Trans-SEC
Innovating pro-poor Strategies to safeguard Food Security using Technology and Knowledge Transfer

Enhancing Smallholder Farmer Access to Prime Markets Through Horizontal & Vertical Linkages: The case of Sunflower in Tanzania

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Background

➢ Cooperative movements in 1930s-1970s followed a horizontally and vertically linked production, processing and marketing system that was well-organized (Mrema & Ndikumana, 2013)
➢ 1980s-2000 – chaotic period with heavy-handed government operated parastatals: learnt hard lesson that government interference in production & marketing is not efficient & does not work for the poor
➢ 2000-todate: Back to the future? New locally integrated companies offer promise of re-inventing horizontal and vertical linkages
➢ **Objective of WP 7**: upgrading food value chains through establishing vertical & horizontal linkages (Figure 1)

Objective of this study:
➢ *Analyzing the status quo of vertical & horizontal linkages in the project regions*
➢ *Exploring possibilities for linking sunflower farmers to higher-value markets*
➢ *Analyzing how institutions & policies hinder or support sunflower VC development*

Figure 1: Concept of horizontal & vertical linkages
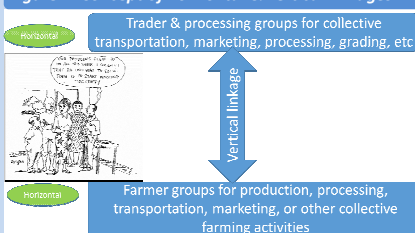
Study Regions & Data Sources

➢ **Household data**: 2 Trans-SEC project regions (semi-humid Morogoro and semi-arid Dodoma), total sample of 900 households (450 per region).
➢ **Trader data**: Interviews with traders (wholesaler, retailer, transporter, collectors, agents/brokers) in the same regions; total sample of 263.
➢ **Stakeholder consultations** were conducted with project farmer groups, processors, and civil society & government institutions

Results of Household & Trader Survey

➢ horizontal & vertical linkages are still quite limited for both farmers and agricultural traders (Figure 2 & Figure 3)

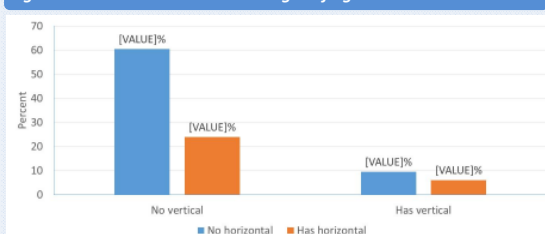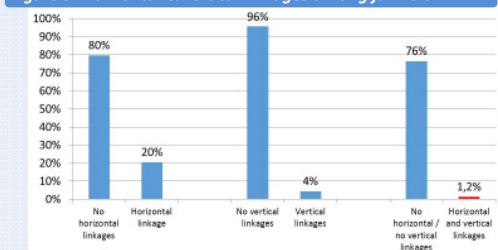**Figure 2: Vertical & horizontal linkages of agricultural traders**

Figure 3: Horizontal & vertical linkages among farmers

➢ Horizontal & vertical linkages are associated with higher commercialization and farmer income (Table 1).
➢ Farmers with linkages are likely to be better educated, have smaller families, are in remote areas & own cellphones (Table 2).
➢ Agric traders with linkages are likely to be wholesalers, males, have storage facility, face higher transaction costs and use internet for market intelligence (Table 3)

Table 1: Paired test of commercialization & income across vertical & horizontal farmer linkages

	Horizontal linkages		Collective selling		Vertical linkages (specific buyer)		Commercialized (sale > 50% of production)	
	Yes	No	Yes	No	Yes	No	Yes	No
Crop income (USD-PPP)	643	556	601	573	1,398***	536	1,307 ***	266
Agricultural income (USD PPP)	699	676	644	683	1410***	645		
Crop commercialization (Sale / production value)	37%***	30%	43%***	31%	36%	31%	71%	13%

Table 2: Farm household characteristics (with vs. without linkages)

Variable	Horizontal linkages			Vertical linkages
	No horizontal or vertical linkages (n=489)	Collective or producing, processing, selling, or buying (n=192)	Collective selling only (n=38)	Specific buyer (n=29)
Human capital:				
Male HH head	0.78	81%	76%	95%**
Age of hh head	49.29	46.76*	45.18	41.9***
Years schooling	5.18	5.21	6.31**	5.91
Family size	4.93	4.31***	4.16**	4.79
Adult female labor	1.25	1.14*	1.05	1.21
Adult male labor	1.13	1.01	0.97	1.54***
Agric as primary activity	0.84	0.75***	0.63***	0.90
Off-farm income	0.51	0.47	0.53	0.59
Physical capital:				
Farm size	1.72	1.57	1.84	2.28*
TLU	1.09	0.36*	0.47	1.37
Owns mobile phone	0.41	0.45	0.47	0.38
Bicycle	0.43	0.48	0.55	0.56*
Motor vehicle	0.04	0.04	0.03	0.05
Access to rural services:				
Distance to market	7.51	20.98***	63.43***	58.84***
Received credit	0.17	0.19	0.34***	0.10

Table 3: Drivers of vertical & horizontal linkages among traders

	Vertical	Horizontal
Male trader (cf female)	0.100	0.5923**
Dodoma region (cf Morogoro)	0.390	0.000245
Wholesaler trader (cf retail trader)	0.401	0.773***
Education (cf no formal education)		
• Primary	-0.551	0.6149
• Post-primary	0.095	0.2047
Age	-0.006	-0.0016
Has store	0.496**	0.0036
languages	-0.366*	0.0373
Distance to supplier (farmers)	-0.001	0.0004
Distance to nearest town	0.003	0.0023
Total transaction costs	0.00000	3.76e-6*
Uses internet for mkt intelligence	-0.12	0.4143**

Sunflower Value Chain Case Study

Participatory business model analysis (Table 4) suggested creating horizontal & vertical linkages (to large processors) offer highest return at current prices

Table 4: Participatory analysis of business model options

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	Marginal rate of return	
No horizontal or vertical linkage - baseline		
• With unimproved seed	0.69	0.06
• With improved seeds	0.93	1.05
• Without Cake	1.26	0.67
• With cake	1.69	1.03
With vertical linkage –sell directly to Mt Meru	2.25	2.35

Institutional and Policy consultations:
➢ Palm oil: 4th largest import item in Tanzania (after petroleum, cars, & trucks), yet the country has the potential to become an edible oil exporter.
➢ Cheap palm oil imports (tariff free) puts price pressure on locally produced sunflower oil → limits poverty reducing potential of sunflower production
➢ Potentials of re-introducing import tariff to protect local producers & processors?
➢ Limited adoption of improved sunflower varieties in the country
➢ Low availability of improved seeds: only one old improved variety (Record C) with low oil content (27%)
➢ Need of developing new varieties with higher yield & oil content, but lack of edible-oil researchers & research funds → Need to increase research funding on edible oil crops

Next steps

➢ Detailed policy analysis to build case & justification for re-introducing edible oil import tariff
➢ Analysis of the sunflower innovation system to identify gaps and identify successful models for increasing technology uptake
➢ Business plan development for better linking farmers to markets (other Task in WP7)

References:
Mrema & Ndikumana (2013)

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