Assessment of the participation of smallholder farmers in agro-processing industries of Gauteng Province

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Abstract: In South Africa, smallholder farmers were known to have a limited scope of participating in the agro-processing sector. Hence, part of transformational agenda of the country is to ensure that smallholder farmers are meaningfully participating in the agro-processing industries. The aim of the study was to evaluate the participation by smallholder farmers in the agro-processing sector in Gauteng Province. The primary objective was to identify critical factors that influences smallholder participation within the agro-processing industries. Non-probability sampling technique was used to draw 78 participants from three regions of Gauteng province (that is, Westrand, Eastrand and Tshwane). A multilinear regression and quantile analysis were performed to identify factors influencing participation in agro-processing. The results indicates that market access linkages could significantly improve smallholder participation in agro-processing. Therefore, it could be concluded that market access linkages is significant to ensure that Gauteng smallholder farmers participate in the agro-processing value chain. Henceforth, Gauteng Department of Agriculture and Rural development should prioritise strengthening of market access linkages to improve the smallholder farmers' agro-processing participation.

Keywords: agro-processing, factors, market, participation, smallholder

Introduction

The concept participation differs by numerous experts (Pope 2014). Broadly participation defines various activities such as: involvement; contractual, consultative, collaborative, and collegial; farmer- or community-initiated interactions (Biggs, 1989, Lilja et al., 2000). In South Africa, smallholder farmers were known to have a limited scope of participating in the agro-processing sector. According to Sharma (2016), smallholder farming participation in the global value chains, is perceived as of prime importance for their inclusion in the agricultural development in the developing countries. In addition, smallholder farmers are known across the globe for participating in the agro-food markets through local collector traders (Natawidjaja et al., 2014). Vorley et al., (2012) pointed out that smallholder farmers seems to be linked with the markets through informal transactions and small traders. This practice is common because smallholder farmers appear to have no economies of scale that entice larger traders (Natawidjaja et al., 2014).

Challenging the unequal local power relations which has a historical connotations, the current government has taken a political decision to ensure the development of smallholder farming by introducing agricultural black empowerment initiatives. This strategic approach was tacitly crafted to redress the imbalances of the past regime and also to unite the previously divided agricultural sector. The process for the redress is termed the transformation of South African agricultural sector (Mmbengwa, 2009). Part of transformational agenda is to ensure that smallholder farmers are meaningfully participating in the agro-processing industries. As alluded by King, & Hickey, (2015), participation could be contextualised as transformatory as it resonates closely with the reconfiguration of power relations concerning of smallholder farmers in the South African Agricultural landscape.

Theoretical framework

Previous studies advocated that there are numerous benefits that smallholder farmers can gain when participating in the agro-processing sector (Aphane 2011 and Alene et al., 2008). According to these authors, some of the benefits are associated with the potential to improve the cash-flow of these farmers and thus, enhancing their farming sustainable. Smith (1983), highlighted the reasons for participation as a designed procedures to consult, involve, and inform the stakeholders with the view to allow them to make an input for pending decision. Furthermore, Arnstein, (1969) presented the theory of participation as s step ladder process. In his theory, non-participation is the lowest level of participation and is defined by manipulation and therapy (healing). Table 1 highlights several typologies of participation by different experts.

Table 1: Typologies of participation (Source: Reed, 2008)

Basis Of Typology	References
1. Typology based on different degrees of participation on a continuum. Numerous alternative terms suggested for different rungs of the ladder (e.g. Biggs, 1989; Pretty, 1995a,b; Farrington, 1998; Goetz and Gaventa, 2001; Lawrence, 2006)	Arnstein's (1969) ladder of participation. Sometimes presented as a wheel of participation Davidson (1998)
2.Typology based on nature of participation according to the direction of communication flows	Rowe and Frewer (2000)
3.Typology based on theoretical basis, essentially distinguishing between normative and/or pragmatic participation	Thomas (1993), Beierle (2002)
4.Typology based on the objectives for which participation is used	Okali et al. (1994), Michener (1998), Warner (1997), Lynam et al. (2007), Tippett et al. (2007)

The lowest level of participation (Non-participation) is followed by moderate participation stage which is described by tokenism, as a participation constituted by information, consultation and placation (conciliation). The highest level of participation is described as citizen power and it is constituted by partnership, delegated power and citizen control (See Figure 1). The classification of participation form the baseline theory of participation is described as the first typology of participation in Table 1. In addition, the second typology describes the quality of participation. Whiles the third typology is based on theory and the fourth typology is objective orientated.

According to Rowe & Frewer, (2000), the higher the ladder step of participation, the better the quality of participatory processes. Ultimately the quality of the participation as described in the citizen power stage (where partnership, power of delegation and control is exercised by the stakeholder concerned), is where the impact of participation yields the most economic rewards. In figure 1, factors that could improve the quality of participation are presented.

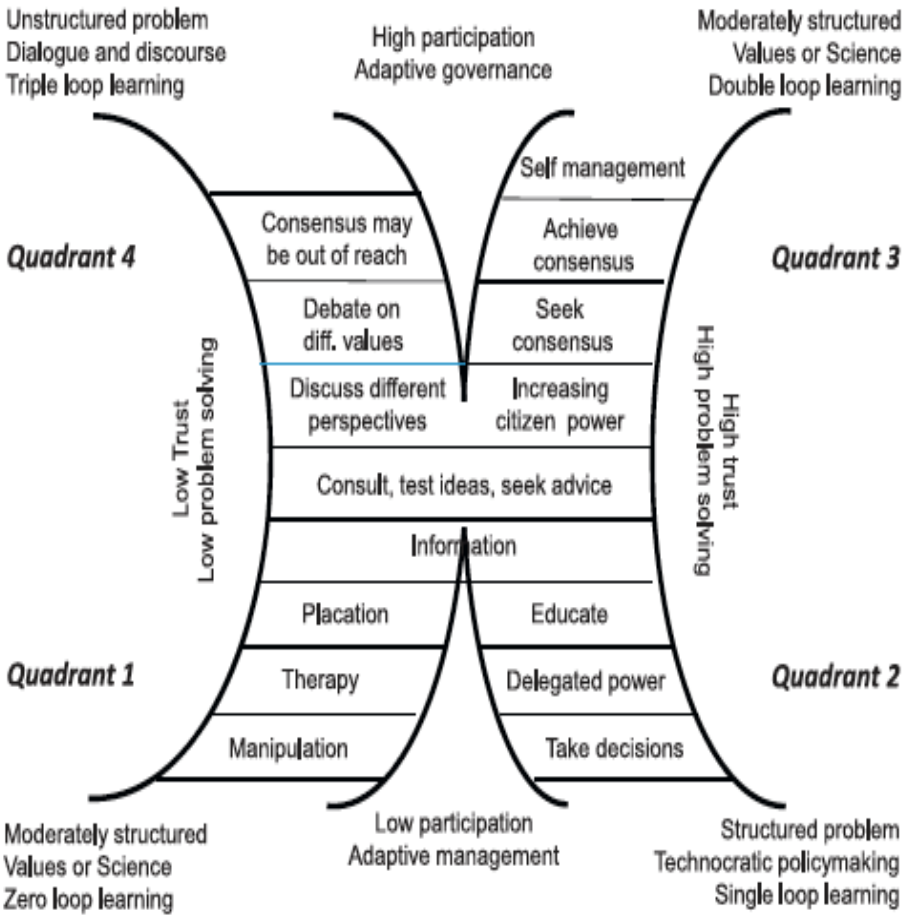

Figure 1: Split of low and high level of participation (Hurlbert & Gupta 2015).

The alignment of theory of participation with the model for cooperative governance (Figure 2) is crucial. In the theory of cooperative governance, it appears that the factors that influence participation are brought from two extremes (i.e. power-resources-knowledge asymmetries and pre-history of cooperation or conflict). In the case of South African farming sector, smallholder and commercial farming sector were dualistically distanced from each other resulting in the former producing for household food security and the latter producing for profit. It is the latter that is commercially linked to the agro-processors whilst the former is linked to informal traders.

The aforesaid extremes in the farming sectors marks the power-resource-knowledge-cooperation and conflict. Commercial agriculture is economically powerful because of its resource endowment and knowledge of agricultural sector. On the contrary, smallholder farming (often called resource-poor farming) has less economic power and resources. Consequently, the existence of the resource power extremes has created historical challenges associated with lack of cooperation between the two stakeholders in the agricultural sector in South Africa. After, realising these disunity in these farming stakeholders, the South African government took a strategic decision to unite this sector by addressing the imbalances of the past through comprehensive agricultural support to smallholder farming and also initiating programs that seek to integrate these farming into the main stream economic sphere.

This decision took centre stage due to the political breakthrough of the 1994 election of democratic government. Progressive policies that enhance social cohesion in the agricultural sector were introduced and implemented since the taking over the governance. Some of these policies sought to ensure that smallholder farming is involved in the commercial agricultural landscape which (amongst others) their legislative inclusion in the participation in the agro-processing sector.

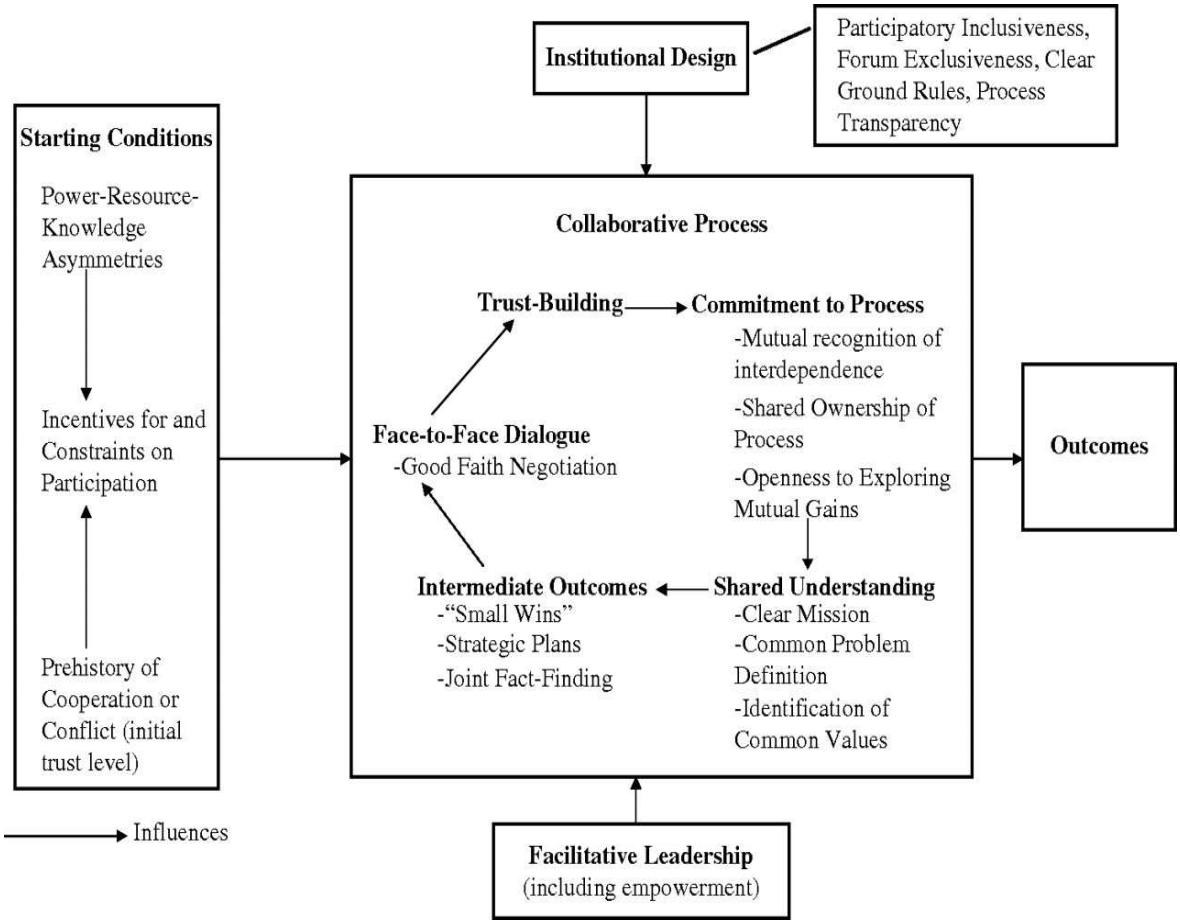

Figure 2: The model for collaborative governance (Source: Ansell and Gash 2008)

Problem statement

The existing global and South African's theoretical agro-processing framework does not clearly entice smallholder farmers' participation in agro-processing industries. Consequently, government policies and educational programs lack their much needed impact in ensuring the participation of this important stakeholder in the agricultural industries of South Africa. The lack of theoretical framework for the participation of this part of agricultural sector, may explain their lack of significant contributions in job creation for the advancement of the socio-economic sphere of South Africa.

The results of this study has a probability of influencing the development of theoretical framework for the smallholder farming participation in agro-processing sector and thereby influencing the scholarly research, practice, educational interventions, curricula, counselling and existing agro-processing policy refinements. Globally, small firms (smallholder farming) have higher job creation and destruction rates than larger firms (Cramer & Sender, 2015).

In South Africa, the National Development Plan (NDP)'s vision 2030 has shown that smallholder farming is amongst of the critical stakeholder that has more chances of contributing to rural job creation compared to the commercial agriculture (NDP, 2013). This makes their participation in this industry an enabler for their quest of their economic viability. In other words, smallholder agro-processing participation could be likened with the restoration of rural poor economic development.

Generally, it is known that most of the agro-processing firms are based in Gauteng Province. Investigating the extent of smallholder farmer's participation in Gauteng province, may give a good picture of whether smallholder farmers are integrated into this sector and are playing a meaningful role in agro-processing industries. Current literature shows smallholder farming sector has received government support since 1994 with little focus on linking them to

sustainable value chain (Chauke & Anim 2013). Therefore, there is more compelling scientific rationale to conduct the research that seek to find out the extent of smallholder farmers' participation in agro-processing industries. This could be useful not only to inform government policies, strategies, farmer support but also to access the progress of agrarian development and societal transformation.

Materials and methods

This study used cross-sectional research designs. The collection of the cross sectional data was done in 2016, where 78 participants were drawn from three regions of Gauteng provinces (that is Westrand, Eastrand and Tshwane). The non-probability sampling techniques was used in the collection of data. In this sampling technique, a purposive sampling was found to be appropriate. The study used both qualitative and quantitative research approaches. These approaches were used where they could yield comparative relative advantages. During the initial phase, qualitative approaches were preferred because more explanatory and exploratory information were required to delineate the study objectives and constructs. These methodological approaches were compatible with participatory action research (PAR) which were applied during the beginning of the research.

The rationale of using PAR was to collect as much information as possible to validate the research. In the collection of quantitative data, a questionnaire was used. The trained numerator, interviewed the respondents using the close ended questionnaire. The quantitative approach was used to create a predictive model and response coefficients. The qualitative approach was also useful in interpreting the results, on other hand, the data collection was through a closed ended questionnaire. A multi-linear regression model was used in identifying the factors that influences agro-processing participation across gender derives. Furthermore a quantile analyses factors that affect smallholder farmer agro-processing participation was conducted.

Results and discussions

Male respondents are of the view that access to infrastructures could significantly improve agro-processing participation in Gauteng Province (Table2). On the other hand, female respondents are of the view that value chain and market access are significant in improving agro-processing participation in Gauteng Province, as opposed to access to infrastructure (Table 3).

Table 2: Factors that influences agro-processing participation: observation from male respondents

-> gender = Male

Source	SS	df	MS		
				Number of obs	= 42
				F(3, 38)	= 19.90
Model	25.0942173	3	8.3647391	Prob > F	= 0.0000
Residual	15.9713686	38	.420299172	R-squared	= 0.6111
				Adj R-squared	= 0.5804
Total	41.0655858	41	1.00159965	Root MSE	= .6483

factorparti~n	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
factorlinkage	-.0210393	.1564555	-0.13	0.894	-.3377668	.2956882
factorvalue~n	.2874746	.1479559	1.94	0.059	-.0120466	.5869957
factorInfra~e	.6957402	.1702673	4.09	0.000	.351052	1.040428
_cons	-.0681796	.1049188	-0.65	0.520	-.2805767	.1442174

Table 3: Factors that influences agro-processing participation: observation from female respondents

-> gender = Female

Source	SS	df	MS		
				Number of obs	= 36
				F(3, 32)	= 9.82
Model	17.1945903	3	5.73153011	Prob > F	= 0.0001
Residual	18.6759705	32	.583624078	R-squared	= 0.4794
				Adj R-squared	= 0.4305
Total	35.8705608	35	1.02487317	Root MSE	= .76395

factorparti~n	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
factorlinkage	.3829625	.1480689	2.59	0.014	.081356	.684569
factorvalue~n	.3999042	.1907559	2.10	0.044	.0113471	.7884613
factorInfra~e	-.0095317	.1627848	-0.06	0.954	-.3411136	.3220501
_cons	-.0736191	.1304446	-0.56	0.576	-.3393261	.1920879

The residual for multiple linear regression was found to be not normal. Hence, a quantile regression was further performed. Table 4 and 5 presents the results of the quantile analysis. The lower (quantile 25) and median quantile (50), confirmed the view from women respondents which indicate that market access linkages is significant to ensure that Gauteng smallholder farmers participate in the agro-processing value chain.

Table 4: Quantile analysis of the factors that affect smallholder farmer agro-processing participation

Simultaneous quantile regression — Number of obs = 78
bootstrap(100) SEs — .25 Pseudo R2 = 0.4603
.50 Pseudo R2 = 0.4517
.75 Pseudo R2 = 0.1388

factorparti~n	Coef.	Bootstrap Std. Err.	t	P>|t|	[95% Conf.	Interval]
q25						
factorlinkage	.6723276	.2218616	3.03	0.003	.2302587	1.114397
factorvalue~n	.3512076	.2225447	1.58	0.119	-.0922225	.7946377
factorInfra~e	-.017551	.1536011	-0.11	0.909	-.3236079	.288506
_cons	-.3851906	.1197812	-3.22	0.002	-.6238599	-.1465212
q50						
factorlinkage	.8461507	.2387489	3.54	0.001	.3704332	1.321868
factorvalue~n	.1671109	.2022228	0.83	0.411	-.2358267	.5700485
factorInfra~e	.1023374	.190219	0.54	0.592	-.2766822	.4813571
_cons	-.1100866	.0935509	-1.18	0.243	-.2964909	.0763177
q75						
factorlinkage	.4660065	.3324132	1.40	0.165	-.1963412	1.128354
factorvalue~n	.1165668	.1664742	0.70	0.486	-.2151403	.448274
factorInfra~e	.1735736	.1840345	0.94	0.349	-.1931232	.5402704
_cons	.3284131	.2632292	1.25	0.216	-.1960825	.8529087

The establishment of sustainable markets should be first priority to support the participation of smallholder farmers in agro-processing. The AgriParks model is one of the initiatives that seem to have potential in ensuring the

participation of smallholder farmers in the agro-processing value chain. Market access linkages should be second priority to ensure that these famers are able to participate in market access created. Furthermore, the market access linkages being created should be assessed as to whether they are beneficial to farmers. Table 5 highlights factors to be considered in ensuring effective participation of smallholder farmers in agro-processing. I.e. market linkages, sustainability of market linkages, institutions linking farmers to markets (such as government or parastatal), and also the benefits of these linkages.

Table 5: Factor analysis of the factors that influences the participation in agro-processing

Variable	Factor1	Uniqueness
linkages	0.9099	0.1720
linked_sus~e	0.9298	0.1355
govt_linka~s	0.7991	0.3614
linked_par~s	0.8193	0.3287
linked_ben~t	0.8612	0.2584

Conclusion

The objective of this study was to identify factors that influence smallholder farmers' participation in agro-processing. A multilinear regression and quantile analyses were performed in order to identify factors the factors under consideration across gender derives. From the results, it could be concluded that market linkages is the most important factor that influences smallholder participation within the agro-processing sector. The results of the study have both theoretical and pragmatic impact and were evaluated based on the opinion of the farmers and stakeholders in the agricultural sector. Theoretically, it has added value to existing theory in that market access is key. Practically, it may require efforts to ensure that farmers are supported in accessing these markets. Furthermore, farmers should be assessed as to whether they are benefiting from the market access created. Therefore, it could be concluded that for the Gauteng Department of Agriculture and rural development (GDARD) to initiate and improve the smallholder farming agro-processing participation, the strengthening of market linkages should be prioritised.

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