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Factors influencing communal live stock farmers' participation into the National Red Meat Development Programme (NRMDP) in South Africa: the case of the Eastern Cape Province

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ABSTRACT

In 2005, ComMark embarked on the Eastern Cape Red Meat Development Programme (ECRMDP) as an initiative to increase formal market participation of communal farmers. With the end of support from ComMark in 2008, the National Agricultural Marketing Council (NAMC) took over. With funding from the Department of Rural Development and Land Reform (DRDLR) and partnerships with the provincial departments and the municipalities, the programme has expanded effectively within the Eastern Cape Province and it has been rolled out to other provinces as well, hence it is now known as the National Red Meat Development Programme (NRMDP). The initiative emanated from the observation that the local demand for beef outstrips production, hence resulting into importation of more beef. This was against the background that there was untapped potential in the communal farming areas where 40% of beef production takes place in South Africa, of which 3.3 million heads of cattle is found in the Eastern Cape alone.

Although the programme has so far had a significant contribution towards communal farmers' participation in formal markets as well as their understanding of the value of formal market participation, empirical evidence to support this notion is still desirable. Hence this case study was conducted to determine the factors that influence farmers' participation in the programme, focusing on the Eastern Cape Province. A logistic regression model was used to determine factors influencing farmers' participation in the programme, and the results indicated that distance to markets, stock size, days of fattening and the contribution of the programme (income earned from livestock sales through the programme) significantly influence farmers' participation. This is an indication that farmers are slowly beginning to understand how they can best make use of the opportunity presented by the programme. Hence policy wise, it is commendable to encourage communal livestock farmers to participate in the programme.

1. INTRODUCTION

Livestock in South Africa, as in other developing countries, is one of the important sources of livelihoods for the poor and has also been shown to be a good commodity for providing a steady and growing income to the poor and rural women. For households affected by poverty, livestock products remain one of the few rapidly growing markets within the agricultural sector. It has also been shown elsewhere that the poor earn a higher income from livestock than the wealthy (Delgado, et al., 1999). Studies in South Africa have shown that smallholders in some areas have a comparative advantage in certain commodities such as livestock which, if properly supported by targeted public investments, could result in multiplied income and employment benefits for the rural poor (Ngqangweni, 2000).

Approximately 80% of the agricultural land in the country is suitable mainly for extensive livestock farming (DAFF, 2013), and the communal land occupies about 17% of the total farming area and supports approximately 52% of the total cattle (Beyene et al., 2014). In 2012, there were an estimated number of 3 million communal farmers, accounting 40% of the total cattle available in South Africa (DAFF, 2013). However, Ainslie et al (2002) found that the quantity of livestock marketed by communal farmers in the Eastern Cape was well below 10% of the total herd size, compared to 25% - 30% of their commercial counterparts. Comparing the two categories of farming, it is clear that communal farmers have challenges in marketing their livestock. Among other challenges, these farmers are characterized by lack of marketing infrastructure such as regulated grazing (camps), auctioneering facilities and rural feedlots. These challenges potentially prohibit farmers from full participation in the

formal marketing of livestock, and nonparticipation in markets by livestock farmers in communal areas can mean an opportunity forgone to increase household food security, reduce poverty and export earnings.

Therefore, marketing of livestock is important for the development of the communal sector. Hence, the country embarked on the red meat programme. After more than ten years since the start of the programme in the Eastern Cape Province, it is interesting to undertake some empirical analysis of the programme. However, this is just a baseline analysis. The objective was to determine the factors that influence farmers' participation in the programme, focusing on the Eastern Cape Province.

2. BACKGROUND OF THE PROGRAMME

In 2005, South Africa embarked on the Red Meat Development Programme as an initiative to increase formal market participation of communal farmers. This initiative was driven by ComMark as the Eastern Cape Red Meat Project (ECRMP) aimed at increasing the participation of communal livestock farmers in the formal market. This emanated from the observation that the local demand for beef outstrips production, hence resulting into importation of more beef. This is adjacent to the recognition that there was untapped potential in the communal farming areas where 40% of beef production takes place in South Africa of which about 3.3 million heads of cattle is found in the Eastern Cape alone.

The support from ComMark ended in 2008. Thus, the National Agricultural Marketing Council (NAMC) inherited the programme. The programme has since been funded by the Department or Rural Development and Land Reform (DRDLR). A combined effort from the NAMC and DRDLR has seen the programme expanding within the Eastern Cape and moving out to other Provinces. Currently, the programme covers six Provinces and effective in three as presented in Table 1. The two partners (NAMC and DRDLR) work with the provincial departments and municipalities, and this, so far, has proven to be a strong partnership. The programme has, so far, generated R53.3 million from communal livestock sales since the NAMC took over.

Table 1: The extent of the programme

Province	**Operational CFPs**	**Planned (some under construction) and ready for intake**
	Number	**Number**
Eastern Cape	9	8
KwaZulu-Natal	3	8
North West	1	2
Northern Cape	0	1
Mpumalanga	0	1
Limpopo	0	2

3. AN OVERVIEW OF COMMUNAL CATTLE FARMERS IN SOUTH AFRICA

The theoretical evolution of communal farming with its associated difficulties (some natural while others were manmade) is presented in Mmbengwa et al (2015). The authors further deliberate on the characteristics of the South African livestock, where they show that that communal farmers have a low off-take (at about 5%) compared to their commercial

counterparts whose off-take is estimated to be approximately 30%. Some of the natural courses that can be attributed to the imbalances include droughts and disease outbreaks versus low ability of communal farmers to adapt to such; while the manmade ones can be associated with historical systematic policies that excluded black farmers from the farmer support services that were available in the country. As a result, small-scale farmers account for 40% of the cattle herd and only account for 5% share of the formal market (cattle) participation in the country.

With livestock being the biggest enterprise in South Africa's agricultural sector, it is important to take a closer look at beef (as part of the red meat). South Africa's cattle herd increased from 7.9 million cattle in 1970 to about 13.7 in 2015 (DAFF, 2016). However, there are years that saw decreases in numbers such as 1979/80, 1984/85 and 1993/94, during this period. On the slaughter side, from 2010/11 to 2015/16 the country has been slaughtering about 3.7 million cattle per annum.

In terms of South African agriculture's contribution to GDP compared to Sub-Saharan Africa, one would assume that agriculture is less important in South Africa compared to other countries. Recent report from the World Bank indicates that agriculture contributes an average of 15% of total GDP. This figure ranges from below 3% in South Africa and to more than 50% in Chad. However, agriculture and particularly livestock contribute significantly to South Africa's GDPs in the sense that it is the primary occupation. This makes South Africa to be significantly different from the economies in the rest of sub-Saharan Africa in the afore-mentioned terms, which means that agriculture, and particularly livestock, is not becoming any less important in the economy of the country, including its rural areas.

Ngqangweni and Delgado (2002) argued that the relatively small share of agriculture in South Africa's national income and the studies showing the importance of remittances and non-farm activities for rural households in South Africa, hide the potential contribution of agricultural (and particularly livestock) income in providing self-driven livelihoods for the poor. This is especially true for poor and vulnerable groups who live in the marginalized rural areas within an otherwise advanced industry-based national economy. They further argue that rural households' move away from dependence on agriculture is more as a result of lack of opportunities in agriculture rather than increasing opportunities outside agriculture in South Africa.

Ngqangweni and Delgado (op cit.), in a study based in Limpopo province of South Africa, found that poorer households faced more hurdles in participating in the livestock value chain than their well-endowed counterparts in the communal areas. The relatively wealthier households also tended to own more livestock than poorer ones. The study showed that the state of being poor affected the ability of households to make investment decisions that might be useful in achieving positive livelihood outcomes. The constraining factors included lack of access to financial services and infrastructure.

4. MARKET-RELATED CHALLENGES FACED BY COMMUNAL CATTLE FARMERS

Small-scale livestock husbandry remains a primary land use option in communal areas over most of Southern Africa (Dovie et al., 2006). A study by Masika et al (1997) revealed that the production of cattle is the major animal farming in the communal areas. This is due to a multi-purpose nature of livestock production and its multiple benefits in communal rangelands, which has been noted to yield high economic returns (Barrett, 1992). According

to Turner and Williams (2002) communal farmers do not keep livestock solely for marketing purpose, they keep them as a means of storing wealth that is only converted into cash during times of crop production failure, among other reasons. This makes livestock, particularly cattle, to be the most valued assets in the rural communities (Turner and Williams, 2002).

Although a lack of buyers is frequently given as a reason why small-scale farmers are unable to access the market, the fact is that when such buyers do wish to buy from small-scale farmers, the poor condition of livestock results in lower farm gate prices, especially during dry spells. Livestock auctioneers and speculators often raise concerns that they cannot pay competitive prices for animals that are in poor condition or not ready for the market (Luppnow, 2003). De Waal (2004) indicated that poor condition of livestock is important, but the age of animals (too old) equally contributes to poor prices when farmers do sell. Poor condition of livestock is also attributable to inadequate grazing and the extreme degradation of the natural resource. Lack of suppliers of important agricultural inputs for livestock farmers, such as vaccines and feed supplements, and common problems of genetic inferiority of animals further reduce the desirability of animals. The low levels of technology adoption further compounds the problem (Nell, 1998).

Furthermore, the large numbers of cattle kept in villages lead to overstocking and severe overgrazing especially in winter where natural pasture is reduced to zero. This results not only to inadequate feed but also to poorer quality pastures each year. Since supplementary feeding is hardly provided due to the costs involved, insufficient nutrients subsequently result to high loss of weight (Soun et al., 2006). In addition, high costs of veterinary services prohibit constant and continuous use of these services (Copeman et al., 2008; MAFF, 2006). There is also a shortage family labour and unreliable hired labour to cover all the activities performed at the same time on the farms (crop production, livestock production of various types and requirements, and off farm activities). This tends to result to poor management of stock (FAO, 2005).

Other major challenges include high transaction costs. Various researchers (Jari, 2009; Emongor, Louw, Kirsten & Madevu, 2004; Gong, Parton, Zhou & Cox, 2004) highlight transactional costs as barriers to the efficient participation of emerging farmers in different formal markets. Emerging farmers will not use a particular channel when value of using that channel is out-weighed by the costs of using it. Key, Makhura, Kirsten, and Delgado (2001) have isolated high transaction costs to be one of the key reasons for emerging cattle farmers' failure to participate in formal markets. For example, remote location of most emerging cattle farmers coupled with poor road networks result to high transactional costs (especially transport costs), thereby reducing the price that traders are prepared to pay for the cattle (Musemwa et al., 2007).

Makhura (2001) and Nkhori (2004) noted that even if emerging farmers are in areas with good road linkages, the distance from the formal markets tends to influence transaction costs. The further away the emerging farmers are from formal markets, the higher the transport costs they incur. As it is a statutory requirement that when purchasing or selling cattle, producers and consumers must have a valid identification certificates and transporting permits (NDA, 2005), farmers incur extra transport costs to obtain transporting and selling permits from the police station and veterinary offices, respectively. These restrict farmers' participation in distant markets.

Furthermore, smallholder farmers tend underestimate the value of collective action. As a result, they often sell small and varying numbers of livestock individually and directly to the

buyers without linking to other market actors (World Bank, 2005; Coetzee, Montshwe & Jooste, 2005). In other words, smallholder farmers lack collective action in markets and this weakens their bargaining positions and often exposes them to price exploitation by traders.

5. METHODOLOGY

5.1. Data and sampling design

Secondary data was obtained from the farmer's database that was developed through the programme – the sampled data constituted of 513 farmers. The data covers only one Province, Eastern Cape, hence this study is referred to as a case study. The Eastern Cape Province is where the programme was born and where it is widespread in terms of operating CFPs and farmers' participation. The sample was drawn randomly from five district municipalities. These include Amathole, OR Tambo, Alfred Nzo, Chris Hani and Cacadu district municipalities.

5.2. Analytical methods

Farmers within the province differ on how they market their livestock considering the constraints engulfing market participation. Therefore, it was observed that using the off-take rate alone to determine farmer's market participation was insufficient. Hence, a logistic regression model was used to determine the factors influencing formal market participation, where the dependant variable is a dichotomous variable. The model was expressed as follows.

$$Y_i = X1 \quad + X2 \quad + X3 \quad + X4 \quad + X5 \quad + \varepsilon_i$$

Where the outcome variable Y_i equals 1 if the respondent participates in the programme and zero, otherwise. Other explanatory variables presented in Table 2.

Table 2: Explanatory variables used

Variable	Description
Y_i	Outcome (Participant or not participant)
X1	Stock size
X2	Distance to the market
X3	Condition of livestock
X4	Days of fattening
X5	Contribution of the programme
ε	Error term

In addition, the logistic regression model was necessary to estimate the percentage of variance in the dependent variable explained by the independent variables. Independent variables included in the model are stock size, distance to market, condition of livestock, days of fattening and contribution of the programme. Other variables were excluded by virtue of being insignificant.

5.3. Results and discussion

5.3.1. Descriptive analysis

The domination of males in the agricultural sector is still common in the communal areas of South Africa (Montshwe, 2006), and the Eastern Cape is no exception. For example, the gender distribution of the sampled farmers was 85.63% (Males) to 14.37% (females). This can be attributed to the fact that cattle herds are associated with the social status of men in the communal areas. In addition, women can only herd households when they are single or widows. However, there is no evidence of the contribution of women on household decision making regarding livestock ranches.

5.3.2. Empirical analysis

Table 3 indicates an increase in off-take rate that communal farmers eventually gain an interest to participate in formal markets. This is against the background that communal farmers are in possession of about 40% of cattle, but only about 5% make it to the formal market. However, the off-take rate presented in Table 3 is an approximation; it was calculated from the sales and population of livestock data from the sampled farmers. Nevertheless, the results indicate that the average off-take rate for Alfred Nzo is the highest at 15.77%. The average off-take rate for the five municipalities is 12.7%, which is still below the 25% for the commercial farmers. However, it is higher than the off-take rate of the communal cattle sector (5%) in South Africa.

Table 3: Off-take rate (%)

	Amatole	OR Tambo	Alfred Nzo	Chris Hani	Cacadu	Average
2005	10.9	10.1	13.2	9.8	8.6	10.52
2006	12.8	9.8	15.6	10.2	9.9	11.66
2007	13.9	12.1	15.9	10	10.5	12.48
2008	15.9	12.9	17.1	10.7	8.8	13.08
2009	14.7	12.8	14.92	13.8	11.3	13.504
2010	13.5	11	15.3	12.4	10.8	12.6
2011	13.9	13.5	16.64	12.8	11.1	13.588
2012	14	13.8	17.5	13.9	13	14.44
Average	**13.7**	**12**	**15.77**	**11.7**	**10.5**	**12.734**

5.3.2.1. Determinants of formal market participation

The NRMDP was initiated to narrow the gap between communal farmers and their commercial counterparts in terms of formal market participation. In this way, the untapped potential of beef production from the communal areas would not be overlooked. Therefore, it was interesting to do the empirical analysis of factors that would influence farmers' participation into the programme, thereby participating into the formal market opportunities entailed in the programme.

a) Distance to markets

The results presented in Table 4 point out that there is a positive significant correlation between distance to market and formal market participation. The results explicitly show that there is 48.205 fold increases in odds of formal market participation for every unit increase in distance to the market for livestock farmers in the communal CFPs. This implies that there is greater participation in the formal market by these farmers regardless of the distance to the market, when other factors are kept constant.

Table 4: Economic impact of the NRMDP on communal livestock in the EC

Formal market participation	Odds ratio	SE	Z	P > |z|
Stock size	2.818	1.23	2.38	0.017
Distance to market	48.205	49.07	3.81	0.000
Days of fattening	1.070	0.02	4.03	0.000
Contribution of the programme	1.002	0.00	2.18	0.030
Constant	**0.003**			
N	**511**			
LR Chi-Squared	**205.85**			
Prob > Chi-Squared	**0.000**			
Pseud R-Squared	**0.778**			

b) Stock size

Stock size is an important factor that can increase the economic viability of the livestock farming. With an increase in stock size, more cash-flow is likely to be achieved by the farmers. The results indicate that stock size is positively correlated with formal market participation of communal livestock farmers. The odds ratio for the association between formal market participation by communal livestock farmers and stock size, adjusting distance to market, days of fattening and contributing to the programme is 2.818. This implies that there is 2.818 fold increases in the odds of formal market participation for every unit increase in stock size. This appears to indicate a significant impact the NRMDP can have on the economic viability of farmers considering its impact on the increase in stock size.

c) Days of fattening

The body condition of any livestock in formal markets attracts good market prices and therefore, increases the profitability of the enterprise. In this study, it was found that there is a positive correlation between the days of fattening and formal market participation of communal livestock farmers. Furthermore, the results indicate that formal market participation will increase by 1.07 fold for every unit increase in the days of fattening. This

appears to indicate that increase in body condition of the livestock could possibly increase formal market participation by the farmer, when other factors are kept constant.

6. CONCLUSION

The model used in this paper was fit for the analysis and the results indicate that the communal farmers' odds to participate into the programme increase when stock size, distance to markets, days of fattening, and income received from livestock sales through the programme are adjusted. Furthermore, this correlation is significant in all four occasions. To some degree, this is an indication that farmers are slowly beginning to understand how they can best make use of the opportunity presented by the programme. Hence policy wise, it is commendable to encourage communal livestock farmers to participate in the programme. In other words, supportive policies and institutions could substantially improve productivity and income generation and make a major contribution to poverty reduction in the communal space.

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