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Cover Page Footnote

The research grant provided by the Central University of Technology and the kind assistance from colleagues including agricultural extension officers in the Mbizana local municipality is acknowledged. This paper emanates from an earlier academic study at the Central University of Technology in the Free State, South Africa. Please address all correspondence to Christopher Nwafor (manchrizzo@hotmail.com).

Prospects for Commercialization among Smallholder Farmers in South Africa: A Case Study

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ABSTRACT

The study explored determinants of commercialization among selected smallholder potato farmers in Bizana, Eastern Cape Province of South Africa. Increasingly presented as a rural development paradigm, the capability of many smallholders to commercialize is questioned. Fifty-eight smallholder farmers were purposively sampled for this study, which estimated farmers' level of commercialization and identified factors contributing to their estimated engagement with markets. Structured questionnaires were used to obtain primary data from farmers, while reports from published materials were also reviewed. The study utilized the household commercialization index (HCI) and ordinary least squares (OLS) regression model as its main analytical tools. It found a mean HCI of 0.48 among the farmers with 60 percent of respondents below the halfway point to a fully commercialized status. The results indicate varying levels of market engagement among smallholder farmers and underscore the need for caution in adopting a rigid commercialization approach.

KEYWORDS

Commercialization, classification index, markets, regression, smallholder farmers

INTRODUCTION

Commercialization is viewed in diverse ways and invariably means different things among various economic, social, and academic groups. While one school of thought considers commercialization as a categorical concept used to classify farmers according to their volume of produce intended for the market (Pradhan, Dewina, and Minten 2010; Randela, Alemu, and Groenewald 2008), another view involves

the integration of farmers into value chains (Barrett et al. 2010; Rahut, Castellanos, and Sahoo 2010).

A review of various concepts associated with commercialization highlights strong linkage to the phases of value-chain development. These phases outlined by Rao, Geleta, and Suryanayana (2015) involve increased production and sale of surpluses, reacting to signals from input and output markets, the capacity to access regional markets, a greater role of modern technology in production, an integration of farmers with agro-processors, and the emergence of efficient farmer-based organizations. Though earlier commercialization scholars highlighted a marketable surplus, contemporary literature suggests an emphasis on the degree of engagement with markets, either for inputs, output, or both (Okezie, Sulaiman, and Nwosu 2012; Panashat 2011). Therefore, Chirwa and Matita (2011) asserted that commercialization among smallholder agricultural producers implies an increased participation or improved ability to participate in both input and output markets. In encouraging the engagement of smallholder farmers in value chains, or their participation in existing and new markets, many issues are at play, such as the potential to benefit from the demands of the market, while improving their household incomes and food security position.

A rudimentary view of smallholder commercialization assumes either the increased production of food crops and marketed surpluses (Osmani and Hossain 2015), or an emphasis on the production of cash crops. Any position taken could disconnect the farmer from tapping into lucrative value-chains or jeopardize their household food security. It further highlights the difficulties posed to smallholder farmers considering commercialization, which requires well-functioning markets, adequate institutional arrangements, and necessary infrastructure. Abu (2015) outlined requirements for smallholder commercialization extending beyond well-functioning markets, to efficiency and lower cost factors that are reflective of inherent production and opportunity costs. Additionally, there is growing division within the smallholder sector, wherein shrinking farms and land size inequalities together with the emergence of large sized farms, challenge the inclusivity of the reported economic growth brought about by agricultural commercialization in several African countries (Jayne, Chamberlin, and Headey 2014). It is this disparity among smallholders that highlight the inadequacy of the push for commercializing, and realization among proponents of the commercialization agenda that a well-targeted social policy intervention could yield more positive outcomes for specific groups of smallholder farmers. Hazell and Rahman (2014) point to the limited chances of commercial

engagement among many resource-constrained households in Africa, which hinders the drive for a pro-poor model of growth in the agricultural sector (Klasen and Reimers 2017; Muricho et al. 2017; Valdes and Foster 2010).

The issues constraining smallholder agricultural commercialization in African countries have been articulated by critics of the pro-poor growth model. Three key arguments are identified to work against the theoretical bedrock of the model. These include achievement of food security and poverty reduction through large scale agriculture, poor replicability of the Asian model in sub-Saharan Africa conditions, and marginalization of the poor through polarization of assets and income (Djurfeldt, Dzanku, and Isinika 2018).

PROBLEM STATEMENT

Commercialization presents hindrances for smallholder farmers, as they face numerous difficulties participating in markets. Several constraints and barriers facing smallholder farmers in South Africa have been highlighted, including poor market access, unavailability of credit, lack of institutional support, high transaction costs, lack of training, and inadequate property rights (Abdulai and Birachi 2009; Thamaga-Chitja and Morojele 2014). In trying to resolve many of these challenges, the solutions proffered tend to disadvantage smallholders and include partnerships with established farmers or participation in marketing schemes to take advantage of economies of scale. Nevertheless, these so-called market orientation strategies benefit established large-scale farmers more than smallholders (Bernard and Spielman (2009) in Kabiti et al. 2016; Bitzer and Bijman 2014). Additional reservations have been expressed by Poole, Chitundu, and Msoni (2013) regarding the viability of a commercialization agenda, wherein market-oriented actions may fall short of the food security expectations among smallholder rural producers.

However, the importance of the smallholder agricultural sector has been affirmed (Zhou, Minde, and Mtigwe 2013) as it provides employment and supports rural welfare and food security. The emphasis now is on how these smallholder farmers could improve their competitiveness through participating profitably and sustainably in agricultural supply chains (Dunn 2014; Haggblade et al. 2012; OECD 2015; UNCTAD 2015). How to successfully integrate smallholders into agricultural supply chains is the subject of on-going research efforts. As pointed out by Ortmann and King (2010), research on how small-scale farmers in Southern Africa could successfully participate in supply chains has gained momentum. This assertion is supported by articles

and reviews such as Louw and Jordaan (2016) as well as Mmbengwa et al. (2018).

The participation of small-scale farmers in existing supply-chains largely depends on commercialized agricultural production (ADB 2013; Gabre-Madhin 2009; Mudhara 2010), which strengthens the case for additional research into smallholder commercialization. Therefore, in furtherance of these research efforts, this study explored the prospects for commercialization or degree of engagement with markets among smallholder potato farmers in the study area. The selected smallholder farmers are listed in the potato commodity group with the Department of Agriculture in Mbizana, and its members have participated in farm trials organized by the commodity group under the aegis of Potatoes South Africa (PSA).

RESEARCH QUESTIONS GUIDING THE STUDY

What is the level of commercialization among selected smallholder potato farmers in the study area?

What factor(s) influence the level of commercialization among these smallholder farmers?

SIGNIFICANCE OF THE STUDY

The significance of this study lies in the contribution it makes to identifying factors that promote increased commercialization among the target group and the associated drawbacks linked with increased market exposure among smallholder farmers. Additionally, recommendations for policy interventions through government and private sector initiatives are put forward to support food security while improving the productivity and profitability of smallholder agriculture in the area. The chosen study area provides an illustration of the stark duality of agriculture in South Africa, where previously enforced racial segregation by government spawned a highly organized and prosperous commercial sector existing alongside a poorly resourced communal-land-based subsistent farming sector.

METHODS

Study Area

The Mbizana local municipality is in the north eastern part of the Eastern Cape Province, within the Pondoland in the former Transkei Homeland of South Africa. A recent municipal boundary adjustment locates the local municipality within the Alfred Nzo district. Bizana is the main town located on the R61 road connecting the south coast of Kwa-zulu Natal province to the N2 road leading to Mthatha in the Eastern Cape. It is a rural town which lies on latitude 31.567 and longitude

29.400 with an estimated area of 2806 km², along the eastern coastal belt of South Africa. It has a temperate climate, characterized by fertile soils and frost-free conditions, with an annual rainfall of around 1000mm mostly in the summer, although there is substantial winter rainfall. With an estimated population of 319,948 and average household size of 5.2 persons (based on the 2011 population census), it is one of the more highly populated local municipal areas within the district (MSA 2012).

Bizana area lies north of Lusikisiki and is wedged between rivers umTentu to the south and umTamvuna to the north, forming the northern boundaries of the Eastern Cape Province with the Kwa-zulu Natal province. Dominated by grasslands, settlements are loosely scattered throughout the area and are surrounded by arable grazing land, with a unique biodiversity value. Along the coastal strip, popularly referred to as the Wild Coast, there is a narrow belt of tropical vegetation that includes grasses, palms, wild bananas, evergreen forests of indigenous yellowwoods, and ironwoods with stream-bank bush (Pieterse 2007).

Sampling and Data Collection

Farmer interviews and data collection were carried out using a purposive sampling technique, based on the June 2013 list of registered potato commodity farmers obtained from the Department of Agriculture in the Bizana District Office. This sampling method was utilized due to the very large population of rural smallholder farmers, making randomization difficult considering the resource constraint and time limitation of the study. The population was hence limited to farmers registered with the Department of Agriculture. This implies that the results cannot be generalized to all smallholder farmers within the municipality.

The study targeted all 71 farmers on the list to ensure total population coverage following Etikan, Musa, and Alkassim (2016). However, only 62 farmers were available and interviewed, with 58 questionnaires successfully completed and 4 questionnaires declared invalid due to non-completion of all sections.

Analytical Method

The basic quantitative parameter of interest targeted was the household commercialization index (HCI), which was computed to estimate the level of commercialization among smallholder farmers. A regression model was also used to determine factors influencing intensity of commercialization. These methods are similar to those

employed in other commercialization studies completed by Rao et al. (2015) and Okezie et al. (2012).

The household commercialization index (HCI) measures the gross value of crop sales by a household in a given year, as a fraction of the gross value of all crops produced by the same household (i) in the same year (j) and expressed as a percentage.

$$HCI (i) = \frac{\text{Gross value of crop sales}_{\text{hhi year } i}}{\text{Gross value of all crop production}_{\text{hhi year } j}} \times 100$$

A simple linear model, the Ordinary Least Squares (OLS), was utilized to assess the determinants of commercialization among the smallholder potato farmers in Bizana. Following Gujarati and Porter (2009), the OLS model is expressed as:

$$Y = f(x_1, x_2, \dots, x_n) \dots \dots \dots (1)$$

Where:

Y is the dependent variable representing some measure of commercialization for the enterprise (potato), while x is the explanatory variable.

Following convention, the model was specified as:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 \dots \dots \dots \beta_n X_n + \mu_i \dots \dots \dots (2)$$

Where:

β_0 = Intercept or constant term

$\beta_1, \beta_2, \dots, \beta_n$ = Slope or regression coefficient

X_1, X_2, \dots, X_n = Explanatory or independent variables

μ_i = Error or disturbance term.

The model was estimated to identify factors affecting the level of commercialization. Given the rather large number of variables enumerated, the likelihood of correlation among independent or predictor variables was high. For this reason, the test of multi-collinearity was applied.

The speed with which variances and covariance increase can be seen with the variance-inflating factors (VIF), which shows how the variance of an estimator is inflated by the presence of multi-collinearity (Goletti, Purcell, and Smith 2003). A formal detection of tolerance or the variance inflation factor (VIF) for multi-collinearity was used as follows:

$$VIF = \frac{1}{\text{tolerance}} \dots \dots \dots (3)$$

Where, tolerance = 1-R²

FINDINGS

The demographic characterization of the respondents is presented in Table 1. Among the survey respondents, 69 percent were female and 31 percent male; 69 percent of respondents were between 36 and 56 years, 9 percent were younger than 35 years and 22 percent older than 56 years. Only 7 percent of respondents had completed high school (Grade 12), 5 percent had no education, while the majority (72 percent) had the equivalent of a post-primary education. While 62 percent of respondents live in tin-roofed brick houses, approximately 14 percent live in thatch-roofed mud houses and 24 percent in compounds with a combination of buildings with brick-zinc and mud-thatch-roofed huts, an attribute of the predominantly rural environment.

Table 1: Demographic Characteristics of Survey Respondents (N = 58)

Variable		Frequency (n)	Percent (%)
Gender	Male	18	31
	Female	40	69
Age	35 or less	5	9
	36 - 45	14	24
	46 - 55	26	45
	56 or more	13	22
Education (Number of years in school)	0	4	5
	5 or less	8	14
	6 - 12	42	72
	More than 12	4	7
Bank Account	Have bank account	32	55
	Do not have bank account	26	45
Farming experience (Years)	5 or less	13	23
	6 - 10	17	29
	11 - 20	21	36
	More than 20	7	12
Farm size (Hectares)	Less than 2	23	53
	2 - 4	28	35
	More than 4	7	12
Household size (Number of persons)	5 or less	33	57
	6 - 10	19	33
	More than 10	6	10
Other income source	None	2	3
	Social grants	35	60
	Pension	12	21
	Salary	7	12
	Self-employed	2	4

Source: Questionnaire survey in Mbizana local municipality, 2014

The type of house in each compound could be considered an indicator of resource availability within the household, with many households striving to move away from thatch-roofed mud houses.

More than half of the respondents (55 percent) had a bank account, and on average the respondents had about 14 years of farming experience. Among 53 percent of the respondents, farm size was two hectares or less, while 25 percent had more than two but less than four hectares, with 12 percent farming on more than four hectares. The average household size among the respondents was six persons. However, large households are characterized by extended family or nuclear family systems. Almost all the respondents (97 percent) had an alternative source of income, which were mainly government social grants and pensions.

Measure of Commercialization among Respondents

The values of crops produced during the previous cropping season and the amount received for crops sold by respondents was used to determine the commercialization index as shown in Table 2.

Table 2: Household Commercialization Index of Respondents (N = 58)

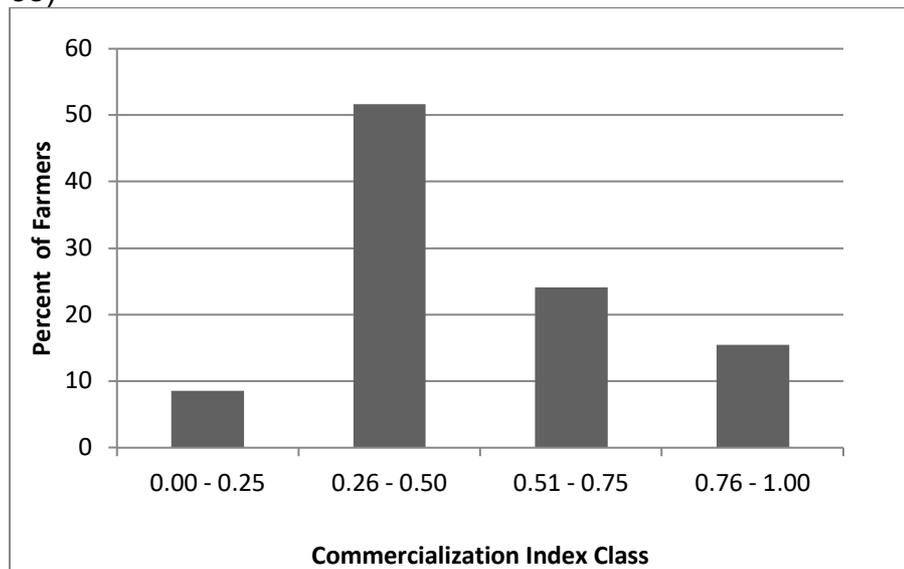
Variable	No. of Responses	Value in South African Rands (R)			
		Mean	Standard Deviation	Minimum	Maximum
Total value of all crops produced	58	17507	42726	1400	325000
Amount received from all crops sold	58	10966	39468	0	300000
Household commercialization index	58	0.48	0.21	0.00	0.93

The mean HCI calculated among the farmers in the study area is 0.48, with a minimum value of 0.00, a maximum value of 0.93, and standard deviation of 0.21. The data indicate that on the commercialization continuum stretching from subsistent to fully commercialized (0-1), many farmers in the study area are situated below the halfway mark at 0.48. Some farmers from the data observed are at 0.93 while others are at 0.00, located on the extremes of the commercialization continuum.

Commercialization Classification Index

The household commercialization index was used to determine the position of farmer respondents on a commercialization continuum. The continuum was divided into four percentiles and farmers were classified accordingly, as indicated in Figure 1.

Figure 1: Commercialization Classification Index of Respondents (N = 58)



As seen from Figure 1, more than 50 percent of the target population falls into the second percentile of the commercialization index class. Approximately 24 percent of the farmers are in the third percentile of the commercialization index class, and 15 percent of the farmers fall into the top percentile of the commercialization index class. However, close to 10 percent of the respondents fall in the bottom percentile of the commercialization index class. Overall, 60 percent of farmers in the study population are located below the halfway mark of the commercialization continuum.

Variables and the Commercialization Classification Index

Several identified variables from the study are important in locating respondents at strategic points in the commercialization class clusters. The variables include having a bank account, the size of farmland, beneficiaries of either grants or loans for farming, and other associated support programs including use of paid casual labor in farming activity, shown in Table 3.

About half of the respondents fall just under the halfway line (0.26-0.50) of the commercialization index class, and we look at the respondents found in either the lowest or highest commercialization index class. It is observed that approximately 16 percent of respondents without a bank account are located in the lowest commercialization index class (0.00-0.25) as compared to only 4 percent in the highest commercialization index class (0.76-1.00). Conversely, only 3 percent of those who have a bank account are in the lowest commercialization index class, compared to 25 percent with

a bank account located in the highest commercialization index class. All respondents with farm sizes more than six hectares are in the upper percentiles (0.51-1.00) of the commercialization index class. Comparatively, about 70 percent of respondents with farm sizes of between four and two hectares, and approximately 62 percent of those with less than two hectares respectively, are situated in the lower percentiles (0.00-0.50) of the commercialization index class.

Table 3: Import of Variables on Commercialization Index (N = 58)

Variables		Commercialization Index Class				Total	
		0.00 - 0.25	0.26 - 0.50	0.51 - 0.75	0.76 - 1.00		
		%	%	%	%	%	n
Bank use	Banked	3.2	53.1	18.7	25.0	100	32
	Unbanked	15.4	50.0	30.7	3.9	100	26
Farm size	≤ 2 ha	12.9	48.5	25.8	12.8	100	31
	>2 and ≤4 ha	4.9	65.4	9.9	19.8	100	20
	>4 and ≤6 ha	0.0	39.6	59.4	0	100	5
	>6 ha	0.0	0.0	50.0	50.0	100	2
Financial support	Grant / loan	3.7	56.9	17.8	21.6	100	28
	None	13.5	46.8	29.9	9.8	100	30
Other support programs (trials, study visits)	Participants	2.7	55.5	22.3	19.5	100	36
	Non-participants	17.9	45.7	27.5	8.9	100	22
Casual labor	Used	4.7	54.7	23.8	16.8	100	42
	Not used	18.8	43.8	25.0	12.4	100	16
Gender	Male	10.9	50.0	22.3	16.8	100	18
	Female	7.6	52.6	24.9	14.9	100	40

In line with the trend above, respondents with financial assistance such as a loan or farm-grant, about 22 percent, are positioned in the higher commercialization percentile, compared to only 9 percent of those without financial assistance. Also, only about 3 percent of those with financial assistance are found on the lowest commercialization index class, compared to 14 percent of respondents without financial assistance located on the lowest index. Approximately 57 percent of loans and farming grant beneficiaries are situated in the average commercialization index class (0.26-0.50); this is in contrast with 47 percent of farmers in the same index class, who are non-beneficiaries of any financial support. The same patterns are found for respondents who have benefitted from different support programs such as farm trials, study visits, information day attendance, and group purchase of certified inputs. Respondents employing casual labor were

also slightly more likely to have higher commercialization scores. Interestingly, we find that from the gender of respondents, the trend suggests there are more male respondents in both the lowest (0.00-0.25) and highest (0.76-1.00) commercialization index class. However, this might be due to the smaller number of male respondents (18) compared to female respondents (40).

Significance of Identified Variables on Commercialization Index

Multiple regression analysis was employed to ascertain the significance of certain identified factors in driving household commercialization. Table 4 presents a summary of these variables, their units of measurements, type, and hypothesized relationships with the dependent variable.

Table 4: Model Variables Applied in the Analysis

Variable	Unit	Variable Type	Expected Sign (+/-)
Number of years farming	Actual in years	Continuous	+
Size of farmland	Actual size of land owned (ha)	Continuous	+
Post-harvest practice	Post-harvest storage practices (Yes = 1 / No = 0)	Binary	+
Access to credit	Access to credit (Yes = 1 / No = 0)	Binary	+
Use of irrigation	Use of irrigation (Yes = 1, No = 0)	Binary	+
Use of casual labor	Use of casual labor (Yes = 1, No = 0)	Binary	+

The ordinary least squares analysis was used, with the household commercialization index as dependent variable, and other identified factors as independent variables. The result from the regression analysis is shown in Table 5.

Table 5: OLS Estimates of Variables Influencing Commercialization (N = 58)

Variables	Standardized Coefficient	Standard Error	P-value	VIF
Farming experience	0.006	0.003	0.039**	1.518
Farm size	-0.016	0.038	0.684	1.264
Farm location	-0.055	0.036	0.136	1.925
Post-harvest practice	0.194	0.077	0.015**	1.224
Access to credit	0.224	0.074	0.004***	1.397
Income type	0.047	0.034	0.182	1.265
Use of irrigation	0.067	0.056	0.239	1.999
Use of casual labor	-0.059	0.078	0.459	1.131
Model Summary	R ² = 0.383			
F-value	3.647		0.002***	

Significant values at the $p < 0.01$ (***) and 0.05 (**) levels.

The model fits the data well as shown by the significance of the F-value, with acceptable degree of variation in the dependent variable explained by covariates (r-squared), and very minimal multi-collinearity as shown by the VIF. The variables indicated in Table 5, whose coefficients were statistically significant as indicated by the p-values being less than alpha (0.05), include number of years of in farming, which indicates that farming experience is a positive driver of commercialization. This result implies that an increase in the smallholder farmers' farming experience will increase their possibility of commercialization. Farmers gain knowledge and skills as the number of years increase. As a result of longer years in farming, farmers are better informed and able to evaluate benefits derivable from market participation. Post-harvest practice is also statistically significant, showing that the ability to store produce until prices improve lead to higher returns; and access to credit is also significant, highlighting the importance of financial support for enterprise development, the purchase of productive assets and necessary inputs.

Empirical findings from other studies indicate that access to credit is one of the major determinants of market participation (Muricho et al. 2017; Ochieng et al. 2016). As opined by Mmbando and Baiyegunhi (2016), the optimum use of available information could be hampered by limited resources, as the cost of transaction may not be affordable to many farmers. The coefficient of access to credit is positive and significant in improving the propensity of smallholder farmers to be involved in commercialization, hence its significant effect on the dependent variable (commercialization index). This agrees with other studies which outline the positive role of credit in influencing smallholder orientation towards commercialization (Agwu, Anyanwu, and Mendie 2012; Kimemia 2004).

DISCUSSION

With the projected growth in the global population and its consequences for food supply and demand, various stakeholders in the African agriculture and rural development sector have continued to seek ways to bring about increases in production and improvements in productivity to meet the needs of the continent. There is also renewed interest in the potential of Africa to meet additional world requirements from the agricultural sector.

The important role of women in the sector is recognized, especially in rural communities where they are strongly involved in agricultural activities, as confirmed from this study, as they constitute more than 60 percent of smallholder farmers. This has prompted calls for a greater recognition and appreciation of their contribution to

agriculture and rural development, including the development of gender sensitive policies that respond to the needs of women producers in view of its concomitant effect on progress for the sector and the economy (Njobe 2015; Ogunlela and Mukhtar 2009).

While improvements have been recorded in accessing financial services in the continent, the financial inclusion of rural people including smallholder farmers, especially women, remain a cause for concern. Measures aimed at easing constraints to financial services provision in many cases are deemed ineffective or at best insufficient, especially in relation to the needs of smallholder farmers, as found in this study, where only 55 percent of participants had a bank account. The study shows how having a bank account could differentiate those within the highest and lowest commercialization index classification. Consequently, access to financial services for smallholder farmers continue to be considered a major constraint for agriculture (Amadhila and Ikhida 2016; Mukasa, Simpasa, and Salami 2017).

Rural smallholder agricultural production in South Africa is primarily practiced on communal areas, with different land tenure systems. A commonality is the small size of land used by rural farmers as shown in this study, where many participating farmers had less than two hectares of land. The average utilized land for farming found by Pienaar and Traub (2015) among smallholders was just under a hectare. While the South African agricultural sector is highly heterogeneous and includes large sized farms that are clearly commercial in orientation, it also includes many backyard farms that support quasi-subsistence livelihoods; and the common denominator among smallholder farmers is their small farm sizes. Most of the farmers in this study within the highest commercialization index classification had more than six hectares of land. The disparity in farm size is also mirrored in the household commercialization index among study participants.

As a variable influencing commercialization among study participants, the knowledge of post-harvest practices among crop farmers support both their household food security objective and market income potential. Post-harvest losses practically lead to forfeiture of income, and while it depletes the resource base used in production, it also reduces the available food-basket in many producer-households. Estimates indicate high post-harvest loss of food crops produced in Africa, especially among smallholder farmers, which can be linked to poor infrastructure and weak market systems failing to connect potential buyers to producers and considered to be a disincentive to investments among resource-constrained smallholders (Bourne 2014; World Bank 2011). Therefore, a reduction in post-

harvest losses could be achieved through the participation of smallholders in targeted training activities, increased extension coverage, linkage to markets, and improvements to rural infrastructure. The participation in training, peer visits, and extension support have the additional benefit of enhancing farming experience which also contributes to their commercialization.

CONCLUSION AND RECOMMENDATIONS

The disparities in the level of market participation among farmers show the need for caution in the quest to commercialize the smallholder farming sector. Within the smallholder group, differences exist with some farmers receiving appreciable financial returns while others continue to subsist with meagre returns. These returns are invariably based on both the size of land available and utilized by the smallholder farmer.

While the average level of commercialization is low at 0.48 among the respondents, there were several respondent farmers already commercialized, market ready, or market viable, whose potential needs to be developed to enable them to participate regularly in both input and output markets. Access to credit, post-harvest practice, and farming experience were factors identified as having influence on the level of commercialization among the study respondents. Among those on the lower commercialization levels, support measures are required to improve their ability to engage with markets. In several instances, market engagement is not an option for those who have very little to sell, and confirms the excess production or marketable surplus requirement put forward by a group of commercialization advocates. Other social interventions should be considered and are recommended for this category of smallholder farmers.

In the South African context where there is on-going land restitution, how land is allocated to beneficiaries has the potential to either increase or reduce existing inequalities among the rural population. Though farm size alone was not found to significantly influence commercialization in this study, many market-oriented farmers had higher than average farm sizes. Training and mentorship including other forms of support to new beneficiaries of land restitution is recommended, as it will assist in the drive to increase food security and provide a means of livelihoods for smallholder farmers who are not able to engage actively with formal supply chains.

The study also recommends improved storage and post-harvest practices among the smallholder potato farmers, which could be facilitated by commodity groups and achieved through the installation

of appropriate storage facilities, cleaning, grading and packing sheds, as well as processing (value-addition) for the fast-food market. This is in tandem with the requirement for identifying the stage(s) of value-chain development that could be beneficial to specific smallholder farmers contemplating commercialization. An additional recommendation which is aimed at strengthening connection to input and output markets among smallholder farmers is the facilitation by government agencies of increased access to financial services, including credit facilities, tenure security, and viable land markets, which will promote increased levels of commercialization among market-ready smallholder potato growers within the study area.

Strength, Weakness, and Recommendation for Future Research

This research identified common trends among the study population, and its setting within a rural environment captured key features among smallholder farmers in sub-Saharan Africa. Existing literature was utilized in identifying and describing relevant explanatory variables, and the result will serve as a baseline for future similar studies within the area.

The study however depended on cross-sectional data, and it would be worthwhile to track changes within participants over a period, hence future research will benefit from using time series data. Also, the population was limited to farmers listed under the potato commodity provided by the Department of Agriculture; future research should target all smallholder farmers in the area. This will ensure a more representative and random selection from this wider sample population will enhance the generalization of findings. It would be beneficial to further utilize the interactions or relationships between demographic characteristics such as age, gender, and farm-size in exploring trends in market participation among smallholder farmers in rural communities.

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