

Gender differences in social learning among Vanuatu Growers

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Background

- Information about ag technologies and how to use them has the potential to increase adoption.
- Acquiring info has a cost:
 - Governments financing public extension systems.
 - Individuals' time search/learn, own experimentation.
- Learning from others – social networks, is a cost-effective strategy to traditional extension services.

Recent literature

- **Social learning:** Individuals learn from others who adopt, reduce costs of own experimentation.
- **Recent literature in ag development focuses on social learning – social networks and adoption** (some examples include Maertens, A., 2017; Murendo et al., 2018; Matuschke & Qaim, 2009).
- **Less on information transfer** (for a recent study see Lee et al., 2019).
 - Information affects success of adoption (Rogers, 1993).
- **More focused on men** (focusing on women Beaman & Dillon, 2018; Mekonnen et al., 2018 & BenYishay et al., 2020).
 - In Sub-Saharan Africa and South Asia.

Contribution and research questions.

- Studying information transfer among men and women in the context of the Pacific.

Research questions:

- Is there evidence of information network effects on cocoa smallholder farmers' knowledge of recommended best practices?
- Do these effects differ between men and women?
- Vanuatu as a case study using cocoa as example.

Vanuatu, cocoa, and women.

- Cocoa 3rd most important source of cash.
 - Produced by smallholder farmers in the islands of Malekula, Epi, and Santo.
- Pests, poor access to yield enhancing inputs, lack of market access, vulnerability to natural disasters & an aging stock of cocoa trees.
- Efforts to revitalised the cocoa industry - local gov, ACIAR.



Source: Google maps.

Vanuatu, cocoa and women

- Perceptions – kastom and religion:
 - Women responsible for food production and family care
 - Men for cash crops and inter-household transfers
- Reports from FAO and qualitative evidence suggest that women work together with men in food and cash crops (hired labour is rare).
- Efforts by international org, local gov and SPC – effectiveness unclear.
- Exclusion of women can reduce the effectiveness of programs aiming at increasing yields/product quality.

Data

- Representative sample of the population of cocoa growers in West Epi, 2018.
 - 9 villages
 - 118 households: 118 men and 106 women
- Socio economic and cocoa farm charact
- Modules for men and women - enumerators same sex as respondents:
 - Participation in ag activities.
 - Sources of information.
 - Detailed social networks data.
 - Detailed knowledge test.

Men and women participate almost equally in agricultural activities

Agricultural activities		Men	Women	Diff
Food Crops	Grow	81%	84%	-3%
	Harvest	75%	71%	5%
	Sell	37%	59%	-23%
Cocoa	Weeding	73%	69%	4%
	Pruning	76%	63%	13%
	Harvesting	64%	65%	-1%
	Fermenting	40%	31%	8%
	Drying	34%	30%	4%
	Sell wet	61%	57%	4%
	Sell dry	39%	30%	8%
	Training	21%	5%	16%

From July 2017-July 2018

Family and friends in the village are the main source of cocoa information

Sources of information	Men	Women
Family & friends in village	84%	93%
Cocoa buyers	43%	34%
Cocoa producer association	39%	12%
Extension agent	7%	7%

From July 2017-July 2018

Methods: Measuring networks

- Random matching within sample (Maertens & Barrett, 2013).
- Network restricted to village and same sex.
 - Avoid conflict or misunderstanding.
- Each man and woman were asked about 10 other men/women in the sample.
- Network link if answered YES to the following questions:
 - Do you go to [name] for **advice** when you have issues with your cocoa?
 - Do you **discuss** any cocoa production or postharvest related issues with [name]?

Methods: Measuring “knowledge”

- Detailed knowledge test:
 - Cocoa extension manuals for Pacific, validated with local extension workers (2) and male and female cocoa growers (20 households).
 - Multiple choice, true and false statements and questions that required a specific answer.
 - Enumerators trained in cocoa, did not read answer but listened carefully and marked option(s) closest to answer (Kondylis et al. 2015).
 - 21 questions production and postharvest.
 - 58 total points

Methods: Estimating network effects

Separated for men and women

$$score_i = \alpha + \beta_1 \overline{scoreN_i} + \beta_2 \overline{scoreN_i}^2 + \beta_3 x_i + \beta_4 \overline{xN_i} + \beta_5 village_i + \mu_i$$

Where,

$score_i$ = knowledge test score

$\overline{scoreN_i}$ = average score network links

x_i : vector of socio-economic characteristics

$\overline{xN_i}$: average characteristics network links ← control correlated effects.

$village_i$: village variables ← control exogeneous effects.

If $\widehat{\beta}_1 > 0$ and $\widehat{\beta}_2 < 0$ inverse U-shaped relationship.

Estimation using OLS for *advice* and *discuss*

Women reported less information network links than men

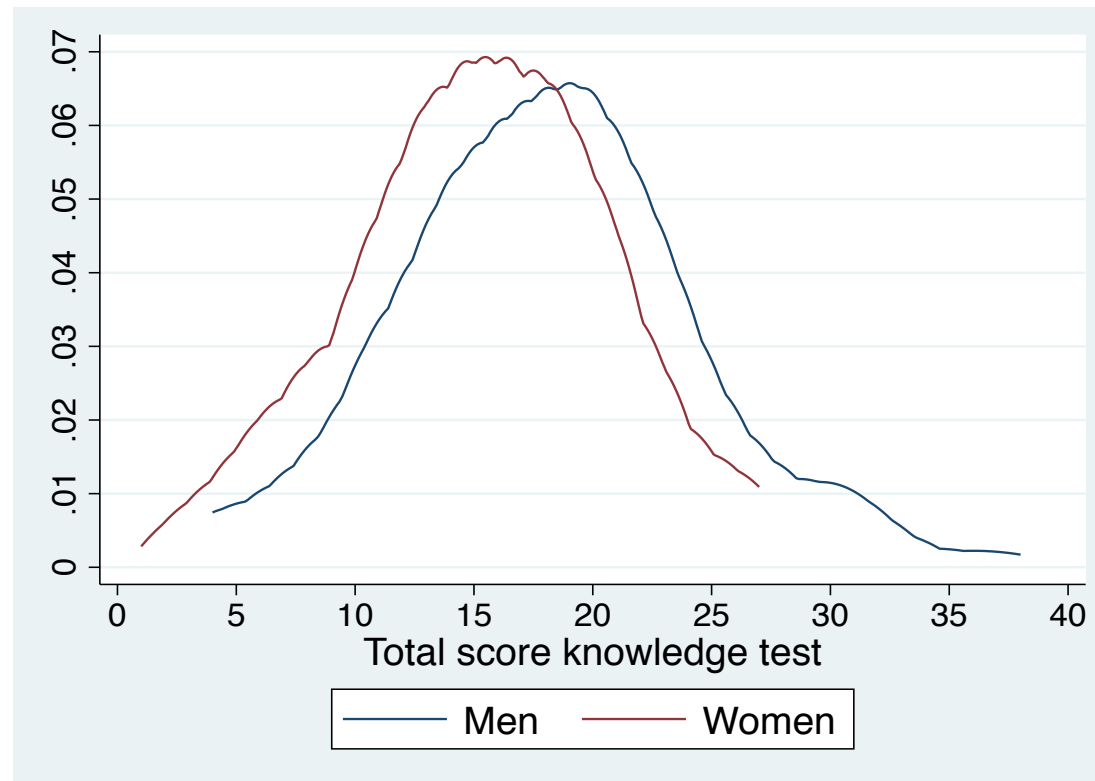
Number of contacts in cocoa information network

Variables	Men	Women	Diff
	mean	mean	
<i>Advice</i>	4.29	2.65	1.74***
<i>Discuss</i>	4.48	2.58	1.91***
Observations	118	106	

Levels of significance ***1% **5% *10%

Women scored lower than men in knowledge test

Kernel distribution of Men and Women knowledge test scores.



21 questions 58 total points

Nobody passed the test!!!!

Test scores low for both men and women

Test topics	Men	Women	Diff
Pruning, weeding, harvesting	40%	33%	7%
Fermenting and drying	44%	38%	6%
Pest and diseases	22%	19%	3%
Identify in pic	18%	16%	1%
Total	31%	26%	5%

Observations 118 men and 106 women
Levels of significance ***1% **5% *10%

Network effects among men but not among women

Dependent variable: test scores

Explanatory variables	Men		Women	
	advice	discuss	advice	discuss
Avg network test score	0.89***	0.77***	0.18	0.29
	(0.23)	(0.25)	(0.30)	(0.28)
Avg network test score sq	-0.03***	-0.03**	-0.01	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)
Individual characteristics	Yes	Yes	Yes	Yes
Household characteristics	Yes	Yes	Yes	Yes
Village variables	Yes	Yes	Yes	Yes

Robust se in parenthesis.

Observations 118 men and 106 women

Levels of significance ***1% **5% *10%

Education, experience and community activities

Explanatory variables	Men		Women	
	advice	discuss	advice	discuss
Education	1.78*	1.88*	0.57	0.45
	(0.97)	(1.03)	(1.52)	(1.30)
Education sq	-0.21**	-0.22**	-0.02	-0.00
	(0.11)	(0.10)	(0.14)	(0.13)
Experience	0.37*	0.40*	0.55***	0.54***
	(0.21)	(0.21)	(0.16)	(0.17)
Experience sq	-0.01	-0.01	-0.01***	-0.01***
	(0.01)	(0.01)	(0.00)	(0.00)
Training	-0.61	0.04	0.63	0.64
	(1.46)	(1.51)	(1.79)	(1.83)
Day for the chief	-0.86*	-0.83*	0.33	0.24
	(0.48)	(0.42)	(0.40)	(0.40)

Robust se in parenthesis. Observations 118 men and 106 women

Levels of significance ***1% **5% *10% Categorical variables 1=never to 6=every day

Summary

- Men and women participate equally in most agricultural activities: food crops + cash crops. Women participate much less in training.
- Women have less contacts within their cocoa information networks compared to men.
- Both men and women failed the knowledge test. Women scored lower than men.
- Find evidence of effects within information networks for men but not for women.

Conclusions

- These findings have implications for the design and implementation of gender-inclusive agricultural interventions:
 - More training is needed for both men and women in cocoa farming households
 - Extension programs to focus on increasing women's participation and on helping cocoa growers understand the benefits of recommended best practices
- The use of farmer to farmer dissemination channels has the potential to disseminate knowledge cost-effectively in the context of the Pacific

Conclusions

- More research is required to determine if this is the case and which types of information networks work best for men and women.
 - Future studies looking at a causal peer effect.
- Gender-inclusive extension strategies based on the use of social networks.
 - Disseminate information about recommended best practices for cocoa, food crops and cash crops, and promote strategies for climate change adaptation

Thank you!

- Questions?

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