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Commercialization of Smallholder Farming: It's Inclusive Household Welfare Effects on Smallholder Farmers in Butaleja District

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Abstract
This paper explains the potential impact of agriculture commercialization on the welfare of smallholder farmers participating in the Doha rice scheme project of Butaleja District in Uganda. The study used cross-sectional data from 368 respondents in the three counties that make up Butaleja District. Stratified random sampling was used with each county serving as a stratum. With the help of the National agriculture advisory services farmers list in each county, simple random sampling was applied to select respondents to participate in the study. Results reveal a significant positive relationship between commercialization of Smallholder Farming and household welfare, with key variables of market access and internal farming activities positively and significantly contributing to improved household incomes and farm outputs. The study recommends that improvement in household welfare could be achieved by farmers actively working on improving market access and internal farm activities. The results imply that development players like government and farmers should use improved farming approaches and improve market access so as to transform household welfare.
Keywords: Smallholder farming, commercialization, welfare and market access

1. Introduction

Commercialized farming is widely considered as the most effective means of dealing with poverty in the developing world (Carletto, Corral & Guelfi, 2017; Ogutu, Godecke & Qaim 2017). It is estimated that a one percent increase in agricultural productivity could reduce the percentage of poor people living on less than 1 dollar a day by range of 0.6% to 2% (Asfaw et al, 2012). In Uganda most farmers are marginal cultivators, with subsistence agriculture as the major source of livelihood absorbing over 75% of the country's population (Abera, 2009, World Bank, 2009). Rural areas are the home to the majority of Uganda's population and smallholder farming being the foundation for the rural economy serving mainly as a source of food and income (Govereh, 1999). With Uganda having only 12% of smallholder farmers as net sellers of farm output and net buyers standing at 66%, access to markets and moving from subsistence to market oriented farming can bring about economic growth, low food prices, food security, bridging of the nutritional gap and improvement in the standards of living (MAAIF, 2010, Osmani et al., 2015, deHaas, 2016). Earlier literature,(World Bank, 2007, Govereh, 1999, Strasberg *et al*., 1999) show smallholder farming, to be as efficient as large scale farming, in transforming economies, if farmers receive similar support services like credit and inputs from government. It is in this breath that the Ugandan government embarked on plans to commercialize smallholder agriculture with a number of broad based programs ranging from Poverty Alleviation Action Plan (PEAP), Plan for Modernization of Agriculture (PMA), National Agriculture Policy (NAP) and the with recent being the creation of the National Agricultural Advisory Service (NAADS) an agricultural advisory secretariat to avail farmers with broad knowledge in improving farm outputs, marketing of farm outputs, provision of farm inputs and technological advancement. However, with all these governments' efforts, agriculture has not registered robust growth and real transformation as intended. Most farmers have stayed subsistence, with only 25% of rural farmers accessing markets to sell their produce (World Bank, 2009). Several studies conducted by International Food Policy Research Institute(IFPRI) and the Economic Policy Research Centre(EPRC) in most developing countries Uganda inclusive, have revealed positive impacts of smallholder commercialization on welfare, income, nutrition and other social economic development of households. This widespread positive reputation of smallholder farming as a means to reduce poverty brings optimism of increasing farmer's welfare (World Bank, 2009, Muriithi &Matz, 2014). Further results depict smallholder commercialization as a better predictor of household welfare, promoting living standards through consumption of high valued foods, purchase of home durables better education for their children and totally improved health standards (Gebreselassie, and Sharp, 2007), however, most studies use models from outside Uganda (Von Braun, 1994, Omiti, 2009, Okezie 2012). Even those studies conducted in Uganda are based on data from other regions yet Eastern Uganda considered as the country's food basket has never been focused on before. The purpose of this research therefore, is to fill this emptiness in literature by examining the levels of agricultural commercialization and its impact on welfare of smallholder farmers in Butaleja district taken as one of the major beneficiaries of a number of government programs focusing on commercialization farming, these range from Rural Development Strategy (RDS), Plan for modernization of Agriculture (PMA) and the Prosperity for All (PFA) program.

1.1. Literature Review

In Uganda over 70% of the population is smallholder farmers, with less than 15% engaged in commercialized farming yet it is clear that commercialized farming and improving land productivity have become tools for escaping from poverty (Abera, 2009). Farming is stated to have a higher potential to create jobs, increase returns to the asset that people poor posses, i.e. labor and land, and it pushes down prices of most food stuffs (Hazell et al, 2007). Uganda's government initiated Operation wealth creation a program that encompasses many projects within, amongst which is commercialization of smallholder farming. Commercialization of farming was earlier a concept of large scale farming, small farmers where never considered market participants simply because smallholder farming was basically for subsistence purposes and in some communities selling of food was considered a taboo. Literature from various studies tackled the concept of commercialization with varying definitions but all centering at growing something for more than household use, being market oriented and capturing crop specialization benefits (Govereh, 1999; Sokoni, 2007; Hazell et al, 2007; Immink and Alarcon, 2009; Von Braun 1994). Commercialization of smallholder farming lies heavily in its potential to increase rural household economic growth and poverty reduction. It improves on welfare of most household directly through income effects and indirectly through forward and backward linkages. Linkages are generated through improved demand for farm inputs, and use of the farmers' improved incomes to buy consumer goods (Randela, 2005). Commercialization is also known to have comparative advantages over subsistence agriculture; it generates income for rural households, expansion in the use of hired labor than it was in subsistence production (Von Braun, 1994, Dorsey, 1999). Increased wages and employment from commercialization translates into a broad spectrum of development in the entire rural economy (Randela et al, 2008). According to Von Braun(1994) and Ogutu, Godecke & Qaim (2017), improved incomes permits households to respond in ways that may favor nutritional improvements by reducing mal-nutrition among households, incomes lead to purchase of different goods and services which well relates to improved welfare, access to better housing, schools and medical services (Kennedy and Bouis, 1993). Further research mentions commercialization as an engine for agricultural efficiency, enhanced household access to food and farmer participation in markets (Webb, 2000, Von Braun, 1994, Kennedy, 1994). A number of debates about commercialization of farming as means to better welfare and alleviate poverty has been paramount in most economies with access to markets, better farming techniques and tools at the helm, Analysts and policy makers have now switched to markets for agricultural outputs, as an underlying principle to allow households increase their incomes, produce high value crops which would provide the highest returns to land and labor (Osmani et al, 2015, Herrmann, 2017). Market access to staple foods and asset accumulation are emphasized, in improving welfare, infrastructural developments, strong farmer organizations and promotion of contract farming their welfare standards can improve (Leavy and Poulton, 2007; Koppmair, Kassie & Qaim, 2017).

In a related agreement Govereh (1999), argues that the basic assumption embedded in the commercialized comparative advantage is the ability of smallholder farmers to produce mainly high value cash crops which give them higher incomes to buy household consumption items, these incomes and food stuffs also give way to improvement in food security, poverty reduction and economic growth (Bernard, and Spielman, 2008, Jaleta, 2009). Commercialization literature, also introduces the value chain concept that with increased household market participation, this directly impacts on value chain actors such as input suppliers, output traders, transporters, processors, financiers and others, these enjoy economies of scale created from increased demand and supply; it reduces the cost per unit of operation and eventually increases their house hold incomes. It further states that processing and marketing of commercial products at a village level contribute total household labor income and employment, hence instrumental in overcoming poverty (Kawagoe, 1994, Ebata and Hernandez, 2017). However, other studies suggest that despite the fact that movement from subsistence farming towards market commercialization increases income, welfare and contribute to economic prosperity; commercialized agriculture has lead to adverse consequence mainly by exposing households to volatile food market prices and food insecurity (Osmani et al, 2015). In Uganda Eastern districts of Mayuge and Luuka community leaders have gone back to sensitizing communities to resort back to subsistence farming and concentrate mainly on maize growing than sugar cane, because sugar cane growing is causing food scarcity and increased food prices in these communities. Other scholars have also argued that full commercialization can only be achieved if issues like transport, road access, land size, integration extension services are in place, since market inefficiency and high transaction costs which inhabit farmers from enjoying the fruits of commercialization and household stability (Mahelet, 2007; Bernard,2007; Leavy &Poulton,2007).

2. Materials and Methods

The research adopted a cross sectional survey design; it targeted the 9,214 registered smallholder farmers under the Doho rice scheme project in the three counties of Busolwe, Budumba and Bungola that make up *Butaleja District* . The reason for selecting Butaleja District is that, apart from it being the country's leading producer of rice and farming being the principle source of livelihood for majority of the population, it also has benefitted a

lot from a number of government agriculture commercialization related projects, A sample size of 368 farmers from a population of 9, 214 registered farmers was arrived at basing on Krejcie and Morgan 1970 table. To guarantee fair representation of each county in the district, stratified sampling was adopted with each county serving as a stratum, before simple random sampling used to select at most 123 households per county as units of analysis. Structured survey questionnaire were administered with one farmer acting as a respondent per household preferably the family head as adopted and used by (Nguyen and Ramachandran 2006). See table 1 below.

Table 1: selection of respondent

Name of County/ Stratum	Number of Sample Respondents	Response Rate
Busolwe	122	83%
Budumba	123	79%
Bungola	123	90%
Total	**368**	**84%**

Source: Authors computations

2.1 Measurement of Variables

Measurement of variables is based on previous studies; however, it is improved upon to be consistent and suitable for this study. Respondents assessed commercialization of smallholder and household welfare on a 5-point Likert scale developed by Rensis Likert in the 1930s, ranging from 5 = Strongly Agree, 4 = Agree, 3 = Somehow Agree, 2 = Disagree, and 1 = Strongly Disagree. The study measures Commercialization in two key dimensions, i.e. Degree of market participation or the proportion of output sold (Wellard, 2011, Leavy &Poulton, 2007), and level of internal farm activities (land, labor and capital) (Jayanta, 2015, Ukoha et al, 2007). Welfare is measured in terms consumption of basic grains and high valued foods (Samuel &Sharp 2007) and the level of expenditure on non food items like education and health (Gebreselassie &Sharp, 2007, Osmani et al, 2015).

2.2 Validation of Research Instruments

Content validity checks were performed to ensure that items used were meaningful to the sample and captured the issues that were being measured. The validity test results were all higher than 0.70 on a scale scale of (0.0 to 1.0) and thus were deemed adequate (Anastasi, 1982). Further, the reliability analysis was conducted by calculating the Cronbach's alpha coefficient for each construct, and results showed that measures for all constructs were higher than the recommended critical point of 0.70 Hair et al (2009), indicating good internal-consistency reliability.

3 Findings

3.1 Sample Characteristics

Table2. Sample characteristics

Variable	Category	Frequency	Percentage
Position in Rice Scheme	Spouse of the owner	102	33.6
	Worker	47	15.5
	Farm Owner	154	50.8
	Total	**303**	**100.0**
Duration Spent Practicing Farming for the Market	Less than 1 Year	18	5.9
	2-3 Years	48	15.8
	3-5 Years	78	25.7
	5-7 Years	92	30.3
	7 & Above	67	22.1
	Total	**303**	**100.0**
Anticipated Earnings Per Year	Less Five Million /=	132	43.5
	5-10 Million	121	39.9
	10-20 Millions	35	11.5
	20-30 Millions	10	3.3
	30 Millions& Above	5	1.6
	Total	**303**	**100.0**
Highest Level of Education	Ordinary level	160	52.8
	Advanced level	49	16.1
	Diploma Holder	13	4.2
	Degree Holder	7	2.3
	No academic Level attained	74	24.4
	Total	303	100.0

Source: Primary Data

Table 2 above shoows smallholder farm characteristics, most respondents were farm owners (50.8%),

followed spouses to the farm owners at 33.6%, farm workers taking the least percentage at 15.5%. The majority of smallholder farmers (30.3%) had spent 5-7 years practicing commercialization, followed by those of 3-5 years (25.7%), with the least percentage at (5.9%) of the respondents who have spent less than a year in the trade. Other results reveal that majority of the farmers anticipated to earn less than 5 million shillings per year (43.5%) followed by those anticipating to earn between 5-10 millions (39.9%), with only five respondents anticipating to earn more than 30million (1.6%) meaning that most farmers are still very small, with low production rates, further results revealed, that most farmers were not very educated, with ordinary level holders being the majority at(61.1%), though with abilities to read and write but no specific academic qualifications.

3.1 Level of Commercialization

Our research objectives involved examining the level of smallholder commercialization, and its welfare outcomes. In order to study the welfare outcomes of commercialization, we first studied the level of commercialization of most farmers, by looking at their ability to access markets (Wellard, 2011, Leavy and Poulton 2007) and internal farming activities (Jayanta, 2015).

Table.3 Descriptive Analysis of Market Access

Item	N	Min	Max	Mean	Std. Deviation
I always sell my farm output to the market	303	1	5	3.9	0.7
I have access to both nearby and far markets for my produce	303	1	5	3.1	1.0
I sell most of my produce to middle men from urban centers	303	1	5	3.2	1.1
I have easy transport access to take my produce to nearby market	303	1	5	3.5	0.9
I find the means of transport to the market affordable	303	1	5	3.5	0.8
I easily get market information relating to price changes	303	1	5	3.2	0.9
I am a member of a farmers society in my community	303	1	5	3.4	1.0
I am planning to embrace the new technology in farming soon	303	1	5	3.7	0.9
I have a clear line of credit from where I borrow from	303	1	5	3.1	1.0
I always settle my loan obligations in time	303	1	5	3.2	1.0

Source: Primary Data

Descriptive results in table 3 above show a higher mean for each question measuring access to markets. This implies that most farmers have access to markets and most of what they require to avail their produce to potential customers, like it is in earlier works of Leavy and Poulton(2007), Wellard (2011).

Table 4: Descriptive analysis of Internal Farming Activities (Land, Labor and capital)

Item	N	Min	Max	Mean	Std. Deviation
I have enough land I use for farming and my other personal activities	303	1	5	2.7	1.0
I find this land suitable for crop growing	303	2	5	4.0	0.6
I usually re-invest the business profit to grow my capital	303	1	5	4.0	0.9
I am aware of my capital requirements	303	1	5	3.8	0.7
I cultivate my farm using an ox plough and other machines	303	1	5	3.8	0.6
I train my workers in farm related activities anytime a need arises	303	1	5	2.4	0.9
I often hire labor from my community to use for cultivation	303	1	5	3.5	1.0
I always use credit facilities to buy farm inputs for my farm	303	1	5	3.1	1.0
I taking farming as career in my life	303	2	5	4.2	0.7
I use fertilizers and recommended pesticides to improve output	303	1	5	3.8	1.1

Source: Primary Data

Findings in table 4 above show that majority of the smallholder farmers practice commercialized farming, using modern internal farming activities (labor and capital). Results further show that most farmers responded in agreement to most of the questions testing availability of internal farming activities.

3.2 Correlation Analysis

Table 5: Degree and Nature of the Relationship

ITEM	1	2	3	4
Commercialization of agriculture (1)				
Market access (2)	.801**	1		
Internal farming activities(3)	.727**	.171**	1	
Household welfare(4)	.266*	.198**	.210**	1
** Correlation is Significant at the 0.01 level(2-tailed)				

Source: Primary Data

Correlation results in table 5 above are also consistent with the finding of Samuel and Sharp (2007), fidnings suggest that there has a significant positive relationship between commercialization of agriculture and Household welfare(r = .266**, p<.01). This relationship is also evidenced in the dimensions that measure commercialization of agriculture, Market access(r = 0.198**, P<1), Internal farming activities(r = 0.210**, P<1).

3.3 Regressions Analysis

In addition to correlations, regression analysis was conducted on the data in order to determine the nature of relationship between commercialization of smallholder farming and the dependent variable (household welfare). Table 6 below, presents results from regression analysis.

Table 6: Regression analysis of household welfare

	Un Standardized coefficients		Standardized coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.737	0.188		14.540	0.000
Commercialization of smallholder farming	0.288	0.055	0.266	5.259	0.000
R. Square	0.187		F statistics		27.66
Adjusted R Square	0.169		Sig.		0.000

Source: Primary Data

Results for commercialization smallholder farming presented in table 6 above, show the degree to which the components of commercialized farming predict changes in Household welfare, results show that commercialized farming predicted 16.9% of the variance in Household welfare(Adjusted R Square = .169). Commercialized farming with positive and significant (0.266, p < .000) with construct of market access, internal farming activities as predictors of Household welfare. The regression model was also valid (p < .01).

4. Discussions, conclusion and recommendations

The findings showed a positive significant relationship between commercialization of smallholder farming and household welfare, these results support the study proposition that commercialization and household welfare are positively related. The results are also in line with the findings of Samuel and Sharp (2007), Govereh (1999), Leavy & Poulton (2007), Muriithi & Matz (2014), Carletto, Corral & Guelfi, (2017) which state that there exists a positive relationship between smallholder farmers commercialization and increase of other household welfare. With significant positive relationship between the construct of commercialization(Internal farm activities) and welfare this means that there is clear need for farmers to adopt appropriate farming behaviors as regards deciding inputs to use, quality of labor, machinery, fertilizers and pesticide employed. Nature of land should be emphasized in farming decision making process, farmers need to first experiment the soil type before growing the crops and employing modern farming techniques. Land tenure systems should be re-visited and avoidance of land fragmentation ensures better results from their farms (Jayanta et al., 2015, Jaleta et al., 2009). However, due to lack of modern farming tools and communal land policies in these regions, most farmers find it to manage internal farming activities which tend to jeopardize their eventual farm outputs (Sebatta et al., 2014). In line with the studies of Ebata and Hernandez (2017), results in Table 6 further revealed that market access and household welfare are positively related, this indicates that if government wants to improve commercialization emphasis should be put on markets and farmer's accessibility to these markets, issues of market information, distance to markets, market globalization and liberalization should be addressed (Randela,2005). Preferential trade treatments should be negotiated, and regional blocks formed. Value chain and logistical challenges should also be addressed, road networks, warehouses, cooperative movements, and extension services into farmers more specifically financial knowledge and skills in markets and basic business skills.

4.1 Conclusion

This study investigated the different levels of commercialization among smallholder farmers; it also looked at the impact of commercialization on the house hold welfare of most farmers , with the above results it brings us to a conclusion that commercialization among smallholder farmers should involve making broad agricultural production decisions based on market demands not just basic community needs, a positive significant correlation between welfare and commercialization is a signal to all farmers that with a clear decisions about their farm inputs, embracing technology, and market oriented decisions, their household welfare is likely to improve drastically and attain inclusive growth. It is also notable that smallholder farming will not only generate welfare effects to farmers, but it has a multiplier effect on income growth, economic growth, employment generation and total alleviation of poverty. With all that attained it will lead to reduction in consumption of cereals and a move towards a consumption of high value commodities like eggs, meat, milk, fish and fruits, other changes like economic growth and rising incomes and urbanization are all due to commercialization of farming (Joshi, 2007).

The other noted impact of commercialization is Specialization, and women empowerment, from our sample analysis a great number of respondents were spouses to the farm owners and they were directly involved in farm activities, this inclusiveness of women in farm activities contributes to reduced disguised unemployment among families. Majoring in rice as a crop leads to specialization, this specialization breads innovation among farmers which innovation breads competition leading to effectiveness and general improvement in welfare.

4.2 Policy Recommendations

Instituted structures, policies and directives to transform smallholders farmers from subsistence oriented farming towards farming for markets has yielded positive significant results over the years, though little welfare improvement results have been registered. There is need for specific institutional structures and supportive policies mainly designed to target smallholder farming. Skills assessments need to be conducted and identify training gaps not only on the farm skills but also basic business skills in market activities and personal financial management.

All businesses small or big need clear lines of credit to be in position to expand and reach new horizons, credit services or matching grants for farmers will help many smallholder farmers to improve their farming capacities, farmers will acquire more land and farm inputs more so, technology, pesticides, fertilizers and supply chain logistics to access markets. Studies have shown that credit facilities and matching grants can be an effective tool in promoting access to finance, inducing innovations and commercialization of smallholder farmers, that's why the Ugandan government should think of a Smallholder farmers Fund.

Rather than focusing on a few best suited farmers in different villages for commercialization, government should make it a multi-sector agenda and transform people from subsistence farming to commercialized agriculture. Clear agricultural policy and specific programs should be under taken inclusive of all farmers, tackling all farm logistical challenges. There should be clear transformation strategies, pro-rural policies and strategy interventions should be instituted to improve investment climate, more markets, ware houses, rural roads networks, review land tenure systems, provide proper extension services, this will better farmer lives and lead to economic transformation in the district.

Vertical integration of members and formation of Cooperative Unions should be encouraged, these will provide both backward and forward linkages within the district, and it will give farmers bargaining power for products and also make them do personal saving to improve their capital needs. Cooperatives will play a role of provision of employment opportunities to sons and daughters of member as administrators, accountants and other jobs as the scheme grows. All in all the unions gives an umbrella to farmers in a number of social and economic aspects of the farmers (Jaleta et al, 2009).

4.3 Study Limitations

With some interestingly findings from the study we cannot out rightly say it lacked some limitations there were two main concealed limitations in conducting this study. Standard questionnaire were used in collection of the data, the same measurement context using a common rate and with common item context were employed, these may normally bring about common methods bias. Also the target respondents were so hard to access given the remote nature of these three counties and lack of clear transport system which impacted on the time taken in the field and the final response rate.

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