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2021

A Gendered Analysis of Small-Scale Cocoa Production in Uganda

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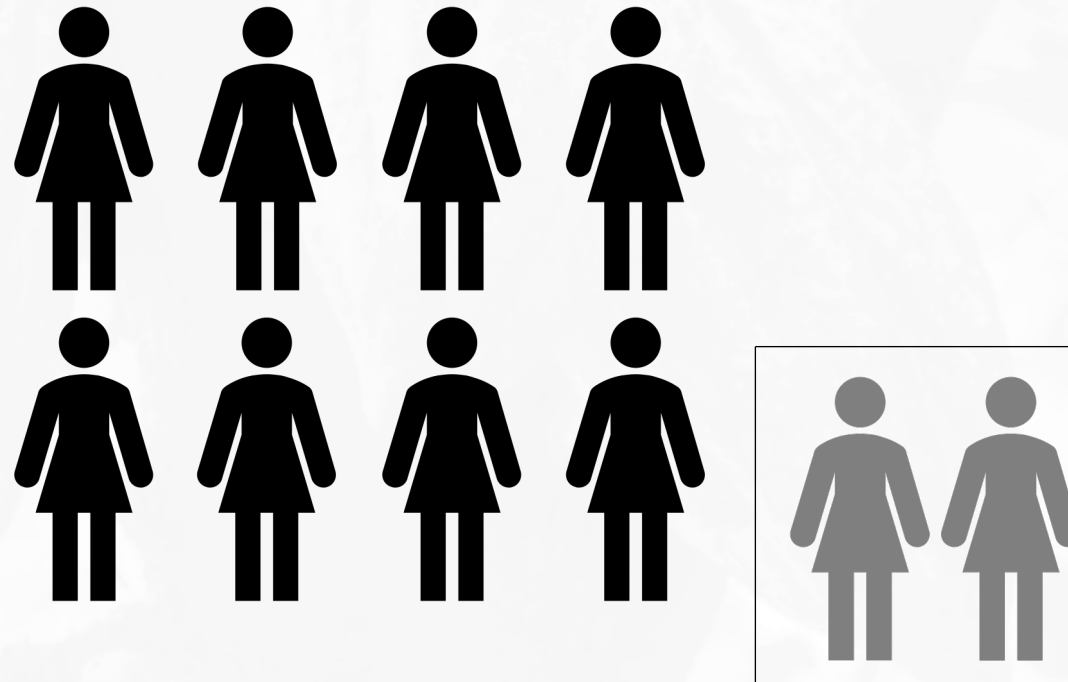
In Uganda, women make up 80% of the employees in the agricultural sector (FAO & UNDP, 2017).

Limited ability to access
and control key
productive resources
(Johnson et al., 2018).

Face disadvantages
based on cultural,
institutional, and social
norms (Johnson et al., 2018).

Experience gender gap in
agricultural productivity of
13% (FAO & UNDP, 2017).

Cocoa is considered a
male crop (Bamwesigye et al., 2020;
Osorio et al., 2019).



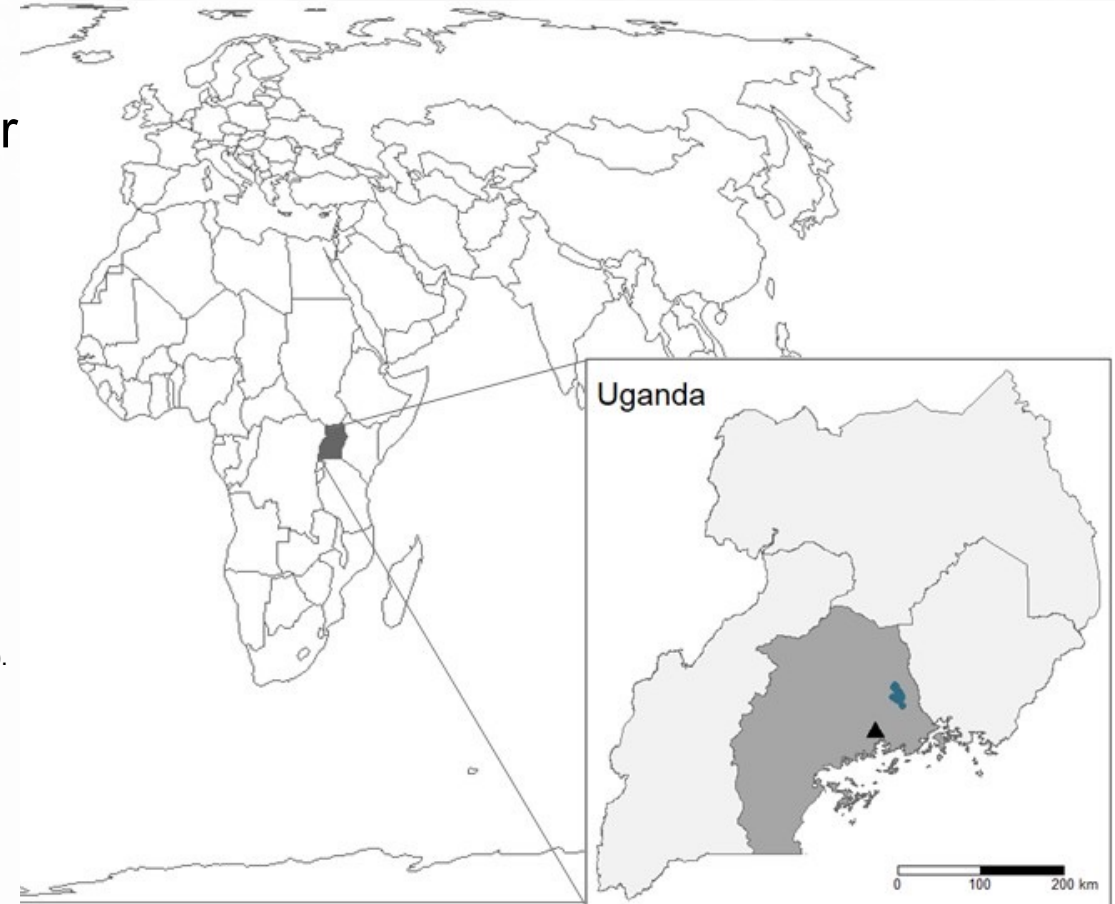
Gender equality and the empowerment of women in agriculture central objectives closely linked to

- improved food security,
- nutrition, and
- education, as well as
- reduced rural poverty

(Johnson et al., 2018).

Empirical Data

- **SusChain research project:** Enhancing supply chain stability, resilience and sustainability through improved sub-supplier management in the chocolate sector.
- **205 cocoa farmers in Mukono** district in Uganda.
- **Random sample** of the **future supplier base** of a Swiss export company.
- **Cross-sectional** data.
- **Semi-structured interviews** conducted by FiBL based on the SMART Farm-Tool (FiBL, 2020).
- Data set predominantly **qualitative**.
- **Male and female roles** in cocoa cultivation and decision-making.



Research Questions

Research Question 1:

What are the differences between male and female managed farms, if any, in terms of roles and approaches to cocoa-growing and related activities?

Research Question 2:

Does the fact that a farm is managed by a woman influence cocoa revenue?



Methods

Descriptive Statistics

- Socio-demographic and farm characteristics of male and female smallholder cocoa farmers

Statistical Analysis

- Gender roles in decision-making and cocoa production activities on the farm

Multiple Regression Models

- Gendered analysis of farm cocoa revenue

Regression Models

$$Y_i = \alpha + \beta \cdot F_i + \gamma \cdot X_i + \varepsilon_i$$

- i refers to the i^{th} individual farm.
- Y_i is the **dependent variable** and stands for the total annual revenue of cocoa production.
- F_i is a **dummy** that takes the value 1 if the farm was female managed and 0 if it was male managed.
- X_i is a **vector** of various agronomic and sociodemographic control variables.
- ε_i is a **random error term**.

Regression Models - Dependent Variable

$$\text{Cocoa Revenue (2019)}_i = \text{Unit Price Cocoa (UGX)}_i \times \text{Cocoa Units Sold (kg)}_i$$

- As a **cash crop, cocoa is of high importance** for farmers, as they derive a large portion of their annual revenue from it.
- **Multiple streams or pathways** can be identified as influences on cocoa revenue.
 - **Higher output** (size and/or input intensities of the farm).
 - **Selling price** (bargaining power of the individual and the condition of the local market).
- Ability to **account for various characteristics** of the cocoa farmer and farm.

Regression Models - Independent Variables

Table 1: Explanatory Variables for Cocoa Revenue

Variables	Description	Expected Effect on Cocoa Revenue
<i>Sociodemographic Variables</i>		
Female	1 if female farmer, 0 if male farmer	-
Age	Age in years of farmer	-
Education	Number of years of schooling of the farmer	+
Formal Savings Account	1 if formal savings account was used, 0 if no formal savings account was used	+
Informal Savings Account	1 if informal savings account was used, 0 if no informal savings account was used	+
<i>Farm Characteristics</i>		
Farm Size	Farm size in hectares	+
Weed Management	Frequency weed management in 2019	+
Group Membership	1 if member, 0 if no member	+
Production Diversity	Number of crops cultivated on farm	-
Workforce	Number of workers employed on farm	+
Training	Number of training days received in 2019	+
<i>Cocoa-Specific Variables</i>		
Cocoa Area	Cocoa area in hectares	+
Dried Cocoa	1 if dried cocoa, 0 if fresh cocoa	+

Notes: Farmer refers to the respondent, that was either the farm owner or farm manager; if a positive influence of the variable on revenue was expected, the chosen sign is + and, vice versa, - if a negative influence was expected.
Source: Survey.

Regression Models

$$Y_i = \alpha + \beta \cdot F_i + \gamma \cdot X_i + \varepsilon_i$$

A simple regression that solely included F_i as the explanatory variable was employed.

β was expected to be negative, based on the assumption that a female farmer is disadvantaged in cocoa revenue generation.

Additional variables that represent mechanisms of gender discrimination **were gradually added**.

Once the variables control for some of the mechanisms the **gender differences** are expected to **disappear** → **β is becoming smaller** in absolute terms.

The so-called '**female effect**' should be **more visible** if these variables are not considered.

Results & Discussion

Descriptive Statistics

Women farmers...

- were **less educated**.
- managed **smaller farms**.
- had **smaller cocoa plots**.
- carried out weed management **less frequently**.
- **owned fewer formal** savings accounts.
- **owned more informal** savings accounts.
- received **less training**.

Table 2: Descriptive Statistics of Individual Characteristics by Gender

	Observations	Mean (sd)			t-stat
		All	Female	Male	
Female (dummy)	205	0.31 (0.46)			
Age (years)	205	52.73 (12.85)	56.36 (11.75)	51.05 (13.03)	-2.80
Education (years of schooling)	187	7.37 (3.49)	5.66 (2.63)	8.13 (3.57)	4.68*
Farm Size (hectares)	205	7.26 (7.52)	4.70 (4.06)	8.45 (8.42)	3.40*
Cocoa Area (hectares)	205	0.64 (0.72)	0.41 (0.39)	0.73 (0.81)	2.97*
Dried Cocoa (dummy)	192	0.24 (0.43)	0.24 (0.43)	0.24 (0.43)	-0.05
Production Diversity (number)	205	6.85 (1.90)	6.75 (1.88)	6.90 (1.92)	0.51
Workforce (number)	205	3.33 (1.25)	3.09 (1.10)	3.45 (1.30)	1.92
Weed Management (number per year)	198	4.26 (3.30)	3.57 (1.61)	4.57 (3.78)	1.99*
Formal Savings Account (dummy)	196	0.19 (0.40)	0.06 (0.25)	0.26 (0.44)	3.35*
Informal Savings Account (dummy)	196	0.46 (0.50)	0.65 (0.48)	0.37 (0.48)	-3.82*
Group Membership (dummy)	205	0.69 (0.46)	0.70 (0.45)	0.69 (0.46)	-0.21
Training (days)	200	2.72 (4.05)	1.52 (1.60)	3.27 (4.68)	2.88*

* significant at $p < 0.05$; sd = standard deviation.
Source: Survey.

Results & Discussion

Role Distribution

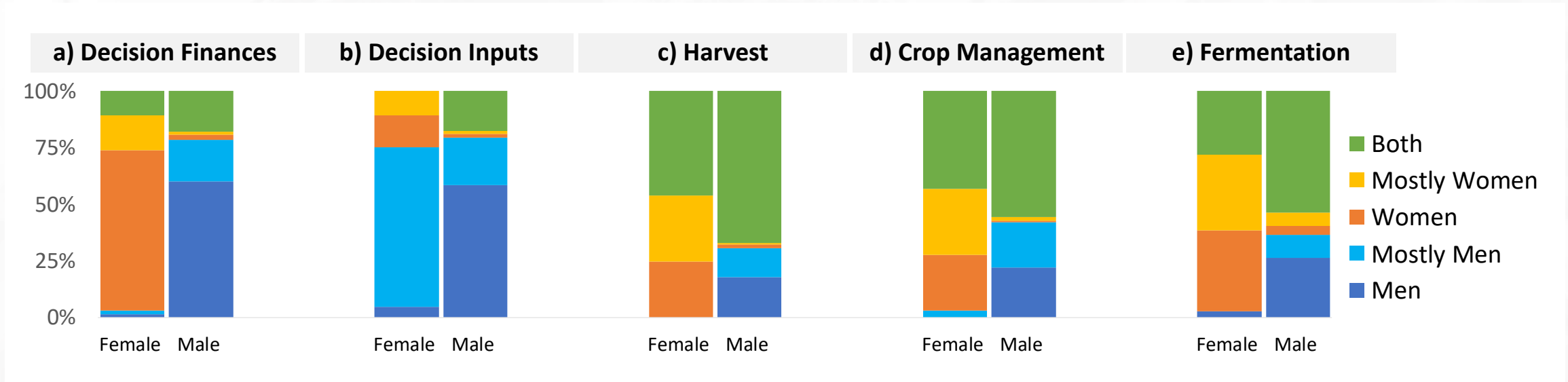


Figure 1: Differences in roles and responsibilities concerning various decisions and activities on farm between male and female managed farms

Results & Discussion

Regression Analyses

- Women cocoa farmers **generated about a third** of the men's revenue in fresh cocoa (336 USD and 905 USD, respectively).
- A **formal bank account**, the **workforce**, and the **cocoa area** are key determinants that significantly influenced cocoa revenue.
- By adding the explanatory variables that controlled for several mechanisms of female discrimination the **gender gap accounted for -212 USD**.



Conclusions

- **Women** are involved in **all processing steps** and **most decisions**.
- Women's contribution to agricultural production **clearly significant with diverse and complex roles**.
- Several **gender-based differences** in the sample group.
- **Input- and finance decisions** are **male-dominated**.
- **Cocoa revenue significantly lower** on female managed farms.
- Women farmers in a worse economic situation **due to external mechanisms** in place.

Recommendations

Towards shifting paradigms in agriculture for a healthy and sustainable future

Recognize

Educate

Reduce
Constraints

Take
Action

Thank you for your attention!



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