



Original article

An Empirical Analysis of Commercialization of Smallholder Farming: Its Inclusive Household Welfare Effects

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Abstract

This paper assesses the potential impact of commercialization of agriculture on household welfare of farmers in eastern Kenya under the Mwea rice scheme. The study consists of cross-sectional data collected with structured survey questionnaires. Stratified sampling was adopted with each of the four zones in the District forming a stratum. The number of respondents was 368 selected conveniently with the help of the National agriculture advisory services officers. The causal relationship and impact of commercialization on welfare were estimated using Pearson's correlation coefficient and regression analysis. The analysis results revealed significant positive relationship between commercialization 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 regression result further predicted a 16.9% improvement in household welfare if farmers actively worked on improving market access and internal farm activities like fertilizers and pesticides. It's therefore recommended that farmers work on all aspects that can improve on their farm outputs and also get links to both nearby and far markets. Formation of saving schemes will help them pool resources to buy inputs like tractors, lobbying central and local governments for infrastructure in the districts and negotiating better output prices. All this will help improve farmers' household welfare and standards of living in this area.

Keywords: Small holder farming, commercialization, welfare and market access

Introduction

Commercialized farming is widely considered as the most effective means of addressing poverty in the developing world. 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 between 0.6 to 2 percent and that no other economic activity generates the same benefit for the poor like agriculture as postulated in World Water Assessment Programme (United Nations) (UN-Water & Unesco 2009; Asfaw et al. 2012). In Kenya most farmers are marginal cultivators, with subsistence agriculture as the major source of livelihood absorbing over 75% of the population for their livelihood (World Bank 2009; FAO 2010). Rural areas are the home to the majority of Kenya's population and small scale agriculture is the foundation of the rural economy serving mainly as a source of food and income (Govere et al. 1999). With increased output of the Smallholder farmers, poverty can be reduced, food prices pushed down, food security and nutritional gap of people improved (Osmani 2015). Access to markets and moving from subsistence to market oriented farming can bring changes in economic growth and eventual improved standards of living, given that in Kenya only 12% of small holder farmers are net sellers of their farm output with net buyers standing at 66%, this leads to demand exceeding supply at all costs showing a huge potential for growth (MAAIF 2010).

Smallholder agriculture, which is the predominant source of livelihoods for most families, has proven to be as efficient as larger farms when farmers receive similar support services and inputs from Government in terms of credit and farm inputs (World Bank, report 2007). In Kenya government has embarked on plans to commercialize smallholder agriculture with a number of broad based policies 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 their farm outputs and commercialization of farm produces, provision of farm inputs and technological advancement. However, despite all these efforts agriculture has not registered robust growth and transformation as intended since most farmers have stayed into subsistence agriculture with only 25% of rural farmers accessing markets and selling what they produce (World Bank report 2009). According to Muriithi and Matz (2014) widespread positive reputation of smallholder farming as a means to reduce poverty, brings optimism that small holder farming increase the farmer's welfare that's why governments embark on promotion of value addition to agricultural commodities, as a means of improving farm output and eventual value of the final product specifically horticultural and dairy products (World Bank 2009). Welfare is usually not observable but it represents standards of living. Proxies like household expenditure on food and education are usual indicators of welfare (Quartey 2005). However, with all government efforts to improve agriculture and access markets, many households in Kenya's Eastern district of Mwea cannot afford to purchase necessary farm inputs such as fertilizers, pesticides and improved seeds, which would bring about increase in productivity and eventual, growth in household income to improve their socio-economic welfare (Ukoha et al. 2007).

Earlier studies have attempted to examine smallholder farmer commercialization as a better predictor of household welfare, that it enhances farm profit margins, promotes living standards and welfare through consumption of high valued foods, purchase of home durables better education for their children and totally improved health standards (Gebreselassie & Sharp 2007) but most studies are using models outside Kenya (Von Braun 1994; Omiti et al. 2009; Okezia et al. 2012) and even those studies within Kenya are based on data from other regions yet eastern region considered as the food basket of country no such study has been conducted. The purpose of this research is to fill this emptiness in literature by examining the levels of agricultural commercialization, its key determinants among the small holder farmers and the impact of commercialization on the welfare of small holder farmers.

Literature Review

Statistics world over show that 1.5 billion households in developing countries live in rural areas with a biggest percentage of these involved in agriculture (World Bank 2007), in Kenya above 70% of the population are small holder farmers, with less than 15% engaged in commercialized farming yet it's 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 possess, i.e. labor and land, and it pushes down the price of most food staples (Hazell et al. 2007).

That's why the Kenyan government initiated Operation wealth creation a program that encompasses many projects within, amongst which is commercialization of small holder farming. Commercialization of farming was earlier a concept of large scale farming, small farmers were 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 has tackled the concept of commercialization with varying definitions but all centering at growing something for more than household use. [Govere et al. \(1999\)](#) looks at commercialization as "the proportion of agricultural production that is brought to the market, [Immink & Alarcon \(2009\)](#) cites commercialization as the extent to which farmers allocate their resources to marketable farm commodities, [Sokoni. \(2007\)](#) & [Hazell et al. \(2007\)](#) looked at agricultural commercialization as a move away from subsistence production to market oriented production. Von Braun et al. (1994), has more extensive argument about commercialization that it involves increased market transactions to capture the benefits from specialization, commercialization should be about proper decision making as regards, input and output decisions, market concentrations and production techniques.

Commercialization of small holder 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 linkages. Forward and backward linkages are generated through improved demand for farm inputs, and use of the farmers' improved incomes to buy consumer goods ([Von Braun 1995; Randela 2005](#)). Commercialization is known to have comparative advantages over subsistence agriculture; it generates income for rural households, expansion in the use of hired labour than it was in subsistence production ([Von Braun et al 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](#)).

[Von braun \(1995\)](#) also argues that 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 & Bouis 1993](#)). Further research mentions commercialization as an engine for agricultural efficiency, enhanced household access to food and farmer participation in markets ([Von Braun & Webb 2000; 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](#)). Market access to staple foods and asset accumulation are emphasized, in improving welfare. If smallholder farmers can have better access to markets, infrastructural developments, strong farmer organizations and promotion of contract farming their welfare standards can improve ([Leavy & Poulton 2007](#)).

In a related agreement [Govere et al. \(1999\)](#) argues that the basic assumption embedded in the commercialized comparative advantage is the ability of small holder 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 & Spielman 2008](#)). [Jaleta et al. \(2009\)](#) also introduces the value chain concept in commercialization that with increased household market participation, it 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's further argued that processing and marketing of commercial products at a village level contribute total household labor income and employment ([Kowagoe 1994](#)).

However, other studies suggest that despite the fact that movement from subsistence farming towards market commercialization increases income, welfare and contribute to economic prosperity ([Zhou et al. 2013](#)), commercialized agriculture has led to adverse consequence mainly by exposing households to volatile food market prices and food insecurity ([Osmani et al. 2015](#)). In Kenya Eastern districts like Mayuge & Luuka community leaders have gone back to sensitizing communities to go back to subsistence farming and concentrate on maize growing than sugar cane, because sugar cane growing is likely to bring about hunger in the community([new vision 2014](#)). Other scholars have also argued that full commercialization can only be achieved if a number of issues are put in place. [Mahelet \(2007\)](#)

cites transport means, road access, land size, integration extension services among others. [Leavy & Poulton \(2007\)](#) looks at the type of concentration small holder farmers should focus on, whether food crop or cash crop, [Bernard et al. \(2007\)](#) cites market inefficiency and high transaction costs which inhibit farmers from enjoying the fruits of commercialization and stability in a household. All which seem not to have been addressed by Kenya though it's aiming for full smallholder farming commercialization.

Research Design and Methodology

The research adopted a cross sectional survey design; the study targeted the 9,214 smallholder farmers registered under the Mwea rice scheme (Irrigation farm in Kenya) according to NAADS Officer Report 2014, in the eastern county. The sample size of 368 farmers was arrived at basing on the Krejcie and Morgan Table of 1970, which gives a fair representation of the study population, study questionnaires were administered and of the 368 distributed questionnaires distributed 366 were obtained back giving us 99% Response rate. Stratified sampling was adopted with the counties forming the strata and from each county; farmers were conveniently selected basing on their availability and willingness to participate in the study. According to the NAADS coordinator officer's report 2014 farmers were registered under households, and one respondent was targeted per household, preferably the family head as adopted and used by Nguyen and Ramachandran (2006) this seemed fit for the study, because family heads tend to have full knowledge of all key activities. Structured survey questionnaires were administered to respondents who were selected conveniently with the help of the National agriculture advisory services officer, being known to have embraced commercial farming and are producers of Rice and other crops like ground nuts, oranges, maize, millet, beans, cassava and potatoes, under the Mwea rice scheme in the region.

Measurement of Variables

Measurement of variables was on the basis of previous studies which employed the use of Likert scale, measurement items were improved to be consistent and suit the study. Respondents assessed commercialization of small holder 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, to 1 = Strongly Disagree. The study measured Commercialization of smallholder farming as the degree of participation in market, or the proportion of output sold in the [Wellard\(2011\)](#), [Leavy & Poulton \(2007\)](#), activities (land, labor and capital) ([Jaleta et al. 2009](#); [Jayanta et al. 2015](#)). Welfare was measured in terms consumption of basic grains and high valued foods ([Samuel & Sharp 2007](#)), Expenditure on non-food items, education and health ([Gebreselassie & sharp 2008](#); [Osmani et al. 2015](#)), because these capture the researcher's aspect of study more extensively, a regression model was later run to ascertain the impact of commercialization on welfare.

Validity and Reliability

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 above 80 hence deemed valid [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 above the recommended critical point of 0.70 ([Hair et al. 1998](#)), indicating good internal-consistency reliability. As shown in table 1 below:

Table1. Validity and reliability of variables

Variable	N	Cronbach Alpha Coefficient	Content Validity Index
Commercialization of Agriculture	20	.814	.830
Household Welfare	10	.817	.877

Data Analysis

This segment presents findings of the study generated from data analysis and its interpretation. It includes descriptive statistics, Pearson's correlation coefficient analysis and regression analysis.

Sample Characteristics

Table 2: Ownership of the Farm

Variable	Category	Frequency	Percent
Position in the rice growing project	Spouse of the Owner	112	30.6
	Worker	47	12.8
	Owner of the farm	207	56.6
	Total	366	100.0

Results & Discussion

Findings in table 2 were mainly intended to help the researcher get full knowledge of the position occupied by the respondent on the farm. Most respondents were farm owners 207 (56.6%), followed spouses to the farm owners at 30.6%, and with workers taking the least percentage at 12.8%.

Table 3: Duration Spent Practicing Farming for the Market

Variable	Category	Frequency	Percent
Duration of involvement in commercialized farming	Less than 1 year	18	4.9
	2-3 years	59	16.1
	3-5 years	100	27.3
	5-7 years	102	27.9
	7 & above	87	23.8
	Total	366	100.0

Duration spent practicing commercialization: Based on scores obtained on different indicators, scrutinized data presented in Table3 reveals that a majority of respondents (27.9%) had spent 5-7 years practicing commercialization, followed by those who were above 7 years 23.8%, with the least percentage (4.9%) of the respondents, having joined commercial farming less than a year ago. Meaning that most respondents had a wealth of knowledge regarding smallholder commercialization

Table 4: Anticipated Earnings per year

Variable	Category	Frequency	Percent
Amount money anticipated to earn per year	Less than 5 million	162	44.3
	5-10 million	151	41.3
	10-20 million	42	11.5
	20-30 million	10	2.7
	30 & above	1	.3
	Total	366	100.0

The results showed that majority of the farmers anticipated to earn less than 5 million shillings per year 44.3% followed by those anticipating between 5-10 million (41.3%), followed by those that anticipated to earn between 10-20 million (11.5%) with only one respondent

anticipating to earn more than 30million (0.3%) meaning that most farmers are still very small, with low production rates as has been shown in Table 3

Level of Commercialization

Our research objectives involved examining the level of small holder 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 & Poulton (2007), use of fertilizers and chemicals against diseases (Jayanta et al. 2015).

Descriptive results in table 5 above, show an above average mean for all questions measuring access to markets. This means that most farmers have access to markets and all that required to make their products reach potential customers, so using access to markets as a measure of commercialization as used by Wellard (2011), Leavy & Poulton (2007), these results show us the level of commercialization among the smallholder farmers in the study areas is at a moderate level.

Table 5. Descriptive analysis of Market Access

I	t	e	m	N	Min	Max	Mean	Std. Deviation
I always sell the biggest percentage of farm output to the market	36	6	1	5	3	9	0.7	
I have access to both nearby and far markets for my produce	36	6	1	5	3	1.1	0	
I sell most of my produce to middle men from towns and urban centers	36	6	1	5	3	2.1	1	
I have easy transport access to take my produce to nearby markets	36	6	1	5	3	5.0	0.9	
I find the means of transport for my produce to the market affordable	36	6	1	5	3	5.0	0.8	
I have easy to market information pertaining to produce prices	36	6	1	5	3	2.0	0.9	
I am a member of a farmers society or organization in my community	36	6	1	5	3	4.1	0	
I am planning to embrace new technology in farming soon	36	6	1	5	3	7.0	0.9	
I have a clear line of credit from where I borrow from	36	6	1	5	3	1.1	0	
I always settle my loan obligations in time	36	6	1	5	3	2.1	0	

Table 6. Descriptive analysis of Internal Farming Activities (Land, Labor and capital)

I	t	e	m	N	Min	Max	Mean	Std. Deviation
I have enough land I use for farming and my other personal activities	36	6	1	5	2	7	1.0	
I find this land suitable and good for crop growing	36	6	2	5	4	0.0	0.6	
I usually re-invest the business profits to increase my capital	36	6	1	5	4	0.0	0.9	
I am away of my capital requirements	36	6	1	5	3	8.0	0.7	
I cultivate my farm using ox ploughs and other farm inputs get better results	36	6	1	5	3	8.0	0.6	
I train my workers in farm related activities any time need arise s	36	6	1	6	2	4.0	0.9	
I often hire labor from my community to use for cultivation	36	6	1	5	3	5.1	0	
I always use credit facilities to buy farm inputs for my garden	36	6	1	5	3	1.1	0	
I take farming as a career in my life	36	6	2	5	4	2.0	0.7	
I use fertilizers and other recommended chemicals as means to improve my output	36	6	1	5	3	8.1	1	

The results from table 6 above showed that majority of the small holder farmers practice commercialized farming, using Internal farming activities(Land, labor and capital) as a measure of commercialization, ANOVA results showed that the most farmers responded in agreement to most of the questions testing availability of internal farming activities. With a mean of above average it means

Correlation Analysis

Table 7. Household welfare

I	T	E	M	1	2	3	4
Commercialization of agriculture (1)				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).

Empirical evidence suggests the ultimate objective of commercialization of agriculture is the attainment of better welfare outcomes for the smallholder farmers. Correlation results in table 6: are also consistent with the finding of (Samuel & Sharp 2007), results show 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 ($r = 0.198^{**}$, $P < 0.01 < 1$), Internal farming activities ($r = 0.210^{**}$, $P < 1$). These results are a clear indication that when small holder farmers wholesomely embrace commercialization and are enthusiastic about the future improvements, it will bring about improvement in their household welfare, these welfare effects will be symbolized by increase in consumption of non-grain consumables (including sugar, coffee, salt and cooking oil); kerosene consumption; and expenditure on shoes and clothes, education, health care, durable goods (bed, mattress, radio, TV, mobile, etc), housing (iron sheets, buildings, etc) and farm implements (ox ploughs and fertilizers, water pumps etc).

Regressions Analysis

Table 8 Regression analysis of household welfare

	Unstandardized Coefficients		Standardized Coefficients	t	Sig .
	B	Std. Error	B e t a		
(C o n s t a n t)	2.737	.188		14.540	.000
Commercialization of agriculture	.288	.055	.266	5.259	.000
R S q u a r e	0.187		F Statistics		27.660
Adjusted R Square	0.169		S i g .		.000

Regression results for commercialization of agricultural are presented in table 8. It shows the examined degree to which the components of commercialized farming predict changes in Household commercialization, results showed that commercialized farming predicted 16.9% of the variance in Household welfare (Adjusted R Square = .169). Commercialized farming with positive and significant (Beta = .266, sig. < .000). With constructs of market access, internal farming activities as predictors of Household welfare. The regression model was also valid (sig. $P < 0.01$).

Results in Table 6 showed a positive and significant relationship ($r = .266^{**}$, $p < .01$), between commercialization of smaller holder famers and welfare of households, these results support the study proposition that commercialization and household welfare are positively related. The results are also in line with finding of Samuel & Sharp (2007), Leavy & Poulton, (2007), Govereh et al., (1999) & Muriithi & Matz (2014), which stated that there exists a positive relationship between small holder farmers commercialization and increase of other household welfare. There was evidence showed that significant positive relationship between the construct of commercialization (Internal farm activities) and welfare. It suggests 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. The nature of land should also be key, farmers need to first experiment the soil type before growing the crops and employee modern farming techniques other than relying on nature. Land tenure systems should be re-visited and avoidance of land fragmentation to ensure better results from their farms (Jaleta et al. 2009; Jayanta et al. 2015). However, due to lack of agricultural skills and communal land policies in these regions, most farmers find it to manage their internal farming activities and this tends to jeopardize their eventual farm returns (Sebatta et al. 2014).

Results further 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.

Conclusion

This study investigated the different levels of commercialization among small hold farmers; it also looked at the impact of commercialization on the house hold welfare of most farmers, with these results it brings us to a conclusion that commercialization among smallholder farmers should involve making broad 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 clear strategic decisions about their farm inputs decisions, embracing technology, and market oriented decisions, their household welfare is likely to improve drastically and attain inclusive growth.

Small holder 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 et al. 2007).

The other noted impact of commercialization is specialization, and women empowerment, from our ANOVA 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 breeds innovation among farmers this innovation breeds competition leading to effectiveness and general improvement in welfare.

Policy Recommendations

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

All business small or big need credit to be in position to expand and reach new horizons, credit services or matching grants for farmers, have help many small holder farmers world to improve their farming capacities. These help farmers acquire more land and farm inputs more so, technology, pesticides, fertilizers and supply chain logistics to access markets. Studies shows that credit facilities and matching grants are effective tool in promoting access to finance, inducing innovations and commercialization of small farmers. Hence the Kenyan government should think of coming up with a Small holder farmers Fund. Rather than focusing on a few best suited farmers in different villages for commercialization, government should make it multi sectoral 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.

Vertical integration of members and formation of Cooperative Unions, these will provide both backward and forward linkages within the communities. It will give farmers bargaining power for their products and also make them do saving to improve their capital needs. These cooperatives will play a role of provision of employment opportunities to children of member as managers, accountants and other terms as the scheme grows, and all in all the union gives an umbrella to farmers in a number of social and economic aspects of the farmers (Jaleta 2009)

Study Limitations

There were two main concealed limitations in conducting this study. Standard questionnaire were use in collection of all 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 villages and lack of clear transport system which impacted on the time taken in the field and the final response rate.

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