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Factors Having The Most Significance on the Choice and Selection of Marketing Channels Amongst Communal Cattle Farmers in Vhembe District, Limpopo Province

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ABSTRACT The prime objective of this study was to investigate the factors having the significance on the choice of cattle marketing channels, and in addition, participation of the farmers in mainstream formal market. Fifty-five (n=55) farmers were purposively and randomly selected for a questionnaire-based data collection mini-survey. The study was conducted in the Musekwa Valley in Vhembe District, Limpopo Province, South Africa. Descriptive data were collected and fitted to a Binary Logistic Regression Model to determine the significant factors. The majority of the cattle farmers preferred the informal market (56.4%) ahead of mainstream formal market (43.6%). Farm record keeping, distance to the mainstream formal marketing channel and farm productivity revealed the high significance. Workshops should be conducted for the farmers on farm record keeping and farm productivity improvements while marketing infrastructure could be developed nearer the farmers' villages to promote participation of the farmers in mainstream formal marketing channels.

INTRODUCTION

Background of the Study

Participation of communal small-scale farmers in the mainstream formal marketing in Sub-Saharan Africa and other developing regions of the world is low and, therefore, of high development and improvement priority amongst governments of the region in current economies (Demeke and Haji 2014). Low participation of farmers in mainstream formal agricultural marketing is detrimental to economic development and, in addition, impeding to household welfare gains that might emanate from active participation in the market (Onoja et al. 2012; Ndoro et al. 2014).

Reviewed literature (Mailu et al. 2012; Enkono et al. 2013; Girei et al. 2014; Kemisola et al. 2014; Sigei et al. 2014; Sebatta et al. 2014) opined that sub-sectors such as cattle, cassava, fisheries, potato, poultry and pineapple farming amongst others continued to face perpetual mainstream formal market-based constraints. As a result of such constraints, farmers opt for informal market options comprising mainly individuals buying for various socio-cultural imperatives (Sikhweni and Hassan 2013).

Despite the growth of agricultural markets – especially, in the livestock sub-sector, as a result of factors of the so-called Livestock Revolution (Stroebel 2004; Nthakheni 2006; Sumberg and Thompson 2013), and other multi-faceted factors such as increasing regional populations, household income growth, lifestyle change where increased number of people are consuming more protein foods from meats, increased urbanisation and globalisation amongst others (Ndoro et al. 2014), livestock marketing in communal and small-scale farming still remained low, stagnant and almost un-improving to date. The subsequent low rates of active participation, or non-participation at all in mainstream formal agricultural marketing is a major constrain of socio-economic advancement, growth and development of the poor – especially, in the developing regions where poverty is on the rise (Demeke and Haji 2014; Ndoro et al. 2014).

Low agricultural market participation affected the majority of communal small-scale farmers in the developing regions – especially, in Sub-Saharan Africa (Chauke and Anim 2013; Demeke and Haji 2014; Ndoro et al. 2014). In South Africa during liberation in 1994, Black small-scale farmers – especially, those in the so-called former homeland Bantustants such as Bophothatswana, Ciskei, Gazankulu, Lebowa, Transkei and Venda, for instance, found themselves trapped in this low market segment of the agricultural

sector, however, with state-sponsored and supported White commercial farmers, on the other side of the market (Chauke and Anim 2013). The former apartheid regime had created and systematically maintained racially-based structured agricultural economy, therefore, effectively creating at least three agricultural economies.

There are three groups of farmers in South Africa; large scale commercial farmers, emerging commercial farmers and communal subsistence farmers (Stroebel, 2004; Montshwe, 2006; Nthakheni, 2006). Each group farms for different reasons. Farming reasons might determine agricultural economic behaviour (Lubungu et al. 2012). Large scale commercial farming is still dominated by Whites who had immense policy support from the previous apartheid government (Shao et al. 2004; Senyolo et al. 2009). White farmers are resource-rich and commercially-orientated – and also, farm mainly from private property (Stroebel 2004; Randela 2005; Grwambi et al. 2006; Montshwe 2006; Nthakheni 2006).

The so-called emerging farmers group is mainly comprised of the Black middle-class farmers who are stepping in the commercial agricultural market – either through state-sponsored programs or personal initiatives. The communal farmer group comprises the formerly disadvantaged Black farmers who are resource-poor – farming mainly from communal land - who mainly farm for household consumption and subsistence reasons, although, some also sell surplus produce mainly to the informal market. The communal subsistence farmers are characterised by low market participation and poor participation where a few of these farmers managed to reach the formal market (Senyolo et al. 2009; Lubungu et al. 2012; Chauke and Anim 2013; Girei et al. 2014; Jari and Fraser 2014; Ndoro et al. 2014).

Research Statement of the Problem and Objective (s)

Based on the low or non-market participation of communal small-scale cattle farmers in mainstream formal marketing in South Africa in general and in Vhembe District, Limpopo Province in particular, this study, therefore, investigated the factors influencing such market behaviour. However, in addition, this study also prioritises the non-market participation factors empirically using the so-called Logistic Regression Model. Focusing on the factors with the most significance on market participation and choice emanates from the fact that reviewed literature showed there is a plethora of literature (Chauke and Anim 2013; Girei et al. 2014; Jari and Fraser 2014; Ndoro et al. 2014) positing the multiple and multi-faceted factors impeding participation of communal small-scale livestock farmers in mainstream formal cattle marketing in various parts of Sub-Saharan Africa in general and South Africa in particular. However, what is clear is that such literature does not explore the varying degree of influence to which the impeding factors contribute to farmers' decision with regard choice and participation in the market.

This non-prioritisation of the factors leaves a vacuum in the understanding (Ndoro et al. 2014) of the impact and influence of these factors on market choice and the subsequent participation of communal small-scale farmers in mainstream formal cattle marketing in South Africa. This study, therefore, is a departure from the traditional and overly generalised outcomes by prioritising those impeding factors to market participation amongst communal small-scale cattle farmers. Besides, this study fills that research gap. The over-arching purpose of the study is to design policy recommendations that would appropriately address this crucial agricultural market factor which might lead to socio-economic non-development and non-progress amongst the poorer section of the South African farming public; previously disadvantaged Black farmers if left unresolved for too long.

Research Question

This paper is guided by two simple research questions:

- What are the cattle marketing options available for communal cattle farmers in the Musekwa Valley?
- Amongst the various factors identified as impeding participation and choice of mainstream formal cattle marketing channels amongst communal small-scale cattle farmers in the Musekwa Valley which of those factors show increased significance?

Structure of the Paper

This research is structured as follows: First, the study introduced the context of the research

through a comprehensive introductory background. Secondly, the study presented the reviewed literature. Thirdly, the research methods detailing amongst others; sampling frame, procedures, data collection and data analysis are detailed. The results of the study are detailed, thereafter, followed by conclusions drawn and policy recommendations.

Literature Review

This section presents reviewed literature relevant to issues of low or non-market participation of small-scale cattle farmers in mainstream formal cattle marketing in South Africa.

The Agricultural Market During and Post-apartheid South Africa: The Period April 1994 to Date

Only five percent of cattle produced in the communal areas of South Africa reach the mainstream formal cattle markets against 25 percent of cattle from commercial farmers (Nkhori 2004; Lubungu et al. 2012) – and this stems from different factors (Ndoro et al. 2014). The greatest socio-economic anomaly in the South African agricultural economy was created by apartheid politics adopted by the nationalist White minority government of the time led by the National Party (NP). Like elsewhere in sub-Saharan Africa post-independence, where governments shifted policy to accommodate the formerly neglected poor African farmers, the new democratic post-apartheid South Africa government had to adopt an integrative policy seeking redress of the socio-economic inequalities created by apartheid in the agricultural sector (Chauke and Anim 2013). Since then, there has been growing academic and policy interest in South Africa on how the various farming groups practice their agricultural trades and are engaged in the market in particular. Post-apartheid, consensus determined that the communal subsistence farmer – mainly from Black communities should be assisted more with regard participation in mainstream formal market because this group had been long marginalised by apartheid.

Motivation for Integration of the Agricultural Market

Government first sought to integrate and amalgamate the dual agricultural economy into a single system by removing the associated apartheid-promoted policies characterised by red-tape for Black farmers in particular (Shao et al. 2004; Stroebel 2004; Nthakheni 2006; Senyolo et al. 2009; Chauke and Anim 2013). Government has opined that the integration would improve amongst others market opportunities for the previously disadvantaged Black farmers in South Africa – especially, those farming in communal areas in former Bantustants perceived to be amongst the poorest in the country. Participation in mainstream formal market could maximise the communal farmers' profit making potential while creating wealth and livelihood improvement opportunities while assisting farming households to fight poverty, reduction of race-based inequality, increase employment opportunities especially, amongst the vulnerable groups such as youth and women in the rural areas (Montshwe 2006; Mmbengwa et al. 2011; Chauke and Anim 2013; Girei et al. 2014; Ndoro et al. 2014). Clearly, good market choice and participation by communal farmers could provide options for improved livelihood, and also catalyses the objectives of government on rural sustainable development efforts (Van Schalkwyk et al. 2007).

Reasons Why Participation in Mainstream Formal Market Differs Between Farming Groups

Participation in the cattle market amongst the identified three groups of farmers in South Africa differed for various reasons. Various factors have been identified as causes of diverse approach in market participation amongst farmer groups in South Africa in general and Limpopo Province in particular. Socio-demographic typologies of farmers have played a major role in determining their probabilities to participate in the market (Schwalbach et al. 2001; Montshwe 2006; Juma 2009; Hangara et al. 2011). In addition, ownership of assets such as cattle, technological infrastructure like telephone; radio and means of transport, distance to the markets (Ainslie 2003; Stroebel 2004; Balagtas et al. 2007; Senyolo et al. 2009), availability of physical infrastructure such as roads and institutional support such as government intervention processes and policies in extension service; agricultural policy; farmer access to financial assistance and insurance, adoption of new cattle production and

marketing technologies and level of farm productivity amongst others have played major roles in influencing market choices of communal farmers in the developing regions (Nell 1998; Mahabile et al. 2005; Grwambi et al. 2006; Nthakheni 2006; Pamacheche and Koma 2007; Girei et al. 2014; Ndoro et al. 2014). Evidently, a plethora of intertwined factors influence cattle marketing amongst communal cattle farmers in the developing regions in general and South Africa in particular (Lubungu et al. 2012; Chauke and Anim 2013; Ndoro et al. 2014).

METHODOLOGY

Description of the Study Area

The Musekwa Valley is an arid to semi-arid area characterised by high summer temperatures which might even reach as high as 45ºC in late summer. This study area is located in the so-called Greater Nzhelele area in the Vhembe District municipality of Limpopo Province. The area is comprised of approximately 1 375 households which are spread in eight villages, with a total population of 6 179 inhabitants of which 54.9 percent are women while 45.1 percent are men. Goats (53.0%), cattle (42.9%), donkeys (2.5%) and sheep (1.6%) are the main livestock units kept by the majority of the households.

Sample Frame, Sampling Techniques, Data Collection Methods and Instruments

There are approximately 183 farming households – which represent approximately 13.3% of the total households in this study area. Of the total farming sample frame (183 farmers), this study randomly selected fifty-five (n=55) farmers to be interviewed for primary data collection. A semi-structured cross-cultural questionnaire with close and open-ended set of questions translated from English to Tshivenda to facilitate proper understanding of the questions by the respondents as recommended by Hangara et al. (2011) and Tabaro (2013) to collect data was employed.

Data Analysis

The collected research data were captured and analysed through the SAS Version 2008. First, the data were entered into an Excel Spreadsheet for descriptive analyses. Secondly, the descriptive results of the study were, thereafter, exported and fitted to the empirical model.

Empirical Model

A Binary Logistic Regression Model that considered farmer's marketing channel (MCHANEL) as a dependent variable and other variables (age, level of education attained, employment, household size, farming experience, farm system adopted by farmer, ownership of livestock, keeping of farm records, distance to the market, access to the market, access to extension service, access to loans, access to market information, membership in farmer organisations, ownership of transport, advertisement, income derived from farm activities and productivity of the farm) as predictor variables was fitted into the model to determine the outcome.

The logistic regression model used in this study was expressed as:

Logit (p) = $\alpha + \beta_1 X_1 + \beta_2 X_2 + \ldots \beta_n X_n$ where $X_1, \ldots X_n$ were the predictor variables (Table 1) respectively and "p" denoted the probability that the farmer sold at least an animal or more over the previous 12 months prior to this study to either an informal or formal marketing channel. In this case, if P is < 0.05, then the value of that covariate makes a significant contribution to the variance and, therefore, this covariate is included in this model. Each final model was tested for fitness to the data. The parameter β_i refers to the effect of X_i on the log odds that Y=1, controlling the other X's. For instance, exp (β_i) is the multiplicative effect on the odds of a 1-unit increase in X_i, at fixed levels of the other X's (Agresti 1996). Table 1 indicated the predictor variables of the model for this research.

RESULTS AND DISCUSSION

The Binary Logistic Regression Model was run to predict the factors having significance on the probability of the communal cattle farmers' choice and participation in mainstream formal market. The outcome of this model is indicated in Table 2.

As depicted in Table 2, the regression analysis of the Binary Logistic Regression Model eliminated the rest of the insignificant predictor variables from the model, and retained only three significant predictor variables (Table 3).

Table 1: Selected variables and expected effect (+/-) on market choice

Variable code	*Variable description*	*Measurement of variable*	*Effect*
AGE	Age for household head in years	Below 35 years (1), otherwise (0)	±
EDUCATION	If farmer has attained formal education	Yes (1), 0therwise (0)	+
EMPLOYMENT	Employment status of household head	Employed (1), otherwise (0)	±
HHSIZE	Household size	More than 6 (1), otherwise (0)	±
FARMEXP	Years completed in cattle farming	>Three years (1), otherwise (0)	+
SYSTEM1	Type of production systems	Cattle only (1), otherwise (0)	±
OWNERSHIP	Cattle ownership	Yes (1), otherwise (0)	+
RECORDS	If farmer kept farm records	Yes (1), (0)	+
SPOINT	If there is selling point in farmer's village	Yes (1), otherwise (0)	+
DISTANCE	Farmer to market geographical distance	Near (1), otherwise (0)	±
ADVERT	If farmer advertises sales	Yes (1), otherwise (0)	+
EXTENSION	Access to extension assistance	Yes (1), otherwise (0)	+
LOANS	If farmer accesses formal loans	Yes (1), otherwise (0)	+
INCOMESELL	Income by farmer through cattle sales	Yes (1), otherwise (0)	+
TRANSOWN	Transport ownership by farmer	Yes (1) otherwise (0)	+
MEMBER	Membership in farmer organisations	Yes (1), otherwise (0)	+
MCHANEL	Farmer's marketing channel	formal (1), informal (0)	+
FARMPROD	If farmer weaned any calves	Yes (1), otherwise (0)	+

Table 2: Factors with most significance on mainstream formal cattle market choice and participation amongst communal farmers

Predictor variable	*DF*	*Score (Chi-square)*	*Pr-Chisq*
AGE	1	0.4977	0.4805
EDUCATION	1	0.0164	0.8981
EMPLOYMENT	1	0.7924	0.3734
HHSIZE	1	1.4318	0.2315
FARMEXP	1	0.3016	0.5829
SYSTEM1	1	0.2698	0.6035
OWNERSHIP	1	4.3860	0.0362*
RECORDS	1	8.3214	0.0039*
SPOINT	1	0.3318	0.5646
DISTANCE	1	0.0168	0.8967
ADVERT	1	0.0453	0.8315
EXTENSION	1	2.9980	0.0834
LOANS	1	0.3487	0.5549
INCOMESELL	1	0.1819	0.6697
TRANSOWN	1	2.2429	0.1342
MEMBER	1	1.3455	0.2461

As can be observed in Table 3, the results of the Binary Logistic Regression Model revealed that increased ownership of cattle (OWNERSHIP), keeping of farm records (RECORDS) and productivity of the farm (FARMPRODUC) were significant to the model and, therefore, retained.

The Implication of the Results of this Model

This section of the study discusses the implications of the retained variables on the choice and subsequent participation of communal cattle farmers in mainstream formal market versus the informal market.

Ownership of Cattle

As hypothesised in Table 1, increased ownership of cattle (OWNERSHIP) revealed high significance to the communal cattle farmers in this study area choosing the mainstream formal cattle market and subsequent active participation of the farmers in this market. The high significance of this variable on the model suggested, therefore, that any increase in the number of cattle units amongst the communal cattle farmers in the study area might, therefore, increase the very farmer's probability of choosing and participating in mainstream formal marketing of cattle (Table 3). Besides, increased number of herds per farmer might result in available surplus cattle for the mainstream formal market unlike when the farmer has a smaller herd. Farmers would need to have surplus output to meet both household consumption needs and market demand on the one hand (Kemisola et al. 2013). The result of this paper is in collaboration with the findings reported amongst small-scale cattle farmers in Namibia (Enkono et. al. 2013; Thomas et al. 2014). One crucial aspect of communal cattle farming in most parts of the Vhembe District is that there was increased number of farmers who kept cattle in a cultural practice called "*u swiswa kholomo*" for other people such as relatives – especially those relatives who are migrant workers, and could not take care of their

Table 3: Results of the market choice model (MCHANEL)

	Estimates	*Std error*	*Wald Ch-square*	*Pr.Chisq*	*Exp (Est)*
Intercept	-4.9058	1.5832	9.6011	0.0019	0.007
OWNERSHIP	2.5507	1.2179	4.3860	0.0362	12.816
RECORDS	3.4076	1.1813	8.3214	0.0039	30.192
FARMPRODUC	2.3472	1.1290	4.3218	0.0376	10.456

animals (Nthakheni 2006). This cultural practice of "*u swiswa kholomo*" has major implications for farmers when marketing decisions are needed. For instance, farmers would not sell animals that do not belong to them unless they have the owner's permission. The results of this study in fact corroborate this assertion because the results of this model revealed that the odds of cattle farmers choosing and selling their cattle to the mainstream formal cattle marketing channels are 12.816 higher (Table 3) for farmers who owned the cattle rather than those farmers who kept the animals for other people such as relatives. This result suggested that the odds of choosing and selling cattle to the formal cattle marketing channels in this study area are 12.8 times greater when the individual cattle farmers owned the animals they kept than when the farmers kept the animals for other people such as relatives. What these results opined is that communal cattle farmers who owned the cattle they kept had easier decisions to make with regard choice of marketing channel and the subsequent market participation than the farmer not owning the cattle.

In addition, the results of this study also suggested that cattle farmers who owned fewer animals might not have enough stock to satisfy the demand of the mainstream formal market while those other farmers actively participating in mainstream formal market have larger herds to meet the demand of the mainstream formal market (Nkhori 2004; Enkono et al. 2013). Cattle farmers with larger herds might be motivated to choose mainstream formal market ahead of the informal market because prospects were that such farmers might be able to reduce transaction costs which might not be the case with farmers with smaller stock. Further, this assertion opined that those farmers who sold in larger quantities are therefore expected to actively participate in the mainstream formal markets than those who sold smaller quantities of animals. Besides, the more ownership of cattle units increase, the higher the probability of such farmers choosing and participating in mainstream formal market is multiplied.

Keeping of Farm Records

The model's selection of the record keeping variable (RECORDS) as having significance (Table 2) was as hypothesised in Table 1. As reflected in Table 3, the results of this paper opine therefore that the farmer who keeps farm records has a 3.4076 increase in probability of choosing and participating in the mainstream formal cattle market, with the odds being 30.192, suggesting that the odds for choosing and participating in the mainstream formal cattle market are 30.192 greater when the farmer keeps farm records than when the farmer does not keep farm records.

Keeping of farm records is expected to assist the cattle farmer to keep and access crucial production and managerial information on the farm. The farm crucial information might include amongst others herd dynamics; cattle mortality controls mechanisms, general cattle production management and cattle marketing activities amongst others (Lyimo et al. 2004). Keeping of farm records such as those on market information and farm financial accounts could provide crucial information about the farming enterprise (Duren 2001), thus, increasing the probability of the farmer to have options in choosing appropriate marketing channels.

Further, those communal cattle farmers who keep farm records are also expected to be more entrepreneurial than those farmers who do not keep farm records. Entrepreneurial cattle farmers are expected to choose and actively participate in mainstream formal markets than those farmers who are less entrepreneurial. Entrepreneurship could also enhance the farmers' innovation in farming – providing these farmers with an opportunity to conduct cattle production and market practices in an entrepreneurial way (Jha 2009) with increased cash returns and maximized profits (Mmbengwa et al. 2011). Contrary to this

however, the results of the study suggested that the cattle farmers in the study area could be less entrepreneurial because they do not keep farm records and this retards their progress towards full entrepreneurship.

Increased Farm Productivity

The results of the empirical model as indicated in Tables 2 and 3, further, revealed that increased farm productivity (FARMPRODUC) was significant to the model as has been predicted in Table 1. This result is in agreement with those reported by Jaleta and Gebremedhin (2011) who argued that increased farm productivity promote participation of farmers in the market. Further, the results of this paper opine that if the farm could increase its productivity, the probability of the communal cattle farmers in this study area to choose and actively participate in the formal markets could also increase by as high as 2.3472. In addition, the results of the study revealed that the odds of choice and participation in the formal market are 10.456 greater when the cattle farm was productive (Table 3). Increased farm productivity could be a reflection of the farmer's preparedness to produce more surpluses for the mainstream formal market because farmers with increased productivity are expected to be more market-orientated - regardless of the many other impeding marketing factors which could have different influence on marketing decision of the respective cattle farmer (Rios et al. 2009).

The correlation matrix of predictor variables included in model analysis is presented in Table 4.

In terms of the results in Table 4, there is a negative correlation between ownership of cattle (OWNERSHIP) and farm productivity (FARMPRODUC) amongst communal cattle farmers in this study area. Simply put, the expressed correlation of these variables suggested that the decrease of ownership of cattle by a unit might as well decrease the farmer's probability of farm productivity. Secondly, the results in Table 4 revealed that there is a positive correlation between ownership of cattle (OWNERSHIP) and keeping of farm records (RECORDS) by communal cattle farmers in this study area. In other words, as farmers increased ownership of cattle, probabilities are that they also would increase keeping of farm records. This result could be explained by the fact that the more the farmer has a larger herd the more that farmer might become more entrepreneurial by interacting with other mainstream commercial farmers who might rub the skills of running a professional enterprise on the farmer – obviously, learning the value of keeping farm records. Thirdly, the results in Table 4 revealed that there is a positive correlation between keeping of farm records (RECORDS) and farm productivity (FARM PRODUC) amongst communal cattle farmers in this study area. Further, positive improvement in farm record keeping might promote farm productivity. This result is expected because generally farmers who kept farm records were opined to have access to crucial information which might be needed to improve farm operations and management on various factors including production and marketing – thereby, improving their overall farm performance (Duren 2001; Lyimo et al. 2007).

Table 5 indicated the observed versus predicted probabilities for choice and participation in mainstream formal marketing amongst the communal cattle farmers in the Musekwa Valley, Vhembe District.

Table 5: Observed versus predicted probabilities for choice and participation in mainstream formal marketing

Percentage of cases correctly classified	95.0%	*Percentage*
Percentage of Variance	75.353	
R-square	0.3788	
Observed – mainstream formal market channels	31	43.6
Observed – Informal market channel	24	56.4
Total observed	55	100

Table 4: Estimated correlation matrix: Market participation

Parameter	*Intercept*	*OWNERSHIP*	*RECORDS*	*FARMPRODUC*
Intercept	1.000	-0.7513	-0.7190	-0.5978
OWNERSHIP	-0.7513	1.000	0.1867	-0.0122
RECORDS	-0.7190	0.1867	1.000	0.8031
FARMPRODUC	-0.5978	-0.0122	0.8031	1.000

As indicated in Table 5, a measure of goodness of fit, the overall model fit is tested using the Hosmer and Lemesshow Goodness of fit test of linear/non-linear restriction and the results indicated that this model is appropriate and is a good fit for the data. With regard to the predictive efficacy of this model, out of 55 sampled communal cattle farmers in the study area included in this model, 95.0 percent is correctly predicted. The percentage of deviance is 75.353. The results of this model revealed an R- Square of 0.3788. This means that the proxy for mainstream formal cattle market participation amongst the communal cattle farmers in the study area is 37.9 percent. This is explained by the fact that some of these farmers also keep cattle for other people such as relatives which they might not be able to sell. In addition, a fewer number of these farmers also keep farm records while, further, a considerable number of these farmers also were not productive in the previous 12 months prior to the study. Under these conditions, farmers might find themselves with limited options in terms of choice and subsequent participation in mainstream formal marketing. However, marketing of cattle amongst communal cattle farmers in most developing regions depended on a broad-based and diversified marketing channels of either formal or informal options. Besides, if there are perceived difficulties from selling in mainstream formal market, the majority of communal cattle farmers in most developing regions are known to also sell their animals in the informal market. The informal market is cheaper, quicker and easier to locate.

The results of this study revealed that only 43.6 percent of the communal cattle farmers chose and, also participated in the mainstream formal cattle market against 56.4 percent who chose and also participated in the informal market 12 months prior to this study. This suggested that the informal cattle market is the most popular preferred and adopted market than mainstream formal cattle market amongst communal cattle farmers in this study area. These results are similar to Sikhweni and Hassan (2013) who reported that the communal cattle farmers in the Mhinga area elsewhere in the Vhembe District also marketed their cattle informally (60.0%) and/or formally (40.0%). Thomas et al. (2014) also reported similar patterns of communal cattle farmers choosing and actively participating in the informal (62%) and mainstream formal (38%) cattle market in the Zambezi Region, Namibia. However, a sharp contrast of farmer cattle marketing behaviour has been recorded in Aminius and Otjinene in Namibia where a comprehensive 93% of communal cattle farmers instead chose and participated in mainstream formal marketing of cattle (Hangara et al. 2014). Out of the results of this study and those reported in reviewed literature, it is evident that factors promoting or impeding choice and participation of communal cattle farmers in mainstream formal market vary from region to region – depending on circumstances. However, most crucially is the fact that even though in some cases there were too few communal cattle farmers choosing and participating in mainstream formal marketing - signs are also there showing that communal cattle farmers could also choose and actively participate in mainstream cattle marketing.

Based on the results of this study, the findings opined, therefore, that communal cattle farmers in the study area are regarded as being highly informal in terms of cattle marketing. Clearly, cattle marketing amongst communal small-scale cattle farmers in this study area adopt a two-way model in marketing of cattle; informal and formal markets. The dual market practice is consistent with general practices amongst livestock farmers in most parts of South Africa, and elsewhere in countries such as Namibia where it is known to be uncharacteristic of farmers to only sell cattle to an exclusive marketing channel (Van Schalkwyk et al. 2007; Hangara et al. 2014; Thomas et al. 2014).

CONCLUSION

This questionnaire-based survey paper investigated the factors with more significance on the choice and participation of communal cattle farmers in mainstream formal marketing of cattle. Fifty-five (n=55) randomly and purposively selected communal cattle farmers were surveyed for primary data collection in the Musekwa Valley, Vhembe District of Limpopo Province, South Africa.

This paper employed a Binary Logistic Regression Model that considered marketing channel (MCHANEL) adopted by the communal cattle farmers in the Musekwa Valley as a dependent variable and predictor variables (age, level of education attained, employment, household size, farmer experience, type of agricultural production system, cattle ownership, record keep-

ing, availability of selling point, distance to the market, advertisement, extension services, access to loans, income generated from cattle sales, membership of farmer in farmer organisations and farm productivity) as indicated in Table 1 to predict the outcome of the model.

The predictor covariates of this model were selected on their anticipated probability to influence choice of market and the subsequent participation of farmers in the mainstream formal cattle market to determine the results of the empirical model. Further, this model was built from data exported and fitted to the model from the descriptive results. In other words, the results of the descriptive data were fitted into the empirical model for analysis.

The results of the empirical model revealed that the majority of farmers chose and participated in the informal market (56.4%) while others chose and participated in the mainstream formal market (43.6%). The results of the model also revealed that ownership of cattle, keeping of farm records amongst communal cattle farmers and productivity of the farm enterprise were significant to the choice of mainstream formal cattle marketing strategy and, in addition, subsequent participation of the communal cattle farmers in this market. It is evident from the results displayed by the results of this study that market choice and farmer participation in the market highly depends on a set of intertwined factors rather than a single factor. This research also observed that ownership of cattle had a negative effect on the productivity of the farm while ownership of cattle also positively relates with keeping of farm records. Keeping the records of farms also positively influenced the productivity of the farm.

RECOMMENDATIONS

In view of the observed factors in this study, the following recommendations are crucial:

The results of this study revealed encouraging market scenario amongst communal cattle farmers in this study area because the level of choice and participation in mainstream formal cattle marketing is reasonably higher when compared to other areas in the district and in the province in general. However, some work still needs to be done with regard choice and participation on mainstream formal market as a few other farmers still were locked in the informal market.

The integration of such farmers into mainstream formal market might be achieved through improved education of the farmers with regard amongst others, the benefits of participating in mainstream formal marketing.

Farmer ownership of cattle must be prioritised by amongst others encouraging farmers to keep cattle for themselves and not other people such as relatives to improve decision making on farm issues including market participation. The results of this study suggested that proper training programs on crucial factors of cattle farm record keeping and production such as animal breeding techniques and disease control and management be developed among the communal cattle farmers in the study area in particular to enhance farm productivity, and to increase the prospects of increased herds. Training the farmers on animal breeding techniques might improve the low calving and weaning rates, which eventually might improve stock availability for the farmers. Increased stock availability might improve the chances of the farmer participating in the market – especially, the commercial market which requires increased number of animals available for the market.

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