. Marginalized farmers like those in this study have limited knowledge of the prices for the commodities they have for sale (Christoplos, Longley, & Slaymaker, 2004; Mohammed, 2007). Marginalized farmers in northern Shan State need better information about the markets. Farmers expressed they are limited by not having consistent market access because the market disappears during spikes of armed conflict. The movement of family members to the regional towns to find opportunity and avoid armed conflict is one-way marginalized farmers are gaining access and knowledge of more equitable pricing. Even with better knowledge the farmers are still limited by sufficient transport means to market their goods.

Further research should be conducted to understand market changes. Just like armed conflict, there appear to be zones of differing impact depending on how close they are to the armed conflict zones. In addition, the constraints on traders and the risk they incur in operating near conflict areas should be studied. Further consideration should be given for how marginalized farmers can gain better access to the markets.

Many farmers expressed the opportunity for off-farm seasonal labor as an important source of cash income for marginalized farmers. This confirms the same trend noted in post-conflict Mozambique (Bozoli & Bruck, 2009; Cramer, Oya, & Sender, 2008). Marginalized farmers in northern Shan State are being pushed away from agricultural land they believe belongs to them. There was a sense of frustration by farmers and agricultural development workers concerning land use. This issue will likely grow in importance as the Myanmar government encourages foreign agricultural investment. Research should seek to clarify the displacement of marginalized farming communities. When marginalized farmers displaced by armed conflict make their way to urban and peri-urban areas, will they overwhelm the urban local government and services to handle them?

The movement of farmers into peri-urban safe areas and young people to neighboring countries is a strategy marginalized farmers use to avoid armed conflict. It is risky for young people because most will be undocumented workers. In addition, women can be caught in prostitution enslavement. The farm family also loses the potential labor of the young people in the community. The result is many marginalized farm villages in northern Shan State have few young people from 16 – 30 years of age. This loss of a proportion of the community and the risk involved in moving is similar to the corrosive community reaction theory of Freudenberg and Jones (1991) where social capital is lost after shock to the community.

The movement of marginalized farmers to safe areas means farmers are available for off-farm work in small scale local business, local industry, and, as farm labor. When moving to safe areas the farmers often are not able to find enough land to support themselves through their own agricultural production. Often, these farmers can only produce backyard livestock, a home garden, and a few fruit trees to offset the need to purchase food from local markets.

The strategy of off-farm movement into safe areas by farmers should be further studied to understand the impact the practice has on their livelihoods. Quantifying this movement and the advantages and disadvantages to the farm family would help agricultural development.
practitioners know how to assist farm families when they make this difficult choice. It would also help aid agencies work in IDP camps and develop policies toward reintegrating displaced marginalized farmers into their farming livelihoods after conflict. The impact on agricultural production resulting from young people leaving to work in neighboring countries is not yet understood. This information is important for the individual farm households and the overall agricultural production capacity.

The last theme revealed farmers found ways to rebuild their food production after conflict. Although not an easy process, many innovative farmers were able to find ways to borrow money or use familial networks to purchase animals and find new seed to plant. The seed purchased was often hybrid corn seed or vegetable crops like watermelons. Often, NGOs provided seeds.

Agricultural development of the relatively conflict-free zones is progressing due to the demand for agricultural products from the growing Chinese market and the regional market in Myanmar. The transition to growing hybrid corn by marginalized farmers provides the quickest route for cash income but is also having negative effects that must be considered. One effect is the need for increased agrochemical purchase and application for optimized growth. Another impact is the loss of traditional varieties of corn, upland rice, and traditional legumes. These crops are being replaced by seed purchased from seed companies.

The approaches to encourage an effective decentralized diffusion system valuing the indigenous knowledge systems of the farmers should be considered. This tactic includes training agricultural advisors who are able to work together with marginalized farmers to encourage deliberative livelihood improvement strategies. It is important to quantify the effect of agrochemicals on farmers’ livelihoods and farming systems. Using farmer field schools and working with farmer self-help groups should be considered to improve the opportunities for equitable agricultural development.

The issue of marginalized farmers recovering from armed conflict merits more research to further understand the dynamics of this phenomenon. Future research should include mixed methods approaches (Thaler, 2012; Barron, Diprose, & Woolcock, 2011).

**Practical Application**

Implications for practice fall into three categories: post-conflict agricultural development; agricultural extension and training; and agricultural innovation systems. In all of these practices, the belief it is “possible to establish a virtuous cycle wherein more or better (conflict-sensitive) development will reduce violent unrest, which in turn will bolster growth, reduce poverty, and enhance prosperity” (Barron, Diprose, & Woolcock, 2011, p. 41).

**Post-conflict agricultural development.** Post-conflict agricultural development requires more research. The most effective ways to design appropriate responses to assist agricultural recovery after conflict that does not cause the marginalized, resource poor farmer to become more vulnerable and impoverished. It is important to remember armed conflict will continue (Barron, Diprose & Woolcock, 2006).

The second issue to consider is shifting from acute emergencies, during and immediately after conflict, to solving chronic agricultural development issues. This was discussed by Kabeer (2002) and Barrett (2002) with the illustration of the safety nets to assist in temporary crises and longer-term opportunity ladders marginalized farmers can use to increase resilience of their farming systems and livelihoods (Christoplos, Longley, & Slaymaker, 2004).
Agricultural extension and training (AET). After considering the experience of marginalized farmers recovering from armed conflict, I support the observation of Swanson and Rajalathi (2011) that the worldwide trend toward a more pluralistic agricultural extension service is a positive development for marginalized farmers. Myanmar has made hard choices to use a portion of its limited government budget for agricultural extension and development.

Agricultural innovation systems. In order to meet the needs of a more mobile population when they are recovering from armed conflict, it is clear international non-government organizations, international government aid organizations, and government entities should consider the advantages of encouraging agricultural innovation systems. These systems are more flexible to meet the needs of industrial agriculture and agribusiness needs along with providing appropriate networks for marginalized resource poor farmers.

Rogers (2003) helped us understand some of the key core strengths of the U.S. Cooperative Extension model. The core strengths should be used in design and strengthen a more effective agricultural innovation system for northern Shan State. Key additions needed with marginalized, resource poor farmers are for a more decentralized system where farmers have a voice in the development agenda and the support to experiment with what works best for them.

Part of the decentralized system is a need for persons who are able to assist farmers in adapting innovations to fit their local context and integrate these innovations into production systems (Lionberger, 1972). This role could be filled in a lower cost way by equipping key farmers or key players with skills allowing them to function as a semi-official extension agent.

More research is needed to further understand the strategies of marginalized farmers in order to rebuild food production systems. What is clear is innovative systems matching the reality of post conflict and complex political emergencies are needed. “The need is enormous, not only for recovery, but also transformation. If there is anywhere that organized support to technological change is needed, it is in places where former livelihood strategies are no longer viable” (Christoplos, Longley & Slaymaker, 2004, p. 24).

References


Experts’ Views on the Potential of Luxury Niche Agricultural Products for Rural Economic Development in Mexico and Other Nations with Similar Needs: A Delphi Study

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Abstract
Economic development is essential for nations to realize growth and prosperity. For rural contexts, producing luxury niche agricultural products, such as cut flowers, may offer unique opportunities. Nevertheless, variables exist that should be considered before starting such ventures. We sought to identify the potential of smallholder farmers in rural Mexico, and other nations with similar economic development needs, to grow high-value crops for luxury markets. Knowledgeable experts served as panelists during the study’s three rounds of data collection, including researchers, extension educators, or other relevant professionals from Mexico and the United States. The initial round included three questions regarding 1) plant products, 2) a SWOT analysis framework, and 3) what smallholder farmers needed to achieve competitive advantages. In rounds two and three, the items retained from the preceding round were presented within a SWOT framework to be rated using a six-point, Likert-type agreement scale. The cutoff percentage for consensus of agreement was 75.00%. After three rounds, 113 items reached consensus, including five categories of plant products; nine Strengths, 21 Weaknesses, 15 Opportunities, and 13 Threats; and 50 items regarding producers’ competitive advantages. Although our analysis revealed opportunities for smallholder farmers to successfully grow specialty crops for luxury niche markets, producer training and support mechanisms are needed to overcome weaknesses and threats while capitalizing on their strengths.

Keywords: human capital; poverty; rural livelihoods; smallholder farmers; specialty crops; SWOT analysis
Introduction

Economic growth continues to be one of the world’s major development objectives and is part of the United Nations’ Sustainable Development Goals (Le Blanc, 2015), such as no poverty, zero hunger, good health and well-being, among other aims. Every year, governments of different nations strive to improve their economies in efforts to diminish poverty (Hák et al., 2016); however, these goals are not always achieved. It is likely that more innovative and targeted solutions are needed to address this problem (Meza & Webb, 1990).

Poverty affects millions of people around the world, and more than 70.00% of the impoverished live in their nations’ rural areas (Martínez, 2010). Regarding Mexico, more than four million households did not have the necessary income to acquire a basic food basket to meet their needs in 2012; 62.00% of the families that experienced food insufficiency resided in rural areas (CONEVAL, 2013). However, cases of rural development exist that may be appropriate for replication, such as the Mexican State of Sinaloa’s rise as a leading tomato producer on the international stage (Barrón & Rello, 2000; Flores & Edwards, 2019), and other examples of training and the provision of production inputs to resource-constrained, smallholder farmers (Buadi et al., 2013; Murshed-E-Jahan & Pemsl, 2011). This may include producers growing for specialty or luxury niche markets.

Luxury products range from long-term retained goods, e.g., jewelry, real estate, and watches, to more short-term products, including service and experience goods, such as alcohol, food, hotel stays, and travel, for which the use or display of particular brands may bring prestige to owners apart from any functional utility (Chandon et al., 2016; Vigneron & Johnson, 2004). Such goods are typically categorized as rare, unique, uncommon, or controlled by sumptuary laws (Hauck & Stanforth, 2007; Lynn, 1991). Agricultural produce fitting these criteria include some specialty crops that classify as arboREAL, fruit, nursery, ornamental, and vegetable, among other categories (Zhang & Wilhelm, 2011). Several specialty crops have worldwide prestige such as specific varieties of olives and grapes (Fuks et al., 2016; Geman & Kanyinda, 2007). These types of crops comprise a significant and expanding percentage of agribusinesses and may be a way to diversify smallholder farmers’ crop portfolios while helping to mitigate financial risks and increase profits (Popp & Rudstrom, 2000; Weisensel & Schoney, 1989). D’Arpizio and Levato (2018) predicted that a positive trend across the world’s regions would drive the luxury goods market higher by 6.00% to 8.00% at constant exchange rates and reach 276 to 281 billion euros, or more than $300 billion USD, in 2018. However, little is known about how smallholder farmers facing significant resource constraints might successfully produce for such markets.

Conceptual and Theoretical Frameworks

The objective of economic development, our study’s conceptual framework, does not guarantee people achieving happiness, but it may increase the possibility of choices to satisfy their needs by raising per capita income (Hidayah et al., 2012; Koven & Lyons, 2010; Leigh & Blakely, 2010). Development gives individuals greater control over the environment in which they live, and, therefore, allows them to increase their freedom (Singer, 2006). Due to economic development, people can choose between having more goods, more leisure, or both (Meza & Webb, 1990). As such, when introducing economic development in contexts that have been stagnant, special problems may arise, including the need to transform beliefs, habits, and institutions (Acemoglu et al., 2005). Despite these challenges and uncertainties, the promotion of economic development operates in most societies (Le Blanc, 2015). However, in many lesser-developed nations their population’s aspirations often exceed the possibilities provided by
production, and differences between economic strata often widen over time (Costa & Bazzanella, 1958; Phillips, 2017). Moreover, the study of a nation’s agricultural sector regarding its economic development holds a fundamental place in related literature (Singh & Tabatabai, 1993). In the rise and development of most civilizations, much of the economic activity frequently involved agriculture (Singh & Tabatabai, 1993). Economists, therefore, have recognized the importance of this sector in fomenting economic growth (Johnston & Mellor, 1961; Singh & Tabatabai, 1993).

Human capital, this study’s theoretical framework, at its most basic level, measures a worker’s quality based on the idea that human potential and the skilling of labor are the drivers of economic growth (Krutova, 2015; Luckstead et al., 2014). The impact of having proper educational and professional training of a nation’s workforce to compete in markets that are increasingly demanding, dynamic, global, segmented, and sophisticated seems undeniable (Fernández et al., 1999; Loubet & Morales, 2015; Sánches & Ríos, 2011). And the importance of training and upgrading intensifies during periods of rapid technological change (Griliches, 1997).

Training is considered an investment in human capital (Loubet & Morales, 2015; Luț, 2017). Human capital theory suggests that investments in training stimulate a rise in workers’ productivity that leads to an increase in their respective incomes (Loubet & Morales, 2015; Varela & Retamoza, 2012). Human capital theory further states that investing in people should also provide economic benefits to society overall (Sweetland, 1996).

This study was designed to identify the potential of smallholder farmers growing specialty crops to achieve rural economic development in Mexico and other nations with similar needs, as perceived by a panel of experts who participated in a three-round Delphi process during late 2019 and early 2020. The Delphi method is a technique for reaching consensus of agreement among experts regarding concerns, issues, or topics for which their opinions are valued (Dalkey, 1969).

Purpose and Objectives

The study’s purpose was to investigate the potential of smallholder agricultural producers to successfully grow products intended for luxury niche markets, including crops such as high-value, ornamental flowers and specialty produce. To achieve this purpose, we examined the perceptions of experts regarding specialty crops that may be appropriate for smallholder farmers to produce in rural Mexico and other nations with similar economic needs. We sought to understand their views by identifying a consensus of agreement among the experts. Two objectives were addressed to accomplish the study’s purpose: 1. Determine a consensus of agreement among a panel of experts regarding the potential of smallholder farmers to produce high-value, specialty crops. 2. Apply a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis framework to portray and interpret the panelists’ views.

Methods

Our study’s research design was essentially descriptive-exploratory; as such, a survey research design was applied by selecting the Delphi method in conjunction with SWOT analysis as data gathering, analysis, and interpretation tools (Hossain & Hossain, 2015; Rehmat et al., 2014; Schmelzenbart et al., 2018). In exploratory studies, investigators attempt to understand the causes of a phenomenon in the absence of settled conclusions (David & Sutton, 2011). Another benefit that exploratory research can offer is its adaptability and flexibility (Edmondson & McManus, 2007; Kimmelman et al., 2014; Reiter, 2017). As with the exploratory design,
descriptive research methodology also can be appropriate when testing hypotheses and theories (Lambert & Lambert, 2012; Salaria, 2012). Acceptable approaches for conducting exploratory research may involve consulting experts regarding an issue or topic (Edmondson & McManus, 2007; Rao & Perry, 2003). The Delphi method solicits and interprets the opinions of experts (Hsu & Sandford, 2007; Loo, 2002; Mcilfatrick & Keeney, 2003; Uhl, 1983).

Among survey-based studies, the Delphi method is an approach employed in numerous disciplines to attain a consensus of agreement among experts, i.e., panelists, about concerns, issues, and topics for which their opinions are appropriate and valuable (Stitt-Gohdes & Crews, 2004; Thangaratinam & Redman, 2005). Dalkey (1969) described the Delphi method as a systematic approach for a decision-making group to use to reach consensus by responding to specific questions over numerous rounds interposed with the group members’ ongoing feedback. We used it to identify, analyze, and interpret the perceptions of our panelists (see Figure 1).

**Figure 1**

*Delphi Technique Procedural Flow Chart*

```
Start Delphi

Identify potential experts

Perform the round of Delphi

Collect, analyze round responses

Develop feedback for panelists of subsequent round

Evaluate consensus

If η<0.75

No

Yes

Report the final results

End Delphi
```


The Delphi method aims to distill the benefits of group members’ knowledge and expertise without the possible disadvantage of group dynamics distorting the results, i.e., dominant personalities prevailing or individuals’ desires to conform to majority opinion (Kauko
& Palmroos, 2014; Martin & Frick, 1998). This research technique allows investigators to communicate needs, trends, or factors related to a specific topic (Stitt-Gohdes & Crews, 2004).

Beginning in the early 1950s, SWOT analysis has been a strategic planning tool used by practitioners and researchers (Panagiotou, 2003). This technique parcels contextual factors comprising a phenomenon as inherent strengths and weaknesses versus external opportunities and threats (Duarte et al., 2006; Valentin, 2001). The Delphi method is an appropriate procedure for conducting a SWOT analysis, including the study of quality and innovation (Campos-Climent et al., 2012; López, 2004). SWOT analysis is an approach that can lead to coherent recommendations for decision-making to address issues or resolve problems by determining internal factors, e.g., available resources, motives, or existing skills, and external factors, such as economic and social environments, government policies, and market trends (Li et al., 2016). Our study combined the Delphi approach for consensus-building with a SWOT analysis framework.

Panel of Experts

To determine the reliability and validity of a Delphi study’s findings, the number and appropriateness of panelists are important considerations. Dalkey et al. (1972) asserted that Delphi studies are reliable by having a panel with at least 13 members who are truly representative of the expert community. Careful selection of a panel of experts is the keystone to a successful Delphi study (Stitt-Gohdes & Crews 2004). Key informants (Rogers, 2003), i.e., directors of societies and foundations and other relevant professionals knowledgeable of the study’s phenomenon, were contacted to develop a preliminary respondent frame. These key informants knew of possible panelists willing to be contacted and who may have been inclined to participate in the study. The individuals nominated were researchers, extension educators, or other professionals who investigated and/or provided extension services to producers or potential producers regarding high-value crops and had experience with at least one specialty crop.

Panelists’ Personal and Professional Characteristics

Of the 18 panelists who completed the study’s Round One instrument, 11 (61.11%) were female, six (33.33%) were male, and one (5.55%) responded other for their gender. The panelists’ ages ranged from 28 to 68; the mean age was 51.88 years. Regarding ethnicity or race, 15 (83.33%) identified themselves as Latino; two (11.11%) as Caucasian, and one (5.55%) preferred to not indicate their race or ethnicity. One (5.55%) participant reported a bachelor’s degree as the highest educational degree earned, five (27.77%) indicated a master’s degree, and 12 (66.66%) held doctorates. The panelists’ years of related work experience ranged from five to 49 years and averaged 20.44 years. Nine (50.00%) indicated that they were full-time professors/researchers; four (22.22%) responded as holding positions of directors, managers, or specialists in enterprises or foundations; three (16.66%) were consultants, and two (11.11%) were full-time extension educators. Five (27.77%) panelists specialized in agronomy; two (11.11%) in agricultural education and communications; two (11.11%) in food sciences; two (11.11%) in horticulture; two (11.11%) in strategy and/or economic development; one (5.55%) in ecology; one (5.55%) in public administration; one (5.55%) in vegetable physiology; one (5.55%) in biology; and one panelist (5.55%) did not respond to the question.

Instrumentation and Data Collection

For the first or initial round of the study, we developed an open-ended instrument consisting of three questions. The study’s questionnaire was reviewed by faculty members of the
Department of Agricultural Education, Communications, and Leadership; the Department of Horticulture and Landscape Architecture; and the Department of Entrepreneurship at Oklahoma State University to ensure content and face validity. The three questions were: 1. Which luxury high-value agricultural plant products may reflect an unsatisfied consumer demand and have the potential for delivering profits to smallholder farmers in low- and middle-income countries? 2. What is the potential for smallholder agricultural producers in rural areas to grow products intended for luxury niche markets, including crops such as high-value, ornamental flowers, foliage, spices, and specialty produce? Please include any strengths, weaknesses, opportunities, and threats to producing for luxury markets that should be considered by aspiring producers, especially smallholder farmers, such as resource input needs, technical needs including education and training, innovation concerns, and so forth. 3. What is needed for smallholder farmers in rural areas to achieve competitive advantages, if producing luxury agricultural products for niche markets, as defined in this study?

The panelists’ responses to the first round’s questions were used to develop the study’s Round Two instrument. We grouped the suggested crops into 10 categories based on the first round results in consultation with a horticulturalist. The panelists answered the second question using a SWOT analysis framework and responded to question three in an open-ended way. Data collected during Round One were used to develop the study’s Round Two instrument.

Round Two consisted of the panelists rating the statements derived from Round One using a six-point, Likert-type scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Slightly Disagree, 4 = Slightly Agree, 5 = Agree, or 6 = Strongly Agree. The statements for which more than 75.00% of the panelists indicated either Agree or Strongly Agree were determined to have reached consensus of agreement. In Round Three of the study, panelists were asked to rate the statements from Round Two that failed to reach consensus of agreement but achieved a level of 50.00% or higher. The other items were removed from further study. Round Three employed a dichotomous scale: Disagree or Agree (Lamm et al., 2020). The statements for which more than 75.00% of the panelists indicated Agree were also determined to have reached consensus.

Three rounds are often sufficient to collect the necessary data, and, in most cases, to reach consensus of agreement in a Delphi study (Custer et al., 1999; Ludwig, 1997). Further, Dalkey et al. (1972) indicated that a group of 13 Delphi panelists was required to achieve reliability with a 0.90 correlation coefficient. Kastein et al. (1993) also asserted that 13 participants were an appropriate number to achieve sufficient reliability in a Delphi study. Therefore, participation of 15 panelists throughout the study’s three rounds of data collection supported the reliability of our findings. Three panelists only participated in Round One.

From Round One, 286 statements were provided by the panelists (n = 18). We analyzed each item, and similar or duplicate statements were either combined or eliminated, and compound statements were separated (Fereday & Muir-Cochrane, 2006; Shinn et al., 2009). From the 286 original items, 188 were retained for presentation in Round Two.

In Round Two, the panelists rated their levels of agreement on the items distilled from Round One. Items for which more than three-fourths (>75.00%) of the panelists selected Agree or Strongly Agree were considered to have reached consensus of agreement (Buriak & Shinn, 1989; Carnes et al., 2010; Farrell et al., 2015; Hsu & Sandford, 2007; Pietersma et al., 2014; Shinn et al., 2009), i.e., 91 (n = 15; 83.33% response rate). And 72 items for which more than one-half (>50.00%) but less than three-fourths (<75.00%) of the panelists chose Agree or Strongly Agree were used to develop the study’s Round Three instrument (Carnes et al., 2010; Rodriguez-Mañas et al., 2013). The 25 items for which less than one-half (<50.00%) of the
Panelists chose *Agree* or *Strongly Agree* were removed from further investigation.

Round Three sought to achieve *consensus of agreement* on the remaining items. The panelists were asked to indicate either *Disagree or Agree* (Lamm et al., 2020) during this round. Seventy-two items were returned to the panelists. An additional 22 items reached *consensus of agreement* (*n* = 15; 100.00%). The remaining 50 items failed to reach *consensus of agreement*.

**Results**

**Round One**

In responding to question one, the 10 categories of plant products offered by the panelists included arboreal, culinary herbs, edible fruits, endemic species, medicinal, nursery crops, nutraceutical foods, precious woods, vegetables, and other. These categories were populated with 91 examples. The number of statements provided for question two applying a SWOT analysis framework were 28 Strengths, 37 Weaknesses, 30 Opportunities, and 28 Threats. The panelists indicated a total of 55 responses to question three, i.e., producers’ competitive advantages.

**Round Two**

In Round Two, panel members rated their levels of agreement for the 188 statements derived from Round One by using a six-point, Likert-type agreement scale. For 91 items, more than three-fourths (>75.00%) of the panelists (*n* = 15) selected either *Agree* or *Strongly Agree*. We determined that *consensus of agreement* had been reached for those items (Carnes et al., 2010; Shinn et al., 2009). Four categories of plant products reached *consensus of agreement*. Items related to question two reaching *consensus of agreement* included six Strengths, 13 Weaknesses, 12 Opportunities, and seven Threats. And 49 items reached *consensus of agreement* regarding producers’ competitive advantages in response to question three.

**Round Three**

The panelists rated their levels of agreement for the 72 items that failed to reach *consensus* (<75.00%) during Round Two but exceeded 50.00%. During this round, the panelists used a dichotomous response scale: *Disagree or Agree* (Lamm et al., 2020). More than three-fourths (>75.00%) of the panelists (*n* = 15) selected *Agree* for 22 of the returned items; therefore, *consensus of agreement* was reached for those items. The additional items reaching *consensus of agreement* included one category of plant product; three Strengths, eight Weaknesses, three Opportunities, and six Threats; and one additional competitive advantage.

The total number of items that reached *consensus of agreement* was 113 after three rounds of data collection (see Table 1). The distribution of those items included five categories of plant products with 61 examples; nine Strengths, 21 Weaknesses, 15 Opportunities, and 13 Threats; and 50 items related to smallholders’ competitive advantages.
Table 1
*Items that reached Consensus of Agreement after Three Rounds of the Delphi Study (N = 113)*

<table>
<thead>
<tr>
<th>Items</th>
<th>% Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Question 1.</strong> Which luxury high-value agricultural plant products may reflect an <em>unsatisfied consumer demand</em> and have the potential for delivering profits to smallholder farmers in low- and middle-income countries? (<em>n = 5</em> Categories, including 61 Examples)</td>
<td></td>
</tr>
<tr>
<td>Culinary herbs (e.g., amaranth, <em>Dialium</em> [velvet tamarind], mint, oregano, sage, thyme)</td>
<td>93.33</td>
</tr>
<tr>
<td>Edible fruits (producers of such, e.g., avocado, blackberry, blueberry, cranberry, <em>Cucurbita ficifolia</em> [fig-leaf gourd], currant, kiwi, pepper, pitahaya, <em>Prunus salicifolia</em> [cherry], quince, raspberry, strawberry, wild grape)</td>
<td>86.67</td>
</tr>
<tr>
<td>Endemic species, including for local cuisine and popular culture (e.g., cinnamon, garlic, ginger, rosemary, saffron, tapirira, turmeric, vanilla)</td>
<td>80.00</td>
</tr>
<tr>
<td>Medicinal (e.g., arnica, boldo, calendula, echinacea, mallow, maritime cineraria, melissa, tarragon, valerian, witch hazel)</td>
<td>80.00</td>
</tr>
<tr>
<td>Nursery crops, including floral and foliage, tropical and other (e.g., anthurium, aspidistra, aster, bromeliad, <em>Byrsonima</em> [locust berry], chrysanthemum, <em>Eustoma</em> [lisianthus], fern, gardenia, holly, lavender, lemon croton plant, lily of the valley, liriope, maidenhair, myrtle, orchid, peony, perennial, philodendron, ruscus, tulip, <em>Zantedeschia aethiopica</em> [arum lily])</td>
<td>80.00</td>
</tr>
<tr>
<td><strong>Question 2.</strong> What is the potential for smallholder agricultural producers <em>in rural areas</em> to grow products intended for luxury niche markets? <strong>Strengths</strong> (<em>n = 9</em>)</td>
<td></td>
</tr>
<tr>
<td>Local knowledge</td>
<td>100.00</td>
</tr>
<tr>
<td>Agrobiological diversity of species in their areas</td>
<td>93.33</td>
</tr>
<tr>
<td>Availability of native plants</td>
<td>93.33</td>
</tr>
<tr>
<td>General agricultural knowledge</td>
<td>86.67</td>
</tr>
<tr>
<td>People with value for the land</td>
<td>86.67</td>
</tr>
<tr>
<td>Labor that can achieve specialization</td>
<td>86.67</td>
</tr>
<tr>
<td>Microclimates</td>
<td>80.00</td>
</tr>
<tr>
<td>Land</td>
<td>80.00</td>
</tr>
<tr>
<td>Rural society eager for alternatives and proposals to improve their quality of life</td>
<td>80.00</td>
</tr>
<tr>
<td><strong>Weaknesses</strong> (<em>n = 21</em>)</td>
<td></td>
</tr>
<tr>
<td>Altered natural resources</td>
<td>100.00</td>
</tr>
<tr>
<td>Poor communication channels</td>
<td>93.33</td>
</tr>
<tr>
<td>Loss of resources due to different causes</td>
<td>93.33</td>
</tr>
<tr>
<td>Ignorance about products destined for luxury markets</td>
<td>93.33</td>
</tr>
<tr>
<td>Lack of assessment</td>
<td>93.33</td>
</tr>
<tr>
<td>Distant location</td>
<td>86.67</td>
</tr>
<tr>
<td>Lack of unity and community disinterest</td>
<td>86.67</td>
</tr>
<tr>
<td>Limited resources</td>
<td>86.67</td>
</tr>
</tbody>
</table>
Lack of research and development 86.67
Reduced or limited postharvest shelf life 86.67
Lack of education 86.67
Lack of advice and training 86.67
Use and transformation of products is unknown 86.67
Lack of investment capital 86.67
Lack of technology 86.67
Abuse/misuse of chemical pesticides 86.67
Lack of organization to make cooperatives 80.00
They leave the land to emigrate to the cities 80.00
Lack of training in reproduction of species with high sales potential 80.00
Poor vision of sustainability 80.00
Lack of transportation 80.00

Opportunities (n = 15)
Grow plants for products that are well-priced 93.33
Possibility of sales by cooperatives 86.67
Potential for additional income 86.67
Gourmet markets of international cuisine 86.67
Use the research of Mexican scientists 86.67
Interest and openness of the community 80.00
Need exists for foods with nutritional and functional properties that, in addition to being part of the ingredients of traditional cuisine, have properties that help prevent diseases such as diabetes, high cholesterol, and vascular diseases 80.00
Need to use or take advantage of one or more regional resources 80.00
Some plants can grow in small areas and require minimal care 80.00
Train housewives and youth to integrate them into the workforce 80.00
Market for organic products is growing 80.00
Market for healthy products is growing 80.00
Specialized markets 80.00
Very suitable climates 80.00
Unsatisfied demand* 78.57

Threats (n = 13)
Abandonment of farming and producers migrating due to increasing crime, including acts of violence 100.00
Loss of resources due to looting and other criminal acts 93.33
No organizations exists or locals do not know how to effectively organize themselves 93.33
High dependence on government subsidies 93.33
Recurrent climatic effects in the region, including intermittent impact on communication 93.33
Climate change 93.33
Loss of resources due to natural causes 86.67
Deforestation 86.67
Land use that endangers plant diversity 86.67
No clear export legislation exists for many products 86.67
Middlemen 80.00
Highly bureaucratic processes for obtaining licenses 80.00
Increasing price of raw material 80.00

**Question 3.** What is *needed for smallholder farmers in rural areas to achieve competitive advantages* if producing luxury agricultural products for niche markets, as defined in this study (*n* = 50)

- Internal organization and planning process that allows producers to visualize in tangible and economic ways what to produce at different times 100.00
- Consider the inputs required and receive related technical advice and training 100.00
- Know the full value chain of their product(s) 100.00
- Receive financial advice to form agreements benefiting the community 100.00
- Receive training on new practices and crops, as well as trading, sales, and after sales activities 100.00
- Receive training about cooperatives and creation of value addition networks 100.00
- Develop management plans 100.00
- Benefit from research and development 100.00
- Conduct good practices 100.00
- Receive training on environmental, economic, social, and cultural sustainability 100.00
- Not be subjected to governmental paternalism 100.00
- Practice sustainable entrepreneurship 100.00
- Prepare short-, medium-, and long-term production goals 100.00
- Receive basic education 93.33
- Maintain an attitude of adaptation to changes and innovation 93.33
- Receive technical and administrative training 93.33
- Conduct good agricultural practices, preharvest, harvest, and postharvest 93.33
- Adopt technology for the transformation of tinctures, extracts, essential oils, and capsules 93.33
- Integrate the use of productive value chains with minimal reliance on middlemen 93.33
- Receive access to credit to finance projects under fair lending conditions 93.33
- Receive training about luxury niche markets 93.33
- Affiliate with programs that assure them a fair price for their products 93.33
- Obtain suppliers that can be trusted to provide quality inputs 93.33
- Plan production better to maintain a stable level of product supply 93.33
- Adequate infrastructure 93.33
- Obtain certificates and keep related records 93.33
- Recognition of and respect for cultural diversity, including producers’ ancestral origins 93.33
- Promotion of human values 93.33
- Benefit from collaboration among academic, governmental, and other societal actors 93.33
Develop communion between themselves and consumers 93.33
Conduct a community analysis regarding the viability of a production project 93.33
Provide appropriate care for the environment 93.33
Practice multidisciplinary integration 93.33
Acquire technical advice from extension agents to deal with pests and diseases 93.33
Use inputs that contribute to the reduction of greenhouse gases (GHG) 93.33
Apply technologies that restore natural resources such as soil, water, and local biodiversity 93.33
Preserve traditional, ancestral knowledge for care of the land 93.33
Not illegally extract resources 93.33
Sustainable vision 93.33
Necessary to organize small producers for the production and transformation of seed 86.67
Participate in national and international fairs 86.67
Receive environmental education 86.67
Assess regional environmental conditions 86.67
Be willing to produce outside of their comfort zone 86.67
Know and value their natural resources and how to use such properly 80.00
Access to funds for the development of medium or high technology greenhouses 80.00
Acquire knowledge of current regulations regarding the use of forest resources 80.00
Maintain ownership of intellectual property 80.00
Be less fearful of change 80.00
Practice green agriculture 80.00

Note. *Item rated by 14 of the 15 panelists.

Conclusions
After three rounds of data collection, the panelists reached consensus of agreement for 113 items (see Table 1). The distribution of those items included five categories of plant products appropriate to be grown by smallholder farmers. Fifty-eight Strengths, Weaknesses, Opportunities, and Threats emerged deserving consideration if such crops were to be produced. The panelists indicated another 50 items related to smallholder farmers’ competitive advantages if producing specialty crops for luxury niche markets. Thirteen of these items received 100.00% agreement and the lowest six items garnered 80.00% agreement (see Table 1). Seventy-five other items did not reach consensus of agreement after three rounds of data collection.

The panelists reached consensus of agreement for nine Strengths, 21 Weaknesses, 15 Opportunities, and 13 Threats. However, 65 items from the SWOT analysis categories did not reach consensus. Our study exposed both existing and needed aspects of human capital development (Krutova, 2015; Zvarych, 2018). If considering the main internal factors agreed to by the panelists, some of the potential producers’ Strengths were local knowledge, agrobiological diversity of species in their areas, availability of native plants, general agricultural knowledge, and people with value for the land (see Table 1). Strengths yielded the smallest number of items.
Weaknesses had the most items reaching consensus of agreement, including factors such as altered natural resources, poor communication channels, loss of resources due to different causes, ignorance about products destined for luxury markets, and lack of assessment (see Table 1). All of the Weaknesses for which the Delphi panel reached consensus should be carefully considered in strategic planning (Chernov et al., 2016; Párraga et al., 2014) intended to prepare smallholder farmers to grow specialty crops for luxury niche markets. This should guide their development of human capital and receipt of support (Fernández et al., 1999; Krutova, 2015; Luckstead et al., 2014; Swanson, 2006; Zvarych, 2018).

Examples of external factors were Opportunities to grow crops that are well-priced, possibility of sales by cooperatives, potential for additional income, gourmet markets of international cuisine, and using the research of Mexican scientists (see Table 1). And Threats emerged such as abandonment of farming and producers migrating due to increasing crime, including acts of violence; loss of resources due to looting and other criminal acts; lack of existing organizations, or locals do not know how to effectively organize themselves; and high dependence on government subsidies (see Table 1).

Recommendations for Practice

Panelists acknowledged the importance of relying on and developing further the potential producers’ human capital using a SWOT framework. Therefore, future actions associated with implementing our findings should seek to exploit the Strengths and Opportunities and diminish or eradicate the Weaknesses on which the panelists reached consensus of agreement. The panelists also identified Threats (Lang et al., 1997) that could decrease the likelihood of the producers succeeding. Such challenges ranged from international competition for market share to violent crimes against producers to their lacking organizational capacity. These and other Threats should be checked to the extent possible. Recognizing various internal and external factors could be the first step toward capitalizing on the producers’ strengths and opportunities while minimizing or even alleviating their weaknesses and threats, as found in this study.

It is uncommon to find locales that share matching characteristics and needs, therefore, tailored strategic plans are often needed. In many cases, a lack of recognition about the importance of agriculture to rural economies and its impact on the global economy hinders the vision of policymakers and the leaders of rural communities in effectively planning for future opportunities (Singh & Tabatabai, 1993; Swanson, 2006). Therefore, we also recommend using our findings as a guide to examine the situation in regions and communities to determine purposeful initiatives for leveraging the strengths and opportunities inherent to those locales. Stakeholders should develop strategic plans (Albrechts et al., 2017; Bryson et al., 2018) presenting a range of economic development possibilities relevant to their regions.

Another recommendation for future practice emphasizes the importance of Extension services, public and private, and the vital position such serves in the diffusion of innovations, including the transfer of new knowledge and practices proposed for smallholder farmers to adopt (Rivera & Sulaiman, 2009; Rogers, 2003). However, before these practices and innovations may be diffused, change agents, including advisory service and extension professionals, must be convinced of the importance and necessity of such (Tiraiyari et al., 2013). Rural economic development can be more effective when providers understand the current context and needs of communities, including the necessity to invest in human capital (Krutova, 2015; Luckstead et al., 2014; Lut, 2017). Moreover, achieving economies of scale is nearly impossible if actors are only working individually (Altman, 2015). Therefore, practitioners of rural economic development
should form and organize local groups or cooperatives of potential producers to jointly decide on strategies and guidelines consistent with strategic objectives that can be adopted, implemented, and monitored over time. Cooperatives could also contribute to improving methods of administration, management systems, and training processes, among meeting other needs supporting the creation of human capital and increasing productivity (Ito et al., 2012; Mojo et al., 2017). According to Swanson (2006), organizing farmers is an essential and initial step toward long-term economic development in rural contexts.

**Recommendations for Research**

Rural actors, including smallholder farmers who contribute to economic development, should be studied to better understand their structures, practices, and outputs, especially regarding economic, environmental, and social impacts. Research also should be conducted to determine farmers’ perceived production interests and related needs, and the capacities of their communities. Such an approach may lead to adapting participatory research agendas and developing plans that include training programs and management frameworks more likely to help these communities capitalize on their competitive advantages (Swanson, 2006).

Another priority for research is the improvement of data collection to support future strategic planning and decision-making. Reliable data from specialty crop communities and other relevant stakeholders are needed to comprehend production budgets, sales and related forecasts, and volume of purchases, among other economic indicators. In addition, by examining the relationships between and among growers, agribusinesses, and other actors, researchers could better illustrate their behaviors, needs, interactions, and synergies, which may assist in improving rural economies (Flores et al., 2018). The need also exists to explore larger geographic scales and contexts. Although individual regions may have their own interests in promoting local specialty crops for luxury niche markets, larger, multi-region studies could expand our understanding of the phenomenon (Evans et al., 2012; Freedman et al., 2013), including the interplay of more complex dynamics and likelihood of multiplier effects.

**Implications and Discussion**

The Delphi method used in tandem with SWOT analysis was valuable in this study because the approach revealed significant issues – both positive and negative – likely to be encountered by smallholder farmers and their rural communities in Mexico and perhaps in other contexts with similar economic development needs. Further, the need for human capital accumulation, as presented in our findings, is considered a significant factor in economic development (Becker, 1993; Luț, 2017). It can positively affect economic growth through local innovation and by the adoption of introduced technologies and practices (Benhabib & Spiegel, 1994; Meza & Webb, 1990), including farmers choosing to grow new crops for previously untapped markets. Although theories are often postulated to illustrate economic development, our work may contribute to its practice and literature, especially in the rural contexts of developing nations. Our findings support the need to develop farmers’ capacities to produce specialty crops with the prospect of improving their livelihoods and thereby lift national economies (Becker, 1993; Krutova, 2015; Loubet & Morales, 2015; Luckstead et al., 2014; Stiles & Kulvisaechana, 2003; Zvarych, 2018), i.e., achieving the broad supposition of human capital theory.
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Measuring Educational Intervention Impacts on Food Security and Nutrition among Rural Farmers in El Salvador: A Mixed Methods Study

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Abstract
Food insecurity in rural El Salvador has been a long-standing problem. This mixed-methods study explored rural farmers’ perceptions of their food security situation, identified critical food security needs, and examined farmers’ intentions to adopt measures to enhance their food security after an educational intervention to combat food insecurity in the area. For this community, the results reveal that access and utilization are the food security dimensions in which farmers perceive the most significant challenges. To mitigate these challenges, farmers participated in an educational intervention that addressed food and nutrition security issues, including household food production, food safety, and drinking water treatments. Post-intervention results show an increase in farmers’ intentions to adopt new food production, processing, and preparation practices that improve household food and nutrition security. However, the results highlight farmers' need for continuing education to fully address all food problems in the community.

Keywords: El Salvador, farmers, food security, household nutrition, educational intervention
Introduction

According to the Food and Agricultural Organization [FAO], beginning in 2017 the improvements seen in global food security over the last decade began to decline. The number of people living in food insecurity increased from 804 million in 2016, to almost 821 million in 2017 (FAO et al., 2018).

The current trend in global statistics issues a clear warning that if no changes are made, the global goals for eradicating hunger by 2030 will not be achieved (FAO et al., 2018). In El Salvador, despite significant efforts to address food insecurity, there still exist many food deficiencies throughout the country. As recently as 2017, El Salvador reported 42,840 households, representing 214,000 people, living in a state of chronic food insecurity. Farmers and their families are the population most affected by food insecurity (World Food Programme [WFP], 2018).

Educational programs for smallholder farmers about food security and nutrition reduce vulnerability and improve resiliency, especially for the most fragile developing economies (FAO, 2011). FAO recognizes training as an essential catalyst for addressing food insecurity and malnutrition (FAO, 2011; FAO et. al., 2005). The education of rural farmers has a positive effect on food production and consumption behaviors. According to Sahyoun et al. (2004), adults can develop or improve their knowledge, skills, and abilities related to food security and nutrition by participating in programs with an appropriate design and facilitation process.

Theoretical Framework

This research study made use of two theoretical frameworks to structure different aspects of the investigation. The first is the FAO Food Security Theoretical Framework, which states that food security for a household means access by all members at all times to enough food for an active, healthy life. At a minimum, this includes the ready availability of nutritionally adequate and safe foods, and the assured ability to acquire acceptable foods in socially acceptable ways, that is, without resorting to emergency food supplies, scavenging, stealing, or other coping strategies (Research Triangle Institute [RTI], 2014, p. 1)

In the search to ensure food security in rural communities, the four dimensions of food security—availability, access, utilization, and stability—must be achieved (Simon, 2012). Educational efforts to reduce food insecurity should seek to include all dimensions of food security (FAO, 2012). Research by Olumakaiye and Ajayi (2017) showed that education could reduce levels of malnutrition and food insecurity. Some of the main topics addressed in food and nutrition security interventions include family nutrition, family gardening, and family finances (Simon, 2012).

The second theoretical framework used in this study is the FAO Theoretical Framework for Nutritional Education Programmes. This theoretical framework uses science-based knowledge to promote proper nutrition, as well as to prevent health consequences derived from the lack of nutritious foods (Smith & Smitasiri, 1997). The most compelling aspect of this framework is that it encourages the educator to work in conjunction with participants to identify the best way to use available food and resources. An important component of this framework is that the educator should help participants strategize to prevent food shortages (Barth-Eide et al., 1996; Smith & Smitasiri, 1997).
Purpose and Objectives

The purpose of this mixed methods study was to evaluate the impacts of an educational intervention on food security and nutrition among smallholder farmers in Chalatenango, El Salvador. The following research objectives guided this study:

1. Qualitatively identify the state of food security, food choices, nutritional attitudes, and barriers to access food perceived among smallholder farmers in rural El Salvador.
2. Quantitatively measure the impact of an educational program on farmers’ knowledge, attitudes, and perceptions on how to improve their food security and nutritional status.

Methods

The importance of assessing and incorporating a community’s socio-economic characteristics in the design and implementation of food security programs has been well-documented (Ahmed & Del Ninno, 2002; Pothukuchi, 2004). For this reason, this study used an exploratory sequential mixed methods design. The main feature of this research approach is the collection of qualitative data in the initial stage of the study and using that data to drive the collection of quantitative data in the second stage of the research (Creswell & Plano, 2018). The data are then integrated to provide a broad understanding of the research results.

Qualitative Strand

To explore food security from the perspective of smallholder farmers, face-to-face interviews were conducted with 17 farmers in the fall of 2018. The interviews focused on farmers’ food security, food choices, nutritional attitudes, and perceived barriers to accessing food. The interviews lasted an average of 45 minutes, were administered in Spanish, and were audio-recorded with the participants’ permission.

Participants were from the hometown of one of the research team members. This researcher went door to door in the community to recruit participants for the study. This process included the initial visit to their houses to introduce the research project and ascertain their willingness to participate in the study. The investigator then set a time and place for the interview based on the participant’s preference.

The interview included questions about family structure and demographics, water and sanitation, agricultural production, food security, and food preferences. The interview questions sought to explore farmers’ knowledge on food security and nutrition, food choices, and barriers to accessing food. The food preferences questions were designed using the FAO Dietary Guidelines for Salvadorian Families (FAO, 2012).

Qualitative Data Collection. The recordings of the interviews with the 17 farmers were transcribed manually and translated to English by a bilingual Salvadorian and reviewed by two additional bilingual Spanish speakers to ensure accuracy. A pseudonym was assigned to each participant to ensure the confidentiality of the information. For the analysis, coding was implemented to identify common patterns and similarities in the participants’ experiences; coding allows the researcher to extract meaning from data units and to gather them into groups or categories (Ivankova, 2015). For this research study, descriptive and concept coding methods were used.

Observations of the smallholder farmers in and around their homes, in the community, and on their land also contributed to the qualitative portion of this study. The primary researcher carefully observed food stocks, storage and preparation areas, as well as the agricultural production. In addition, water sources were visited, waste management processes were observed,
and interactions between family members and community members were documented. Photographs were taken of different aspects of the farmers’ lives relating to the dimensions of food security.

In qualitative research, trustworthiness refers to the level of confidence that the researcher has set in the results based on the research design, participants, and research context (Ary et al., 2006). Triangulation of the interview data was accomplished using interviews with leaders in the community, observations, photographs taken by the primary researcher, and the literature. As themes emerged in the analysis, they were categorized under the four dimensions of food security—availability, access, utilization, and stability. A thick rich description using quotes of participants was used as well as an in-depth description of the methods in order to aid in the transferability of the findings. The researcher's interpretations were verified using peer-debriefing.

**Research Subjectivity Statement.** It is common in qualitative research for the researcher to issue a statement to clarify any potential areas of bias in the research. The primary researcher for this study was born and raised in Chalatenango and has known many of the families in the community for most of his life. Another team member is from Honduras and has worked several Central American countries, including El Salvador. Another author has lived and worked in several countries throughout Latin America. All members of the research team have had professional experience in different developing countries.

**Quantitative Strand**

A non-equivalent control group design was used in the quantitative phase. The non-equivalent research design compares individuals who are not randomly assigned among the control and experiment groups (Frankel, et al., 2015). The control group was built using matching, which is a selection process of the control group participants based on the similarity of the research criteria, drawing comparisons between the groups. While random assignment is still a superior method of subject selection to avoid bias, matching can help build reliable control groups and reduce bias (Rossi et al., 2009; Stuart & Rubin, 2008). In areas like the one in this study, there are no accurate records of community members; thus, there was no systematic way to randomize the assignment of participants to a treatment or control group. Researchers determined that matching would allow the control group to be generated effectively in this context.

Farmers who participated in the qualitative phase were invited to participate in the quantitative phase, which included an educational intervention on food security. For the recruitment of the participants, ACOPIDECHA de R.L., a farmers’ organization, assisted the researcher. House-to-house invitations, phone calls, flyers, and a formal invitation letter were used to invite the participants. Farmers were asked to meet on the grounds of the ACOPIDECHA de R.L. facility on a particular day and time to participate in the educational intervention.

Prior to the implementation of the intervention, the participants were informed that their participation in the study was voluntary and that they would not receive any compensation for their participation. A folder with an informative manual, a pen, and a notebook were provided for the participants. Participants received an identification code in their notebook to use when completing the research instruments. These procedures were followed to assure anonymity. The participants were not asked for any identifying information except for the identification code on the research instrument.
An instrument comprised of four sections was used in the study, including demographic information, the FAO Food Insecurity Experience Scale, a knowledge section, and an attitudinal section. The research instrument was administered before and after the educational intervention as a pre-test and post-test to measure the impacts of the educational intervention on food security and nutrition. The pre-test instrument was administered to the participants at least three days before the intervention. The post-test was distributed to the treatment group after the educational intervention and for the control group at a date and time set by the participants. The control group received the educational intervention after they completed the post-test instrument as compensation for their participation in the research project.

Knowledge test. The knowledge instrument was based on food security and nutrition information and corresponded to the educational intervention curriculum; it tested participants only on the information they were provided during the educational intervention. The 25-item instrument was divided into three sections: food security and nutrition at home, drinking water treatments, and food production. Cronbach's alpha reliability coefficient was acceptable (> .7) for each research instrument section (George & Mallery, 2013).

Attitudinal test. The attitudinal instrument was developed based on findings from the qualitative section of the research study. The 47-item instrument used a five-point Likert type scale and was divided into six research constructs in the pre-test and post-test with one construct exclusively for the post-test. The constructs included in the instrument were: community, education, food choices, food safety, water treatments, and agricultural production. Cronbach's alpha reliability coefficient was acceptable (> .7) for each research instrument section (George & Mallery, 2013).

Quantitative Data Collection. Quantitative data were collected using a paper-based research instrument and entered in an Excel spreadsheet. The Statistical Package for Social Science (SPSS®) was used for the statistical analyses. The negative stated questions were recoded. Descriptive statistics were performed to describe the research population and the state of food security in the community. For the educational intervention evaluation, the participants’ scores in attitudinal and knowledge tests were compared. Independent t-tests comparing the control and treatment group were used. The alpha level was set at \( \alpha = 0.05 \) level of significance, \( a \text{ priori} \). The final instrument reliability was measured using a post-hoc analysis. According to Foster et al. (2018), a post-hoc analysis is carried out after data collection, and not only allows identification of significant differences between groups’ means, but also to determines the origin of this difference.

Results

Objective 1

The first objective of this research study was to qualitatively identify the state of food security, food choices, nutritional attitudes, and barriers to access food perceived among smallholder farmers in rural El Salvador. Seventeen farmers participated in the interview process. Among the farmers, nine (52%) were male and eight were female (48%). For the data analysis, the emerging themes were divided using the FAO Four Dimensions of Food Security theoretical framework: food availability, food access, food utilization, and stability (Napoli, 2011).

Food availability. Food availability is the longest-standing food security dimension and focuses on the balance between population and food. Agricultural production and trade (Burchi
& De Muro, 2016) primarily influence this dimension. The theme of agricultural production emerged in this dimension of food security.

Agricultural production refers to the annual production rates and the elements that affect agricultural production. Farmers’ food security depends not only on the amount of food available, but also on the diversity and quality of these foods. For example, Jose stated that the food preferences at home influenced the family’s agricultural production decisions. Jose said: “…I always produce the same crops. Implementing crop rotation is complicated. What we need to produce is the corn for tortillas…”

The poor agricultural production rates in El Salvador are also affected by the lack of arable land. In El Salvador, farmers compete against rapid urbanization and environmental degradation for the available land (Vargas, 2003). The availability of agricultural land especially affects smallholder farmers. Carlos mentioned: “…I only have a small space to produce. I have to look for someone to lease me land in order to produce the amount [of grain] needed in my home…”

The lack of arable land is not the only agricultural problem identified by farmers. Pests and diseases also affect agricultural production. Changes in the biological and chemical interactions between crops, pests, diseases, and their natural enemies have affected tropical countries like El Salvador (Cilas et al., 2016). Fidel said “…there are pests or diseases that we do not know how to treat, and they are stronger [more resistant] every season…”

Food Access. Food access is the second food security and nutrition dimension and refers to the economic, natural, and human resources available to produce and purchase food. This dimension is especially critical for rural communities in lower- and middle-income economies (Cordero-Ahiman et al., 2017). The themes of access to markets and income and purchasing power emerged from the food access dimension of food security.

Access to Markets. The access to market emergent theme refers to the economic, social, and geographic limitations that farmers face to access appropriate markets and agricultural inputs. Farmers associate their limited access to markets with the deficient transport systems available in rural areas of El Salvador. Ramiro mentioned that “…The buses are very old and do not work constantly…” For farmers in El Salvador, travel to the closest market represents an investment of both time and money. Lidia mentioned “…We go to the market three times or less per year…” Angelica said: “…We do not go to the market very often. Agricultural activities do not allow us to travel constantly…” Farmers recognize that the foods that can be obtained in the market are more diverse compared to those available in the community. Lidia mentioned “…I would like to go [to the market]. There are more things [food] there. But I do not have money to be able to go very often…”

Income and Purchasing Power. This theme explores the economic situation among rural farmers in El Salvador. The farmers’ economic conditions are characterized by low purchasing power and low-income rates; the poverty rate of rural farmers is 22% and their principal source of income is agricultural production (FAO et al., 2018). Carlos said: “…We live with what we produce in the field. It’s a poor life but we survive…” Farmers in the study used words like poor, scanty, and oppressive to describe their economic conditions.

The farmers’ economic situation emerged in almost every interview. Participants described their economic situation as difficult, complicated, and getting worse and worse. When asked about his income, Ramiro said: “…My income is definitely not enough to purchase food for my family…”
Food Utilization. Food utilization is the third food security dimension and refers to both an individual’s knowledge of proper food preparation and consumption, as well as the actual sanitary conditions necessary to safely consume and produce food. The following themes emerged in the food utilization dimension: drinking water quality, women’s participation, food safety, and family nutrition.

Drinking Water Quality. This theme refers to the water access limitations faced by the farmers, as well as the consequences of the inadequate quality and quantity of drinking water on human health. This theme comprises the limitations of drinking water access and the implementation of water treatments by participants.

The lack of appropriate water sources was a common theme that arose during the analysis of the farmers’ interviews. For some families, the principal water source is the well they have at home. While some families have wells and latrines in their homes, many families still lack these basic services, and carry water from a local river. Raquel mentioned “…The water is consumed without any treatment. We store it in containers to keep it fresh and free of trash…” To describe their water, participants used terms like it has very bad odors, it tastes strange and it is dirty.

Women’s Participation. This theme explores women’s participation and decision power in family agricultural production and family diet of participant households. When the researcher began to ask about the family agricultural production, female participants’ answers were principally: “I do not know,” “I could not answer,” and “my husband knows that.” Though they professed a lack of knowledge about the technical, productive, and economic aspects of their own family farming, women actively contribute to household food production. Raquel said “…I help him at work [agricultural production], but he is the one who makes the decisions…” Flor mentioned “…I always work with my husband. Children also help us especially during the evenings…” Lidia said “…He knows how he manages things [agricultural production]. I do not get involved in that…”

Food Safety. This theme explores the food and sanitary conditions and practices implemented by farming households in rural areas of El Salvador. In the participants’ homes, there was an evident lack of sanitation that is aggravated by the deficient sanitary infrastructure available. For the most part, participants perform their physiological needs in latrines that use ashes to treat excrement. Some of these latrines are not in good condition; they were built inappropriately, with poor materials, and without considering location with respect to other areas of the house.

During the interviews, the researcher was able to observe the distribution of spaces in the participants’ houses. Some farmers have their latrines located close to drinking water wells. The construction of these houses is driven by the location of water wells so that they are near the places where daily cleaning activities are carried out to facilitate the carrying of water. The close location of the latrines to the cleaning stations is not a healthy practice. The latrines have been built with underground structures for the storage of excrement. These underground structures often connect with the groundwater sources that supply the family well water. This creates a potential source of cross-contamination and represents a health risk.

Family Nutrition. The relevance of studying family nutrition lies in the complexity of nutritional problems and the specifications for each stage of human development. The nutritional requirements for each family member are different and require special care. This theme explores the attitudes and behaviors of participants related to the nutrition of family members.

The participants in this study do not seek to satisfy the dietary preferences of their members. For these families the priority is the amount of food that can be consumed rather than
the quality or satisfaction of individual tastes. Flor said “... I’m looking for food that everyone can afford ... In my house we all eat what is available ...” Armando said: “... My wife knows what she buys for the house ... Foods are always bought cheap ... “Ana mentioned that “... you cannot buy a lot of food, what you buy is for everyone, although not everyone likes it ...”.

**Food Stability.** Food stability is the last food security and nutrition dimension and seeks to ensure the sustainability of the other three dimensions. Food stability requires multidisciplinary approaches that protect, conserve, and promote sustainable food systems. The following themes emerged in the food stability dimension:

**Climate Change.** This theme explores the farmers’ knowledge on climate change and the perceived impact on agricultural production. When asking the participants to define the concept of climate change, the following answers emerged: *I do not know what climate change is, I do not understand that [climate change,] and /or I cannot define it.* A lack of scientific knowledge and training on climate change is evident in the participants. However, by addressing the question in a different way, asking the farmers if they had observed any changes in the climate patterns during the last years, the following answers emerged: Antonio said: "Yes, the weather changes a lot, for example, there are years where it rains a lot and others where the droughts are very long ..." Jose mentioned that "Before, the weather changed year after year ... now, the changes are in the same year, we do not know at times what is going to happen, and we have to be prepared for whatever ..."

**Objective 2 Results**

The second objective of this research study was to quantitatively measure the impact of an educational program on farmers’ knowledge, attitudes, and perceptions on how to improve their food security and nutritional status.

**Educational Intervention.** A four-hour educational intervention was designed for community members based on the findings from the qualitative data. Three learning modules were developed to present the intervention content to the participants. The educational intervention structure included: introduction, important concepts related to the topic, and practice activities. The practice activities sought to strengthen the farmers’ understanding of the topic and increase their engagement. The learning modules were facilitated by the principal researcher. The educational intervention content was compiled in an informative manual designed and developed by the researcher in Spanish. Food security and nutrition experts supervised and revised the informative manual prior to its use. The manual sought to provide an information source for farmers and a reference for use of the information at home. Based on the high level of community illiteracy, the informative manual was designed with diagrams and images facilitating farmers’ understanding. For the experimental group, there were more males (n = 40) than females (n = 14). The control group followed the same tendency, having more males (n = 29) than females (n = 19). Overall, both groups were composed mainly of males (n = 69) rather than females (n = 33).

**Farmers’ Knowledge.** After the educational intervention, the experimental and control groups’ knowledge scores did not violate homogeneity, as assessed by Levene’s Test for Equality of variance (p = .514 and p = .325, respectively) (Field, 2018). The experimental group’s knowledge scores were higher for posttest (M = 20.78, SD = 2.30) than pretest (M = 7.93, SD = 2.31), a statistically significant difference t (106) = -28.97, p < .001. For the control group, there was no statistically significant difference (p < .05) between pretest and posttest scores. (Table 1).
Table 1

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretest M</th>
<th>Pretest SD</th>
<th>Posttest M</th>
<th>Posttest SD</th>
<th>t</th>
<th>df</th>
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<tbody>
<tr>
<td>Experimental</td>
<td>7.93</td>
<td>2.37</td>
<td>20.78</td>
<td>2.30</td>
<td>-28.98</td>
<td>106</td>
<td>&lt;.00*</td>
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<tr>
<td>Control</td>
<td>8.19</td>
<td>2.50</td>
<td>8.40</td>
<td>2.89</td>
<td>-21</td>
<td>94</td>
<td>.71</td>
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Note: ^1Score: 0 – 25; *p < .01.

Farmers’ Attitudes and Perceptions. The attitude and perception scores per construct per each level of testing were normally distributed. Distribution was assessed by skewness and kurtosis between -2 and +2, which are considered acceptable in order to prove normal univariate distribution (Field, 2018). This was followed by visual inspection of the distribution shape.

In the experimental group, the Community construct, farmers’ attitudes and perceptions were higher for posttest ($M = 4.14, SD = .68$) than pretest ($M = 3.26, SD = .63$), a statistically significant difference $t(106) = -6.9, p < .001$. Sample questions addressing the Community construct included I am not interested in feeding my community, and I am willing to exchange food products with other members of my community.

For farmers’ scores on the Food Choices construct, there was an increase in scores from posttest ($M = 3.64, SD = .32$) to pretest ($M = 3.21, SD = .59$), a statistically significant difference $t(106) = -4.6, p < .001$. Sample questions addressing the Food Choices construct included The foods produced in home gardens are not good quality, and To have a healthy diet I have to eat a variety of foods (cereals, vegetables, meat, dairy products ...).

In the Education construct, there was an increase in scores from posttest ($M = 4.13, SD = .71$) to pretest ($M = 3.38, SD = .60$), a statistically significant difference $t(106) = -6.2, p < .001$. Sample questions addressing the Education construct included I am not trained to produce food in a home garden, and I need to learn more about my family’s diet.

The Food Safety construct did not meet the Levene’s Test for Equality of Variance assumption of homogeneity of variance ($p = .03$). The corrected t-test was used not assuming homogeneity of variance. There was an increase in scores from posttest ($M = 4.01, SD = .47$) to pretest ($M = 3.43, SD = .62$), a statistically significant difference $t(99.05) = -7.3, p < .001$. Sample questions addressing the Food Safety construct included The storage temperature of food is not important in my house, and The cleaning of food is not important for the health of my family.

For the Water Treatments construct, there was an increase in scores from posttest ($M = 3.70, SD = .43$) to pretest ($M = 3.44, SD = .79$), a statistically significant difference $t(106) = -4.6, p = .035$. Sample questions addressing the Water Treatments construct included Contaminated water is not a risk to my family, and Water cleaning is not important in my house.

In the Agricultural Production construct, there was an increase in scores from posttest ($M = 3.16, SD = .36$) to pretest ($M = 3.14, SD = .41$), no statistically significant difference $t(106) = .215, p = .830$. Sample questions addressing the Agricultural Production construct included I have the right resources to produce food, and I am not interested in producing food in my house. For the control group, there was no statistically significant difference in constructs between pretest and posttest scores (Table 2).
Table 2

*Group Differences for Treatment and Control Attitudes Pretest and Posttest Scores*

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<tr>
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*Note: ¹Likert type scale: (1) Strongly Disagree (2) Disagree (3) Neither in disagreement nor in agreement (4) Agree (5) Strongly Agree; *p < .05.*
Discussion

In El Salvador, the highest levels of poverty mainly affect rural populations. Poverty limits the satisfaction of many basic needs of farmers, including food, education, and water and sanitation (Government of El Salvador [GOES], 2017). In 2017, of the total population living in poverty or extreme poverty, 83.7% of households did not have adequate sanitation conditions and 49% did not have access to potable water (GOES, 2017).

The results of this research study indicate that in this particular community in rural El Salvador, food insecurity centers primarily in the access and utilization dimensions of the FAO framework. Though access is challenging to address in an educational intervention, the utilization dimension was addressed in this case. Results of post-intervention assessment indicate a change in farmers’ knowledge on food security and nutrition after the educational intervention. According to Brenes (2017) knowledge is an important component of the behavior change process. Farmers’ attitude and perception scores increased after the educational intervention and are evidence of the contribution of the training to the possible change on farmers’ food security and nutrition. After the educational intervention, farmers expressed their intentions to adopt the concepts of family nutrition, home water treatments, and agricultural production practices. However, these results should be interpreted cautiously because the agricultural production attitudes and perceptions did not change significantly after the training.

For future interventions that seek sustainable improvement in the food and nutritional security of a community, it is recommended to include an education and training component for the participants that is derived from community members’ own assessments of their needs. The intervention in this study was developed based on the results of qualitative inquiry in the community. Understanding the community members’ perceptions helped structure the content and delivery methods used in the intervention. The results of this study indicated that the changes in farmers’ knowledge, attitudes, and perceptions, may have been generated by participation in the educational intervention (Berckler & Wiggins, 1989).

Educational interventions in rural communities should be designed, implemented, and evaluated, promoting the active participation of women and youth. Improving food and nutrition security is a task in which all family members should participate. The qualitative analysis in this study showed that although women work in agricultural activities, they are not seen, nor do they see themselves, as playing a decisive role in those activities. However, women decide the family diet and have the leading role in the food decisions at home. Additionally, young people and children work in family agricultural production in the geographical area of this study, but their voices are not often heard on matters of food security. Food choices and preferences during childhood not only influence development and growth, but also affect the adoption of bad eating habits during adulthood, underscoring the importance of including their perspectives in food and nutrition security research (Taylor, et al., 2005).

For future educational programs with farmers, it is recommended to tap into the interests of the farmers to participate in these types of programs. The reasons for the participation of adults in multiple educational modalities are diverse and influence the kind of results the program can achieve (Merriam et al., 2007). Educational interventions should be sensitive to the social, cultural, and economic aspects of the population of interest. In food and nutrition security, many aspects of daily life are influenced by tradition and are strongly rooted in cultural identity (Counihan & Van Esterik, 2012). The participation and possible adoption of knowledge by farmers must be motivated by offering accessible and relevant knowledge and technologies (Adesina & Zinnah, 1993).
Lastly, the impacts of educational interventions on smallholder farmers should be evaluated in the short, medium, and long term (David & Asamoah, 2011). Assessing the level of knowledge retention and techniques that have been implemented over time would assist in designing interventions that are more effective with similar communities. Based on the intervention designed in this study, it is recommended to provide ample time for the execution of the intervention in order to fully address all aspects of the intervention topic. In this study, not all the topics identified in the qualitative stage were addressed in the educational intervention.

Additional research with smallholder farmers in El Salvador is recommended, especially in light of the small sample size the comprised the participants in this study. A longitudinal study with the same community would also provide interesting insight into the longevity of the knowledge gained in the educational intervention. Research into the actual behavior change – if any – of the study participants over time would also yield fruitful and informative data on food security interventions.

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Effective Organizational Functioning Capacity Needs of Rural Advisory Service Networks: A Delphi Study

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Abstract
This study expands on previous research within an international extension context with a particular focus on identifying the capacities associated with effective organizational functioning. A panel composed of 31 experts participated in a three-round Delphi process and identified a list of 38 specific capacities associated with effective organizational functioning related to extension networks. Among the 38 specific items, five primary themes emerged: (1) an extension network should be transparent about its policies, procedures, and organizational intent; (2) knowledge sharing and collaboration within an extension network is critical; (3) general policies and management guidelines should be in place; (4) the development and maintenance of intentional, long-term relationships with various actors in extension, including stakeholders, policy-decision makers, and the private sector is critical; (5) reasonable expectations and guidelines should be established for both extension network officers and network members. The study’s results provide a guide within which extension networks and organizations may evaluate current capacities from both a developmental and strengths perspective.

Keywords: capacity assessment; extension networks; organizational development

Funding: This study was supported by the Global Forum for Rural Advisory Services.
Introduction

Since their inception, rural advisory services (RAS), synonymous with extension services, around the world have undergone several paradigm shifts (Faure et al., 2012; Swanson & Rajalath, 2010). For example, technology transfer, advisory services, non-formal education, and facilitation extension are examples of major paradigm shifts in extension education (Swanson & Rajalath, 2010). These paradigms can be explained in the terms of purpose and process of communication (Röling & de Jong, 1998).

During the early stages of agricultural extension development, a top-down approach called technology transfer – based on persuasive method of communication primarily aimed at improving food productivity – was adopted. With the increase in food production, a rise in inquiries occurred regarding specific issues of next level production, e.g. supply of inputs and crop management. These inquiries resulted in a persuasive and participatory paradigm called advisory services. Simultaneously in developed regions, a demand in educational and training aspects resulted in a paternalistic paradigm termed non-formal education. This approach focused on equipping farmers with specific skill sets related to management or technical knowledge. Similar to non-formal education but more participatory in approach, a different paradigm, facilitation extension, has evolved (Swanson & Rajalath, 2010).

Public funding shifted in the 20th century to be more supportive of industrial and technological advancement rather than agricultural production with a decrease in public funding noted for RAS (Umali-Deininger & Schwartz, 1994). Even with dwindling financial resources, RAS continue to be relevant and play a critical role in agriculture development and food security by providing rural communities with current information on agriculture (Davis et al., 2014). This relevance continues today as RAS shift to assist in sustainable agriculture development. For example, a positive relationship has been found between extension training programs and increased farmer adoption of agricultural best management practices in several studies (Dillon et al., 2016; Farzam et al., 2015; Kondylis et al., 2014).

Effective organizational functioning of RAS systems is essential for their providers to be efficient in serving the agricultural community (Maddy et al., 2002). Public investments have been focused on the development and implementation of technologies to improve agricultural production and productivity, but it is difficult to attribute how much of the increase in production is due to RAS efforts ensuring integration, rather than the technology itself (Kimani & Ruigu, 2017). The lack of ability to quantify the effectiveness and impacts of RAS efforts has led to decreased funding for such globally (Kimani & Ruigu, 2017; Mukherjee, 2012; Ragasa et al., 2016). However, sustained funding is one of the critical factors for effective organizational functioning and the advancement of RAS (Ragasa et al., 2016). Due to the reduced public funding for RAS, fewer opportunities have occurred for RAS providers and the systems that support them to improve performance (Paul et al., 2016a, 2016b).

At the same time, private and non-governmental organizations (NGOs) have become actively involved in agricultural production education resulting in the advent of pluralistic RAS (Christoplos, 2010). These groups tend to be more market-oriented than production-focused (Christoplos, 2010) and concentrate in a specific agricultural area of financial interest, e.g. fertilizer or seed sales. The addition of new and different key actors with diverse goals and intent in the RAS networks has initiated concerns related to the coordination of efforts and consistency of RAS advisory performance (Phillipson et al., 2016). Operating individually, private RAS providers have found success due to effective networking, strong linkages, and availability of
funds within their areas of operation (Mengal et al., 2016), but are not necessarily cooperative in their intentions.

At the global organizational level, the effectiveness of private RAS providers and NGOs has been found to be inconsistent and at times ineffective due to their isolated and focused interests (Labarthe & Laurent, 2013). In fact, a rise in the number of market and system failures were observed due to a lower coordination of the decentralized units within RAS networks (Faure et al., 2012). A need, therefore, exists for RAS networks to change their organizational and funding structures to bring these actors together and move forward in a more coordinated manner (Nettle et al., 2017). To begin the process of developing organizational and institutional functioning of RAS networks that can bridge this gap, their network capacities need to be identified.

**Conceptual Framework**

The network perspective of social capital theory was selected as a conceptual framework for the purpose of addressing the study’s research objectives (Woolcock & Narayan, 2000). The term social capital represents networks formed between people and institutions within a community (Woolcock & Narayan, 2000). The networks are a result of established connections (Scott, 2017). But any connection can only be identified as a potential social capital when trust exists between the members of the network and when it enables people or institutions access to available resources (Budai, 2011). These potential networks within organizations may be stimulated to gain understanding on issues that require scrutiny and further improvement (Nahapiet & Ghosal, 1998). The value of social capital may be estimated based on the cultural and social factors of the organizations comprising a network (Boutilier, 2017; Jordan, 2015). As Coleman (2003) elaborated, social capital is a function of the relationships between people or institutions which facilitates action to achieve a common goal and enables organizations to connect and bring together human capital from various specializations. Studies have shown that social capital has the capacity to anchor and enhance the connections in organizational networks by increasing efficacy and resource mobilization (Uzzi & Gillespie, 2002). This is possible for social capital because it creates teams based on reciprocity and mutual contribution through and due to networking (Hu & Randel, 2014).

Although a vast amount of research has been conducted in the field of organizational development (Burke & Noumair, 2015; Cummings & Worley, 2014), limited research exists outlining the capacities needed for achieving those outcomes in different organizational settings (Mendenhall et al., 2017; Lamm et al., 2019). This disparity may be attributed to low prioritization of the organizational issues and allocation of insufficient resources for identifying solutions prior to specific needs (Doherty & King, 2001; Taylor et al., 2010). The failure to identify specific organizational needs early may be due to the disconnect between stakeholders, which reduces the effectiveness and value for the entire organization (Goetsch & Davis, 2014), and is another crucial issue within RAS networks that should be addressed (Davis & Sulaiman, 2014).

Two factors, external (Fligstein, 1985) and internal (Boies & Prechel, 2002), usually influence an organization’s functioning and development (Gunasekaran et al., 2005). The internal factors that may influence this outcome are culture, competition, and values of the organization. The external factors can be operationalized as technical advancements, financial support, public policy, and collaboration between organizations from different sectors (Pfeffer & Salancik, 2003). The issue of managing factors that affect organizational development has been a
consistent challenge, resulting in slower organizational development (Cummings & Worley, 2014). For example, a high percentage of issues involving resource management are associated with structure and type of culture within networks (Budai, 2011).

For stabilizing the effect of various influencing factors on the organization, a higher amount of organizational capacity must exist or be created (Ulrich & Lake, 1991). In management terms, organizational capacity is the capability of an organization to manage resources efficiently (Andrews et al., 2015). Helfat and Peteraf (2003), in their research on capacity lifecycle, described organizational capacity as “the capability of an organization to perform a coordinated set of tasks, utilizing organizational resources” (p.999). Achieving organizational capacities is a collective process dependent on the individual knowledge held among the members of an organization (Nahapiet & Ghoshal, 1998). Applying this concept, the need for increasing organizational efficiency for network development can be facilitated by adopting a social capital theory lens (Coleman, 2003; Woolcock & Narayan, 2000). Using this theory, the capacities needed for organizational development of RAS networks were identified.

**Purpose and Research Objectives**

The purpose of this study was to identify the capacities needed for an RAS network to be effective in organizational functioning. The study was operationalized by two research objectives:

1. Identify potential capacities necessary for an RAS network to be effective in organizational functioning.
2. Determine a consensus of agreement among expert panelists regarding the specific capacities necessary for an RAS network to aid in effective organizational functioning.

**Methods**

The present study was conducted as part of a larger project that analyzed RAS networks from multiple perspectives. The data collection and analysis were completed in a manner consistent with methods described in previous research. According to recommendations by Zhang et al. (2013), a summary of the methods used are provided. Nevertheless, readers are strongly encouraged to review the source manuscript (Lamm et al., 2017) for additional details regarding the study’s research methods.

The study employed a modified Delphi method design to address the research objectives. The Delphi method was deemed appropriate to address the research objectives based on its usefulness in international contexts where participants are geographically dispersed (Humphrey-Murto et al., 2017). In particular, the Delphi approach provides an opportunity for a breadth of expert opinions to be solicited and considered in the pursuit of consensus of opinion (Garson, 2014). The Delphi method has been empirically shown to be a useful tool in international agricultural and extension education research (e.g. Conner et al., 2017; Warner et al., 2016; Gombe et al., 2015; Conner & Roberts, 2013; Morgan et al., 2012; Shinn et al., 2009; Ricketts & Morgan, 2009).

Skinner et al. (2015) stated that experts in Delphi panels should be individuals at the top of their field in technical knowledge with the ability to draw connections between national and international development as well as present and current development. Additionally, these individuals should possess the ability to consider issues from both traditional and unconventional viewpoints (Skinner et al., 2015). Since these experts need to possess the greatest knowledge and experience in their fields, panels generally remain small, ranging between 10-30 members.
(Skinner et al., 2015). Dalkey (1975) found that an engaged panel of 13 members who truly represented the expert community in their field would provide a reliability coefficient of 0.9.

For this study, the expertise criteria included active involvement with RAS, organizational maturity, and experience. Individuals were nominated to serve on the expert panel based on their association and participation within Global Forum for Rural Advisory Services (GFRAS) (Okoli & Pawlowski, 2004). GFRAS was determined to be an appropriate source for identifying potential expert panelists based on the group’s international coverage and the distinct experiences within the population of interest. To minimize bias, individuals representing various geographic locations, experiences, organizational structures, and perspectives were nominated for the panel. A group of 31 RAS network experts were asked to identify the capacities necessary for an RAS network organization to function effectively. Details regarding the panel members is outlined by (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).

An approval from the Internal Review Board at the Florida was obtained prior to the research process. The three rounds of the Delphi process were conducted online according to Dillman et al.'s (2008) Tailored Design Method recommendations. First, a pre-notice email was sent to all expert panelist members prior to the beginning of the research. An email invitation to complete the first round of the process was sent to panelists approximately two days after the pre-notice message. Each of the three Delphi rounds included at least three reminder messages in addition to the original invitation. The response rates for the process were as follows: round one – 94% (n = 29); round two – 87% (n = 27); and round three – 94% (n = 29). Based on previous Delphi process research, responses rates of 70% or greater per round were deemed acceptable (Keeney et al., 2011).

Data were collected based on recommendations in the literature concerning the Delphi process, particularly from within RAS or extension contexts (Delbecq et al., 1975; Lamm et al., 2017, 2018; Nistler et al., 2011). Specifically, the process included three rounds of input from the expert panel. During the first round, panelists were asked to provide up to five of the most important capacities an RAS network should have to be effective in organizational development (Gliddon, 2006) using a word or short phrase. Following the first round, responses were collated and analyzed. During the analysis process, duplicate entries were eliminated and minor wording changes were made to improve clarity (Garson, 2014; Gliddon, 2006). Entry analysis was completed using the Dedoose qualitative analysis software package (SocioCultural Research Consultants, 2016). A total of 46 responses collected in the first round were used to develop the second round questionnaire.

Panelists’ level of agreement for the capacities identified in the first round were captured during the second round of the process. Specifically, panelists were asked to indicate their levels of agreement or disagreement with each item. A five-point, Likert-type scale was used to rate items on 1-Strongly Disagree, 2-Disagree, 3-Neither Agree nor Disagree, 4-Agree, or 5-Strongly Agree.
Agree. Frequencies were calculated and reported for each item. Additionally, mean scores were calculated to establish thresholds as a heuristic approach commonly adopted in Delphi research (see Nistler et al., 2011; Lamm et al., 2017; Forno et al., 2019). Data were analyzed using the SPSS version 21 software package. Items with a mean score of 3.25 or higher were retained for the third and final round. This threshold value of 3.25 was established a priori according to recommendations in the literature (Garson, 2014). A total of 45 items were retained for the final round of the process.

The third round of the process was conducted to establish a consensus of agreement amongst the panelists regarding the capacities necessary for effective RAS network organizational functioning. For each item, panelists were asked to use a dichotomous scale to indicate whether or not they agreed the item should be retained. For each item, a percentage of consensus among the expert panelists was calculated. For example, if an item achieved an 88% consensus agreement in the third round, then 88% of the expert panelists agreed the item should be retained. To be retained, an item required a 75% level of agreement. This threshold value was determined a priori and is based on previous studies which found that a threshold level for consensus agreement between 70-80% is sufficient for Delphi research (Humphrey-Murto et al., 2017; Morgan et al., 2012; Ricketts & Morgan, 2009; Simon et al., 2005). Data were analyzed using the SPSS version 21 software package. A total of 38 items were retained following the final round of the process.

**Results**

At the end of round one, the expert panelists identified 46 capacities, which are outlined in Table 1. In round two, expert panelists rated the level of agreement they associated with each of the 46 capacities. Mean capacity scores ranged from 3.04 to 4.78. The highest mean level of agreement was associated with the statement “a country fora or regional RAS network should use funds transparently.” The lowest mean level of agreement was associated with the statement “a country fora or regional RAS network should communicate in English.” To be retained after round two, capacities needed a minimum mean level of agreement of 3.25. One capacity did not meet this threshold; therefore, 45 capacities were retained following round two.

<table>
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<tr>
<th>Capacities</th>
<th>n</th>
<th>1 (%)</th>
<th>2 (%)</th>
<th>3 (%)</th>
<th>4 (%)</th>
<th>5 (%)</th>
<th>Mean (SD)</th>
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<td>Use funds transparently</td>
<td>28</td>
<td>0.0</td>
<td>0.0</td>
<td>3.7</td>
<td>14.8</td>
<td>81.5</td>
<td>4.78 (0.51)</td>
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<td>Be accountable for spending</td>
<td>28</td>
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<td>0.0</td>
<td>3.8</td>
<td>34.6</td>
<td>61.5</td>
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<td>0.0</td>
<td>0.0</td>
<td>11.1</td>
<td>25.9</td>
<td>63.0</td>
<td>4.52 (0.70)</td>
</tr>
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<td>to the success of the network</td>
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<td></td>
<td></td>
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<td>Articulate a clear vision and mission for</td>
<td>28</td>
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<td>0.0</td>
<td>11.1</td>
<td>29.6</td>
<td>59.3</td>
<td>4.48 (0.70)</td>
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<tr>
<td>Support activities driven by stakeholder needs</td>
<td>28</td>
<td>3.7</td>
<td>3.7</td>
<td>44.4</td>
<td>48.1</td>
<td></td>
<td>4.37 (0.74)</td>
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<td>Std. Error</td>
<td>Range</td>
<td>Lower Bound</td>
<td>Upper Bound</td>
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<td>44.4</td>
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<td>Have network members that are aware of the vision and mission</td>
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<td>0.0</td>
<td>0.0</td>
<td>14.8</td>
<td>40.7</td>
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<td>Have network officers that are aware of how to reach out to network members</td>
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<td>0.0</td>
<td>0.0</td>
<td>18.5</td>
<td>40.7</td>
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<td>Have accountability procedures in place</td>
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<td>3.8</td>
<td>0.0</td>
<td>7.7</td>
<td>53.8</td>
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<tr>
<td>Exhibit a strong network with stakeholders that has been maintained over time</td>
<td>28</td>
<td>3.7</td>
<td>0.0</td>
<td>14.8</td>
<td>40.7</td>
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<tr>
<td>Have a resource generation and management plan in place</td>
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<td>0.0</td>
<td>14.8</td>
<td>55.6</td>
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<td>3.7</td>
<td>0.0</td>
<td>18.5</td>
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<tr>
<td>Have network officers that are committed to RAS</td>
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<td>0.0</td>
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<tr>
<td>Have a policy environment supportive of RAS</td>
<td>28</td>
<td>7.4</td>
<td>0.0</td>
<td>11.1</td>
<td>48.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exhibit a strong network with the government that has been maintained over time</td>
<td>28</td>
<td>7.4</td>
<td>0.0</td>
<td>25.9</td>
<td>48.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enhance networks through peer-to-peer exchange</td>
<td>28</td>
<td>0.0</td>
<td>0.0</td>
<td>22.2</td>
<td>48.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coordinate efforts with related national organizations</td>
<td>28</td>
<td>3.7</td>
<td>0.0</td>
<td>18.5</td>
<td>40.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connect to the research and development community</td>
<td>28</td>
<td>0.0</td>
<td>0.0</td>
<td>18.5</td>
<td>59.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have network officers that are aware of when to reach out to network members</td>
<td>28</td>
<td>0.0</td>
<td>0.0</td>
<td>7.4</td>
<td>48.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clearly articulate policies, regulations, methods, procedures, terms, and definitions</td>
<td>28</td>
<td>11.1</td>
<td>0.0</td>
<td>18.5</td>
<td>29.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exhibit a strong network with beneficiaries that has been maintained over time</td>
<td>28</td>
<td>3.7</td>
<td>0.0</td>
<td>18.5</td>
<td>37.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exhibit dynamic leadership at all levels</td>
<td>28</td>
<td>0.0</td>
<td>0.0</td>
<td>7.4</td>
<td>55.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have network officers that trust one another</td>
<td>28</td>
<td>0.0</td>
<td>0.0</td>
<td>29.6</td>
<td>40.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Possess a governance structure</td>
<td>28</td>
<td>7.4</td>
<td>0.0</td>
<td>18.5</td>
<td>44.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have members that are interested in working together</td>
<td>28</td>
<td>0.0</td>
<td>0.0</td>
<td>3.7</td>
<td>22.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support a culture of innovation</td>
<td>28</td>
<td>0.0</td>
<td>0.0</td>
<td>3.7</td>
<td>33.3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: The numbers in parentheses represent the standard error.
Exhibit a strong network with the private sector that has been maintained over time | 28 | 0.0 | 3.7 | 33.3 | 33.3 | 29.6 | 3.89 (0.89)
Engage in inter-agency collaborations | 28 | 0.0 | 7.4 | 18.5 | 51.9 | 22.2 | 3.89 (0.85)
Have an articulated management of the network | 28 | 0.0 | 0.0 | 37.0 | 40.7 | 22.2 | 3.85 (0.77)
Possess a clearly identifiable organizational structure | 28 | 0.0 | 25.9 | 3.7 | 33.3 | 37.0 | 3.81 (1.21)
Have members that come from multiple disciplines and represent multiple perspectives | 28 | 0.0 | 14.8 | 25.9 | 25.9 | 33.3 | 3.78 (1.09)
Focus on gender equality | 28 | 0.0 | 7.4 | 29.6 | 44.4 | 18.5 | 3.74 (0.86)
Have network officers capable of securing funding | 28 | 0.0 | 11.1 | 22.2 | 51.9 | 14.8 | 3.70 (0.87)
Articulate human resource development strategies | 28 | 0.0 | 11.1 | 29.6 | 37.0 | 22.2 | 3.70 (0.95)
Support members of the network through funding (sustainable and diverse including long-term and grants) | 28 | 3.7 | 18.5 | 18.5 | 33.3 | 25.9 | 3.59 (1.19)
Have a sufficient physical infrastructure in place to ensure the network is capable of performing at a high level | 28 | 7.4 | 14.8 | 18.5 | 37.0 | 22.2 | 3.52 (1.22)
Communicate in local language(s) | 28 | 3.7 | 25.9 | 14.8 | 29.6 | 25.9 | 3.48 (1.25)
Be recognized as a legal entity | 28 | 18.5 | 11.1 | 18.5 | 11.1 | 40.7 | 3.44 (1.58)
Communicate in English | 28 | 11.1 | 18.5 | 37.0 | 22.2 | 11.1 | 3.04 (1.16)

In round three, 45 capacities were presented to panelists, who used a dichotomous scale of “Agree” or “Disagree” to express whether or not they thought an item should be retained. To be retained, capacities needed a consensus greater than 75%. Thirty-eight capacities were retained following round three and are displayed in Table 2.

Table 2
Delphi Round Three Results: Level of Consensus with Organizational Development Capacities (n = 45)

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Consensus %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Articulate a clear vision and mission for the network</td>
<td>100.0</td>
</tr>
<tr>
<td>Use funds transparently</td>
<td>100.0</td>
</tr>
<tr>
<td>Have outputs that are valued by RAS professionals, stakeholders, beneficiaries, and policy/decision-makers</td>
<td>96.6</td>
</tr>
<tr>
<td>Have network officers that are committed to the success of the network</td>
<td>96.6</td>
</tr>
<tr>
<td>Serve as a broker by connecting others</td>
<td>96.6</td>
</tr>
</tbody>
</table>
Have a resource generation and management plan in place 96.6
Have members that come from multiple disciplines and represent multiple perspectives 93.1
Coordinate efforts with related national organizations 93.1
Articulate a strategic plan 93.1
Have network officers that communicate with network members on a regular/timely basis 93.1
Have network officers that are aware of how to reach out to network members 93.1
Enhance networks through peer-to-peer exchange 93.1
Provide consistent activities that are well organized, structured, and reliable 93.1
Exhibit a strong network with stakeholders that has been maintained over time 92.9
Support activities driven by stakeholder needs 92.9
Have networks officers that are committed to RAS 89.7
Support a culture of innovation 89.7
Have accountability procedures in place 89.7
Clearly articulate policies, regulations, methods, procedures, terms, and definitions 89.7
Possess a governance structure 89.7
Connect to the research and development community 86.2
Have a policy environment supportive of RAS 86.2
Have network members that are aware of the vision and mission 86.2
Be accountable for spending 86.2
Exhibit a strong network with policy decision makers that has been maintained over time 82.8
Have members that are interested in working together 82.8
Have an articulated management of the network 82.8
Possess a clearly identifiable organizational structure 82.8
Engage in inter-agency collaborations 82.8
Focus on gender equality 82.1
Have network members that report working towards the network’s vision and mission 79.3
Provide value-added services that otherwise would not be available to RAS professionals, stakeholders, beneficiaries, and policy/decision-makers 79.3
Exhibit dynamic leadership at all levels 79.3
Have network officers that trust one another 79.3
Have a sufficient number of network officers in place to handle and maintain a quality network 75.9
Exhibit a strong network with the private sector that has been maintained over time 75.9
Articulate human resource development strategies 75.9
Have network officers that are aware of when to reach out to network members 75.9
Exhibit a strong network with beneficiaries that has been maintained over time 72.4
Support members of the network through funding (sustainable and diverse including long-term and grants) 72.4
Exhibit a strong network with the government that has been maintained over time 72.4
Have a sufficient physical infrastructure in place to ensure the network is capable of performing at a high level 67.9
Communicate in local language(s) 62.1
Be recognized as a legal entity 62.1
Have network officers capable of securing funding 62.1

**Conclusions, Implications, and Recommendations**

Previous capacity research conducted in an RAS context (e.g. Lamm et al., 2017, 2018, 2019, 2020) has consistently demonstrated that a Delphi panel composed of RAS experts is an effective method of identifying capacities necessary for RAS network analysis. This study expands on previous research in an international RAS context with a particular focus on identifying the capacities necessary for effective organizational functioning. The results are intended to provide a set of guidelines that international RAS organizations may use to identify capacity needs and areas of strength. In addition, the formalization of RAS capacities may also serve to harmonize efforts across geographic boundaries, and provide RAS organizations a common lexicon to describe organizational structures, processes, and functions.

Creating an expert panel of individuals representing diverse RAS networks and environmental conditions aids in the overall utility and application of results. Although every effort was made to reduce bias according to recommendations in Garson (2014), it should be acknowledged that the use of a purposively selected panel has inherent limitations. One of these limitations is that the capacities identified are restricted to the scope of knowledge and insights possessed by the experts (Bödin & Crona, 2009). Since the expert panelists within this study were selected from nominations by a single organization, the capacities identified are also limited by the influences and perspectives of this organization. However, to mitigate potential bias the expert panelists included representation from a variety of affiliated groups. For example, respondents were associated with the United Nations, local country level extension networks, global agricultural for profit enterprises, civil society at a country level, ministry of agriculture representatives, university academics, funding organizations from around the globe, and local extension practitioners from both public and private enterprises.

At a functional level, analysis of the results revealed two capacities that experts unanimously agreed were necessary for an RAS network to be effective in organizational functioning. These capacities included the transparent use of funds and an articulation of a clear vision/mission for the network (see Table 2). Additionally, experts were in near unanimous agreement (96.6%) on four other capacities necessary for an RAS network to be effective in organizational functioning (see Table 2). The first capacity was having outputs that were valued by RAS professionals, stakeholders, beneficiaries, and policy/decision-makers. Another was to have network officers that were committed to the success of the network. Third was for the RAS network to serve as a broker by connecting others involved in the extension service and the fourth capacity was to have a resource generation and management plan in place.

Based on the results of the study, the retained capacities were thematically consolidated. Specifically, items with unanimous or near unanimous (over 96.6%) consensus were extracted. Remaining items were heuristically consolidated to facilitate thematic discussion and associated
conclusions and implications. An acknowledged limitation with the approach is the absence of more formal rigorous qualitative analysis. Nevertheless, the identified themes are only intended to ease summarization and associated recommendations and implications. Without a summarizing structure the 45 retained capacities would be unwieldy to adequately address. However, given the acknowledged limitation the identified themes should only be used as a guide for interpretation and not a research based set of findings.

The first theme was that an RAS network should be transparent about their policies, procedures, and organizational intent. RAS networks should invest time in clearly articulating their policies, mission, and values to stakeholders, clientele, and employees. In business management theory, increased transparency within firms has been shown to enhance stakeholder perceptions of organizational trustworthiness (Schnackenberg & Tomlinson, 2014). Accordingly, we recommend RAS networks to reevaluate their current levels of transparency and institute measures which increase disclosure, clarity, and accessibility of accurate information.

Knowledge sharing and collaboration within a RAS network was another theme that emerged among the remaining capacities. This theme highlights how an organizational environment that encourages communication among peers and collaboration – both within and outside the organization – is crucial to increase knowledge exchange. Knowledge management has been previously identified as a critical capacity necessary for RAS networks and revealed as a foundational component in the development of new networks and the maintenance of established networks (Lamm et al., 2017). The results of this study are consistent with previous research, thereby indicating that the achievement of organizational functioning largely depends on the individual knowledge of those involved (Nahapiet & Goshal, 1998). Accordingly, international agriculture and extension educators should acknowledge the association between knowledge management and effective organizational functioning. Thus, we recommend RAS network personnel engage in practices that foster information exchange and knowledge sharing, such as supporting inter-agency collaboration and building teams with members from diverse backgrounds. Taking these actions would likely contribute to more effective organizational functioning.

The third theme identified relates to general policies and management guidelines that an RAS network should observe and of which it should be aware. Some examples of these guidelines include providing value-added services that would not otherwise be available and providing consistent activities that are well-organized, structured, and reliable. These capacities may help to inform human resource and professional development programming within organizations.

A fourth theme that emerged relates to the development and maintenance of intentional, long-term relationships with various actors in extension, including stakeholders, policy-decision makers, and the private sector. Christoplos (2010) found that an increased involvement of NGOs and private organizations within agricultural production education has led to the creation of new market-oriented RAS services. Thus, it is imperative that RAS networks not associated with private organizations or NGOs are able to develop relationships with these entities and other extension actors in order to facilitate consistent and effective RAS efforts. Therefore, we recommend international agricultural and extension educators to focus on fostering relationships with other RAS network actors, which may influence the effectiveness of future RAS efforts.

A final theme was associated with reasonable expectations and guidelines for both RAS network officers and network members. These expectations included guidelines for how network officers should interact with other RAS actors as well as aspects of RAS networks of which
members should be aware. We recommend the capacities identified within the current research serve as a bases to inform human resource management and professional development programming. In particular, we recommend international agricultural and extension educators use this information to modify how their networks communicate about the roles, responsibilities, and expectations of leaders and members in the organization.

Using Delphi results as a foundation for instrument development has been established in the literature (Cheng et al., 2001). Thus, an additional recommendation is for future researchers to use the capacities identified in this study to create a scale that quantifies organizational functioning capacity within RAS networks. Examining the capacity needs of RAS networks regarding organizational and institutional functioning, as well as other related areas identified in the literature (Lamm et al., 2017, 2018, 2019, 2020), would enable RAS networks to establish more holistic and comprehensive insights into organizational strengths and areas requiring further development.

References


Numerous studies support the role of improved agricultural practices in reducing poverty, and because much of the agricultural labor in lesser-developed countries (LDCs) is that of smallholder women farmers, many International Non-Governmental Organizations (INGOs) are implementing programs for these women. The United Nations prioritized gender equality and women’s empowerment in the Sustainable Development Goals (2015-2030) and encouraged governments and other actors, such as INGOs, to do the same. However, little qualitative research has been done to study the effectiveness of INGOs regarding women’s empowerment through improvements in their agricultural practices. This study was conducted to develop a deeper understanding of the lived experiences of women in an INGO’s empowerment program. The study’s theoretical perspective conjoined critical and feminist theories. Twelve beneficiaries of the INGO Field of Hope’s projects in northern Uganda were interviewed. The responses were analyzed to develop four themes and 12 subthemes to understand their experiences and distill the phenomenon’s essence. We recommend that more research be done to assess which INGO practices encourage empowerment over dependency and whether such projects increase agricultural productivity.

Keywords: livelihood improvement; phenomenology; women’s empowerment
**Introduction/Review of Literature**

By empowering women in lesser-developed countries (LDCs), many non-governmental organizations (NGOs), including international non-governmental organizations (INGOs), strive to improve their livelihoods and stimulate national economies. In 2010, Sub-Saharan Africa (SSA) accounted for one-third of the world’s worst poverty (The World Bank, 2013). Seventy percent of the world’s poorest people lived in rural areas and depended on agriculture for their livelihoods, and about one-half of those suffering from hunger were farming families (Food and Agriculture Organization [FAO] of the United Nations, 2014; Olinto et al., 2013). Along with its higher prevalence in rural areas, poverty was and remains more common among women.

**Empowering Women through Agriculture**

Gender equality is one of the United Nations’ (2017) 17 Sustainable Development Goals (SDGs) for the world to achieve by 2030. Women’s empowerment, and, subsequently, their equality, has long been a topic at the forefront of societal change and it dominates much of today’s global conversation regarding development. An empowerment agenda supports the “rise of participatory approaches to development and often mean[s] working with women at the community level building organizational skills” (Momsen, 2004, p. 14). Empowerment is a developmental process aiming to instill women with self-esteem and self-confidence to aid them in decision-making and in acquiring the skills needed to live productively (Momsen, 2004).

Moser explained empowerment as “giving women the right to determine choices in life and to influence the direction of change through the ability to gain control over crucial material and non-material resources” (as cited in Osirim, 2001, p. 168). It should be noted, however, that empowerment cannot occur with only women involved, but rather as a collaboration between women and men. Mosedale (2005) explained that empowerment must consider “the ways in which power relations between the sexes are constructed and maintained” (p. 244).

Empowering women in the agricultural sector could be highly impactful because of its significance to the economies of SSA nations (FAO, 2011; Lecoutere, 2017; O’Sullivan et al., 2014; The World Bank, 2016; USAID, 2015). In SSA, women make up more than 50.0% of the labor force in agriculture but only own approximately 20.0% of the land (FAO, 2014). The FAO (2011) reported that women, given equal opportunities to resources compared to men, could increase their farming yields from 20.0% to 30.0%, and raise the agricultural output of LDCs by 2.5% to 4.0%. Considering that food demand in SSA is expected to increase more than 50.0% by 2030, the need for increased productivity creates an even greater demand on the region’s women farmers regarding their future yields (Kanté et al., 2013; Mukembo et al., 2017; Yeboah et al., 2018).

Women, however, frequently suffer from limited access to inputs, including seed, credit, extension services, and other resources compared to men, which negatively impacts their abilities to produce food and thrive economically (FAO, 2014). More than 1.3 billion women lack access to bank accounts with no way to gain or develop credit, and many face the reality of not receiving loans crucial to those in agriculture and the already financially troubled (UN Women, 2014). This marginalization often places women at an economic disadvantage (Ben-Ari, 2014).

A U.S. government-funded food security initiative, Feed the Future, developed the Women’s Empowerment in Agriculture Index (WEAI) to “track the change in women’s empowerment levels that occurs as a direct or indirect result of interventions” (Alkire et al., 2013, p. 2). This tool is used to analyze women’s empowerment and gender parity. To measure empowerment, the WEAI examines five domains: production, resources, income, leadership, and
time (Alkire et al., 2013). The domains assist in measuring empowerment and provide comprehensive and beneficial criteria for doing that. Each gives voice to the challenges faced by impoverished and disempowered women. In a pilot study using the WEAI, it was found that women in four districts of Uganda were most disempowered in terms of “access to and decisions on credit, group member[ship], workload, [and] leisure” (Alkire et al., 2013, p. 11). The index highlights important factors to consider if seeking to empower women as farmers and agribusiness entrepreneurs in LDCs.

This montage of challenges opens doors for organizations to enter communities and provide a variety of assistance to women such as microfinancing opportunities (Otero, 1999) and the development of cooperatives (Lecoutere, 2017). Both microfinancing and cooperatives are popular in Uganda. Field of Hope (2020a) employs such while prioritizing women’s empowerment through agricultural development. The INGO focuses on rural northern Uganda, the nation’s most impoverished and agriculturally dependent region (Ali et al., 2015; The World Bank, 2016).

The INGO Field of Hope’s Work in Uganda

Field of Hope (2020a) is a not-for-profit INGO started originally to help meet the need for agricultural training in northern Uganda. Within the scope of their Victory Outreach Ministries Agricultural Program, Field of Hope (2020a) mobilizes groups of women in the rural districts surrounding Lira, Uganda. Through these groups, it sponsors trainings on agricultural practices and proper Village Savings and Loan Association (VSLA) services, lending, and operational practices. By forming cooperatives and participating in VSLAs, the women “have access to small loans at reduced interest rates to purchase inputs and equipment. At the end of the saving period . . . women receive the money they have saved, plus the interest earned” (Field of Hope, 2020b, para. 6). On one occasion, the INGO also sponsored tractor plowing of the women’s fields.

As an INGO, Field of Hope (2020a) operates from the United States and relies on a Ugandan coordinator employed by their church partner to coordinate activities in the country. Over time, it established a relationship with another agricultural training organization. At the time of the study, through this affiliation, Field of Hope (2020a) had gained access to trainers on agricultural and financial literacy. This team assisted in planning and delivering the INGO’s smallholder women farmers’ program, including multiple projects through its outreach efforts. Because little research had been done to examine its beneficiaries’ experiences, a study was warranted to understand their lived experiences regarding the empowerment intended to result from the INGO’s projects in Uganda.

Purpose and Objectives

The study’s purpose was to explore and derive meaning from the shared experiences of women participants in an empowerment training program in Uganda, including agripreneurship opportunities. This phenomenological study sought to examine the impact of these opportunities on the women’s livelihoods and their communities. Two research objectives guided the study: 1) describe the women’s lived experiences with the empowerment opportunities provided by the INGO Field of Hope in northern Uganda; and 2) distill the essence of the women’s lived experiences regarding their interactions with the INGO Field of Hope.
Theoretical Perspective/Phenomenology

A blend of two theories was used to guide this study. Critical theory was the foundational perspective and augmented by feminist theory. The theories’ primary foci on human relationships and social interactions supported using such a lens in this inquiry. According to Fay, critical theory is “concerned with empowering human beings to transcend the constraints placed on them by race, class, and gender” (as cited in Creswell & Poth, 2016, p. 29). This study explored the women’s power relations within their participant groups, households, and communities after involvement with the INGO, Field of Hope.

The goal of critical inquiry is to “critique and challenge, to transform, and to analyze [relationships]” (Merriam & Tisdell, 2016, p. 59). As a result, actions could be taken to increase the effectiveness of the INGO’s program and, thereby, further empower their beneficiaries. We intended to report on what the INGO could improve, explicate what they were doing well, and describe how the women viewed the organization so Field of Hope could more effectively achieve its objectives in the future. Feminist theory is rooted in critical theory and intersectionality. It questions “the centrality of gender in the shaping of our consciousness” (Creswell & Poth, 2016, p. 28), which informs understanding. We aimed to provide deep and rich description (Lincoln & Guba, 1985) of the women’s experiences with the INGO’s empowerment program. The two theories formed the study’s theoretical lens.

Phenomenology is the “study of how people describe things and experience them through their senses” (Patton, 2015, p. 116). This approach was used to capture a deep understanding (Creswell & Poth, 2016) of what the women involved in the INGO’s empowerment program experienced, and how they described and understood such, i.e., to distill the phenomenon’s essence (Moustakas, 1994). Essences “enrich and clarify our knowledge and experience of everyday situations, events, and relationships” (Moustakas, 1994, p. 48) and are the “ultimate in understanding [a phenomenon]” (p. 51).

Methods

Tracy (2010) asserted that “high quality qualitative methodological research is marked by (a) worthy topic, (b) rich rigor, (c) sincerity, (d) credibility, (e) resonance, (f) significant contribution, (g) ethics, and (h) meaningful coherence” (p. 839). This study was guided by these criteria. Based on the relevance of women’s empowerment within the United Nation’s (2017) SDGs, the study’s phenomenon was relevant, timely, and significant. To achieve sincerity, Tracy (2010) recommended self-reflexivity and transparency, which we disclosed. Credibility implies “research marked by thick description, concrete detail, explication of tacit (nontextual) knowledge, and showing rather than telling; triangulation or crystallization; multivocality; member reflections” (Tracy, 2010, p. 840). We maintained such through deep research and inquiry, as well as effectively communicating the study’s methods and results. This inquiry aimed to influence INGOs/NGOs operating within the sphere of women’s empowerment by giving voice to their beneficiaries’ experiences, which addressed Tracy’s (2010) call for resonance. Scant evidence existed in the literature examining the experiences of beneficiaries of women’s empowerment programs in Uganda calibrated to improve their agricultural productivity; as such, this study is a significant contribution (Tracy, 2010) to understanding this phenomenon.

To ensure respect and ethical practices while working with the interviewees and the INGO’s partners, appropriate exiting procedures were followed, including sharing the study’s findings (Tracy, 2010). The inquiry was approved by the Institutional Review Board at
Oklahoma State University. It connected literature, theoretical perspectives, research practices, results, interpretations, and discussion to explore the phenomenon and establish meaningful coherence (Tracy, 2010). Peer debriefing increased the likelihood of our findings being credible and trustworthy (Spall, 1998). Peers involved in the debriefing included three doctoral graduates with experience in international agricultural development and qualitative research. Bracketing was also used to “mitigate the potential deleterious effects of unacknowledged preconceptions related to the research and thereby to increase the [study’s] rigor” (Tufford & Newman, 2012, p. 81).

**Researchers’ Reflexivity**

The lead researcher’s social position was that of a white, female U.S. citizen, aged 23 who held a bachelor’s degree in agricultural communications at the time of the study. She had experience with non-profit organizations through her mother’s work in U.S. rural housing development. Agriculture was an interest due to her ranching background and experiences in youth programs. Her views on women’s equality and experiences with female role models added perspective to this inquiry. She interned with Field of Hope from July 2017 to May 2018. The other researchers were either full-time or adjunct faculty members at the lead researcher’s university and represented agricultural education and agricultural economics. All had traveled to Uganda to work with entrepreneurs on issues of food security, including women, and had visited its northern region. Two had taught and mentored Ugandan graduate students.

**Group of Interviewees**

The study’s participants were selected based on the suggestions of key informants (Rogers, 2003) knowledgeable of Field of Hope’s (2020a) projects in northern Uganda. They included Field of Hope’s Ugandan coordinator, district coordinators who organize groups and interact with the coordinator, church pastors who aid in communication among groups and coordinators, and chairpersons of the women’s groups. For two groups, the chairpersons shared the opportunity to be interviewed and several women volunteered. In the other groups, a key informant asked potential interviewees to participate. In all, 12 women volunteered, three from each district (see Table 1) within Field of Hope’s service reach. All were active in a VSLA group and had participated in the INGO’s programming since its inception in 2015. Ten farmed seven or fewer acres, one had nine acres, and another cultivated 20 acres. Two owned some land (4 ≤ acres), but most shared ownership with husbands or farmed land belonging to male relatives.

**Table 1**

<table>
<thead>
<tr>
<th>Pseudo-name</th>
<th>District</th>
<th>Age</th>
<th>Est. Yearly Income (UGX)</th>
<th>Years of School</th>
<th>Self-Reported Literacy</th>
<th>Children/Dependents</th>
<th>Marital Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woman 1</td>
<td>Amolatar</td>
<td>63</td>
<td>300,000</td>
<td>S4b</td>
<td>Both</td>
<td>4/6</td>
<td>Widow</td>
</tr>
<tr>
<td>Woman 2</td>
<td>Amolatar</td>
<td>32</td>
<td>200,000-1,000,000</td>
<td>P6c</td>
<td>Some</td>
<td>3/5</td>
<td>Married</td>
</tr>
<tr>
<td>Woman 3</td>
<td>Amolatar</td>
<td>64</td>
<td>5,000,000</td>
<td>P7c</td>
<td>Some</td>
<td>4/7</td>
<td>Married</td>
</tr>
<tr>
<td>Woman 4</td>
<td>Apac</td>
<td>52</td>
<td>150,000</td>
<td>P5c</td>
<td>Yes, native</td>
<td>6/4</td>
<td>Married</td>
</tr>
</tbody>
</table>
### Table 1. Selected Personal Characteristics of the Study’s Participants

<table>
<thead>
<tr>
<th>Woman</th>
<th>Village</th>
<th>Age</th>
<th>Annual Income</th>
<th>Educational Level</th>
<th>Literacy</th>
<th>Marital Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Apac</td>
<td>35</td>
<td>200,000</td>
<td>S1&lt;sup&gt;b&lt;/sup&gt;</td>
<td>Read, little write</td>
<td>4/1</td>
</tr>
<tr>
<td>6</td>
<td>Apac</td>
<td>56</td>
<td>1,190,000</td>
<td>P7&lt;sup&gt;c&lt;/sup&gt;</td>
<td>Some</td>
<td>5</td>
</tr>
<tr>
<td>7</td>
<td>Alebtong</td>
<td>47</td>
<td>10,000,000</td>
<td>S6&lt;sup&gt;b&lt;/sup&gt;</td>
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<td>6/4</td>
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<td>8</td>
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<td>S2&lt;sup&gt;b&lt;/sup&gt;</td>
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<td>500,000</td>
<td>S1&lt;sup&gt;b&lt;/sup&gt;+V&lt;sup&gt;d&lt;/sup&gt;</td>
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<td>10</td>
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<td>47</td>
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<td>Dokolo</td>
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<td>1,200,000</td>
<td>P5&lt;sup&gt;c&lt;/sup&gt;</td>
<td>Both</td>
<td>9/5</td>
</tr>
</tbody>
</table>

**Note.**<sup>a</sup>$1.00 USD = 3,706.10 UGX at time of the study.  
<sup>b</sup>Secondary school.  
<sup>c</sup>Primary school.  
<sup>d</sup>Vocational school.  
“Both” or “yes” denotes the woman’s ability to write and read; “some” denotes the woman’s lack of confidence in her ability to write or read; “native” refers to the native language of the region, Luo.  
<sup>e</sup>Dependents includes grandchildren, orphans within the family or community, or young adults needing financial assistance.

### Instrumentation, Data Collection, and Data Analysis

The study’s semi-structured interviews were conducted during August of 2017 as guided by 25 open-ended questions we developed. The interview protocol avoided asking directly about empowerment but instead inquired regarding indicators of it, such as economic independence or income, land ownership, agricultural production, education, resources, time, and leadership (Alkire et al., 2013; Osirim, 2001). The interviews were audio-recorded to ensure accuracy, and the lead researcher kept a journal during the study (Creswell & Poth, 2016). Eleven of the women relied on a translator to interview in Luo, the local language. Woman 7 was fluent in English and asked to be interviewed in such. The study’s translator was a Ugandan male in his late 20s. He was recommended by the INGO’s Ugandan coordinator. The translator was fluent in English and Luo and had an agricultural background, but he lacked experience with the INGO, which reduced the potential for him biasing the translated responses. He translated in the third person (Edwards, 1998) and the lead researcher transcribed those interviews demonstrating that voice. We acknowledge that the translator’s gender and social class may have influenced the women’s responses due to cultural dynamics and norms.

By compiling transcripts of the interviews coupled with the lead researcher’s reflections and observations, an understanding of the women’s lived experiences was constructed (Creswell & Poth, 2016; Moustakas, 1994). The findings were reviewed for “‘significant statements,’ sentences, or quotes” (Creswell & Poth, 2016, p. 79) to provide an understanding of how the women interpreted their lived experiences with Field of Hope. These data were transformed into clusters of meaning (Creswell & Poth, 2016; Moustakas, 1994) for analysis through coding. Open coding was done to “understand how [the] data might relate to broader conceptual issues” (Yin, 2016, p. 196). Next, codes were categorized into parts, or themes, i.e., axial coding, illuminating recurring patterns across the data (Merriam & Tisdell, 2016). The lead researcher recorded her assumptions and memoed to note connections (Merriam & Tisdell, 2016; Yin, 2016) and to “reflect on the larger thoughts presented in the data” (Creswell & Poth, 2016, p. 188).
By using themes derived from the axial coding and memo writing, theoretical statements or tentative schemes were developed representing the “significance of interpretations and conclusions in relation to the literature and previous studies” (Yin, 2016, p. 199). Other researchers familiar with these methods also reviewed the codes and derived themes. We discussed and negotiated our mutual analyses to arrive at a thematic portrayal of the women’s lived experiences.

Results

Our analysis of the interviews yielded 33 codes from which four major themes and 12 subthemes emerged. We assessed the prevalence of themes by determining how many responses supported such (Braun & Clarke, 2006). Responses by eight or more women related to each theme.

Theme #1: Securing their children’s futures through education

The women were concerned for their children’s futures and the need to provide them with high-quality education. Women 7 described her greatest achievement in the previous five years: I have been able to pay my children’s fees. . . . when soya is good, I am going to sell it now, and I’m going to pay their tuitions, pay their fees, and improve our livelihoods . . . our main focus now is for the children to live and study. To have a good life . . . . Many expressed a deep responsibility to secure their children’s education. Woman 5 said: “She wants the life of her kids to be improved through studies by the money she will get through digging and through farming so that they will have [a] better future.” The women also described the difficulty of relying on farming to pay school fees, especially with uncertain rainfall. They shared, however, what a great help the VSLA had been by lending them money for the fees if needed.

Belief that a better future for their children is directly related to education. Momsen (2004) reported that, although the parents typically have lower levels of education, many impoverished families view education to be directly related to more successful lives removed from poverty. To this point, Woman 12 said: “[O]ne thing she would like to change is so that those kids should put all their attention on studies, so that all the way, their life can get changed.” Woman 3’s beliefs were similar, especially for her daughters: “. . . [before] girls weren’t allowed to go to school [past P7], but, this time, her girls are going to school so they will have better life – more than her.”

Burden and responsibility of paying school fees. To ensure that education transpires, school fees must be paid. For many, this is a large undertaking and an expensive challenge always at the forefront of their minds. Woman 9 decried: “The challenges is studies. She wants the kids to go to [a] good school, and now the good school demands much money, and they do not have. So that’s the greatest challenge.” Woman 8’s comments harmonized with this position: “All the money she has been getting she has been using to pay school fees. So, the biggest challenge she’s had was paying school fees.” On occasions, they sold produce at undesirable times to put their children in school. Woman 10 also described this burden: “The greatest challenge is paying school fees. . . . [If] they don’t have a good market, yet the school is demanding them to pay – so it is a big struggle in their life.” For many women, only a few of their children attended school, while others stayed home due to the lack of funds. The daughters were typically kept home because their education was not deemed as important as that of sons (FAO, 2011; Momsen, 2004; The World Bank, 2013).
Theme #2: Empowerment and improved livelihoods as a result of INGO participation

Osirim (2001) explained empowerment as “psychological well-being, self-esteem, self-respect, and autonomy coupled with the striving for or achievement of economic independence” (p. 169). The five subthemes within this broad theme explored the women’s feelings of empowerment and experience of improved livelihoods.

**Development of self-esteem.** Woman 7 recognized that Field of Hope had helped them to realize their abilities as women: “. . . we [group members] tell them a few things about how they can keep their homes well, how they can keep their families. . . . and we can help our husbands to raise our homes, to make our families well.” Woman 9 attested to more self-confidence: “[N]ow they are bold – they can even speak in public in front of a hundred people. They can speak freely. And when you [white people] come, they fear you, but they can talk to you.”

**Gender equity and inclusiveness.** When speaking about empowerment through equality, inclusivity was important; therefore, Field of Hope worked to involve men if the group so chose. In this instance, husbands of the women were invited to join the groups, and many found that this helped encourage their wives to participate. Along with this inclusivity was an embracing of members from all socioeconomic classes and religious backgrounds. Woman 8 described this: “. . . without differentiating the denomination, where you come from, but getting all of them together from different localities and work them together so they can unify themselves and get ideas from one another. . . .” Despite the strong ties to religious preferences and church families in Uganda, many of the women were members of churches other than Field of Hope’s partner. Woman 9, a Catholic, said that the group “brought them together. It has helped them to know people they used to not know; it has helped them to unite together” despite their religious differences.

**Building community.** This lack of discrimination attested to building community. Woman 12 spoke of the others as friends. She said: “[Field of Hope] has given her a company with friends. . . . Field of Hope has helped people come together in savings, and now people are growing together. . . . [Her favorite thing] is staying in one accord, in unity.” Woman 8 shared that bringing the women into community with one another was a “very good achievement.” She also said: “Field of Hope has brought them together. That has enabled them to have unity.”

**Economic empowerment.** Regarding this subtheme, many women described the INGO’s contributions to improvements in their incomes whether through the savings scheme or their increased agricultural yields. One woman told her story of producing enough yield of sunflowers to afford purchasing better seed for the next planting season and producing enough from that crop to build a new kitchen. Woman 2, who attributed their increase in yields and incomes to the agricultural trainings, expressed: “Because Field of Hope has taught them to plow or plant seeds, it has enabled them to get high[er] income.” Woman 7 explained: “We are encouraged and have hope now. It has affected our lives so much and just improving our income in agriculture.” The testaments support the economic empowerment described by Osirim (2001). Woman 11 also recognized a difference in her life because of Field of Hope: “Now that she’s in the group, she has more money. . . . they have savings here. You [can] come and borrow and use and step-up the business and then come back and bring the money.” Improved money management was also described. Woman 6 shared: “Before, she did not know how to keep money, but now she can keep money. It has improved her skills, and now she can think right [about finances].”

**Improved agricultural practices.** Economic empowerment also could be seen through the
women’s agricultural practices. They had experienced increased yields by applying improved farming practices and the use of better-quality inputs. Woman 7 made this point:

Field of Hope has . . . taught us many things – how to use land, how to have best crops, when to know that your crop is ready or when your crops are not yet ready. . . . [It] has made our knowledge about agriculture wider now, wider than before.

One practice repeatedly mentioned was broadcasting seeds versus planting in rows, which they noticed immediately improved their yields. Woman 4 said: “. . . what she learned from Field of Hope is a better method of farming. She used to just cast seeds, but . . . Field of Hope comes and taught her how to plant seeds in rows, the yield is improving.” Woman 10 elaborated further: “Planting seeds, they used to cast, but now, they plant them in rows. . . . [and] find out they have a good yield.” Field of Hope also provided tractor plowing prior to one planting season. It sponsored the tractor, and the women’s group paid for the fuel. This made an impact on them. Woman 11 said that it more than doubled her yield: “[W]hen Field of Hope gave them [the service of a] tractor, the maize, they used to get like seven sacks. That year was doubled, and they got 18 sacks within a single season.”

**Theme #3: Further aspirations for improved quality of life**

Although the women described economic improvements through the INGO’s empowerment projects, they also discussed desires for more change and even better livelihoods. Each woman, in some way, expressed a need or desire for more assistance to further raise their socioeconomic levels such as more training, funding, and farming inputs.

**Need for greater income generation.** The women had ideas to encourage more income by better marketing of produce and training for other vocations and businesses. These expressions were related to their need for more funds to pay school fees and purchase amenities. Woman 2 explained: “. . . Field of Hope could help them to raise their level of income, it would help them to save for their kids, for schooling, and help them for their health.” They also desired to acquire agribusiness training. Woman 2 said: “[T]hey should add on the skills of farming and how to do business . . . how to get a market for their goods and how to sell it.” Woman 9 elaborated: “. . . [other ways] Field of Hope should help them is how to maintain their crops and sell their crops. . . . they should be trained how to work with the cooperative society, thereby, when they plant a crop they can sell together.”

Many women also discussed the possibility of businesses other than farming. As Woman 1 described, they experience a long dry season with insufficient rainfall to support crops, so little farming occurs. During this period, families must survive on the income and production of their previous planting season. Woman 4 also wanted another business to help her family. She said: “Five years coming, she would [hope to] have something that could help her family . . . some business when she is out from home she can come and do after farming.” She further said that as she ages farming is more difficult, so “she wants something that she could be sitting down and sell because her age is growing older. That thing would help her.” Some ideas mentioned were baking bread, tailoring clothes, pottery making, or owning shops in the village such as a bicycle repair shop.

**Need for additional agricultural inputs.** To further increase their farming productivity, the women articulated a great demand for more agricultural inputs. Woman 1 stressed: “. . . they highly need those things, like fertilizer, seeds, [and] trainings . . . so they can also improve their lives.” Woman 5 expressed that “Field of Hope should help her with tools, seeds that can help her to farm well, and change her life.” And Woman 2 described a desire to farm more land to
increase production. Along with inputs, mechanization would also help. Many women expressed interests in tractor plowing after witnessing what Field of Hope had partially funded; they perceived that their group owning a tractor would be helpful. Woman 12 rationalized: “Giving us what to plow with [would help], our own, so that they can use it at any time.” Woman 11 also stressed the need for tractor plowing: “... when they plow the garden locally using their hands ... the depth is just also as small as this, so planting, the plant root cannot enter, penetrate and go deep. ... It [the plant] does not grow well.”

In addition, the women requested help in post-harvest handling – mostly storage so they could keep their produce safe while waiting for better prices. Woman 10 clarified this view: “... also the challenge they have is storage. So, if they could get somewhere where they could have the produce stored together, it could help them get to good markets and not waste money.” Woman 7 explained further: “Maybe they could train us on how to make good storage. How to store the cereals. When they come out of the garden sometimes they are cereals ... but how to store them.” Woman 5 also stressed that a machine to assist in agro-processing would be helpful.

**Theme #4: Ongoing challenges**

Three subthemes explicated the theme of *ongoing challenges*. Although these obstacles may not be resolved or entirely overcome, Field of Hope and other NGOs, whether international or local, should be aware of these issues to effectively serve their beneficiaries.

**Climate and weather volatility.** One challenge especially pertinent in northern Uganda is weather unpredictability. This was a sensitive topic during the interviews due to a recent drought. The unreliable rainfall often hampered the women’s farming enterprises, and thus their annual incomes. Woman 7 explained: “The first challenge is in the drought. Sometimes we don’t get what we expect. Like last season we plant[ed] six acres, but we only get five bags because the drought had been so hard from January to June.” Woman 1 described the INGO’s response to the drought: “... in early this year still famine [existed] because there was a lot of drought, so Field of Hope provided them with posho and beans.” (Posho is a traditional food made by boiling maize or cassava flour in water.) The droughts left many unsure of how to manage their crops. Woman 5 decried the difficulty: “Unfortunately this last season, there was drought and not everyone plant[ed], and it was actually hard for everyone to know what advice to give each other.”

**Access to and affordability of healthcare.** The women lived great distances from amenities, including healthcare. Many traveled more than one hour to a health clinic and faced the challenge of unreliable transport to reach it. In cases of emergencies, this can be catastrophic. Woman 12 shared a desire to have her own vehicle to provide carriage to hospitals. Her home is approximately a 20 km walk to a taxi station and the hospital an additional 40-minute ride. She explained: “So, she would like also to, if possible, she could have transport, so whenever there is someone that is sick or something happened, that person can be rushed to the hospital immediately. ...” And Woman 2 said: “Sometimes sickness is a surprise. Then, the challenges they have when this sickness comes, they look around and there is no other income they can take.”

**Fear of abandonment by the INGO.** The women had worked with Field of Hope for two years, forming a reliance on their services and relationship which left them fearing the project’s end. This can be attributed to their perceptions of improvement through the INGO’s programs, but also to their desires for further empowerment and self-improvement. Woman 3 wished for the INGO to stay: “... they should keep on coming to them to encourage them and give them
skills so that they can go up.” The women repeatedly mentioned the impact of the INGO’s “encouragement.” They expressed fear through feelings such as love and affection. Woman 6 said: “[S]he loves Field of Hope, they want them to come back to them always, and [give] plan[s] and whatever they bring for them is welcomed; they will be happy with it.” Woman 7 expressed her wish for ongoing support: “. . . I wish they would not leave us, they would continue with us, until they bring us out of the state we are in.” Woman 5 expanded that to include the community: “. . . people in the community will look at them, and come with them, and they will make a bigger group in the society and the lives of people will be changed.” And some women expressed a fear of abandonment once they were too old to farm.

**Conclusions, Implications, and Recommendations**

Analysis and interpretation of the study’s interviews revealed four emergent themes and 12 subthemes. The theme of *securing children’s futures through education* refers to the concern the women had about putting their children in school. Most of the women interviewed only achieved a primary level of education or some secondary schooling (see Table 1). The related subthemes displayed the women’s insistence on their children attending school to ensure they have a better future compared to their parents, which included the requirement to pay school fees.

The theme *empowerment and improved livelihoods as a result of INGO participation* indicated the women’s positive reactions to their involvement. The subtheme *developing self-esteem* indicated the women’s increasing self-confidence and self-empowerment, and pride of participating in financial decision-making and keeping their families well. The subtheme *gender equity and inclusiveness* is related to the involvement of males in the program’s groups, not as threats to the women’s empowerment but rather as encouragers and supporters. The women also mentioned the differences among the groups’ members, such as religion, tribal heritage, age, and background, but emphasized the unity and relationships formed despite their differences. The subtheme *building community* reflected the women’s feelings of belonging and harmonious accord with other group members. They openly encouraged one another and counted on all members to participate for the groups’ betterment. The subtheme *economic empowerment* emanated from the increases in crop yields experienced, and the convenience and benefits of related savings they relied on during hard times. The women used the extra money to construct outdoor kitchens and to buy better seed for the next planting season.

The theme *further aspirations for improved quality of life* revealed the women’s desires to achieve more financially and materially in the future. Although the women recognized the improvements already made, they articulated needs for additional progress to reach a higher socioeconomic status and greater financial security. The subtheme *need for greater income generation* supports the theme because many women discussed alternative ways to increase their incomes and how Field of Hope could help. The women described skills such as marketing of garden produce and additional vocational training. Many worried about when they could not physically labor as much and the uncertainty of their incomes. The subtheme *need for additional agricultural inputs* indicated their desires for more efficient inputs of higher quality such as improved seeds and fertilizer, mechanized plowing, methods of post-harvest storage, and access to more land.

The theme *ongoing challenges* accentuated the women’s persistent problems. A subtheme *climate and weather volatility* expresses the persistent issue of drought and climate
extremes detrimental to the women’s farming efforts. Drought has become more prevalent in northern Uganda (The World Bank Group, 2016), and the women described how the hardships of drought and dramatic climate variability impeded on their livelihoods. The subtheme access to and affordability of healthcare explicated the women’s struggles to afford adequate health care, assuming they were able to access it. This subtheme reveals the lack of infrastructure, such as transport and health clinics, and their travails to reach distant facilities. The subtheme fear of abandonment by the INGO illuminated the women’s worries about their welfare and livelihoods after the program’s end. The women spoke appreciatively of its impact and repeatedly expressed their wishes for continued support. These remarks usually followed comments about the program’s unknown completion date and the uncertainties they felt. This theme exemplified their reliance on the INGO.

The study’s theoretical perspectives were grounded in empowering women to transcend the constraints they face (Creswell & Poth, 2016). The women described that, as a result of participating in the INGO’s program, they were transcending the constraints of northern Uganda’s gender rules (Roberts & Edwards, 2017). Critical theory gave a way to “critique and challenge, to transform, and to analyze” (Merriam & Tisdell, 2016, p. 59) the gender inequality experienced by the women. In addition, feminist theory recognized the intent of the empowerment program to “correct both the invisibility and distortion of female experience in ways relevant to ending women’s unequal social position” (as cited in Creswell & Poth, 2016, p. 28). The theme further aspirations for improved quality of life evokes critical theory in that the women had begun to envision new possibilities for their lives. This theme, along with the themes securing children’s future through education and ongoing challenges, also demonstrates critical theory by helping the women to “examine the conditions of their existence” (Creswell & Poth, 2016, p. 29). In accord, the phenomenon’s essence was distilled: Women participants of programs fostered by the INGO Field of Hope in Uganda, although feeling empowered based on increased perceptions of self-esteem, gender equity, sense of community, agricultural knowledge, and economic improvement, still faced ongoing challenges and aspire to further improve their livelihoods.

Evidence exists that empowering women will have a direct and substantial impact on the economies of their nations (USAID, 2015; World Economic Forum, 2013), and empowering them in the agricultural sector could stimulate that aspect of the economy while reducing food insecurity (FAO, 2011; Lecoutere, 2017; O’Sullivan et al., 2014; The World Bank, 2016; USAID, 2015). Although this study did not quantitatively analyze the economic impact of such empowerment, we recommend that be assessed in future inquiries.

Women suffer from lower agricultural productivity than men, sometimes due to fewer inputs but, at times, in spite of such (Ali et al., 2015; O’Sullivan et al., 2014; Quisumbing & Pandolfelli, 2010). Therefore, as global actors work to empower women, it is important to understand if agriculturally focused empowerment programs aid in improving farming productivity and, thereby, reduce food insecurity. Studies of the agricultural capacity developed by such programs should be conducted. Future research should also analyze the likelihood of children’s, especially girls’, school enrollment increasing and sustaining after their mothers’ involvement in an empowerment program. Studies have shown that the likelihood of education improves when a mother’s access to funds increases (Ben-Ari, 2014; The ONE Campaign, 2015). More research exploring the views of participants’ spouses on gender equality and the empowerment of their wives after involvement with such programs is also warranted. An assessment of their pre- and post-intervention perceptions regarding gender roles and related
issues of equality could be conducted. We also recommend that inquiries examine women’s fears of abandonment by development agencies. Rahman (2006) found that many INGOs in Bangladesh had shifted from mobilization of their beneficiaries to “service delivery” (p. 468), which inspired dependence. Studies should be done to determine which INGO-sponsored activities may foment dependency on service provision over inspiring self-empowerment.

We recommend that INGOs and other development actors routinely assess and evaluate their projects to determine what is working and what is not, and adjust as needed. The WEAI (Alkire et al., 2013) may be a helpful tool for Field of Hope (2020a) and other actors to use. Moreover, INGOs should emphasize participatory approaches (Zimmerman, 1995) to their development work. By using this approach, INGOs would be better able to amplify the oftentimes silent voices of their participants (Cornwall & Edwards, 2010). INGOs working in women’s empowerment should also teach business skills and assist beneficiaries in targeting markets to likely increase their incomes. McMullen (2010) described development entrepreneurship as a form of social entrepreneurship that works to lift individuals out of poverty through entrepreneurial practices, which translates well to the work of Field of Hope (2020a) and similar INGOs. These actors should also recognize the beneficiaries’ fears of abandonment and clearly communicate their schedules for ending projects.

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https://www.one.org/us/2015/03/new-policy-report-poverty-is-sexist/


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