5-2023

# Analyzing youth engagement and gender roles in the groundnut value chain in Uganda using the Photovoice Research Methodology

Annie Faye Carter
acarte75@vols.utk.edu

To the Graduate Council:

I am submitting herewith a thesis written by Annie Faye Carter entitled "Analyzing youth engagement and gender roles in the groundnut value chain in Uganda using the Photovoice Research Methodology." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Agricultural Leadership, Education and Communications.

Tom B. Gill, Major Professor

We have read this thesis and recommend its acceptance:

David R. Ader, Carrie A. Stephens

Accepted for the Council:
Dixie L. Thompson

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

# Analyzing youth engagement and gender roles in the groundnut value chain in Uganda using the Photovoice Research Methodology

**A Thesis Presented for the**
**Master of Science**
**Degree**
**The University of Tennessee, Knoxville**

**Annie Carter**
**May 2023**

# ACKNOWLEDGEMENTS

This manuscript is made possible by the generous support of the American people through the United States Agency for International Development (USAID). The contents are the responsibility of The University of Tennessee and do not necessarily reflect the views of USAID or the United States Government. This study was conducted with the financial support of the Feed the Future Innovation Lab for Peanut, based at the University of Georgia. The research was led by the University of Tennessee (7200AA18CA00003) with subawards to Makerere University, Uganda, and the National Agricultural Research Organisation, Uganda.

In addition, I would also like the individual members from Makerere University and NARO that conducted research in the field when we could not. Thank you to Dr. Archileo Kaaya, Dr. Stephen Lwasa, Dr. Okello Kalule, Daisy Kemigisha and Martha Mirembe for hosting me in Uganda and making me feel welcome.

I would also like to thank the entirety of the Smith International Center, who encouraged and pushed me to expand my research capabilities. I am so grateful to have been a part of this team since my undergraduate experience. Thank you to my advisor, Dr. Tom Gill, and my committee members Dr. David Ader and Dr. Carrie Stephens for your guidance, enthusiasm, and patience throughout these past two years.

# ABSTRACT

In regions of East Africa, groundnut (*Arachis hypogaea* L.**)** is cultivated as a common cash crop in areas of food insecurity and agricultural-dependent communities . Groundnut, also known as peanut, is a legume with a variety of important uses. This crop is especially popular with small-scale farmers and youth, who seek to harvest a crop which is affordable. As an expected 440 million young people enter the global labor market by 2030, those living in rural areas are at a disadvantage when searching for job opportunities. In Africa, this rural-urban divide has impacted the economic sector and the activities in which youth engage. Despite the importance of agriculture to both rural and urban communities, youth seldom engage in production agriculture or other types of agribusinesses. In addition to barriers for youth involvement, gender plays a role in the groundnut value chain by creating unequal responsibilities for labor.

The question then remains as to whether there are ways to empower and equip youth to remain in rural areas, particularly through provision of opportunities for youth in the agriculture sector. Viewing agriculture in terms of value chains from "farm to fork" is a beneficial approach to reframing agriculture as not simply "plows and cows." The importance of this research is to understand the areas for improvement within value chains and reengage youth back into agriculture.

This study used a mixed methods approach to survey research participants and interviewed two groups of groundnut farmers in the Ugandan districts of Nwoya and Tororo. An innovative visual methodology, Photovoice, was used to facilitate additional qualitative research through the duration of the project. The research results indicate that gender is a key determinant for the tasks within the groundnut value chain that each person is expected to complete. Men typically participate in earlier stages of the value chain, like preparing the land. Women are heavily involved in the middle stages and end stages of the value chain, such as weeding, harvesting, shelling, sorting, and drying . Youth are at a disadvantage when accessing land and capital resources, with women facing additional societal biases. These disadvantages and biases create barriers for farmers to enter and remain engaged within the agricultural industry.

# TABLE OF CONTENTS

# LIST OF TABLES

# LIST OF FIGURES

# INTRODUCTION

In Uganda, youth are leaving the agricultural sector despite increased employment opportunities (Ahaibwe et al., 2013). There are multiple reasons for this trend among a variety of agricultural value chains. My thesis research is a part of the larger research project, *Photovoice for youth empowerment in peanut value chains in Uganda*, led by the University of Tennessee, Knoxville, and Makerere University. This research project focuses on the groundnut value chain, commonly referred to as 'gnuts' or peanuts. While this research project focuses only in two districts in rural Uganda, we expect results to reflect the conditions among other major agricultural regions in Sub-Saharan Africa. Groundnuts are a popular crop in Uganda, as they serve as both a food and cash crop and are well suited to many of Uganda's climate zones. This crop also allows for intercropping, which can increase the productivity levels of small-scale farming (Martin-Guay et al., 2018). Nwoya, a district located in northern Uganda, and Tororo, an eastern district, both have high levels of groundnut production. In the 2014 census, Nwoya reported a total population of 133,506, with 20% of the population 18 to 30 years of age. Tororo had a much higher population, with a reported 517,080 residents (Uganda Census, 2014). Nineteen percent of its population were between the ages of 18 to 30 years old.

By focusing on the youth populations within these two districts, the objectives of this thesis are split into two sections: 1) analyzing gender roles within the groundnut value chain and 2) assessing youth engagement in the value chain using the photovoice methodology. Photovoice, first developed by researchers Wang & Burris in the 1990s, is a qualitative data collection method that encourages participants to remain engaged throughout the duration of a research project (Sutton-Brown, 2018). By instructing youth participants to capture photos along multiple steps of the value chain, it is possible to see the value chain through the eyes of the participants themselves. In addition to the photovoice methodology, I employed a mixed-methods approach and used quantitative methods to run two parallel data collections.

Overall results collected show gender-specific roles along the groundnut chain that create barriers, especially for female groundnut producers. Labor intensive steps of the value chain, such as land preparation and transportation to market, are a male-dominated field. Women occupy much of the production and harvesting steps of the value chain. Challenges such as land and credit access, as well as mixed-perceptions and societal biases emerged from the data.

Through the photovoice methodology, youth increased their knowledge about groundnut production and expanded their exposure to their own communities. Feelings of empowerment were identified through individual interviews and gender-disaggregated focus groups with both male and female participants. A quantitative survey based on the Child Trends Flourishing Children Positive Indicators (Olenik, Zdrojewski, & Bhattacharya, 2013) was administered and revealed no change in empowerment levels between the pre- and post-surveys.

# CHAPTER ONE
# ASSESSING GENDER ROLES IN THE GROUNDNUT VALUE CHAIN IN UGANDA

## Abstract

In least developed countries (LDC's), such as Uganda, agriculture employs 80% of women. Despite their high participation, women in Sub-Saharan Africa manage land plots that are 20-30% less productive than plots managed by men. In LDCs, men dominate the cash crop industry while women work largely with food crops. Studies show that female farm managers focus on food crops to ensure food security for their households.

In Uganda, groundnuts are a popular crop because they serve as both a food and cash crop in small-scale farming communities. In 2020, cultivation of this legume represented 24.6% of total arable land in Uganda. In terms of production, both men and women produce groundnuts. This research documents gender gaps within the groundnut value chain in Uganda. I used a mixed methods approach to survey research participants and interviewed two groups of groundnut farmers in the districts of Nwoya and Tororo. Results reveal that men and women participate to different degrees in different stages of the value chain. Additionally, women are at a disadvantage when accessing land and capital resources.

## Introduction and Background

As the global population grows to an estimated 9 billion by 2050, agricultural production remains the focus for how to feed the world (Fróna et al., 2019). For both men and women, improving agricultural yields is important to those who support their households. In Oceania, South Asia and Sub-Saharan Africa, agriculture is the largest employer, with 60 percent of women working in this sector. In least developed countries (LDC's), such as Uganda, agriculture employs 80% of women in the economic workforce (Huyer, 2016). Despite their high participation rate, women in Sub-Saharan Africa manage land plots that are 20-30% less productive than plots managed by men (Ali et al., 2016). To increase agricultural productivity, closing gender gaps can help achieve food security (Owusu & Bravo-ureta, 2021).

In rural communities, especially those located in low-income countries, most household income is produced through agricultural production (Zakaria, 2017). Grown for consumption, food crops such as maize and millet are important to subsistence farmers needing to provide for their household (Kuma et al., 2019). Cash crops, such as cotton and coffee, are grown exclusively for sale and generally categorized as non-food crops. Cash crops are a target industry for improving food security in these communities, despite their susceptibility to fluctuating markets and changing consumer trends (Kuma et al, 2019). In comparison of cash crops versus food crops men dominate the cash crop industry while women work largely with food crops and related industries (Zakaria, 2017). Research has shown female farm managers focus on food crops (in place of cash crops) to ensure food security for their households (Mugisha et al., 2018). Furthermore, Naybor (2009) suggested women are more prevalent than men in agriculture due to women being more responsive to improving household nutrition and increasing food security.

Groundnuts are a popular crop in rural Uganda because they serve in the capacity of a food crop and cash crop in small-scale farming communities (Balakrishnan et al., 1999). Over a decade ago, groundnuts lacked the funding that other cereal and legume crops were receiving, as many thought it would remain a subsistence crop in Uganda (Akpo et al., 2020). Since then, groundnut production has steadily gained popularity among Ugandan farmers. It is especially

popular in the northern and eastern regions of Uganda due to the integration of this crop into resident's cultures (Akpo et al., 2020). This crop requires few inputs, which make it an accessible crop to small-scale farmers (Okello et al., 2014). Furthermore, groundnut is a high source of protein, calories, essential fatty acids, vitamins, and minerals, making it an important nutrient-dense crop. (Ojiewo et al., 2020). Both men and women grow this crop despite gender differences in the value chain. Mugisha et al. (2019) suggested legumes are referred to as *women's crops*, yet women's production still yields significantly lower output than that of their male counterparts.

According to Quisumbing et al. (2014), gender refers to both the assigned roles of men and women and the social relationships between them. Society and culture have influence over gender roles, thus creating a fluid construct that can change from generation to generation (Quisumbing et al., 2014). Researchers have documented disparities between genders within agriculture. In sub-Saharan Africa, these issues are common across rural communities. Wanjala (2014) suggested control of land is one of the main assets to increase bargaining power and securing a space in African economies. For young farmers, acquiring land and capital is difficult without adequate access to credit or extension services (Ahaibwe et al., 2013). Obtaining land is difficult for women, as in some cultures, it is passed down through the male lineage. Doss et al (2018) stated, "In addition, almost all inheritance systems disadvantage women in terms of inheritance, and when women legally inherit, they often face strong social pressure to relinquish their inheritance." (pg. 71).

In northern Uganda, a study was completed by Mugisha et al (2019) on gender yield gaps in groundnut production. Through qualitative methods, these researchers found that women are constrained by limited access to land. In this instance, clan elders in traditional communities allocated the land and women were found to never permanently inherit land. On average, female producers are 5.5 years younger than their male counterparts and have 2.1 years of less formal education, thus accentuating gender differences within the value chain (Ali et al., 2016).

Additional research illustrates gender differences exist in the areas of agricultural inputs, investments in land and improved technologies, market, and credit access along with capital resources, and institutional and cultural constraints within households and their communities (Kilic et al., 2015). Okonya and Kroschel (2014) assessed access to credit for women farmers in their research, stating 26.4% of female-headed households had no access to credit, while only 15.1% of male-headed households stated the same. In terms of why they could not access credit, 62% of female participants stated they did not have collateral for a credit service. Decision-making within households creates another barrier to gender equality, as discussed by Ugwuegbu (2009) in a study on the role of Nigerian women in agriculture. This research suggested that women are least consulted at the beginning stages of agricultural production.

In East and Southern Africa, Baudron et al. (2019) studied eight separate sites across Ethiopia, Kenya, Tanzania, and Zimbabwe to document gender-specific activities across multiple value chains. Their mixed-methods research showed several tasks in the value chains were gender-specific. Land preparation, for example, was more commonly completed by men in all research sites. Weeding, however, was a female-driven task in three of the sites (Laikipia, Mbulu, and Makonde), but presented as a shared task between men, women, children, and hired labor overall. Overall, the largest driver of female labor were post-harvest activities in five of the sites (Baudron et al., 2019).

Literature has previously assessed many of the gender gaps existing in agricultural markets and value chains. However, scholars question the authenticity of information published

as gathering data in developing countries remains difficult (Leder, 2022, Doss et al., 2018). Survey data collection is limited in communities where labor or records may not be documented (Leder, 2022). In particular, collecting numbers on land ownership by women proves a challenge when separating the different types of land ownership, such as landowner versus tenants. Land titles may also not reflect the current owner, thus skewing data. In addition, fewer statistics are available on farms that may be jointly owned by a man and woman (Doss et al., 2018). Mnimbo et al (2017) agrees that there is a lack of literature on the relationships of food value chains and gender research, as the majority of gender studies within value chains are focused on the fruit and vegetable sectors. Therefore, there remains a need to assess gender roles within the groundnut value chain, due to its increasing popularity not only in Uganda, but also in Sub-Saharan Africa.

## Purpose and Objectives

The purpose of this study is to analyze the groundnut value chain in Uganda using a mixed-methods approach. The objective of this research is to assess whether gender plays a role in the tasks that men and women complete within the groundnut value chain in the two districts of Nwoya and Tororo. The central research questions posed to participants are:

1. *"In what steps of the value chain do you participate?" and*
2. *"What challenges have you faced while producing groundnuts?"*

## Theoretical Framework

The concept of gender is integrated with society from early childhood into adulthood. Krumboltz's Social Learning Theory (1976) describes genetic endowments as the inherited qualities that a person is born with and a feature that sets limits to an individual's educational and occupational preferences. This theory stated that environmental conditions, like social, cultural, political, or economic factors in addition to natural forces such as location of natural resources or natural disasters are occurrences outside of the control of an individual (Krumboltz et al., 1976). Career decision making, as well as cognitive and performance skills may be impacted by the learning experiences that occur from early childhood to adulthood (Krumboltz et al., 1976).

In some areas, gender impacts if or how much education a child receives (Blakemore et al., 2009). Blakemore et al. (2009) discussed whether gender dynamics have less influence over society as time goes on. However, researchers in more recent years discuss additional gender disparities, specifically in leadership roles. The transformational leadership style aligns with feminine characteristics such as mentorship and the empowerment that a female leader provides to followers, as stated by Carroll et al. (2021). This is in comparison to a male leadership style, which is categorized as dominant, self-assured, and assertive (Hentschel et al., 2018).

Moreover, physical characteristics of men versus women may determine the societal roles into which a person will fit. Chrisler & Mcreary (2012) stated, " Men's greater upper body strength makes them better candidates for manual labor… Women's reproductive capacity and the caretaking tasks that accompany it make it seem suitable for other roles that require gentleness and nurturance" (pg. 1). We have taken Krumboltz's theory into account as we look at

gender characteristics and the roles our participants choose to participate in along the groundnut value chain.

## Materials and Methods

*Study Sites*

In East Africa, Uganda is the leading producer of groundnuts (Shiferaw et al. 2010). This study focused on the two Ugandan districts of Nwoya (Northern Region) and Tororo (Eastern Region). These two districts have tropical monsoonal climates that follow a bimodal rainfall pattern, with one distinct long dry season (late November through February) and a short or intermittent dry season (June - August). Tororo is at a slightly higher elevation than Nwoya. This makes Tororo slightly cooler, year-round, with average annual temperatures of 22.4 Celsius compared to Nwoya's average of 29.2 Celsius. The predominant farming system in Tororo is banana-millet-cotton, attuned to the monsoonal climate with moderate rainfall (annual average of 1468 mm). Nwoya is slightly drier than Tororo (annual average of 1364 mm rainfall) with a more distinct dry season. The predominant farming system in Nwoya is mixed cropping (cassava-millet) with ruminant livestock (cattle-goats).

The climates of these districts are favorable for groundnut production, which requires optimum temperatures of 27 - 30 °C for vegetative growth and 24 - 27 °C for reproductive growth, and between 450 mm and 1250 mm of evenly distributed annual rainfall for good growth and yield (Okello et al. 2013). Groundnut production is important in both districts, particularly in the long rains (March-June). A secondary groundnut crop is typically cultivated in both districts in the short rains (August-November).

*Photovoice Project and Participatory Mapping*

This research study analyzes gender roles that exist between young male and female farm managers within the groundnut value chain in two districts of Nwoya and Tororo. Data collected for this gender role analysis are a part of the larger *Photovoice for Youth Empowerment in Peanut Value Chains in Uganda* project conducted by partners from the University of Tennessee, Knoxville (UTK), Makerere University, and the National Agricultural Research Organisation (NARO). This project ran from 2019 to 2023.

Sixty youth (30 from Nwoya and 30 from Tororo) were trained by the *Photovoice for Youth Empowerment* project team in participatory mapping. Participatory mapping is considered a bottom-up approach to leading change within a community. The individuals engaged in the process develop a "road map" of policies, concepts, decision-making procedures, and beliefs related to the topic. This process can be used to provide an opportunity for community members to collect personal knowledge of a concept to help resolve an issue with a community or group of individuals (Warner, 2015), and to understand a community's perception of any topic that has geographical implications (North Jersey Transportation Planning Authority, 2018; Klain & Chan, 2012).

The training was delivered within a two-day training in December 2020. The training was conducted twice - once in each district with all 30 participants - and included topics related to team building, negotiating ideas, and the process of developing a participatory map. The training also required youth to use participatory mapping to develop group maps of the groundnut value chain, how they understand the groundnut value chain to be composed,

decision-making processes related to the groundnut value chain, and beliefs related to the groundnut value chain topic. Youth also developed location maps of the groundnut value chain encompassing their community. Participants were interviewed to tell the stories related to the map they have developed. This methodology served as the pseudo-control, or comparison, against which the research team compared photovoice intervention.

Photovoice is a visual research methodology which can empower participants to identify, document, reflect upon, and communicate issues of concern using photography and follow-up discussions (Wang & Burris 1997). It offers a participatory approach which showcases the lived experiences of participants through photo documentation (Plunket et al., 2013). This project investigated the use of photovoice as an innovative methodology to both empower youth in groundnut value chains and further understand additional factors that empower and enable youth to be active stakeholders in the groundnut value chain. During data collection, researchers identified the need to further analyze the value chain and assess the influence of gender roles on agricultural production.

The role of the University of Tennessee, Knoxville, was to provide training on the photovoice process and participatory mapping, while researchers from Makerere University, based in Kampala, Uganda, collected photos from two rural districts. Both university teams conducted interviews and analyzed the research data collected. The team partnered with Uganda's NARO to provide expert advice on groundnut production and assist participants with mapping the groundnut value chain.

For the photovoice methodology implementation, 15 youth farmers in each district (30 total) were selected from the 30-youth trained with the two-day participatory mapping. Therefore, of those originally recruited for the project, half received participatory mapping and the other half received both participatory mapping and a photovoice intervention. From the original pool of 30 youth in each district, we utilized a stratified random sampling technique to select 15 youth per district. We refer to those that received photovoice training as Tororo 1 (T1) and Nwoya 1 (N1). The remaining participants who only received training on participatory mapping are referred to as Tororo 2 (T2) and Nwoya 2 (N2). This sampling was stratified by sex (men and women) and by age category (aged 20-24 and aged 25-29), so there were approximately equal numbers by sex and age in each group. Once stratified into groups, we used random sampling, so that every youth (from the original 30 in each district) had a chance of being selected to be in the experiment group.

The selected youth in T1 and N1 (15 in each district) were trained in photovoice methods by the project team. In addition, they were trained on how to use smartphones (Android) to capture their lived experiences through taking photos. The training lasted approximately 2.5 weeks. The selected youth were provided with smartphones (purchased in Uganda) containing cameras. Youth were instructed as to how often and where to charge their phones, at rural charging stations. Each youth participant took photos of the groundnut value chain in the district he or she is located. Youth participating in the photovoice methodology were asked to document, by taking photographs in response to two questions: a) Actual: What matters most to you in your ongoing engagement in peanut value chains? b) Ideal: What do you need in order to be empowered to engage further in peanut value chains? Following training and instruction, the youth participants were asked to take photos over the course of one year, between December 2021 and December 2022. Photovoice participants were then coded by assigning them numbers, followed by M for male and F for female then T for Tororo and N for Nwoya (ex. 3FN, 4MT).

In total, 866 photos were collected that were deemed eligible for photovoice discussions. Four hundred and three photos were collected from Nwoya and 463 photos were collected in Tororo.

*Mixed Methods*

This research used a mixed methods approach to collect data from participants. Creswell (2019) defines mixed methods as research that "involves philosophical assumptions, the use of qualitative and quantitative approaches, and the mixing of both approaches in a study" (pg. 4). Both quantitative and qualitative approaches were completed as a convergent design, thus data sets were collected concurrently and analyzed independently from one another (Dawadi et al., 2021).

*Quantitative Methods*

In March 2021, a baseline youth survey was distributed by the team based at Makerere University. This survey was intended to document the agricultural activities and perceptions of Ugandan youth aged 18 to 30 years. A purposive sample was completed in both the districts of Nwoya and Tororo to select two to three sub counties in each district. These sub counties included: x. From the sub-counties, another purposive sample was completed to select youth aged 18 to 30 years old. A random sample was completed from this list to select the final survey participants. These participants were categorized into stratified samples. Farmers had biggest sample size of 60 because the youth are mostly involved in production followed by retailers (20) and then input stockists, wholesalers, processors, and transporters were each sampled at 10. This was completed for each district. Four hundred and nineteen youth participated from the survey, with 218 participants from Tororo and 200 participants from Nwoya.

This categorization was done for each district. Survey data was entered into SPSS software for further analysis. Survey responses varied depending on respondent participation and choice to answer the question fully.

*Qualitative Methods*

In this research approach, two methods of data collection were used to gather individual experiences from participants within the groundnut value chain. As mentioned previously, 30 participants from the original 60 participatory mapping group were selected by local project coordinators into groups T1 and N1. Fifteen participants reside in Nwoya (N1), and 15 participants live in Tororo (T1). All participants selected were between the ages of 18 and 35 at the time the project began, thus falling into the age category of youth defined by Awiti (2016). Participants selected currently work in some part of the groundnut value chain or come from families who own groundnut plots. Half of the participatory group were female, and the other half were male.

Individual interviews were conducted with groups T1 and N1. Interviews included questions on feelings of empowerment, cell phone usage, and participants' experiences with the photovoice methodology. The individual interviews lasted between 15 and 20 minutes for each

participant and were recorded for later analysis. All participants were asked the same questions[1]. Interviews were then transcribed through a transcription service and inter-coded using NVivo software.

In addition to the one-on-one interviews, two gender-disaggregated focus groups were conducted in each district. In total, 30 focus groups members were interviewed from their respective districts of Nwoya and Tororo. Both male and female focus groups were asked the same questions, with each lasting between 25 and 40 minutes.[2] The male focus group was led by a male researcher, while the female focus group was led by a female researcher. This was to ensure there was no bias in discussion and that participants felt free to share their thoughts and feelings among participants of the same gender. Focus group interviews were recorded and transcribed using a transcription service, then inter-coded by the research team.

## Results

Findings from the quantitative survey, interviews, and focus groups resulted in three overarching themes: gender roles in the value chain, challenges in the value chain, and perceptions of women in farming. The qualitative methods performed is used as supplementary data that is reflected from the household survey implemented.

### Gender Roles in the Value Chain

In both the interview data and the survey responses, participants responded that men and women complete certain tasks separately within the groundnut value chain. Survey results show that participants identified that different parts of the groundnut value chain were dominated by different genders (Figure 1).[3] It is important to note that the quantitative survey data did not collect gendered differences in input supply (e.g. access to seed, fertilizer, land, etc). I captured data on input supply through the qualitative approaches outlined below.

#### *Land Preparation*

Land preparation is the beginning stage of the groundnut season. Farmers begin by removing all crop residues and weeds from a land plot, to allow for proper room for seed growth. In the survey questionnaire, sections of land preparation included *land clearing*, the *first plowing,* and *second plowing* categories. In many parts of rural Uganda, and in the Nwoya and Tororo districts, this is mainly completed by rudimentary agricultural tools such as the hand hoe or ox plow (Figure 2). Some farm managers can afford their own tools or rent out tractors and other mechanized machinery to till the land instead. Figure 3 displays a tractor hired for rent that is plowing a land plot.

Interview and focus group participants in both the Nwoya and Tororo districts stated that men dominate the land preparation stage of the groundnut value chain. Eighty-four percent of respondents stated men dominated this stage at the beginning of the value chain (Figure 1)

[1] Individual Interview questions are in Appendix 1
[2] Focus group questions are in Appendix 2
[3] All figures and tables are located in the appendix.

(N=186). Ninety-two percent of respondents (N=200) believe men dominate the first plowing stage, while 86% (N=200) think men dominate the second plowing stage (Figure 1).

Focus group results from photovoice participants further supported the survey data through discussion facilitated by researchers. “Almost all men, they do land preparation,” stated a male participant from T1. Women in Tororo stated that men dominate land preparation and plowing. “Plus, the plowing, they second plow, and then they let us come to plant”, stated a female participant from N1 in reference to when men let them begin their work in the field.

The interviewer for the male focus groups from Nwoya and Tororo inquired on why the participants believe women are not expected to participate more in land preparation. In response, the male participants stated women are not expected to use ox plows in agricultural production.

“Women [do] not usually hold ox plows,” stated a female participant from T1. Oftentimes, women are left with hoes to hand plow a garden plot (Figure 4). From the survey and focus group data, men show the most activity in the beginning stages of the groundnut value chain, in particular, the land preparation stage which involves using heavy machinery to open the land for planting.

*Production*

The production stages of the value chain continue after the land has been opened. Often involving very physically demanding tasks, this stage includes planting, weeding, winnowing, and harvesting. Planting is encouraged to be done in a timely manner to optimize rainfall and avoid dry weather or droughts. Figure 5 shows a group of young men planting groundnuts. In these rural areas, weeding may be done through mechanical or physical methods and through use of chemical herbicides. Photovoice submissions showcase people of all ages weeding groundnut plots (Figure 6). Groundnut experts in Uganda recommend farmers weed two to three times per season, before the groundnuts begin to emerge outside of the soil (also known as “pegging”.) After this stage, weeding is mainly done by hand to not disturb the plants. Harvesting can mainly be completed by hand-harvesting or using a hoe or ox plow. The former is usually completed in soil which is loose and sandy, while using tools or oxen might occur in plots with heavy, dry soils.

In the survey questionnaire distributed to participants, the production stage includes *planting*, *weeding*, and *harvesting* (Figure 1). Although the difference in male and female participation was smaller than that of the land preparation stage, survey respondents still identified a gap between men and women within this value chain step. Unlike the land preparation stage, respondents believe women are the more dominant gender overall. However, with regards to the first production task, 61% of respondents (N=200) conclude men take up more of the planting work. In contrast, eighty-four percent (N=200) claim women do the weeding and 71% (N=200) also believe women do more work during harvesting time (Figure 1).

Despite the 61% of respondents in the survey who said men complete more work in the planting stage of the value chain, focus group participants stated men are not as helpful within this stage. Specifically, women in the Tororo focus group described female participation and places where men do not assist in production. “They’re [women] too much involved in planting season stages because the men feel like they’re not supposed to do that.” Another participant stated, “a few do help, but mostly they don’t. Mostly men don’t help.”

The weeding stage of the value chain is predominantly completed by women, and this was supported by survey data and focus group interviews. Male participants in the Nwoya

district collectively stated, “women do all the weeding.” Backpack sprayers can be found to easily spray herbicide on garden plots (Figure 7).

*Post Farm-Gate*

Once harvest of groundnuts is completed, the value chain continues to shelling, drying, sorting, storing, transporting, and the marketing stages of the groundnut season. In the shelling stage, 68% (N=152) women lead these tasks (Figure 1). Sorting and drying categories offer similar results as 82% (N= 188) of respondents (in sorting stages) and 83% (N=200) of respondents (in drying stages) also claim women do more work (Figure 1). Many of the images collected during the sorting stage features groups of women, and sometimes men, working together as a group (Figure 8).

When asked about which gender completes more tasks within the transportation stage of the value chain, 90% (N=189) of respondents claimed it is men who dominate this stage (Figure 1). These data were also reflected in the focus group responses, as discussion moved towards the post farm-gate end of the value chain. Participants commented on the various ways transportation to market can be completed, either by motorcycle, bicycle, and truck or done on foot. According to focus group responses, transportation to market is done by bicycles or motorbikes and are to be completed by men. “Yeah, and then for the issue of transporting, transportation maybe on bicycles, motorbikes, it is for men.” stated a male focus group participant.

However, the male focus group stated men are not allowed to carry sacks of groundnuts on their heads, emphasizing the divide between gender roles within this stage. “Transporting using their heads, no. Men are not allowed,” stated a participant in the male focus group from T1. Figure 9 displays a woman carrying a groundnut sack on her head. Oftentimes, bicycles are used in transportation as well (Figure 10). Women in Tororo discussed that women wish to allow men to do the transporting, if it is done by motorbike or truck, because they wish to rest. A female participant from the Tororo focus group said:

> A man cannot stay in the sunshine for that time, the whole day that is there harvesting. Most men are still thinking that that is the type of work for women. But for us women, we feel like, no. After planting my peanuts, I have to have rest. Yeah? I have to work up to the last moment. And then now time for transporting. Most women feel like no, I think this is now the time for men to do that work.

Although not mentioned in the survey, discussion in the focus groups moved towards packaging groundnuts after harvest. One reasoning for this male-dominated process included the weight of the packed groundnuts and accuracy of measuring the sacks. Some other beliefs about the lack of female participation in packaging activities were stated by male participants in Nwoya: “Okay, accurate on measuring and women sometimes not so accurate,” and “also, men do packing because maybe women are busy in the kitchen preparing food.”

**Challenges in the Value Chain**

Youth, including both men and women, have issues related to developing a productive groundnut crop, as identified by Stephens (2021). This research presents two major challenges

for engaging women within the value chain. These include access to land and access to credit, as documented below.

*Access to Land*

Survey participants were asked about land availability for groundnut production. Data analysis was divided by district and gender to identify detailed trends in land ownership. Participants were asked if they had access to or owned land themselves.

Table 1 displays the survey data from male and female respondents in both Nwoya and Tororo districts. In the district of Tororo, 24% of male participants stated they did not have access to land, while 76% of male participants stated that they did (N=129). Twenty-six percent of female participants claimed they did not have access to land plots, while 74% of female participants said yes (N=84). In the district of Nwoya, more land was readily available to male participants, as 87% of male participants stated they did have access to land (N=119). Female access to land also slightly increased from their Tororo counterparts; however, the percentage gap increased between genders and land access. In Nwoya, 22% of female participants stated they did not have access to land, while 78% responded they did (N=81).

The main theme of focus group discussion on accessing suitable farming land included the tradition of inheritance. Both male participatory groups in Nwoya and Tororo expressed feelings of distrusting women when land is passed down to them throughout their familial lines. Land ownership is historically passed down through male lineage, in fear that women may sell the land and move away once married (Gray & Kevane, 1999). A male participant from T1 stated:

> Okay, the mindset in the community that women are not supposed to inherit the land, [it] weakens even their ownership potential. You find even if the woman is given land, they assume they should sell it and maybe go and get married somewhere. So that thing, you see, making people to [question] to trust the women with the land.

Further discussion in the male focus group from Tororo presented similar issues. "There is still a poor mindset towards ownership of land by women. There's still a big gap." stated a male participant from T1. A female participant in T1 expressed her concerns with the challenge of obtaining land in their district. "So, I feel that is not fair for the women because they're left with most [work] but they're not given access and ownership to the land," she stated.

*Access to Capital*

Survey questions revealed whether youth have accessed credit for agricultural purposes. Overall, there was little variation between the districts of Nwoya and Tororo. Female participants accessed more credit in Tororo, with 53% answering "yes" (N=86). Fifty-five percent of male participants (N=130) stated they have not accessed credit in Tororo (Table 2). Like Tororo, more female participants stated they were able to access credit. The survey data shows a 7% difference between female participants and male participants who obtained credit (Table 2). Male respondents stated that 53% had never accessed credit, while 47% responded yes (N = 250). Female respondents stated that 46% said had never accessed credit versus 54% that stated they have (N = 164) (Table 2).

Participants were asked what kind of credit they have accessed. Answer choices included *neighbor/friend/relative, farmers cooperatives, Saving and Credit Cooperative Organizations* (*SAACO), microfinance institutions,* and *banks*. Overall, most of the participants who were able to access credit received it from a neighbor, friend or a relative (Figure 11). Women were more likely to receive credit from farmers cooperatives and microfinance institutions, rather than banks or from SAACO (Figure 11).

Focus groups elicited discussion from women around immediate challenges they face. Participants stated men can find jobs to help supplement their farming production, while women had limited options available to them. One female participant in N1 said, "...men have at least different options of getting money that can help them with the farm. Well, but for women, it is limited." Another female N1 participant agreed and further stated that "...It is difficult because when female youth, a young woman, has not enough capital, it is a bit difficult for her to begin work."

**Perceptions of Men and Women in Farming**

In addition to discussion on gender roles and challenges, mixed perceptions of both men and women were delivered by the opposite genders. In the context of this agricultural value chain, men in particular expressed feelings of distrust displayed by women. In some participants' views, the storage stage of the value chain offers a chance for women to not involve men for security purposes. "They think if they give us freedom to store the gnuts, maybe to have the keys for the store, we then easily sneak out some groundnuts because they know most men, they like booze." stated one male participant. Another concluded that "...because the women don't trust they don't really give us freedom to have the key for the store."

Women in the study from Tororo discussed their community. A T1 female participant stated that her community doubts the skill of women in the groundnut value chain. *"*They look at women as if they cannot do it, yeah? But when they really engross themself to do it, it surprises the community somehow, yeah?"

Survey respondents were asked if they were aware of any gender bias within the groundnut value chain (GVC). If the respondent selected 'yes', they were then prompted to answer and open-ended questions of what that bias was. In total, 297 participants concluded that they did know of a bias within the GVC. Table 3 displays responses given by both Nwoya and Tororo participants. In the survey, participants were asked if they know of any societal biases within the value chain. If the respondent answered 'yes,' they were then prompted to fill in an answer. Table 3 displays participants responses. Fifty-nine respondents concluded weeding is intended for women, while nine participants indicated that men should prepare the land. Two women and one man included in the household survey stated that "women are not allowed to go to the garden during menstruation periods."

## Discussion

*Gender Roles*

The objective of this research is to assess whether gender plays a role in the task that men and women complete within the groundnut value chain in the two districts of Nwoya and Tororo.

The findings from the interviews and survey questions provide evidence for gender specific roles within the groundnut value chain in Tororo and Nwoya districts. From perceptions based on data collected, men dominate the beginning stage of the groundnut value chain when participating in land preparation. Later stages of production allow for more participation of women. Women are seen to do most of the work in the weeding stages, while both men and women work closely at the same rate in the planting stage. Men dominate the transportation to market tasks of the value chain. Although this legume is sometimes referred to as a 'women's crop', as mentioned by Mugisha et al., (2018), our research supports the involvement of both men and women at different levels within the value chain.

In comparison, we reviewed data collected by Baudron et al (2019) who completed gender research in eight sites across Ethiopia, Tanzania, Kenya, and Zimbabwe. In all eight of their study sites, land preparation tended to be a male-dominated task. Weeding was also discussed throughout focus group discussions. In three sites weeding was a female-driven task. However, they found it to commonly be a shared activity between men, women, children and hired labor throughout the additional sites where data was collected (Baudron et al., 2019). The study completed on land preparation is conclusive with our research results that men dominate that stage of a value chain. Weeding as a female-driven task was common in both studies.

In the youth baseline survey, further clarification could be made on how participants chose to answer questions related to which gender dominates which sector of the groundnut value chain. Further research may be completed on challenges related to youth and gender participation in the groundnut value chain. In addition, the number of respondents (N) varied between questions. This raises several questions:

- Did participants choose not to answer if they did not know which gender was more predominant?
- Were participants likely to skip a question if they were not familiar with the groundnut value chain itself?
- Did the survey participants who were also photovoice study members answer every question?

Results documented in Table 3 indicate that there are societal perceptions present in both the districts of Nwoya and Tororo. Responses varied by gender, with both men and women detailing different biases they believe within the groundnut value chain. The survey data supported what the focus group respondents stated in relation to gender-specific roles throughout multiple levels of the value chain; that men are expected to complete land preparation and women complete the weeding stage of the value chain.

What or who influences these roles within the value chain? This question was raised as qualitative results were collected. Many of the photovoice submissions depict small children who are learning agricultural production from older generations. This may reinforce the societal roles placed upon young men and women as they grow up within the value chains. According to Krumboltz's Social Learning Theory (1976), external factors influence our later decision making when determining what roles to fill as an adult. Further research may be completed on groundnut transportation methods to identify whether the method of transportation determines if a man or woman completes that task. Answering questions like this further determine the root of the gender gaps within the value chain. Additional factors fortify these traditional beliefs, including access to credit and land, which define how successful a farmer may become.

*Challenges in the Value Chain*

Results show barriers to entering into agricultural markets and maintaining a successful groundnut business. Survey data showed there is a difference between male and female participants when having access or owning land. 24% of female participants stated that they did not have access to land (N = 165) while only 19% of male participants stated they also did not have access or own land (N = 248) (Table 1). The focus group discussions further supported the quantitative findings, as both male and female groups commented on the challenges they face obtaining land. This conclusion is supported by qualitative data collected by Mugisha et al (2019) who found that clan elders in Northern Uganda oversee land allocations, thus widening the gap between who inherits a land parcel.

Further analysis was done to identify differences between the districts of Nwoya and Tororo. More male and female participants in Nwoya responded they had access to or owned land than their counterparts in the district of Tororo. In total, there was roughly an 8% difference in access to/owned land from Tororo to Nwoya. One reason for this could be the ratio of population density to land size. From data collected in the 2014 Ugandan Census, the district of Nwoya reported a total population count of 133,506 while Tororo recorded 517,080 people.

Quantitative survey data showed female respondents in both districts were able to access more credit than their male counterparts. Furthermore, the female focus group results identified key issues that women face when trying to gain money outside of an agricultural value chain. Sources of credit varied between genders, with more women obtaining loans from farming cooperatives and microfinances than their male counterparts. These results challenged assumptions that women would have a more difficult time accessing credit. These data also go against similar research done by Okonya and Kroschel (2014) on male and female headed households in Uganda. These researchers surveyed participants and found that fewer female participants had access to credit than their male counterparts. They also found that 62% of women had a lack of assets for collateral that many credit services require (Okonya & Kroschel, 2014). Both male and female participants who obtained credit most commonly received them from friends, family, and neighbors. This is most likely due to ease of access and less available options in the more rural communities of Nwoya and Tororo.

In relation to credit access, the survey data show that participants in Nwoya accessed slightly more credit sources than those in Tororo. In both Nwoya and Tororo, there was a higher average of female participants that accessed credit (Table 2). Although not explicitly mentioned, one reason for the higher percentage of women accessing credit might illustrate the need women face for outside funding. As discussed in the focus groups, one female participant stated that men had easier options of finding work outside of agricultural production to supplement their farms. This could drive a woman to seek funding through credit sources if they cannot find outside work.

In the context of the two rural districts of Nwoya and Tororo, gender roles are apparent and vary between different levels of the groundnut value chain. The results of this study display the challenges many women face within the groundnut chain, largely due to societal perceptions within the communities, as well as facing disadvantages when accessing agricultural resources. This becomes even more significant given that agriculture is the largest employer in Sub-Saharan Africa and women account for 60% of the workforce. It is important to continue gender research that includes the roles of women in agriculture, as historically research has primarily documented

the role of men (Quisumbing et al., 2014). This research should be replicated across various value chains and in different regions to avoid commodity or area-specific bias.

## References

Ahaibwe, Mbowa, S., & Lwanga, M. M. (2013). *Youth Engagement in Agriculture in Uganda: Challenges and Prospects*.

Akpo, Ojiewo, C. O., Omoigui, L. O., Rubyogo, J. C., & Varshney, R. K. (2020). *Sowing Legume Seeds, Reaping Cash A Renaissance within Communities in Sub-Saharan Africa* (1st ed. 2020.). Springer Singapore. https://doi.org/10.1007/978-981-15-0845-5

Ali, Bowen, D., Deininger, K., & Duponchel, M. (2016). Investigating the Gender Gap in Agricultural Productivity: Evidence from Uganda. *World Development*, *87*, 152–170. https://doi.org/10.1016/j.worlddev.2016.06.006

Awiti, A. (2016). The Uganda youth survey report.

Balikrishnan, R., Chombreeda, P., & Rimkere, H. (1998). Gender roles in peanut sector for household food security. *Bangkok: Kesetsart Agricultural and Agro-Industrial Product Improvement Institute*.

Baudron, F., Misiko, M., Getnet, B., Nazare, R., Sariah, J., & Kaumbutho, P. (2019). A farm-level assessment of labor and mechanization in Eastern and Southern Africa. *Agronomy for Sustainable Development*, *39*(2), 1-13.

Blakemore, Berenbaum, S. A., & Liben, L. S. (2009). *Gender development*. Psychology Press. https://doi.org/10.4324/9780203889756

Carroll, Stephens, C. A., Stripling, C. T., Sorochan, J. C., & Brosnan, J. T. (2021). Women in Turf: A Qualitative Study Examining How Women Have Sustained Their Leadership Role in the Turfgrass Industry. *Journal of Agricultural Education*, *62*(4), 139–. https://doi.org/10.5032/jae.2021.04139

Chrisler, & McCreary, D. R. (2012). *Handbook of Gender Research in Psychology: Volume 1: Gender Research in General and Experimental Psychology.* Springer New York.

Dawadi, S., Shrestha, S., & Giri, R. A. (2021). Mixed-methods research: A discussion on its types, challenges, and criticisms. *Journal of Practical Studies in Education*, *2*(2), 25–36. https://doi.org/10.46809/jpse.v2i2.20

Doss, Meinzen-Dick, R., Quisumbing, A., & Theis, S. (2018). Women in agriculture: Four myths. *Global Food Security*, *16*, 69–74. https://doi.org/10.1016/j.gfs.2017.10.001

Fróna, D., Szenderák, J., & Harangi-Rákos, M. (2019). The challenge of feeding the world. *Sustainability*, *11*(20), 5816.

Gray, & Kevane, M. (1999). Diminished Access, Diverted Exclusion: Women and Land Tenure in Sub-Saharan Africa. *African Studies Review*, *42*(2), 15–39. https://doi.org/10.2139/ssrn.1096247

Hentschel, Braun, S., Peus, C., & Frey, D. (2018). The communality-bonus effect for male transformational leaders - leadership style, gender, and promotability. *European Journal of Work and Organizational Psychology*, *27*(1), 112–125. https://doi.org/10.1080/1359432X.2017.1402759

Huyer. (2016). Closing the Gender Gap in Agriculture. *Gender, Technology and Development*, *20*(2), 105–116. https://doi.org/10.1177/0971852416643872

Kilic, T., Winters, P., & Carletto, C. (2015). Gender and agriculture in sub-Saharan Africa: Introduction to the special issue. *Agricultural Economics*, *46*(3), 281–2 84. https://doi.org/10.1111/agec.12165

Klain, & Chan, K. M. A. (2012). Navigating coastal values: Participatory mapping of ecosystem services for spatial planning. *Ecological Economics*, *82*, 104–113. https://doi.org/10.1016/j.ecolecon.2012.07.008

Krumboltz, J. D., Mitchell, A. M., & Jones, G. B. (1976). A social learning theory of career selection. *The counseling psychologist*, *6*(1), 71-81

Kuma, Dereje, M., Hirvonen, K., & Minten, B. (2019). Cash Crops and Food Security: Evidence from Ethiopian Smallholder Coffee Producers. *The Journal of Development Studies*, *55*(6), 1267–1284. https://doi.org/10.1080/00220388.2018.1425396

Leder. (2022). Beyond the "Feminization of Agriculture": Rural out-migration, shifting gender relations and emerging spaces in natural resource management. *Journal of Rural Studies*, *91*, 157–169. https://doi.org/10.1016/j.jrurstud.2022.02.009

Lippman, L. H., Anderson Moore, K., Guzman, L., Ryberg, R., McIntosh, H., Ramos, M. F., Caal, S., Carle, A., & Kuhfeld, M. (2014). Flourishing children. *SpringerBriefs in Well-Being and Quality of Life Research*. https://doi.org/10.1007/978-94-017-8607-2

Maggio, Mastrorillo, M., & Sitko, N. J. (2022). Adapting to High Temperatures: Effect of Farm Practices and Their Adoption Duration on Total Value of Crop Production in Uganda. *American Journal of Agricultural Economics*, *104*(1), 385–403. https://doi.org/10.1111/ajae.12229

Martin-Guay, M. O., Paquette, A., Dupras, J., & Rivest, D. (2018). The new green revolution: sustainable intensification of agriculture by intercropping. *Science of the total environment*, *615*, 767-772.

Mnimbo, T. S., Lyimo-Macha, J., Urassa, J. K., Mahoo, H. F., Tumbo, S. D., & Graef, F. (2017). Influence of gender on roles, choices of crop types and value chain upgrading strategies in semi-arid and sub-humid Tanzania. *Food Security*, *9*(6), 1173-1187.

Mugisha, Sebatta, C., Mausch, K., Ahikiriza, E., Kalule Okello, D., & Njuguna, E. M.

(2019). Bridging the gap: decomposing sources of gender yield gaps in Uganda groundnut production. Gender, Technology and Development, 23(1), 19–35. https://doi.org/10.1080/09718524.2019.1621597

Naybor, D. (2010). *Seeds of crisis: Gender restrictions and agriculture: A study of Kyakibuta,Uganda*. State University of New York at Buffalo.

North Jersey Transportation Planning Authority. 2018. Innovations in public involvement tips and best practices: Participatory mapping. Retrieved from https://www.njtpa.org/getmedia/817ffabc-02b4-4f8b-98ed-d0211dc84de7/ParticipatoryMapping.pdf.aspx

Ojiewo, Janila, P., Bhatnagar-Mathur, P., Pandey, M. K., Desmae, H., Okori, P., Mwololo, J., Ajeigbe, H., Njuguna-Mungai, E., Muricho, G., Akpo, E., Gichohi-Wainaina, W. N., Variath, M. T., Radhakrishnan, T., Dobariya, K. L., Bera, S. K., Rathnakumar, A. L., Manivannan, N., Vasanthi, R. P., … Varshney, R. K. (2020). Advances in Crop Improvement and Delivery Research for Nutritional Quality and Health Benefits of Groundnut (Arachis hypogaea L.). *Frontiers in Plant Science*, *11*, 29–29. https://doi.org/10.3389/fpls.2020.00029

Okello, D. K., E. Monyo, C. M. Deom, J. Ininda, and H. K. Oloka. 2013. Groundnuts production guide for Uganda: Recommended practices for farmers. National Agricultural Research Organisation, Entebbe.

Okello, D. K., Okori, P., Puppala, N., Ureta, B. B., Deom C.M., Ininda, J., Anguria, P., Biruma, M., & Asekenye, C., 2014. Gorundnuts seed production manual for Uganda. National Agricultural Research Organisation, Entebbe.

Okonya, J. S., & Kroschel, J. (2014). Gender differences in access and use of selected productive resources among sweet potato farmers in Uganda. *Agriculture & Food Security*, *3*(1), 1-10.

Owusu, & Bravo-Ureta, B. E. (2022). Gender and Productivity Differentials in Smallholder Groundnut Farming in Malawi: Accounting for Technology Differences. *The Journal of Development Studies*, *58*(5), 989–1013. https://doi.org/10.1080/00220388.2021.2008364

Plunkett, R., Leipert, B. D., & Ray, S. L. (2013). Unspoken phenomena: Using the photovoice method to enrich phenomenological inquiry. *Nursing Inquiry*, *20*(2), 156-164.

Quisumbing, Meinzen-Dick, R., Raney, T. L., Croppenstedt, A., Behrman, J. A., & Peterman, A. (2014). *Gender in Agriculture Closing the Knowledge Gap* (Quisumbing, R. Meinzen-Dick, T. L. Raney, A. Croppenstedt, J. A. Behrman, & A. Peterman, Eds.). Springer Netherlands. https://doi.org/10.1007/978-94-017-8616-4

Shiferaw, B., Muricho, G., Okello, J., Kebede, T. A., & Okecho, G. (2010). Adoption of

improved groundnut varieties in Uganda.

Stephens, C. (2021). WE5. 1: Barriers and opportunities for youth engagement and empowerment in groundnut value chains in Uganda.

Sutton-Brown, C. A. (2014). Photovoice: A methodological guide. *Photography and Culture*, *7*(2), 169-185.

Uganda Bureau of Statistics (UBOS). 2019. Uganda Bureau of Statistics: Enhancing quality of life and use. Retrieved from https://www.ubos.org/.

United Nations Population Division (UNDP). 2017. World Population Prospects and Database. https://esa.un.org/unpd/wpp/Download/Standard/Population/ (accessed 31 Jul. 2018).

USAID. 2016. Youth engagement in agricultural value chains across Feed the Future: a synthesis report. Leveraging Economic Opportunities report No. 46.

Wang, & Burris, M. A. (1997). Photovoice: Concept, Methodology, and Use for Participatory Needs Assessment. *Health Education & Behavior*, *24*(3), 369–387. https://doi.org/10.1177/109019819702400309

Wanjala. (2014). Gendered Asset Inequalities in Africa. *Development (Society for International Development)*, *57*(3-4), 472–480. https://doi.org/10.1057/dev.2015.26

Warner, C. 2015. Participatory Mapping: A literature review of community-based research and participatory planning. Social Hub for Community and Housing Faculty of Architecture and Town Planning Technion.

Zakaria. (2017). The drivers of women farmers' participation in cash crop production: the case of women smallholder farmers in Northern Ghana. *The Journal of Agricultural Education and Extension*, *23*(2), 141–158. https://doi.org/10.1080/1389224X.2016.1259115

# Appendices

Appendix 1: Individual Interview Questions

**[Questions related to Empowerment]**

**Q1:** We are really interested in your views on empowerment. How do you describe empowerment?

**Q2:** How has being involved in this process influenced your sense of empowerment?

**Q3:** What part of this process did you feel most empowered?

**Q4:** Being a part of this project, you were able to discuss with others your photos. How has that changed your participation in the gnut process?

**Q5:** How do you view your role in the peanut value chain has changed since beginning this project?

**Q6:** According to you, describe what being a youth is

**Q7:** What are the challenges of being young in the Groundnut Value Chain

**[Questions related to the use of smartphones]**

**Q9:** Is this your first smartphone?

**Q10:** How has your life changed having a phone?

**Q11:** What problems did you encounter from having a phone?

**Q12**: What social media do you like to use on your phone?

**Q13:** Can you estimate how long you might spend on your phone daily?

**Q14:** What opportunities came from having a phone?

**[Questions related to the photovoice journey]**

**Q15:** What was the best part of being involved in the photovoice process?

**Q16:** What was the worst part/challenges of the photovoice process?

## Appendix 2: Focus Group Questions

**Q1:** Where do you believe women do the most work in the value chain?

**Q2**: Where do you believe men do the most work in the value chain?

**Q3:** What things make it difficult for young men in agriculture?

**Q4:** What things make it difficult for young women in agriculture?

**Q5:** How has being a part of photovoice made you feel?

**Q6:** What more do you expect to gain from this project?

**Q7:** What support would you like to have from the government?

## Appendix 3: Figures and Tables

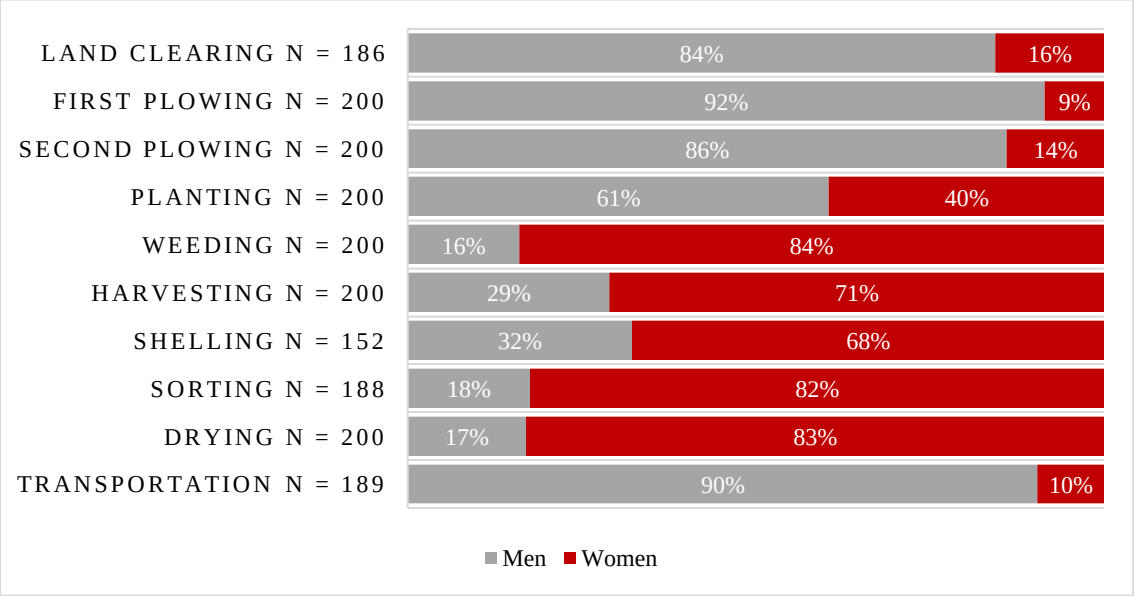


Figure 1. Survey responses assessing gender roles among the various stages of the groundnut value chain

Figure 2. Photovoice submission by 7MN: A group of young men using a plow and ox team to open a lan plot, Nwoya District, Uganda, October 2021

Figure 3. Photovoice submission by 9MN: A tractor preparing a plot of land, Nwoya District, Uganda, April 2021

Figure 4. Photovoice submission by 4MT:  A group of women using hand hoes to weed a garden plot, Tororo District, Uganda, May 2021

Figure 5. Photovoice submission by participant 9MN: A group of men and young boys planting groundnut seeds, Nwoya District, October 2021

Figure 6. Photovoice submission by participant 3FN: A women and young girl weeding a groundnut plot, Nwoya District, Uganda, July 2021

Figure 7. Photovoice submission from participant 3MT: A man using a backpack to spray herbicide on weeds in a garden plot, Tororo District, Uganda, July 2021

Figure 8. Photovoice submission by 3MT: A group of women sorting through groundnut seeds, Tororo District, Uganda, July 2021

Figure 9. Photovoice submission by 3FN: A woman transporting a groundnut sack on her head, Nwoya District, Uganda, April 2021

Figure 10. Photovoice submission by 7FT: Women loading groundnut sacks on a bicycle for transportation, Tororo District, Uganda, February 2021

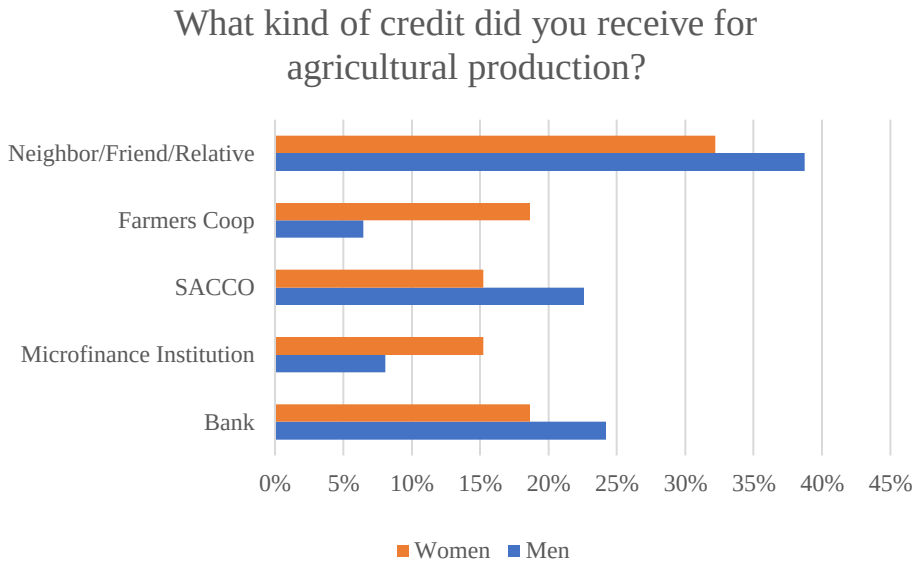


Figure 11. Survey responses: What kind of credit did you receive for agriculture production?

Table 1. Survey Reponses: Do you own or have access to land?

| District | Gender | No | Yes | N |
|---|---|---|---|---|
| Tororo | Male | 24% | 76% | 129 |
| | Female | 26% | 74% | 84 |
| | Total | 25% | 75% | 213 |
| | | | | |
| Nwoya | Male | 13% | 87% | 119 |
| | Female | 22% | 78% | 81 |
| | Total | 17% | 83% | 200 |
| | | | | |
| Total | Male | 19% | 81% | 248 |
| | Female | 24% | 76% | 165 |
| | Total | 21% | 79% | 413 |

Table 2. Survey Responses: Have you accessed credit?

| District | Gender | No | Yes | N |
|---|---|---|---|---|
| Tororo | Male | 55% | 45% | 130 |
| | Female | 47% | 53% | 86 |
| | Total | 52% | 48% | 216 |
| | | | | |
| Nwoya | Male | 50% | 50% | 119 |
| | Female | 46% | 54% | 78 |
| | Total | 48% | 52% | 197 |
| | | | | |
| Total | Male | 53% | 47% | 249 |
| | Female | 46% | 54% | 164 |
| | Total | 50% | 50% | 413 |

Table 3. Survey Responses: Societal Bias in the groundnut value chain

| Survey Responses | Number of responses |
|---|---|
| Weeding is for women | 59 |
| Planting is for women | 10 |
| Clearing land and ploughing is for men | 9 |
| Drying groundnuts is for women | 9 |
| Planting is for men | 5 |
| Winnowing is for women | 5 |
| Men sell off produce | 4 |
| Women are not allowed to go to the garden during menstruation period | 3 |
| Growing groundnuts is for women | 2 |
| Loading/off-loading is for men | 2 |
| Sorting gnuts is for women | 2 |
| Men take gnuts to market | 2 |
| Clearing and removing thrush is for women | 1 |
| Grinding is done by men | 1 |
| Women should harvest | 1 |
| Men are more involved in harvesting | 1 |
| Men distribute gnuts to various locations | 1 |
| Land is not guaranteed | 1 |
| Small scale selling of gnuts is for women | 1 |
| Spraying is done by men | 1 |
| Pregnant women should not plant groundnuts | 1 |
| Women are not allowed in participating and selling of groundnuts | 1 |

# CHAPTER TWO
# ASSESSING THE GROUNDNUT VALUE CHAIN AND YOUTH EMPOWERMENT IN UGANDA UTILIZING PHOTOVOICE

## Introduction and Background

*Youth trends in African agriculture*

By 2030, researchers estimate that 440 million youth will enter the labor market (Yami et al., 2019). Those living in rural areas are at a disadvantage when searching for job opportunities (Yami et al., 2019). In Africa, this rural-urban divide has impacted the economic sector and activities in which youth engage. According to the Consultative Group on International Agricultural Research (CGIAR) system, scientific research involving youth in agriculture is limited (Pyburn et al., 2015; Giuliani et al., 2017). Definitions of youth vary from source to source. The United Nations considers youth to be from 15 to 24 years old, while the African Union identifies youth as those between 15 and 35 years old (Pyburn et al., 2015). The United Nations described 'youth' as the period of transition between childhood and adulthood. It views youth as a more fluid category than other fixed age groups (Bersaglio & Kepe, 2015). Pyburn et al., (2015) reports that worldwide, 55% of youth live in rural areas, while in sub-Saharan Africa, 70% of its youth population reside in rural communities. With approximately 60% of its residents below 35 years old, sub-Saharan Africa also houses the highest rate of youth poverty (Geza et al., 2021).

Agriculture remains the driving economic force for many of the low-income economies in Africa. Despite the prevalence of agriculture in both rural and urban communities, youth seldom engage in farming and other types of agribusinesses (Dercon & Gollin, 2014; Pyburn et al., 2015). Researchers have documented barriers and challenges youth face when entering the agricultural sector. Geza et al. (2021) states several key challenges to youth involvement in agriculture include lack of infrastructure and access to financial and education resources, as well as a low availability of suitable farming land. There lies a gap between available work opportunities in small communities and people traveling to find gainful employment in bigger cities. Amare et al. (2021) and Kaag et al. (2019) state African youth wish to improve their livelihoods, thus move to urban areas. This increases congestion within cities, while also creating inequalities between urban and rural communities (Amare et al., 2021). Kaag et al. (2019) mentions those who migrate often send money back home to invest in land and other resources.

Loga et al.'s (2021) study in midwestern Uganda identified factors that impede youth engagement within agriculture. The authors identified soil fertility as the most important factor creating barriers for youth participation in agriculture. The government-supported groups ranked limited access to land and insufficient inputs as the second and third most significant barriers for youth participation, while the non-governmental supported groups chose lack of technical guidance as second and insufficient inputs as third (Loga et al., 2021). In comparison, researchers in Morocco observed realities, perceptions, and challenges facing rural youth involved in dryland Agricultural Livelihood Systems (ALSs) (Giuliani et al., 2017). Moreover, Giuliani et al., (2017) identified youth have insufficient access to productive resources such as land, water, and capital. Overall, participants stated they had access to land through their families, while those who had plots of their own ranged from less than one hectare to five hectares (Giuliani et al., 2017). Despite these research claims originating in separate African countries, we assume these key issues are widespread in the global south, including Uganda.

*Uganda, youth, and groundnuts*

Uganda is a land-locked country in East Africa. It relies heavily on agriculture, employing 72% of the labor force and accounting for 22% of the GDP (Antonelli et al., 2022). In rural Uganda, small-scale farming is the main form of agriculture and a major source of income for households (Dercon & Gollin, 2014). Here, groundnuts (*Arachis hypogaea* L.**)** are cultivated as a common cash crop in areas of food insecurity and agricultural-dependent communities (Thuo et al., 2013). Groundnut, also known as peanut, is a legume with a variety of important uses. Most importantly, it serves as a protein-rich resource for humans and livestock (Singh & Diwakar, 1993). In Uganda, groundnut is the second most important legume in terms of volume of production (Okello et al., 2010). In 2019, Uganda produced approximately 5000 kg/ha of groundnuts on 32,000 hectares of land (Food and Agriculture Organization, 2019). Because groundnuts generally require few inputs, it is an advantageous crop for many smallholder subsistence farmers in Uganda, especially in the drier northern and eastern districts, where poverty levels tend to be. Constraints to groundnut production include limited access to improved groundnut varieties and limited access to extension services (Kakeeto et al., 2019). In addition to fluctuating markets, households face distress from increasing natural disasters such as droughts, heatwaves, floods, and storms due to climatic changes (Hisali et al., 2011).

In 2014, Uganda's last census reported a population size of 34.6 million, with a 3.0% growth rate from 2002. By 2021, estimates of Uganda's population topped 45 million (World Bank, 2023). Overall, Uganda's population is fairly young. Sixty-nine percent of Uganda's population are under the age of 25 (United Nations Population Division, 2017). Young people are thus vitally important to the future of economic growth in Uganda - and the agriculture sector remains the most important driver of economic growth in Uganda. Half of Ugandan youth currently work in or around an agriculturally related field, but this number is declining despite increasing youth unemployment rates (Ahaibwe et al., 2013). Trends such as this are not unique to the country of Uganda. In Indonesia, researchers are documenting the decline of youth participation in their agricultural industry (Akbar et al., 2020). Engaging youth in agriculture will not only affect the production stages of value chains, but also markets, transportation of agricultural products, sales, and production developments. "Youth plays an active role as a moral force, social control, and agent of change in all aspects of national development," stated Akbar et al., (2020).

The question then remains as to whether there are ways to empower and equip youth to remain in rural areas, particularly through provision of opportunities for youth in the agriculture sector. Articulating agriculture in terms of value chains from *farm to fork* is a beneficial approach to reframing agriculture as not simply *plows and cows*. Identifying entry points for young people to engage in agricultural value chains is a good place to start. Entry points may include ones that incorporate information and communication technologies, along with innovation and business development skills. Entry points may include opportunities in input supply and financial services, digital tools to improve production, or post-farm-gate improvements in transportation, processing, product development and marketing.

## Purpose and Objectives

The purpose of this study is to analyze youth involvement in groundnut value chain in Uganda using a mixed-methods approach. The two objectives of this research are to 1) utilize the photovoice methodology to increase levels of youth involvement within the groundnut value chain and 2) assess feelings of empowerment levels among Ugandan youth in the groundnut value chain. The hypothesis was that by providing cameras and instruction, youth can be empowered in their communities via photovoice. The central research question posed to participants was:

- *"How do Uganda youth feel about their involvement in the groundnut value chain?"*

## Theoretical Framework

This research uses the youth empowerment theory outlined by Jennings et al. (2006) to frame its methods. According to Jennings et al. (2006), empowerment refers to the "individuals, families, organizations, and communities gaining control and mastery, within the social, economic, and political contexts of their lives, in order to improve equity and quality of life," (pg. 32). Therefore, the six critical dimensions of Critical Youth Empowerment (CYE) are: 1) creating a welcoming and safe environment, 2) provide meaningful participation and engagement, 3) create opportunities for equitable power-sharing between youth and adults, 4) engage youth in critical reflection on interpersonal and sociopolitical processes, 5) provide participation in sociopolitical processes to effect change, and 6) engage youth in integrated individual and community level empowerment (Jennings et al., 2006). In order to empower youth, identifying methods that assess and operationalize youth empowerment are required.

## Methodology

### *Photovoice Methodology*

Photovoice is a methodology that allows participants to use photography as a technique to identify and represent their community. Wang and Burris (1997) state that the photovoice methodology "uses the immediacy of the visual image to furnish evidence and to prompt an effective, participatory means of sharing expertise and knowledge" (pg. 369). Since its conception, the photovoice methodology has been a multidisciplinary tool used in many areas of research. It offers a qualitative approach that engages participants, especially women, in the data collection process (Gervais & Richard, 2013). In Rwanda, Gervais and Richard completed a photovoice consultation to assess women's involvement in agricultural development. They used this research methodology to address barriers to agricultural productivity women face and women farmers' perspectives on seed production. In doing so, these researchers used case studies to analyze the advantages and limitations of photovoice research. They concluded it is possible to use the photovoice methodology to engage women in their production and disseminate information to stakeholders and policy makers (Gervais & Richard, 2013).

While photovoice has also been used to enhance participation and stimulate social change for women's empowerment (Budig et al. 2018), human well-being (Masterson, Mahajan & Tengo 2018), and health outcomes (Evans-Agnew & Rosemborg, 2016), there is limited evidence of its application as a research methodology for youth empowerment in agricultural value chains. The use of a youth engagement tool that has been previously field tested (Jennings

et al., 2006) facilitates the evaluation of whether youth can be empowered through photovoice in peanut value chains. By reflecting on their own roles within the value chain and the roles of others, participants could gain more knowledge about their industry. This thesis research is a part of the broader project, *Photovoice for Youth Empowerment in Peanut Value Chains in Uganda*, conducted from 2019 to 2023 by the University of Tennessee, Knoxville (UTK), Makerere University and the National Agricultural Research Organisation (NARO).

*Research Design*

In March 2019, 60 original youth participants were selected by project coordinators in the districts of Nwoya and Tororo (30 from Nwoya and 30 from Tororo). The training was conducted twice - once in each district with all 30 participants to develop group maps of the groundnut value chain, how they understand the groundnut value chain to be composed, decision-making processes related to the groundnut value chain, and beliefs related to the groundnut value chain topic. Youth also developed location maps of the groundnut value chain encompassing their community. The purpose of this training was to provide a bottom-up approach to leading change within a community.

From the original pool of 60 youth participants, UTK and Makerere University used the guidance of the lead peanut breeder from NARO to select 15 youth from each district to participate in photovoice training. This sampling was stratified by sex (men and women) and by age category (aged 20-24 and aged 25-29), so that there were approximately equal numbers by sex and age in the experiment groups in each district. Once stratified into the four groups, random sampling was used, so that every youth (from the original 30 in each district) had a chance of being selected to be in the experiment group for each district. Those that received photovoice training are referred to as Tororo 1 (T1) and Nwoya 1 (N1). The remaining participants who only received participatory map training are referred to as Tororo 2 (T2) and Nwoya 2 (T2).

Furthermore, photovoice participant codes are identified by a number, and ‘M’ or ‘F’ to identify gender, followed by ‘N’ or ‘T’ to identify what district they are from (ex. 2FT, 4MN). These participants were trained on how to use their smartphones (Android) to capture their lived experiences through taking photos. The training lasted approximately 2.5 weeks. The selected youth were provided with smartphones (purchased in Uganda) containing cameras. Youth were instructed as to how often and where to charge their phones, at rural charging stations. Each youth participant took photos of the groundnut value chain in the district he or she is located. Youth participating in the photovoice methodology were asked to document, by taking photographs in response to two questions: a) Actual: What matters most to you in your ongoing engagement in peanut value chains? b) Ideal: What do you need to be empowered to engage further in peanut value chains?

Following training and instruction, the youth participants were asked to take photos over the course of one year, between December 2020 and December 2021. In total, 866 photos were collected that were deemed eligible for photovoice discussions. Four hundred and three photos were collected from Nwoya and 463 photos were collected in Tororo.

*Mixed-methods*

This research uses a mixed method approach where both qualitative and quantitative data are collected, analyzed, and interpreted together to help validate the findings of each method. After the collection of the quantitative data, further data were collected through qualitative methods to see if results matched or countered the quantitative results. This research design allowed for the two parallel data sets to merge and support or oppose the research results and objectives (Piccioli, 2019; Bazeley & Kemp, 2012).

This research study used photovoice as a novel methodology, integrated with the youth empowerment framework outlined by Jennings et al. (2006). In order to empower youth, identifying methods that assess and operationalize youth empowerment is required.

*Quantitative Methods*

In addition to the photovoice training and participatory mapping, all 60 participants received a pre-survey in April of 2021 and an identical post-survey in January of 2022. The survey was created using elements of the *Flourishing Children Positive Indicators* development tool to assess youth empowerment pre- and post-intervention (Lippman et al., 2014). This tool was screened by USAID as a measurement tool for positive youth development and is publicly available at no cost.

Figure 8 outlines the concepts measured among the participatory group. The seven concepts measured include goal orientation, hope, life satisfaction, environmental stewardship, initiative taking, diligence and reliability and altruism. The survey questions were measured through Likert scale (1-5) questions. Example survey questions have been provided in Figure 12.

*Qualitative Methods*

To keep track of the photovoice collection, four field visits were conducted to allow participants to present the photos they had taken in front of their peers. These field visits occurred in March 2021, April 2021, September 2021, and July 2022. Participants were instructed to present one to five photos and the other participants were able to seek feedback from the project team. Through the four field visits conducted, the project team facilitated group discussions about the photovoice photos collected. Participants were able to ask questions and listen to discourse on how to improve their groundnut yields. At the end of each field visit, participants were instructed to take photos of a particular step of the value chain. This allowed participants to see parts of the value chain they may not have originally participated in. The discussions were recorded and transcribed for further analysis.

After the post-survey was distributed to the control group and experimental groups, individual interviews and focus groups were completed with groups that received photovoice training (T1 and N1) during a field visit in July 2022[4]. Individual interview included questions on feelings of empowerment, cell phone usage, and participants' experiences with the photovoice methodology. The individual interviews lasted between 15 and 20 minutes for each participant and were audio-recorded for later analysis. All participants were asked the same questions (Appendix A). Interviews were then transcribed through a transcription service and inter-coded using NVivo software.

[4] Individual interview questions and focus group questions are located in the appendix

Two gender-disaggregated focus groups were conducted in each district. In total, 30 focus groups members were interviewed from their respective districts of Nwoya and Tororo. Both male and female focus groups were asked the same questions (Appendix B), with each lasting between 25 and 40 minutes. The male focus group was led by a male researcher, while the female focus group was led by a female researcher. This was to ensure there was no bias in discussion and that participants felt free to share their thoughts and feelings among participants of the same gender. Focus group interviews were audio-recorded and transcribed using a transcription service. They were inter-coded between research members to identify themes that emerged.

*Challenges and limitations*

In terms of research methods and field visits, there were several challenges. First, the women participants spoke a lower level of English than their male counterparts. This made interviewing and communication more difficult. This was especially prevalent in the more rural district of Nwoya. Although the official language of Uganda is English, many participants spoke local languages. Well-trained translators would be important for further research.

Participants described issues with going out into their communities to take photos. Many of the residents they tried to photograph questioned the reasoning and sometimes asked for money in return for taking photos. Participants were encouraged to take photos of their own family units to reduce this challenge. In addition, a few participants had a difficult time charging their phones and/or breaking them. Several participants complained that their phones were slow and that it cost too much to travel from town to town if they did not have means of transportation.

## Results

### Photovoice methodology

Objective one of this study was to utilize the photovoice methodology to increase youth involvement within the groundnut value chain. Findings indicate that participants increased their knowledge of the groundnut value chain, while also becoming more involved with society through the smartphones that were given by the project team.

Several youths gave examples of how being involved in photovoice led to their greater involvement in the groundnut value chain. These examples were throughout the various value chain stages. For example, in terms of land preparation, participant 2MT commented on the rocks in the photo and recalled the group's first photovoice group discussion. "According to our first meeting here, we got recommendation that when you are selecting a site, it's better to get a place where the soils are fine; not too much clay or rocky but loam sandy soils," he stated, "…if you find such a farmer, advise them to grow something like maize, but gnuts and cassava cannot grow in such a place," (Figure 13).

Another example that youth highlighted is improvement in production and processing practices. Participant 6MN submitted a photo of damaged groundnut plant. Through the photovoice discussion, members learned that this could be caused by termite infestation (Figure 14). In addition, Participant 6MN commented on the size of his land and his production increase.

> Before, my production was low. But now each season I have planted more than two acres. But before I used to plant a half, a quarter, or one. But now I have started planting two and above. And also the management because they have given us the knowledge on how to check whether they have been affected.

During the weeding stages of the groundnut chain, Participant 11MN stated that his involvement in other parts of the value chain have shifted as he has learned more about where he could help improve his own garden.

> Yeah, there is a time I felt [photovoice] empowered me too a lot because when I see the garden, I am helping my wife even in the gnut garden, even doing weeding. So it has empowered me because it has proved there is other work, which was not made for women only. So, you have to help your woman doing some work.

The harvesting stages of groundnut production were also improved through the photovoice process. Figure 15 was submitted by 2FN, showcasing another farmer's methods of drying groundnuts on plastic sacks. 2FN stated that she had learned this was a bad practice if you are planning to use the seeds for germination again. She informed the farmer of the methods she had learned from project leaders on properly drying groundnuts on tarpaulins instead. In the interview, 2FN stated:

> Yes, we like [photovoice] because now it has given us knowledge. Knowledge of how to grow these groundnuts. By the time we started this project, Dr. Okello started teaching us about diseases and growing groundnuts. As for me, I was not even knowing the effect on growing groundnuts and the diseases that affect growing groundnuts. Their names. By this time, I know them all well. We get also to know variety and variety of seeds, the good ones, and bad ones.

Participants identified areas where the groundnut stages can be improved through different practices. In both Nwoya and Tororo, there was discussion surrounding gender roles and the lack of male participation in certain stages of the groundnut value chain. In an example of this, Figure 16 is a woman holding her baby, making it difficult to hand shell groundnuts while her two male companions continue to work. In addition to challenges with gender in the value chain, participant 11MN commented on the high price of fuel, which discourages young farmers (Figure 17). "This is what our youth don't like. This man is transporting his gnuts from the garden taking it home because of the price of fuel is high and he cannot afford to motorbike," stated 11MN.

*Identifying challenges in the Groundnut Value Chain*

During the photovoice collection, photos displayed key challenges youth participants face within the districts of Nwoya and Tororo. For both districts, three main issues were raised. The first, and most important, is the issue of accessing land, which is a major difficulty for young

farmers. Compared to Nwoya, Tororo has less land availability, so youth farmers must rent or work on small pieces of land if they wish to grow their own plot. One participant from the men's focus group in T1 stated:

> The generation that we are going in, there is almost nothing to inherit. So we are looking at that as a big problem in the near future that is going to render most people into lives of absolute poverty because they don't have land.

Land inheritance was a large topic of discussion in both the focus groups and individual interviews. Differences arise in inheritance when it comes to age and gender, according to both male and female participants. Participant 1MT stated:

> That's one of the challenges, in most cases, it's land. Because in Uganda, mostly, okay to a man, fine, I'm entitled to inheriting land from my parents. But in most cases, you only have a chance when they die. Yeah. And that's why most of the young people we have, we've got news that young people have killed their own parents because they want to inherit what they have. So in most parents are very greedy. They can't allow you to access land. He rather hire the land to someone else than giving you the son to practice that.

Female inheritance is less likely than male inheritance when it comes to land, as tradition places land into the hands of the next male generation in fear that a woman may sell the piece of land if she is married. Female participants in the Nwoya focus group emphasized this issue. "Traditionally, it [the land] goes to the son." The interviewer asked what happens if there are only daughters. The participant responded, "… they don't give you that full authority to replace it. You can be using it, but they [women] don't own." The men's focus group in T1 also stated similar ideas. A participant said:

> Okay, the mindset in the community that women are not supposed to inherit the land, [it] weakens even their ownership potential. You find even if the woman is given land, they assume they should sell it and maybe go and get married somewhere…making people to [question] to trust the women with the land.

N1 participants have more land availability than those in T1. The interviewer asked the male focus group about the issue of land availability in the Nwoya district. "That one [land] is not [an issue] in our area here, because we have a chunk of land." stated a male Nwoya participant.

The second most important issue is access to capital. Nwoya participants state the youth face a difficult time accessing loans and credit services to help their groundnut production. Individual interviews from two participants from N1 and T1 mentioned their lack of capital.

> Then you also have capital, the, you know, farming, real agriculture you need some money to put in in order for you to get something, something better out of it. So young men do not have capital anyway, they do not have. Then also school. Like for me actually I spent much of my time at school and when I came back I really had to start from zero. So you find that sort of disrupts you. *Participant 1MT*

> Yeah, financial problems. We don't have capital. So for youth starting a business or farming is a big problem because of the capital. The machine for working the garden, some of others they are lacking the knowledge even. Yeah, for us we have acquired [knowledge], but some others are lacking knowledge. *Participant 9MN*

In both districts, female participants are concerned with finding additional employment to supplement their groundnut production. In Nwoya, some women run hair salons for additional income (Figure 18). In the women's focus group N1, one participant stated, "Men have at least different options of getting money that can help them with the farm. Well, but for women it is limited."

In the women's focus group in Tororo, one participant said, "…it is difficult because when female youth, a young woman, has not enough capital, it is a bit difficult for her to begin work." Women find jobs in tailoring and other retail options, while men can make profit as taxi services, like motorbikes.

Finally, both districts also share the same issue of pests, like rats, that make the storing of groundnuts difficult. Traditional methods of storing groundnuts in sacks, usually laid directly on the ground or pallets, make them easy targets for pests. Figure 19 shows the method some farmers use to store groundnut sacks.

**Assessing feelings of empowerment**

Objective two of this study was to assess feelings of empowerment within the groundnut value chain. We completed this through the use of an empowerment survey in conjunction with the photovoice methodology.

*Empowerment survey*

The empowerment survey was administered before and after the utilization of the photovoice methodology. Table 4[5] includes the seven concepts measured in the youth empowerment surveys given to the T1 and N1 participants. Results are gender disaggregated to show differences between male and female responses. The numbers displayed in Table 4 show the mean results from the pre- and post- surveys. The Likert scale questions ranged from 1 (strongly disagree) to 5 (strongly agree). Overall, the post-survey results showed a slight decline in average for all empowerment scales. The total number of participants (N) varied between pre- and post- surveys. One male participant dropped out of the project, while another male participant passed away in the middle of the year. Three female participants dropped out of the project due to various reasons.

*Status within the community*

As photovoice members, participants were a part of a cohort and met peers from around their community. They increased their presence in surrounding areas by visiting farms and taking photos. Several members said this made them more well known in their village and identified them as someone who had knowledge of agricultural practices This theme was common in both

[5] All tables and figures are included in the appendix

the Nwoya and Tororo districts, despite Nwoya being more rural with a lower population density.

According to participants, the use of smartphones elevated their community status outside of agricultural production. For example, Participant 9MN said, “It has changed my life, I have moved now to the modern world. Because I can acquire many, many things from the smartphone. Like news, I can read news from my smartphone.” Participant 2FT said:

> Yeah, because they [her community] don't see me as a common, common girl. The common lady in the community, they see me with a smartphone. I share with them what I'm going to do. And after taking a few of them and out of that, I really have seen that that phone has really changed my life and I'm really happy because that has made me learn more and has made my community also learn more.

Participants 11MN and 1MN included having a smartphone added to their image. Participant 11MN stated, “It has given us courage in the community because using those phones someone can say now this one is now having something.” Participant 1MN said:

> The time I was not included in this project, I was not exposed to the community. Now when I come into the project, then I get so many things. One is I get more friends in the community and also technology.

Mobile phones can also be used a source of income, as displayed in Figure 20. Participant 3MN stated that this photo displayed a man who charges phones to make money to buy seeds for his garden. He can do this while watching his animals, which can be seen in the background of the photo.

Participants 2FT and 6MT reflected on being able to help their community with the knowledge they have gained in speaking with groundnut experts during field visits and watching photo presentations from their peers. Participant 6MT stated, “This has actually helped me to change the lives of many people, especially the families out there, because most of them do not know what it takes for them to improve on the quality of gnut [groundnut] production.”

To encourage self-reflection, the interviewer asked participants if they could describe what being a youth in Ugandan agriculture meant to them. Both Nwoya and Tororo participants had similar responses, and there were few differences between male and female replies. Overall, the common theme from participants is that youth have an abundance of energy that older generations might lack, as well as more capacity to learn new skills. Six participants from Nwoya and one participant from Tororo related the term “youth” to being of a certain age bracket and responsibilities related to being a young adult. Participant 2FT stated:

> According to me, a youth is a person who is really young in Uganda. When you’re a youth, you typically have to be 18 and above, and when you’re 18 and above, they expect you to be self-responsible in some aspects of life. Can dress yourself, you can plant some things for yourself, you can have a small business. That’s what is expected.

Also from T1, Participant 1MT responded:

> When you reach 18 years and above, then you're considered an adult. Though some people, they can graduate from being a child to an adult but inside their mind is still young. So it's the mindset and again, the way you conduct yourself in the community and the society that you are in.

Participants from both Nwoya and Tororo related "youth" to the ability to work and learn more easily than older generations. "You know, to be a youth is really good because you learn more as you're still young," said Participant 3FT. Participant 9MN mentioned the different methods of farming that younger generations complete versus older adults. "Yeah, because they have a new model of farming these days. Like, youth can use ox plough, yes. But old people, they don't have that energy of using ox plough. They use the tractor also. They operate the tractor," stated Participant 9MN.

3FT used her success from her groundnut plot to pay for her education. In addition to helping her own groundnut plot, she has been able to help others in her community. She stated:

> If you wanted money for paying your education and then if I want to pay my school fees, I can sell my groundnuts, I pay my fees. That's what I did for the first time. I paid my fees. Then I went to the college I did instead of teaching. And right now I opened up and I started school whereby I'm helping the community out of this groundnut work. Yeah, I did it and I'm really happy. And the community is also happy, because when I'm free, I go to my garden to check on my farm. I check. But out of that, I've got the knowledge. Because I sold the groundnuts, went to the college, and now I have the knowledge I can help the community in the other way. I help them to teach their children and I also help them to train them on what to do to achieve their best as they are as groundnuts growers.

Overall, participants felt empowered within their own communities as they improved their employment chances and became more involved within their district. Not only did they actively participate more in groundnut production but involved themselves with other activities within the community.

*Public Speaking*

In an effort to make participants comfortable with public speaking participants in both Nwoya and Tororo, participants were instructed to present their photos in front of their peers and the research team. In addition to this speaking format, they also spoke with farmers from their surrounding community as they took photos of the value chain. Several male and female participants brought this up during their individual interviews. Participant 8MN said, "When I am presenting my photos, I feel that I am empowered because now I can talk in public."

One participant from Tororo enjoyed developing her communication skills. "Going to the field, taking pictures and also interacting because of communication skills, you know, when you go in front, you speak, you know, it builds confidence." she said. Participant 3FT also stated that these skills would be useful to them after the project concluded.

> You know when you go in front, you speak, it builds confidence. Yeah and with that, tomorrow, you'll be able to address even more people. You'd be involved in politics, and you'll be able to conduct rallies and you speak to a large number of people. So it doesn't

just end from here. Yeah. So here it helps us as we come and talk to people and interact with new people. *Participant 3FT*

To conclude the photovoice collection, a community event was held in both districts to let participants present the photos they had taken to their local community. Figure 21 was taken at the community event in Nwoya as a participant presented one of his photos. Figure 22 shows the entire Nwoya photovoice team, including the community members they presented in front of and the project team leaders. A similar event was held in Tororo to allow participants the chance to present their accomplishments.

## Discussion

### Utilization of Photovoice within the value chain

Objective one of this study was to utilize the photovoice methodology to increase youth involvement in the groundnut chain. This was assessed through our qualitative methods in combination with the quantitative empowerment survey distributed by Makerere University. Results revealed that participants increased their knowledge of the groundnut value chain, while also improving their networking capabilities through the usage of smartphones. The photovoice methodology made it easier for participants to navigate data collection, despite language barriers and the COVID-19 pandemic.

The use of smartphones was a catalyst for change amongst the participant groups. Access to the internet and messaging apps allowed participants to be connected to current news and events. Participants also concluded that having a smartphone allowed them to connect to news and other social media platforms around the world. According to participant 2FT, this affected her view in the community as well. This data supports the research completed by Gervais & Richard (2013), who found that cameras allowed female participants who were illiterate to develop new skills and become engaged with the photovoice methodology

In addition to the smartphones, the photovoice methodology also encouraged members to present their photos in a public speaking format. These new experiences increased confidence and made them feel more empowered within a group setting. This was especially impactful to female participants, who commented on being nervous to speak in front of men. During the field visits, having the participants present their photos and encouraging open discussion between other participants and researchers was important to facilitate a sense of teamwork. Participants felt comfortable to ask questions, not only to their peers, but also to the researchers themselves.

The Images collected and discussed during the field visits prompted discussion that encouraged the knowledge gain. Participants remained engaged in the process and utilized their capabilities to actively improve their communities. As discussed by participants in both Nwoya and Tororo, challenges exist to youth entering agricultural value chains. Like data collected by Giuliani et al. (2017), our participants face problems entering agricultural value chains. Some of these barriers are a result of traditional customs and practices, as seen in Figures 13, 15, and 17. Both participants in Nwoya and Tororo face challenges with accessing land and capital. Nwoya had less of a challenge with available land but expressed worries about gaining credit and capital. Challenges that resulted from the data align with the scoping review completed by Geza et al. (2021), who stated that some of the challenges faced in agriculture include lack of access to

information, lack of social networks, lack of access to land, and a lack of initiative to engage youth within value chains.

Through the photovoice process, participants were introduced to new agricultural concepts and methods. This encouraged youth participation in cases like Participant 3FT, who was able to pay for her education with her groundnut profits. The importance of this research is to not keep youth in rural agricultural communities, but to broaden their overall agricultural proficiency and improve the value chains. Furthering the economic divide between rural and urban communities creates less inclusive development. This is in reference to the report written by Kaag et al. (2019), which commented on the need to address inequality reduction to improve poverty in low-income areas.

**Assessing feelings of youth empowerment**

Feelings of empowerment were monitored throughout the photovoice process. The intention of the youth empowerment survey was to calculate the changes in feelings of self through the use of photovoice. Results showed that participants felt slightly less empowered after participating in the photovoice project (Table 4). Several factors may have influenced the results from the empowerment survey. The COVID-19 pandemic occurred during the middle of the project, sending Uganda into multiple lockdowns. Participants were able to continue taking photos, but this limited field visits and interactions amongst the cohort. This could have negatively impacted the morale of participants and decreased the average of the post-survey results.

In addition to the global pandemic, participants are now more knowledgeable about the groundnut value chain. After reflecting on their experiences with agriculture, participants may feel less empowered as their awareness of challenges in the value chain have increased. When visiting the districts in person, researchers realized that a language barrier may have impacted results as well, especially for women in the more rural district of Nwoya. Further research would require a translator to actively assist participants in survey collection.

To supplement the quantitative data, the individual interviews, focus groups, and field visits gave researchers a clearer image of each participant's journey with the photovoice methodology. The qualitative results show a positive increase of self-empowerment and confidence amongst both T1 and N1 participants. These results show growth in knowledge and confidence, not only while discussing groundnuts, but within the communities too. Both Nwoya and Tororo participants showed greater awareness of the various steps in the groundnut value chain.

According to participants in both Nwoya and Tororo, being a part of photovoice resulted in the elevation of their status within their own communities. Several participants concluded that this was because they were seen taking photos around their communities. This gave them the opportunity to speak with other farmers and answer questions they may have had about their own groundnut production. Participants stated that they were able to use the knowledge that they had learned from the field visits to assist those in their area.

Identifying these areas of challenge and the personal growth of our participants show potential ways to strengthen the groundnut value chain through various interventions, which might include governmental programs and support from the private sector and extension groups. Further photovoice research should be conducted on different value chains to compare similarities between agricultural commodities throughout Africa.

## References


Ahaibwe, G., Mbowa, S., & Lwanga, M. M. (2013). Youth engagement in agriculture in Uganda: Challenges and prospects. Economic Policy Research Centre, Makerere University, Kampala, Uganda.https://www.africaportal.org/documents/10865/Youth-Agriculture-Uganda-Challenges-Prospects.pdf

Akbar, Zubair, H., & Jamil, M. H. (2020). Strategy for developing the role of youth in agriculture of Soppeng district, South Sulawesi province. *IOP Conference Series. Earth and Environmental Science*, *473*(1), 12050–. https://doi.org/10.1088/1755-1315/473/1/012050

Amare, Abay, K. A., Arndt, C., & Shiferaw, B. (2021). Youth Migration Decisions in Sub-Saharan Africa: Satellite-Based Empirical Evidence from Nigeria. *Population and Development Review*, *47*(1), 151–179. https://doi.org/10.1111/padr.12383

Antonelli, Coromaldi, M., & Pallante, G. (2022). Crop and income diversification for rural adaptation: Insights from Ugandan panel data. *Ecological Economics*, *195*, 107390–. https://doi.org/10.1016/j.ecolecon.2022.107390

Bazeley, P., & Kemp, L. (2012). Mosaics, triangles, and DNA: Metaphors for integrated analysis in mixed methods research. *Journal of mixed methods research*, *6*(1), 55-72.

Bersaglio, Enns, C., & Kepe, T. (2015). Youth under construction: the United Nations' representations of youth in the global conversation on the post-2015 development agenda. Revue Canadienne D'études Du Développement, 36(1), 57–71. https://doi.org/10.1080/02255189.2015.994596

Budig, K., J. Diez, P. Conde, M. Sastre, M. Hernan, and M. Franco. 2018. Photovoice and empowerment: evaluating the transformative potential of a participatory action research project. BioMed Central Public Health, 18: 432-440.

Dercon, & Gollin, D. (2014). Agriculture in African Development: Theories and Strategies. Annual Review of Resource Economics, 6(1), 471–492. https://doi.org/10.1146/annurev-resource-100913-012706

Dorcas Elizabeth Loga, Paul Kibwika, & Florence Birungi Kyazze. (2022). How do youth innovate to make agriculture gainful? Challenges and youth entrepreneurs in mid-western Uganda. *International Journal of Agricultural Research, Innovation and Technology*, *12*(1), 39–44. https://doi.org/10.3329/ijarit.v12i1.61030

Evans-Agnew, R. A., and M-A. S. Rosemberg. 2016. Questioning photovoice research: whose voice? Qualitative Health Research, 26: 1019-1030.

FAO, (2019). Rural youth employment and agri-food systems in Uganda. A rapid context Analysis. Rome, Italy. http://www.fao.org/3/ca5739en/ca5739en.pdf

Gervais, & Rivard, L. (2013). "SMART" Photovoice agricultural consultation: increasing Rwandan women farmers' active participation in development. *Development in Practice*, *23*(4), 496–510. https://doi.org/10.1080/09614524.2013.790942

Geza, Ngidi, M., Ojo, T., Adetoro, A. A., Slotow, R., & Mabhaudhi, T. (2021). Youth participation in agriculture: A scoping review. *Sustainability (Basel, Switzerland)*, *13*(16), 9120–. https://doi.org/10.3390/su13169120

Giuliani, Mengel, S., Paisley, C., Perkins, N., Flink, I., Oliveros, O., & Wongtschowski, M. (2017). Realities, perceptions, challenges, and aspirations of rural youth in dryland agriculture in the Midelt Province, Morocco. Sustainability (Basel, Switzerland), 9(6), 871–. https://doi.org/10.3390/su9060871

Hisali, Birungi, P., & Buyinza, F. (2011). Adaptation to climate change in Uganda: Evidence from micro level data. Global Environmental Change, 21(4), 1245–1261. https://doi.org/10.1016/j.gloenvcha.2011.07.005

Jennings, Parra-Medina, D. M., Hilfinger-Messias, D. K., & McLoughlin, K. (2006). Toward a Critical Social Theory of Youth Empowerment. *Journal of Community Practice*, *14*(1-2), 31–55. https://doi.org/10.1300/J125v14n01_03

Kaag, Baltissen, G., Steel, G., Lodder, A., & Social Urban Transitions. (2019). Migration, youth, and land in West Africa: Making the connections work for inclusive development. *Land (Basel)*, *8*(4), 60–. https://doi.org/10.3390/land8040060

Kakeeto, Sibiya, J., Melis, R., & Biruma, M. (2019). Farmers' perceptions of drought and other production constraints, drought mitigation options and their implications for groundnut breeding in Uganda. *Indian Journal of Agricultural Research*, *53*(1), 45–50. https://doi.org/10.18805/IJARe.A-337

Lippman, L. H., Anderson Moore, K., Guzman, L., Ryberg, R., McIntosh, H., Ramos, M. F., Caal S., Carle, A., & Kuhfeld, M. (2014). Flourishing children. *SpringerBriefs in Well-Being and Quality of Life Research*. https://doi.org/10.1007/978-94-017-8607-2

Loga, D. E., Kibwika, P., & Birungi Kyazze, F. (2022). Can the current youth agricultural groups be sustainable? Experiences from Mid-Western Uganda. *Cogent Social Sciences*, *8*(1), 2057634.

Masterson, V. A., S. L. Mahajan, and M. Tengo. 2018. Photovoice for mobilizing insights on human well-being in complex social-ecological systems: case studies from Kenya and South Africa. Ecology and Society, 23: 13-30.

Okello, D. K., Biruma, M., & Deom, C. M. (2010). Overview of groundnuts research in Uganda: Past, present, and future. *African Journal of Biotechnology, 9*(39), 6448-6459. Piccioli, M. (2019). Educational research and mixed methods. Research designs, application perspectives, and food for thought. *Studi sulla Formazione/Open Journal of Education*, *22*(2), 439-450.

Olenik, C., Zdrojewski, N., & Bhattacharya, S. (2013). Scan and review of youth development measurement tools. *Washington, DC: United States Agency for International Development. Available at www. usaid. gov/sites/default/files/documents/2155/USAID*, *20*.

Piccioli, M. (2019). Educational research and mixed methods. Research designs, application perspectives, and food for thought. *Studi sulla Formazione/Open Journal of Education*, *22*(2), 439-450.

Pyburn, R., Audet-Bélanger, G., Dido, S., Quiroga, G., & Flink, I. (2015). Unleashing potential: Gender and youth inclusive agri-food chains. *KIT Work. Pap*, *7*, 1-16

Royce, Parra-Medina, D., & Messias, D. H. (2006). Using Photovoice to Examine and Initiate Youth Empowerment in Community-Based Programs: A Picture of Process and Lessons Learned. *Californian Journal of Health Promotion*, *4*(3), 80–91. https://doi.org/10.32398/cjhp.v4i3.1960

Singh, F., & Diwakar, B. (1993). Nutritive value and uses of pigeonpea and groundnut. International Crops Research Institute for the Semi-Arid Tropics (ICRISAT). Patancheru, India. http://oar.icrisat.org/2423/1/Nutritive-Value-Uses-Pigeonpea-Groundnut.pdf

Thuo, M., Bell, A. A., Bravo-Ureta, B. E., Okello, D. K., Okoko, E. N., Kidula, N. L., Deom, C. M., Puppala, N. (2013). Social network structures among groundnut farmers. *The Journal of Agricultural Education and Extension*, *19*(4), 339-359. https://doi.org/10.1080/1389224X.2012.757244

United Nations Population Division (UNDP). 2017. World Population Prospects and Database. https://esa.un.org/unpd/wpp/Download/Standard/Population/ (accessed 31 Jul. 2018).

Wang, & Burris, M. A. (1997). Photovoice: Concept, Methodology, and Use for Participatory Needs Assessment. *Health Education & Behavior*, *24*(3), 369–387. https://doi.org/10.1177/109019819702400309

Yami, M., Feleke, S., Abdoulaye, T., Alene, A. D., Bamba, Z., & Manyong, V. (2019). African rural youth engagement in agribusiness: Achievements, limitations, and lessons. *Sustainability*, *11*(1), 185. https://doi.org/10.3390/su11010185

*Youth definition 2013-1-23 - united nations*. (n.d.). Retrieved February 20, 2023, from https://www.un.org/esa/socdev/documents/youth/fact-sheets/youth-definition.pdf

# Appendices

Appendix 1: Individual Interview Questions

**[Questions related to Empowerment]**

**Q1:** We are really interested in your views on empowerment. How do you describe empowerment?

**Q2:** How has being involved in this process influenced your sense of empowerment?

**Q3:** What part of this process did you feel most empowered?

**Q4:** Being a part of this project, you were able to discuss with others your photos. How has that changed your participation in the gnut process?

**Q5:** How do you view your role in the peanut value chain has changed since beginning this project?

**Q6:** According to you, describe what being a youth is

**Q7:** What are the challenges of being young in the Groundnut Value Chain

**[Questions related to the use of smartphones]**

**Q9:** Is this your first smartphone?

**Q10:** How has your life changed having a phone?

**Q11:** What problems did you encounter from having a phone?

**Q12**: What social media do you like to use on your phone?

**Q13:** Can you estimate how long you might spend on your phone daily?

**Q14:** What opportunities came from having a phone?

**[Questions related to the photovoice journey]**

**Q15:** What was the best part of being involved in the photovoice process?

**Q16:** What was the worst part/challenges of the photovoice process?

## Appendix 2: Focus Group Questions

**Q1:** Where do you believe women do the most work in the value chain?

**Q2**: Where do you believe men do the most work in the value chain?

**Q3:** What things make it difficult for young men in agriculture?

**Q4:** What things make it difficult for young women in agriculture?

**Q5:** How has being a part of photovoice made you feel?

**Q6:** What more do you expect to gain from this project?

**Q7:** What support would you like to have from the government?

Appendix 3: Tables and Figures

| Concept | What they measure | Example Question |
|---|---|---|
| Goal Orientation | Personal flourishing | There is a lot I can do to shape my future |
| Hope | Personal flourishing | I'm excited about my future |
| Life Satisfaction | Personal flourishing | I have what I want in life |
| Environmental Stewardship | Environmental stewardship | I do my part to protect the earth's environment |
| Initiative Taking | Flourishing in school and work | I have the drive to be successful |
| Diligence and Reliability | Flourishing in school and work | I work harder than others my age |
| Altruism | Helping others to flourish | I go out of my way to help others |

Figure 12. Youth empowerment survey concepts

Figure 13. Photovoice submission by 2MT, a youth weeding a groundnut plot by hand, Tororo District, Uganda, August 2022

Figure 14. Photovoice submission by participant 6MN: groundnut plant damaged by termites and drought, Nwoya District, August 2022

Figure 15. Photovoice submission by participant 2FN, groundnuts drying on sacks, Nwoya District, Uganda, October 2021

Figure 16. Photovoice submission by 11MN, woman holding baby while she is trying to hand shell groundnuts, Nwoya District, Uganda, July 2021

Figure 17. Photovoice submission by 11MN, a man transporting groundnuts on his head to market, Nwoya District, Uganda, August 2022

Figure 18. Photovoice submission by 5FN, women working in a hair salon to supplement groundnut profit, Nwoya District, Uganda, August 2022

Figure 19. Photovoice submission by 1FN, groundnut stored in plastic sacks directly on the dirt floor, Nwoya District, Uganda, February 2021

Figure 20. Photovoice submission by 3MN, a man charging phones as a business while he watches his livestock, Nwoya District, Uganda, August 2022

Figure 21. Photo taken by research team at the community event in Nwoya, image displays two participants presenting their photos

Figure 22. Photo taken by research team at the community event in Nwoya, image displays N1 photovoice members and their community members

Table 4. Empowerment survey pre- and post- average responses

| Concept Measured | Question | Pre-survey Male N = 19 | Post-Survey Male N = 17 | Pre-survey Female N = 15 | Post-Survey Female N = 12 |
|---|---|---|---|---|---|
| Goal Orientation | There is a lot I can do to shape my future | 4.95 | 4.93 | 5.00 | 4.50 |
| Hope | I'm excited about my future | 4.16 | 4.15 | 4.29 | 3.92 |
| Life Satisfaction | I have what I want in life | 3.32 | 2.87 | 3.76 | 3.25 |
| Environmental Stewardship | I do my part to protect the earth's environment | 4.63 | 4.53 | 4.41 | 4.25 |
| Initiative Taking | I have the drive to be successful | 4.95 | 4.80 | 4.94 | 4.70 |
| Diligence and Reliability | I work harder than others my age | 4.68 | 4.60 | 4.06 | 4.00 |
| Altruism | I go out of my way to help others | 4.83 | 4.73 | 4.63 | 4.42 |

# CONCLUSION

The entwined completion of qualitative and quantitative methods allowed rich insight on youth participation in the groundnut value chain. Both male and female participants demonstrated increased levels of empowerment after engaging with photovoice. These feelings were encouraged by the usage of smartphones, exposure to the groundnut value chain, and increased involvement within their communities. Despite challenges caused by the COVID-19 pandemic, the photovoice methodology allowed participants to remain engaged with the project even during lockdowns within the country. An immersive data set was created through the implementation of the field visits throughout the year of the photovoice project and individual interviews and focus groups completed at the conclusion of the project.

Although barriers in agriculture have been researched throughout the years, participants in this study were able to cite detailed accounts of the challenges they face on a daily basis. In addition, participants also learned gender-specific areas of disparity by reflecting on the steps of the groundnut value chain. Participants discussed the imbalance of men and women in value chain stages, like preparing land for planting, weeding in the production phase, drying the groundnuts, transporting them to market, and even the market setting itself. Women tend to take on the repetitive, monotonous work, while men complete the labor-intensive steps, like ones that use machinery or oxen.

The household survey distributed by Makerere University offered supplementary quantitative data. Findings (Table 3) supported the gender roles that were discussed throughout the qualitative data. However, not all of the quantitative data supported initial findings. The survey created using the *Flourishing Children Positive Indicators* allowed me to view opposing results, that participants empowerment levels were not affected by the photovoice methodology (Lippman et al., 2014). I view this as not vitally important to the data set as a whole, as several factors may have influenced the responses from participants. This could have been caused by the COVID-19 pandemic, which began in December 2019 and has still shown lasting affects as far as 2023. Another possible theory is that participants reflected on the value chain and were dissatisfied with what they saw.

Future research may be done to understand gender roles in other agricultural value chains in other regions of East Africa and around the world. The importance of understanding challenges within agriculture will allow us to improve the quality of the farming and animal husbandry sectors. The future of the agricultural industry rests upon the estimated 440 million young people expected to join the global labor market by 2030.

# SUBJECTIVITY STATEMENT

I am a young, white female having grown up in the United States and attended a 4-year university. As a youth, I was heavily involved with the National FFA Organization, which led into my pursuance of a bachelor's degree in agricultural communications at the University of Tennessee, Knoxville. After graduation, I continued with UT to complete a master's degree within the same field. I acknowledge my privileged educational background and view my work through the lens of a researcher interested in improving agricultural value chains around the world.

# VITA

Annie F. Carter was born in Los Angeles, California on April 18, 1999. She attended the University of Tennessee, Knoxville, and graduated in 2021 with a Bachelor of Science in Agricultural Leadership, Education and Communications with a focus in communications. She also received a minor in Food and Agricultural Business. During her undergraduate years, Annie joined the *Photovoice for youth empowerment in peanut value chains in Uganda* project. Upon the completion of her undergraduate degree, she pursued her master's degree as a graduate research assistant with the Smith Center for International Sustainable Agriculture at the University of Tennessee, Knoxville. In this position, she continued assisting with the *Photovoice for youth empowerment in peanut value chains in Uganda* project, as well as assisting the Global Communications Leader with promoting Smith Center events and programs. She graduated in May of 2023 with a Master of Science in Agricultural Leadership, Education, and Communications from the University of Tennessee, Knoxville.