

Contracting and gender equity in Tanzania: using a value chain approach to understand the role of gender in organic spice certification

Renee Bullock^{1*}, Amos Gyau², Dagmar Mithoefer³ and Marilyn Swisher⁴

¹International Institute of Tropical Agriculture, South Kivu, DRC

²World Agroforestry Centre, Nairobi, Kenya

³Rhine-Waal University, Kleve, Germany

⁴University of Florida, Gainesville, Florida

*Corresponding author: R.Bullock@cgiar.org

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Abstract

Value chain development (VCD) initiatives within the horticultural and organic sectors in Africa are promising strategies to improve smallholder welfare. Contracting institutional arrangements are a common feature of VCD initiatives and are increasing in number in sub-Saharan Africa as a way to source organic products from smallholder producers. The objective of this study is to better understand men and women's participation in spice producing households that sell under contract and in conventional market chains in the East Usambaras, Tanzania. We draw on New Institutional Economics, political economy and the value chain analysis framework to assess the potential role of contracting to promote gender equity among smallholder organic horticultural producers. We describe intra-household decision making over resources and marketing, access to benefits of contracting, and labor distribution between men and women in contracting and non-contracting households. We then extend the gender analysis to evaluate the role of gender in contracting and conventional value chains operating within the community and district. Using a cross-sectional research design and data collected through 13 focus group discussions, 54 personal interviews and 156 household questionnaires, we show that contracting reduces transaction costs in the chain compared with the conventional trade. However, norms in the wider political economic context give rise to gendered patterns of participation in both household and chain activities in contracting and non-contracting households. Our findings suggest that contracting does not provide significant opportunities for women in married households to participate and benefit based on limited participation in decision-making and access to trainings. Divorced women and widows gain access to contract employment opportunities to earn income. This study highlights the importance of understanding gender relations in the household and community to guide the development of gender equitable VCD initiatives and contracting approaches.

Key words: Gender, contracting, Tanzania, horticulture, smallholder, spices, markets

Introduction

Value chain development (VCD) initiatives within the horticultural and organic sectors in Africa are promising strategies to improve smallholder welfare. Horticultural exports have increased over the last two decades and have dominated export trade in East Africa (Barrientos et al., 2005; Tallontire et al., 2005, 2013). Many sub-Saharan African (SSA) countries pursue the development of horticultural export supply chains as a poverty

reduction strategy because of their potential to increase rural incomes and reduce poverty owing to their high intrinsic value and labor intensive production systems (Aksoy and Beghin, 2004; Maertens et al., 2009). Contracting institutional arrangements are a common feature of VCD initiatives. Contract farming is promoted as a way to incorporate low-income growers into the modern sector and is playing an increasingly important role in developing countries for its potential to bring about greater coordination in the agrifood supply chain

and meet development objectives (Key and Runsten, 1999; Kirsten and Sartorius, 2002; Warning and Key, 2002; Swinnen and Maertens, 2006). Smallholder producers are linked to international markets through global value chains and contracting is often the primary means of sourcing of certified organic products from tropical Africa (Jones and Gibbon, 2011). Recent years have seen an increase in interest in all types of contract farming arrangements for smallholders in tropical Africa and there is growing concern about the implications of such schemes for smallholders (Bolwig et al., 2009). Although gender equitable agricultural development has emerged as an explicit component of VCD efforts and is an important development goal, in many cases women are marginalized or further disadvantaged from meaningful participation in many VCD interventions (Mayoux and Mackie, 2008; Chan, 2013).

Horticulture exports in Tanzania are largely smallholder driven (U.R.T., 2008) and the organic sector is predominantly export-oriented and supported by development funding aimed at improving producer incomes and livelihoods (Parrott and Elzaker, 2003; Bakewell-Stone et al., 2008). Smallholders in the lowland and highlands of the East Usambaras produce perennial spices, black pepper and cardamom, in agroforestry (AF) systems. Approximately 60% of the farmers cultivate black pepper (*Piper nigrum*) as a cash crop in the lowlands, located between 0 and 150 m above sea level (masl) (Reyes et al., 2009). Cardamom (*Elettaria cardamomum*) is grown in the higher parts (850 m) of the mountains (*ibid*) that also support globally renowned biodiverse humid forests (Burgess et al., 2007). The number of households estimated to cultivate cardamom in the highlands range from 60 to 90% (Sah, 1996; Reyes, 2008; Bullock et al., 2014).

Although Tanzania has been at the forefront of creating a positive legal framework and political context for gender equality, gendered cultural norms govern prevailing attitudes and have a pervasive impact on social and economic life (World Bank, 2007). National policies have not significantly replaced customary practices and women are often restricted in their access to important productive resources, including land (Rantala and Lyimo, 2011; Bullock et al., 2014). Since value chain analyses (VCAs) have tended to emphasize chain level activities (Bolwig et al., 2008) they often fail to combine individual, intra-household level phenomena with analyses of broader social and economic processes (Murray, 2002; Riisgard et al., 2010). This results in a poor understanding of gender dynamics in the household and their gendered effects on participation in contracting and VCD initiatives. There is a need for theoretical analyses and methodologies that can mediate between different arenas and levels of social process that link household- and intra-household-level micro-analyses with accounts of global and national processes (Murray, 2002).

The objective of this study is to better understand men and women's participation in spice producing households

that sell under contract and in conventional market chains in the East Usambaras, Tanzania. We draw on New Institutional Economics (NIE), political economy, and the VCA framework to assess the potential role of contracting in promoting gender equity among smallholder horticultural producers in Tanzania. We describe intra-household decision making over resources and marketing, access to benefits of contracting and labor distribution between men and women in contracting and non-contracting households. We then extend the gender analysis to assess the role of gender in contracting and informal value chains operating within the community and district. We contribute to empirical evidence on gendered participation in smallholder horticultural and organic contracting in AF systems in Tanzania. Our findings contribute to the discussion about the role of contracting as a mechanism to benefit women and foster gender equitable growth.

Background

Theoretical and analytical frameworks

In SSA most market exchanges occur through spot market exchange, or simple cash and carry transactions (Fafchamps and Quisumbing, 2002). Since most market transactions are beyond the reach of the formal legal system, trading practices have evolved to minimize the potential for contract failure, such as immediate cash sales rather than long-distance orders, supplier credit and forward contracting (Fafchamps and Minten (2001). Spot markets rarely transfer production and marketing information with regard to quality, timing and future demand, and fail to overcome problems resulting from imperfect input markets (Kirsten and Sartorius, 2002). NIE is a useful approach to explore institutional dimensions of agricultural development challenges in Africa (Dorward et al., 2009). We draw on the discipline to discuss the role of governance, specifically institutional arrangements, to address market failures. Institutions play an important role in addressing these problems by helping individuals cooperate and overcome market failures associated with transaction costs (North, 1994, 1995). Specifically, we compare transaction costs related to information asymmetries in spice contracting and informal value chains. Contracting institutional arrangements are a form of coordination that govern and reduce transaction costs. Contract types are diverse and arrangements vary, but generally include written agreements between agricultural producers and buyers and are a form of vertical integration (Grosh, 1994; Oya, 2012). Contracts lower information asymmetries between buyers and sellers that are common in spot markets. Contracts are thus considered to be suitable coordination mechanisms to ensure that both producers and firms meet export market demands for quality and differentiated products, including high value horticultural products and organically certified products.

We also draw on political economic perspectives to look at household and community level social dynamics,

with a focus on understanding men and women's opportunities and constraints to participation. Value chains and markets are embedded in particular socio-economic and political systems (Tallontire *et al.*, 2013). When participants have unequal capabilities and differentiated access to resources, for example, widely different market structures characterized by uneven and unequal power relations result (Rai, 2002). Individuals differentially incur transaction costs that stem from power inequalities that define the type of work that men and women do and how resources and benefits are distributed within households (Rai, 2002; Quisumbing *et al.*, 2014). Just as gendered household relationships are replicated at larger social scales, patterns of access to resources and functions outside the household reinforce gendered household relationships – e.g., these are reciprocal and mutually reinforcing processes at the micro and macro level (Coles and Mitchell, 2011).

The VCA framework is a commonly used methodology to understand why particular countries and types of enterprises find it difficult to gain entry to specific market sectors, a potential explanation of why benefits of globalization fail to reach the very poor (Mayoux and Mackie, 2008). Value chains conceptualize enterprises and economic activities as part of chains, or as holistic networks and systems of different linked production and exchange activities operating in different geographical areas: local, national and international (*ibid*). VCAs have grown in popularity since 2005 (Neilson, 2013). VCA aims to identify appropriate points of intervention to enhance the ability of industries to compete in local, regional and international markets and improve the situation of disadvantaged actors in the value chain (Mayoux and Mackie, 2008). One avenue for greater market penetration is upgrading, which refers to the ability of actors in the value chain to shift from lower-level to more rewarding functional positions in the chain or to add value to products that will create higher returns to the producer (Kaplinsky, 2000). Product differentiation based on product characteristics like point of origin or organic certification that opens high-value niche markets is another form of upgrading and increasing competitiveness in the market (Kirsten and Sartorius, 2002). A gender value-chain approach combines VCA with a gendered economy perspective (Barrientos *et al.*, 2005). The framework is useful to understand the differential interactions of poor, rural men and women in agricultural markets and identify inequities in power relationships based on the governance of the supply chain (Coles and Mitchell, 2011; Rich *et al.*, 2011). The framework thus provides an understanding of the distribution of gains from market penetration and the gendered nature of production and returns to different types of labor, which may then be used to find leverage points for policy interventions (McCormick, 2001). The framework may also be used to identify gendered patterns of participation that may result from underlying gender inequalities within the broader social context.

Empirical evidence

Studies that examine household level effects for contracting certified organic exports show that there is potential to increase household income through this approach (Warning and Key, 2002; Bacon, 2005; Muradian and Pelupessy, 2005). Okello and Swinton (2007) reports higher revenues, savings and resulting investment in productivity enhancing inputs. Bolwig and Odeke (2007) reported that households engaged in certified organic export production in Uganda earned significantly more income than those who did not. Other less direct benefits include increased productivity and increased coordination between traders and some growers, which may lead to upgrading opportunities (Muradian and Pelupessy, 2005; Jones and Gibbon, 2011). However, poor and small producers, often women in female headed households, may be excluded from the lucrative high-value markets because they cannot compete with larger producers in terms of cost of production or product pricing (World Bank, 2009).

When the effects of contracting organically produced crops are considered using individual sex disaggregated data to provide insights into understanding intra-household dynamics, there is evidence that women's ability to participate and benefit is limited. Furthermore, women may be adversely incorporated into these approaches through household-level decisions to participate, regardless of the potential benefits for them. Women provide much of the labor on smallholder export farms, yet receive little of the rewards from global value chain engagement, e.g. revenues and control over expenditure (Chan, 2013). In some cases women's labor has increased as a result of participation in export certification schemes (Bolwig and Odeke, 2007). Contract farming may also disrupt power relations and increase tensions within farm households, especially between male head-of-households and their wives and children (Carney and Watts, 1990). Smallholder production of French beans in Kenya was shown to increase gender conflicts over rights and resources (Dolan, 2001).

Gendered VCA studies, many of which examine commercial horticulture, often focus on understanding whether voluntary standards and the value chains they govern improve gender equities in agri-food systems (Dolan and Humphrey, 2000; Dolan, 2001; Barrientos *et al.*, 2003; Barrientos *et al.*, 2005; Tallontire *et al.*, 2005; Loconto, 2015). These studies reveal that women are represented disproportionately in lower value chains and in lower positions within those chains in East African and in horticultural production for export (Dolan, 2001). Women's work in the production and processing of export horticultural crops is generally unskilled, monotonous and repetitive, such as sorting and packing activities (Tallontire *et al.*, 2005). Women are preferred for these jobs because of their perceived dexterity and greater attention to detail compared with men

(Staritz and Guilherme Reis, 2013). In Kenya, Barrientos et al. (2005) found that women's employment in horticulture was temporary and insecure. Women in the informal sector often earn lower wages than men (Rijkers and Costa, 2012; Chan, 2013). Women who opt for more entrepreneurial activities, rather than selling their labor, often face barriers arising from cultural and institutional norms that restrict the scale of their entrepreneurial activities and that lead to concentration of women in fewer sectors (Bardasi et al., 2011; Rijkers and Costa, 2012; Staritz and Guilherme Reis, 2013).

Study site

Study site villages are located in the peri-urban lowlands and the rural, remote highlands of the East Usambaras, Muheza District. Washambaa are the majority ethnic group in the region. Many farmers depend on perennial spices that are grown in AF systems for income. Approximately 60% of the farmers cultivate black pepper (*Piper nigrum*) as a cash crop in the lowlands, located between 0 and 150 masl (Reyes et al., 2009). Black pepper vines are planted with *Gliricidia* used as support trees. Cardamom (*Elettaria cardamomum*) is grown in higher elevations (850 m) under the shade of native tree species (Reyes et al., 2009). The highlands support the globally renowned biodiverse humid forests (Burgess et al., 2007). The number of households estimated to cultivate cardamom range in the highlands from 60 to 90% of households in the highlands (Sah, 1996; Reyes, 2008; Bullock et al., 2013). Cardamom sales comprise approximately 30% of household income and more than half of the total cash crop income (Reyes et al., 2006).

Marketing and sales of spices is generally done through the informal, or conventional chain, or through voluntary organic certification. Following structural adjustment programs and the dissolution of cooperatives there was an influx of private traders who have developed a network of traders that facilitate the sale and export of spices to Tanzania and the wider East African community. Several certification initiatives have been undertaken in the area (Akyoo and Lazaro, 2007) over a period of several years. This study examines one company's efforts to organically certify spices grown in the region. The company, established in 1998, established a branch in 2006 that specializes in organic certification of spices sourced from the East Usambaras and exported to European markets (Ruijter and Ayo, 2011). The company offers first-grade products for export to the European market, with second-grade products destined for the regional (Kenyan) market. Its market share is currently very small, <1% (Ruijter and Ayo, 2011).

International donor support has assisted the company to provide training for farmers on subjects such as farming, business and record keeping, organic cultivation practices, erosion control measures, weed and pest

control, pruning, fertilizers and crop rotation (*ibid*). The company implemented processes and strategies to upgrade products to meet export quality standards requirements. Quality characteristics like integrity and size of the spice seeds and color and content of essential oils determine price in the export market. The company established resource-provision contracts with approximately 600 smallholder spice producers. Resource-provision contracts oblige the processor to supply crop inputs, extension, or credit, in exchange for a marketing agreement with the producer (Key and Runsten, 1999). The company director has been trained in ISO 22000 (food safety management systems) and the company has received organic certification from the Institute for Market Ecology (IMO) (Ruijter and Ayo, 2011) While the organic standard does not specifically mention gender discrimination or equity, the policy states that 'fairness requires systems of production, distribution and trade to be open and equitable' (IFOAM); and that 'social and economic impacts of sourcing' must be considered (IFOAM: 23). With respect to employment 'equal opportunities and non-discrimination [must be] afforded to employees and workers' (IFOAM:19).

Methods

A cross-sectional research design was used. Data collection methods included focus group discussions (FGDs), personal interviews and household questionnaires. Five lowland and three highland villages were selected based on the presence of contracted producers in them.

Household questionnaires were administered to a total of 156 individual respondents. Ten households were randomly selected from each village using a list of contracted producers and village registers as sampling frames. Although equal numbers of contracting and non-contracting households were sampled from each list, the actual number of contracting households outnumbered the non-contracting households in the sample. A series of questions were used to validate membership and the discrepancy occurred because the sampling list is updated every 2 years and did not reflect the changes in membership in the sampled households. In each household, the primary owners, husband and wife, were interviewed together to list household assets, i.e. plots. Then the husband and wife were interviewed separately, in privacy. Closed and open ended question formats were used to collect information about decision-making with regard to group membership, training and market participation. Individuals may own several plots, but only the plots with cardamom and black pepper were selected for analysis. Each respondent was asked who contributed the most labor on the plot, family or hired labor. They were then asked about the sex of the type of labor used on the plot and were given the options of male, female and joint labor. Chi square tests of independence were

used to identify significant differences between men and women in households that contract and those that do not.

Thirteen FGDs and 54 personal interviews were used to gather information about men and women's roles, responsibilities and profit margins (Profit margins were calculated based on M4P (2008)). The cost is the money that an actor in the value chain contributes and the margin is the money the actor in the value chain receives, minus the costs (M4P, 2008.) in spice value chains. For the FGDs seven to nine participants of the same sex were selected for a total of six women's groups and seven men's groups (See Collins, 2003). A purposeful maximum variation sampling approach was used to select participants within each village based on the characteristics that were under investigation, namely certification status and gender. A brief example of a VCA framework, i.e. chain level actors and inter-linkages between actors, was given prior to soliciting information from participants about village and district level spice buyers and sellers. Participants were also asked to provide characteristics of the actors, such as gender, volume, capital and services provided, e.g. credit.

Semi-structured interviews were conducted with a total of 54 value chain actors, 38 men and 16 women (Table 1). Interview respondents were selected using referral sampling procedures in which key informants were asked to identify interview respondents who would be able to provide information about spice value chains. Key informants, who included extension agents and village chairpersons, were asked to provide a list of three traders in the lowland and highland villages. After interviewing each trader on the list they were then asked to provide an additional three names of market actors. The logic was to collect information to plot and identify linkages between value chain actors across spatial scales. Interviews were conducted with actors in the community, the district and urban centers that included Dar es Salaam. Respondents were asked about their activities, value addition, profits and interactions in the chain to better understand coordination and governance of transactions. The data were then categorized in order to describe chain characteristics and calculate profit margins for village and district level actors. For each position in the conventional value chain, interview data were used to estimate unit total cost, unit cost and unit price. Unit total cost per position was divided by the sum of total unit costs, 8,073Tsh, to estimate percentage added cost per actor. Unit total cost was subtracted from the unit price to estimate percentage total profits per actor.

Results

Sample characteristics

Respondents represented 83 households in which both primary decision-makers were interviewed in married households and the primary decision maker in single

Table 1. Summary of interviewed value chain actors.

Position/Title	Men	Women	Total	Locations
Exporter	2	—	2	Urban center
Company employee	3	3	6	Village
Grinding factory	2	1	3	Urban center
Input retailer	1	1	2	Urban center
Large trader	7	—	7	District
Muheza town trader	5	—	5	District
Small trader	4	10	14	Village
Urban retailer	6	—	6	Urban center
Urban wholesaler/retailer	6	1	7	Urban center
Totals	38	16	54	

Table 2. Individual and household characteristics in contracting and non-contracting households.

	Contracting (93)	Non-contracting (63)
Location		
Lowlands	56, 60.2%	47, 74.6%
Highlands	37, 39.8%	16, 25.4%
Men	45, 48.3%	31, 49.2%
Women	48, 51.6%	32, 51.0%
Heads of household		
Female	3, 3.2%	8, 12.7%
Male	90, 96.8%	55, 87.3%
No. in household	5.5 (±2.3)	4.8 (±2.6)
<18	2.9 (±1.9)	2.5 (±2.2)
18–50	1.9 (±1.4)	1.8 (±1.2)
>50	0.68 (±1.0)	.51 (±.89)
Total land (acres)	8.4 (±5.3)	7.2 (±6.6)
Plots (#)	3.6 (±2.8)	3.2 (±2.9)

headed households, i.e. widows (Table 2). Eleven households were headed by women, two of whom were divorced, nine of whom were widows. A total of 156 individuals were interviewed. Ninety-three sell under contract and 63 sell in the conventional chain only. Many contracting members sell in both chains. The average number of household members, the total land size and number of plots were higher in households that contract than those that do not.

Men and women were compared with each other in contracting and non-contracting households to discern whether there were significant differences in socio-economic characteristics and gendered differences in access to contract benefits (Table 3). A total of 45 men and 48 women who contract and 31 men and 32 women who do not contract were interviewed. Within contracting households, men have significantly higher levels of group membership and training participation than women. Decisions about attending training and deciding how to spend loans also significantly differed between men and women in households that contract. A total of

Table 3. Socio-economic characteristics for men and women in contracting and non-contracting households.

	Contracting (93)		Non-contracting (63)	
	Men	Women	Men	Women
Age	51.3 (\pm 13.7)	42.0 (\pm 12.6)	47.3 (\pm 13.7)	44.3 (\pm 11.7)
Education	1.0 (\pm .22)	0.85 (\pm .47)	0.92 (\pm .27)	0.83 (\pm 0.38)
Years in village	36.0 (\pm 12.5)	22.8 (\pm 13.4)	36.9 (\pm 13.9)	26.9 (\pm 17.9)
Member	41, 44.1%	27, 29.0%**	11, 17.5%	8, 12.7%
Training received	40, 43.0%	22, 23.7%**	14, 22.2%	6, 9.5%
Training decision: Woman	0, 0.0%	7, 11.3%**	0, 0.0%	6, 30.0%
Man	31, 50.0 %	3, 4.8%	0, 0.0%	0, 0.0%
Joint	9, 14.5%	12, 19.4%	14, 70.1%	0, 0.0%
Credit received	17, 18.3%	11, 11.8%	9, 14.3%	10, 15.9%
Credit decision: Woman	0, 0.0%	6, 21.4%**	0, 0.0%	3, 10.7%
Man	15, 53.5%	4, 14.3%	6, 31.6%	5, 26.3%
Joint	2, 7.1%	1, 3.6%	2, 10.5 %	1, 5.3%

* Significant at 5% level (0.05).

** Significant at 1% level (0.01).

62 individuals in contracting households received training. Among those, 55% of contracted individuals reported that the decision to attend was made by men and 34% reported that the decision to attend was made jointly. Only 20 individuals in non-contracting households attended training. Seventy percent of men reported making the decision alone and 30% of the women reported making the decision alone. Women's self-reported levels of participation in decision-making were higher than men in both types of households. In general, access to formal credit was low among all households, although non-contracting households received slightly more credit, 4% more often, than households that contract. Control of the loan funds differed between men and women in contracting households. In contracting households men were the main decision-makers on how to spend the loan. In non-contracting households men were also reported to be the main decision makers. Joint decisions in contracting were 11%; and 15% in non-contracting households.

Men have more experience and awareness about contracting than women in both contracting and non-contracting households (Table 4). Only 52% of total respondents in non-contracting households were aware the company existed. Men reported significantly higher levels of attendance of training and received more loans from the company than women in contracting households. FGDs and interviews both revealed that men in the household often make decisions about whether to contract. Following inspection to ensure that farms are eligible for certification, at least one household member must sign the contract, frequently the man in married households. Signing the contract and paying a small fee legitimizes membership in contracting. Then at least one household member is registered and is given a number that entitles him or her to obtain access to the contract benefits.

Table 5 shows individuals' agreement with statements about participation in marketing decisions. Responses were measured on an ordinal response format of one to five where five indicates the strongest in agreement with the statement. In general, men are more independent than women in their market-related decision-making. Men had higher median scores than women for the two statements that measured marketing autonomy. Men in households that contract are more autonomous in decision-making than men who do not contract. In both cases men and women's responses significantly differed. Women in non-contracting households scored significantly lower for negotiating spice sales than men. Men and women's scores for items regarding joint decision-making were similar although women in contracting households reported slightly higher scores for joint decision-making regarding the point of sale (POS) and lower scores for joint discussions prior to sale than women in non-contracting households.

Plot level management

In total 129 men reported that they have plots with spice, 83 who sell in contract and 46 who do not. Women's responses totaled 109, 73 who contract and 34 who do not. Figure 1 shows a clear trend in terms labor allocation on spice plots. Respondents were asked to report whether they allocated labor individually or jointly on family owned spice plots during the year. Women seldom work alone on plots on which cardamom or black pepper is grown. Joint labor contributions in contracting households are higher than those in non-contracting households. In non-contracting households, male and joint labor allocation rates are similar. Family labor accounted for 80% of the labor used on plots in contracting households and 83% of the labor used in non-contracting households.

Table 4. Men and women's familiarity with, and access to, contracting benefits in contracting and non-contracting households.

	Contracting (93)		Non-contracting (63)	
	Men	Women	Men	Women
Previous experience	17 (18.3%)	8 (8.6%)*	4 (6.3%)	0 (0.0%)*
Awareness	44 (47.3%)	36 (38.7%)*	19 (30.2%)	14 (22.2%)
Company training	26 (27.9%)	9 (9.7%)**	–	–
Company loan	10 (10.8%)	3 (3.2%)*	–	–

* Significant at 5% level (0.05).

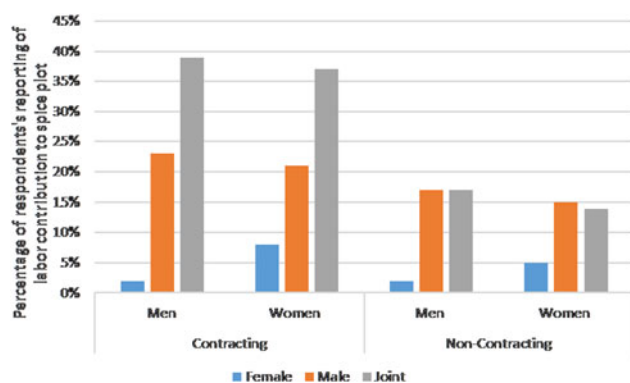
** Significant at 1% level (0.01).

Table 5. Men and women's decision making over marketing in contracting and non-contracting households.

	Contracting		Non-contracting	
	Men	Women	Men	Women
<i>Statements to assess marketing autonomy</i>				
I decide who to sell spices to	3.31 (± 1.18)	2.59 (± 1.0)*	3.95 ($\pm .89$)	2.45 (± 1.01)**
I negotiate sale of spices	2.77 (± 1.16)	2.29 ($\pm .87$)	3.47 (± 1.16)	2.21 (± 0.90)**
<i>Statements to assess joint marketing activities</i>				
Discuss POS with my spouse	4.08 ($\pm .47$)	3.92 ($\pm .61$)	4.04 ($\pm .77$)	3.73 ($\pm .88$)
I discuss with my spouse before I sell spice	4.10 ($\pm .50$)	3.91 ($\pm .57$)	4.17 ($\pm .39$)	4.00 ($\pm .90$)

* Significant at 5% level (0.05).

** Significant at 1% level (0.01).

**Figure 1.** Men and women's reported labor contributions on spice plots.

Spice value chain characteristics

VCA's are presented in the schematic Figures two and three. The location and activities are shown on the left hand side. Bold arrows indicate the primary route of sales in both diagrams while the dotted line represents less common routes in the informal chain. Factory level employment data were not collected and are not presented.

Contracting chain. The contracting value chain has four main nodes, or points of transformation, from production to the final export market in European

countries such as Switzerland and Germany (Fig. 2). Women's participation is most prominent in production and at district level nodes. The company purchases cardamom from smallholders twice per year and black pepper once per year. Farmers are informed about the buying schedule and information about the price is advertised on public posters in local villages. Farmers' opportunities to add value are limited since the company assumes responsibility for post-harvest processing, which includes drying and grading spices to ensure the product meets quality requirements. Although the company strives to pay a price premium for organically certified spices, the prices paid to producers are generally similar to prices paid in the conventional chain, about US\$0.10 kg⁻¹ for fresh cardamom and US\$0.05 kg⁻¹ for fresh black pepper. Company agents purchase either at the farm or in designated collection points in the village. Coordination of sales sometimes creates challenges for smallholder producers due to difficulties in planning harvests and transporting the product to the POS. Company representatives purchase larger volumes, i.e. 200 kg+, at the farms of larger producers while smaller farmers must transport the product to the POS locations in the highlands or directly to the processing center in the lowlands. In all cases, the spice is sorted and only high quality, fully ripened spices are transported to the processing center in the lowlands.

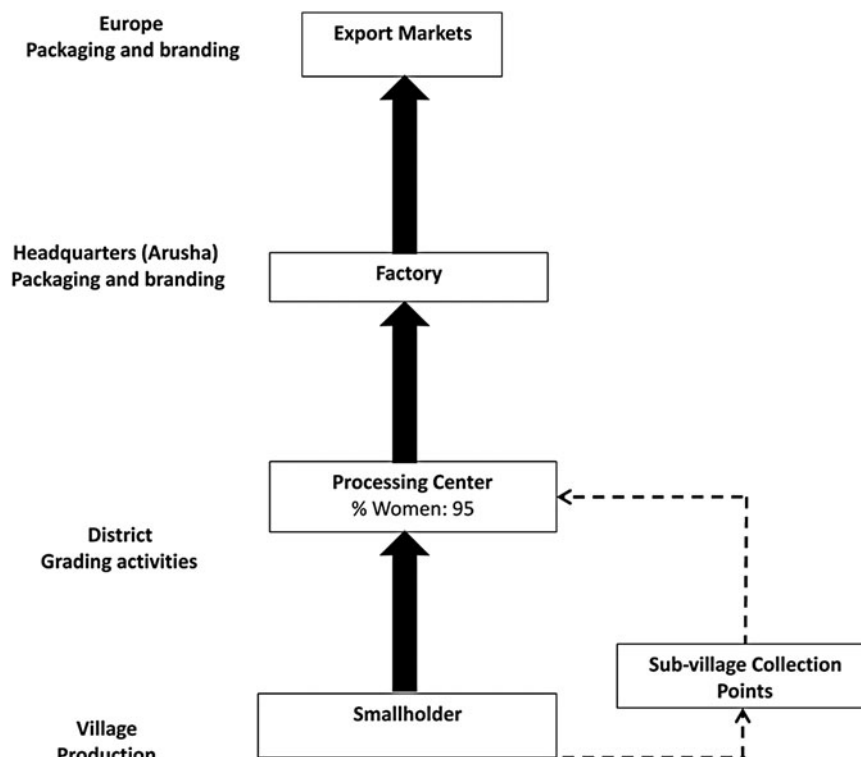


Figure 2. Contracting value chain.

Women participate at production and district level segments of the chain. Approximately 20 individuals, or 95% of total staff in the processing center, are women, most of whom are divorced or widowed. Barriers to enter employment are low because the work is unskilled and positions are limited because the company is small. Women's main responsibilities are to manually sort by size, remove debris, winnow and place the spices on mats to dry. Women are paid based on volume processed and the average daily wage rate is equivalent to non-skilled off-farm wages in the surrounding area, from US\$1.60 to 2.50 per day for 5–6 days per week. After the spices are processed in the lowlands they are transported to Arusha.

Conventional chain. The conventional spice chain comprises four main nodes and the final market outlets include retail shops and markets located in the district, urban centers and regional markets in East Africa (Fig. 3). Women participate in the village and in district level segments of the chain and in urban markets, e.g. Dar es Salaam.

Quality characteristics of spices are not well monitored and price information is hidden between actors in the chain. Actors often add debris to the product to increase volume and personal profit, since prices are based on weight. Such activities result in poor quality products. Smallholders sell throughout the year, including periods when the crops are out of season and not yet mature. Producers' value added activities include rudimentary

post-harvest processing to dry the spices, either in the sun or in stoves. Sorting and grading are performed only for special orders, which are few. Farmers sell most often from their home in spot market transactions. The producer's volume of spice harvested often determines who they will sell to in the chain. Since most farmers are small-scale and often need emergency cash, they frequently sell to small traders in amounts as small as a cup. Small village-based traders process and sell from 200 to 600 kg of spices per annum to district level brokers. Producers with high volumes coordinate sales with large traders, often at the farm. Large traders process and sell approximately three tons of spices per annum to district level wholesalers.

Women participate in the production and district level segments of the chain. Six out of eight of the women holding positions as small village traders were divorced or widowed. Women occupy about 30% of the small trader positions in the village and 2% of the large trader positions. Distinguishing features of these two positions are startup capital required and control of the positions by social networks, both of which generate barriers to entry to women. Informal credit is a key feature in this chain. Cash constrained producers frequently request credit from village traders to hire labor for weeding and harvesting. The provision of credit is through an informal contract that requires the producer to sell the crop to the trader. Interest rates vary from none to 20%. Large traders acquire credit from district

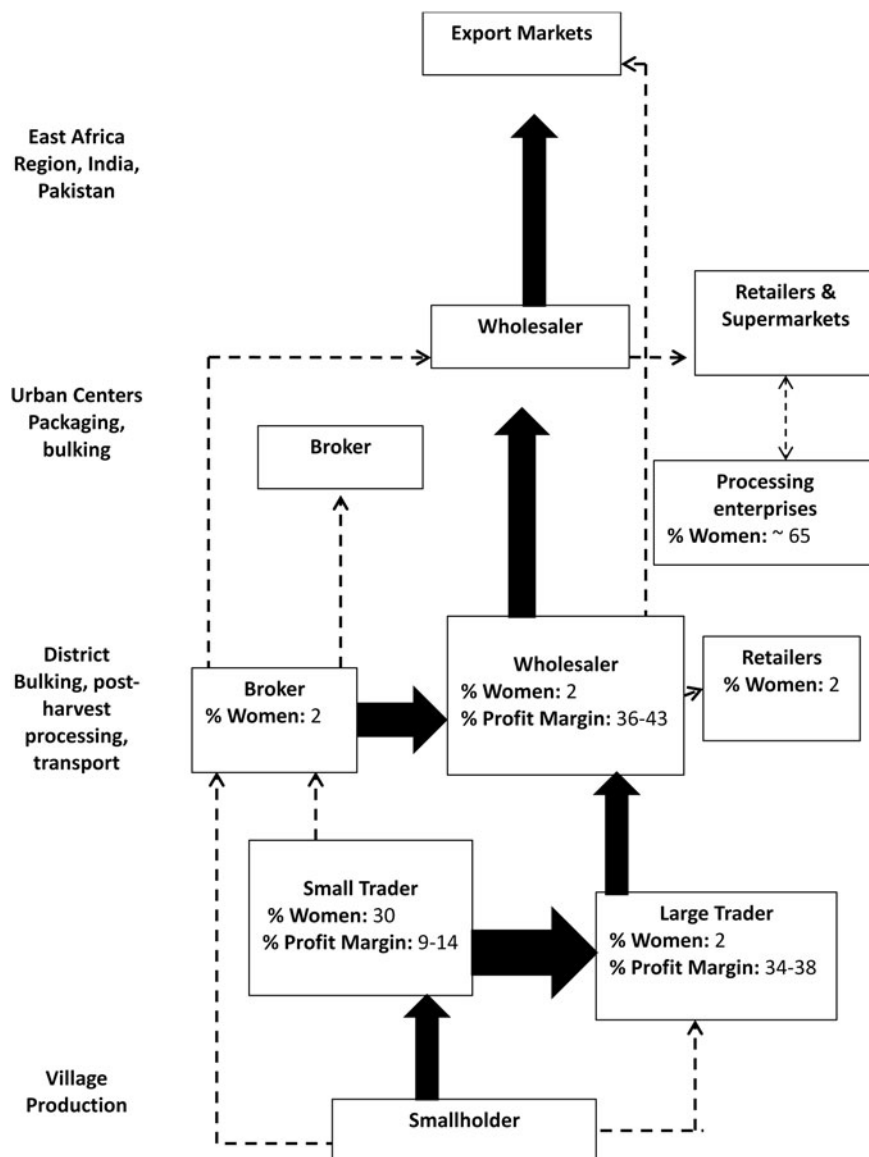


Figure 3. Conventional spice marketing chain.

wholesalers, primarily men, who then sell to wholesalers based in urban centers. They, in turn, export and sell to East African regional markets and local market retailers. In some cases, retailers add value by grinding and branding their products. Processing enterprises in urban centers include small factories in which men operate machinery and women clean and manually grind spices. The differentiation in tasks leads to gender-based wage gaps of 25–50%.

Profit margins were calculated based on interviews with value chain actors for village and district level actors and range from 9 to 43% depending on the position in the chain (Fig. 4). Smallholders incur the highest added costs followed by small village traders, large traders and wholesalers (See Bullock *et al.*, 2014). Total profits are highest for wholesalers and large traders, which are positions more frequently held by men.

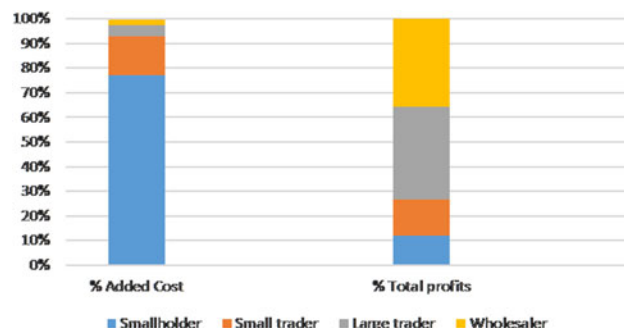


Figure 4. Profit margins.

Discussion

Contracting reduces transaction costs in the chain compared with the conventional trade. However, the wider

political economic context determines who gains access to markets and the extent to which contracting brings about changes in gender relations that result in more gender equitable market development outcomes. The combination of household and chain level analyses shows that interventions differentially influence women. Gender norms and institutions create gendered patterns of participation in both household and chain activities and in both contracting and non-contracting households. Within households, married women benefit marginally through their husband's participation. In the community, women female heads of household often gain access to contracting employment opportunities. Such findings raise concerns about VCD initiatives that rely on contracting mechanisms to enhance gender equitable market development outcomes.

Household

Spices fall largely within men's domain in both contracting and non-contracting households. Findings suggest that contracting does not provide significant opportunities for women to participate and benefit from spice contracting. Women do not directly benefit from household participation in contracting for two primary reasons. First, participation of female headed households is low. Female headed households who are resource constrained may not be able to invest in cash crops and may therefore be excluded from more lucrative opportunities within VCD initiatives. Secondly, women in contracting households had significantly lower levels of group membership and training than their spouses. Although women had slightly higher levels of participation in market decision-making and selling spices jointly in contracting than non-contracting households, the differences were often not significant.

Customary patrilineal land practices and gender norms regarding farm activities influence spice plot land management and labor activities. Men are the primary decision makers about what to plant on spice plots since they are often the owners of the plots. Women's labor contribution on spice plots differed between contracting and non-contracting households. In general, and reflected here, labor in AF systems is often gendered, but the specifics are not well understood (Elias, 2015; Kiptot, 2015). Although men perform most labor associated in spice AF systems, women in contracting households contributed slightly more labor on spice plots than women in non-contracting households, primarily through joint labor with their spouses. Additionally, family labor was more frequently cited as the main source of labor on plots in contracting households. Men, the main beneficiaries of training, reported that they learned about labor reducing practices and occasionally shared this information with their spouses. Bolwig and Odeke (2007) similarly found that women's labor increased, but this was offset by higher income earning potential in a certified

organic scheme based in Uganda. In the East Usambaras, women often do not realize income benefits because of norms and firm characteristics. Women do not substantially participate in decision making about how to spend income from spice sales because they often do not sell independently from their spouses and more generally because spices are cash crops managed predominantly by men. In addition, since the company must meet export quality standards producers' opportunities to add value through post-harvest processing are limited. The firm also faces challenges because exported spices are sold in spot market sales. The company assumes all costs until time of sale, which includes warehouse costs and product testing to ensure the products meet quality standards. Incurring these costs affects their ability to pay producers a competitive price.

Value chain

Contracting improves coordination of sales and improves product quality compared with the conventional chain. Transactions in the informal spice chain share many common characteristics of market exchanges in SSA agricultural market contexts in which many small-scale actors with capital and credit constraints participate. Information asymmetry about quality characteristics is high between buyers and sellers, which increases risk of losses due to poor quality and raises costs in that actors must screen products at each node in the value chain. Since price is determined by weight, producers and traders often add debris and dirt to increase weight. Actors in these value chains have access to very little, if any, information about downstream and upstream activities. By contrast, coordination mechanisms in the contracting chain reduce smallholders search costs by posting collection schedules and price information. The company also provides resources that contribute to local development, specifically agricultural extension assistance, which is lacking in the area. Gendered VCAs revealed that women's opportunities and constraints to participate differ in contracting and informal value chains.

In general, women in female headed households seek income earning opportunities more than married women, likely owing to necessity since women in female headed households have less access to resources, e.g. land. Women face challenges managing both domestic and paid work responsibilities. They often juggle paid work with their childcare and family responsibilities, which can compound poverty (Barrientos et al., 2005). In this study, women who were employed in contracting or working as traders in the conventional chain reported that they exercise financial autonomy and were the main decision makers about how to spend their earnings.

Women often work in commercial horticulture in East Africa (Tallontire et al., 2005) and this was true in the case investigated here. Women perform menial and unskilled tasks and are paid wages equivalent to local

daily wages for female casual farm labor. The company is a small firm and offers few opportunities for employment compared with commercial horticulture in other East African countries. Women are hired on a permanent basis and are offered the choice to contribute to a social security fund. However, paid transport and maternity services are not provided. Lack of benefits, such as maternity leave, childcare and transport are also common for temporary and contract workers in African horticulture, whether production is for export or domestic markets (Barrientos *et al.*, 2005).

Prevailing gender norms give rise to gendered patterns of participation and gains in the conventional chain in particular. Barriers to enter the chain as a small trader are low and these positions are open to women and men alike. Profit margins for actors in these positions are significantly lower than the positions of large village trader and district wholesaler, positions commonly held by men. Drying spices, cardamom in particular, is a simple value addition technique that provides opportunities in an area with few prospects for off farm employment. The dynamics of the chain shift dramatically when advancing to positions that require more capital. For example, a large village trader will have significantly higher profit margins. Women traders are effectively excluded from moving into higher level village positions because of their time constraints related to domestic responsibilities and capital constraints that stem from weak social networks. Social networks, or the close personal relationships among traders, serve a critical role in the informal chain in the absence of formal contracting. Better connected traders have significantly larger sales and value added than less connected traders (Fafchamps and Minten, 2002). In the East Usambaras, men build more extensive social networks than women and this enables men to advance to more profitable positions in the informal value chain by securing credit from larger traders and wholesalers in urban areas. Extra capital enables small traders to provide credit to smallholders and secure higher volumes.

Conclusion

Contracting approaches within VCD strategies must consider the role of gender in the wider social contexts in order to foster gender equitable development outcomes. Gender norms clearly influence gender relations in both household and chain level activities. Approaches that do not consider the role of gender may reinforce gender relations that worsen outcomes for women and men, undermining rural development objectives. This research highlights the need to further investigate the roles of labor and gender in AF systems. Strategies to engender VCD approaches include targeting women and men in recruitment and engaging women in female headed households in chain development processes. Furthermore,

women's access and control over assets, including land and other productive assets, must be addressed to overcome resource constraints that limit their participation in value chain activities and ability to benefit from contracting arrangements. More supportive regulatory frameworks for national level small to medium enterprises would enable companies to offer competitive prices to producers that would consequently increase household income. Lastly, the codes within organic certification should be more explicit in specifying how to foster greater gender equity in employment and production activities. Commercial and small-scale horticulture and organic sectors are growing in East Africa and must support gender equity within the agricultural sector and beyond.

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