Determinants of participation in highly paid markets among woolgrowers in the Eastern Cape province, South Africa

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ABSTRACT
Market participation is a very crucial element among smallholder farmers through its effects on income, poverty reduction and rural economic development. Woolgrowers seek to maximise profits by sourcing for avenues for higher market value for their products. The study identifies factors which determine participation of woolgrowers in high value markets. Using stratified random sampling, data was collected from 248 woolgrowers of the National Wool Growers Association (NWGA). A Logistic regression model was used to determine the factors that influence participation of woolgrowers in high value markets. The results reveals that wool growing experience ($\beta = .033$, Sig = .000), skill acquisition ($\beta=.728$, Sig=.000) and wool price have a positive ($\beta = .071$, Sig = .000) and significant effect on woolgrowers' participation in the highly paid markets, while gender ($\beta =-.412$, Sig=.006) has a negative and significant effect. The findings of this study would enhance future decision and policies that would improve market accessibility and competitiveness of South African woolgrowers, thereby improving their income, food security and livelihoods.

Key words: Highly paid markets, Logistic regression, Participation, South Africa, Woolgrowers.

INTRODUCTION
Market participation is generally very low in rural Africa (Barret, 2008). This has to do with a number of serious constraints and barriers including higher transaction costs (Makhura, 2001). Poor market participation amongst smallholders hinders them from accruing economic benefits (such as higher income growth and savings) associated with participation in high value markets. Despite the importance of small-scale farmers in most developing countries, they still remain entrapped in the vicious cycle of poverty since they are not able to tap onto the economic benefits that come along with market participation.

Low market participation amongst small-scale farmers has slowed down agriculture driven economic growth and exacerbated poverty levels (Zamasiya et al., 2014). The subsistence nature of production that the smallholders engage in cannot rescue them from the vicious circle of poverty if they do not integrate into intensive commercialisation of their products. As highlighted by Makhura (2001), the process of agricultural transformation in South Africa involves moving households from subsistence production to producing for the market. Hence, access to reliable high value markets determines the transformation of small scale farming sector into commercial production (Antwi et al., 2016). The economic benefits of market participation amongst smallholders have been recognised to include employment creation and rural economic development.

Wool development is considered an important catalyst for rural economic development in South Africa (de Beer, 2009). Woolgrowers’ often aim for the highest prices for their products through various promising marketing channels available to them. However, this is not easily achieved due to a number of constraining factors as discussed above. Many different factors influence farmers’ participation in high value markets. Such factors may vary in accordance with socio-economic characteristics of farmers. This is evident from a number of previous studies (Zamasiya et al., 2014; Barret, 2008; Adeoti et al., 2014) on determinants of market participation.

The economic importance of the wool industry in South Africa cannot be underestimated. However, despite the important contribution of the wool sector to the export share of the South African economy, the factors that determine producers’ market participation have not yet been studied. To our knowledge, very few empirical studies, if any, exists in the wool sector that deals with the issue of markets. Therefore, the importance of determining factors that influence the woolgrowers’ in the study area’s participation in high value markets cannot be overemphasised; as this will assist policymakers in making informed decision about relevant support required by the woolgrowers’ particularly with regard to market access. The main objective of the study was to identify the factors which determine participation of woolgrowers in high value markets. From the foregoing, the specific objectives for the study focused on the effect of socio-economic characteristics of the wool farmers on their participation in high value markets.
MATERIALS AND METHODS

The study area: The study was conducted in the Eastern Cape province of South Africa. Its Gross Regional Product is R88-billion (2003) – 8.1% of total South African GDP with an Average GDP growth of 5.3% per annum. The Eastern Cape has over 150 years’ experience in wool and mohair production with renowned expertise in farming, technology, training, production and marketing (ECDC, 2011). There are 846 communal wool producing communities in the Eastern Cape (de Beer, 2012), so in the context of this study, more focus is given to the areas with higher farming concentration.

A sample size of 248 out of 700 active member growers was used, using the Krejcie and Morgan (1970) model. Using stratified random sampling, data was collected from the selected wool farmers’ in 20 towns across 3 district municipalities namely; the Amatole District, Cacadu District and Chris Hani District Municipalities. The interviews were done by appointment to ensure convenience for both the respondent and the interviewer. In case of absence of the household head, an adult (18 years+) was interviewed instead. The data (ranging from demographic to socio-economic) was gathered through a structured questionnaire. To analyse the data, the Statistical Package for Social Scientists (SPSS) software tool Version 22.0 was used. Descriptive statistics such as mean, frequency, sum, standard deviation, maximum, minimum, percentages were used to analyse the demographic and the socio-economic characteristics of the woolgrowers in the study area.

Model specification: A logistic regression model was used to analyse factors which determine woolgrowers’ participation in the high-value markets. The model is based on cumulative logistic probability functions and will be applied as it has the advantage to predict the probability of the farmers’ market participation. This model refers to the probability that the value of a random variable falls within a specified range (Weiers, 2011). Weiers (2011) further highlighted the cumulative probabilities model as frequently referring to the probability that a random variable is less than or equal to a specified value as below:

\[ P = \frac{e^{I_i}}{1+e^{I_i}} \]

Conceptually, the behavioural model used to examine factors participation being given by:

\[ Y_i = g (I_i) \]

\[ I_i = b_o + . b_j X_{ij} \]

Y is the observed response for the \( i \)th observation (i.e binary variable, \( Y_i = 1 \) for participation in high-value market, \( Y_i = 0 \) for otherwise).

If is an underlying stimulus index for the \( i \)th observation, \( g \) is the functional relationship between the field observation \( (Y_i) \) and the stimulus index \( (I_i) \) which determine the probability of participating in the high-value market.

\[ I = 1,2,.....m \] are observation on variables for the participation model; m is the sample size; \( X_{ij} \) is the \( j \)th explanatory variables for the \( i \)th observation and \( j = 1,2,3,.....n; \) bj is an unknown parameter, \( j = 0.1,2,...,n \), where n is the total number of explanatory variables.

Model estimation: The dependent variable was measured by dichotomous variable: farmers who participated in the high-value market were identified as 1, while those not using high-value markets were identified as 0, as presented in the Table 1 below. The model was estimated by the maximum likelihood estimation approach.

Table 1: Variable labels and their expected effects.

<table>
<thead>
<tr>
<th>ID</th>
<th>Independent variables Xi</th>
<th>Variable description</th>
<th>Expected sign</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>X_1</td>
<td>Gender of respondents</td>
<td>Negative</td>
</tr>
<tr>
<td>2</td>
<td>X_2</td>
<td>Age of respondents in years</td>
<td>Positive</td>
</tr>
<tr>
<td>3</td>
<td>X_3</td>
<td>Vehicle ownership</td>
<td>Positive</td>
</tr>
<tr>
<td>4</td>
<td>X_4</td>
<td>Educational level</td>
<td>Positive</td>
</tr>
<tr>
<td>5</td>
<td>X_5</td>
<td>Size of Household</td>
<td>Positive</td>
</tr>
<tr>
<td>6</td>
<td>X_6</td>
<td>Farmer’s residence</td>
<td>Positive</td>
</tr>
<tr>
<td>7</td>
<td>X_7</td>
<td>Total no. of goats</td>
<td>Positive</td>
</tr>
<tr>
<td>8</td>
<td>X_8</td>
<td>Total number of livestock</td>
<td>Positive</td>
</tr>
<tr>
<td>9</td>
<td>X_9</td>
<td>Number of farm labour</td>
<td>Positive</td>
</tr>
<tr>
<td>10</td>
<td>X_{10}</td>
<td>Years of Wool growing by farmer</td>
<td>Positive</td>
</tr>
<tr>
<td>11</td>
<td>X_{11}</td>
<td>Membership of farmer association/cooperative</td>
<td>Positive</td>
</tr>
<tr>
<td>12</td>
<td>X_{12}</td>
<td>Participate in skill training programmes</td>
<td>Positive</td>
</tr>
<tr>
<td>13</td>
<td>X_{13}</td>
<td>Total no. of wool sheep</td>
<td>Positive</td>
</tr>
<tr>
<td>14</td>
<td>X_{14}</td>
<td>Quantity of wool sold in kg/tons per year</td>
<td>Positive</td>
</tr>
<tr>
<td>15</td>
<td>X_{15}</td>
<td>Yearly income from wool production</td>
<td>Positive</td>
</tr>
<tr>
<td>16</td>
<td>X_{16}</td>
<td>Price per kg/ton of wool received by farmer</td>
<td>Positive</td>
</tr>
<tr>
<td>17</td>
<td>X_{17}</td>
<td>Transport cost/year</td>
<td>Positive</td>
</tr>
</tbody>
</table>

Y (dependent variable) Dichotomous variable. Growers participating in the high-value market=1; Otherwise=0.

Source: Information from this study.
RESULTS AND DISCUSSION

Demographic characteristics of respondents in the study:
The results presented in Table 2 shows that a total of 248 Woolgrowers were interviewed in the study. About 64.6% of the sampled farmers were male while the rest 35.4% were female. This gender participatory imbalance may not be far-fetched from the findings of Joekes (1999) which show that the impact of expanding agricultural exports is generally less favourable to women, and varies according to prevailing socio-cultural factors governing the gender division of monetary and employment benefits also appear to be larger for men. Women work less on the more commercialised agricultural produce than do men, and also have less chances of been hired as labourers, who are also mostly men (von Braun and Kennedy, 1994). The findings in Table 2 also show that 47.6% of the sampled woolgrowers were of the age range of 56-75, 33.6% fall within the range of 36-55 years, 1.4% were less than 35 years and 18.2% were above 76 years. These statistics portend a dwindling future for agricultural business in South Africa. This is consistent with the findings of Antwi and Seahlodi (2011), who observed that the ageing population of farmers threatens the future security of agriculture as no feasible succession initiative is in place. Statistics South Africa (2003), also shows that about 59 per cent of all people moving from the Eastern Cape to the Western Cape between 1996-2001 fall into the 20 to 39 age band.

Table 2 further shows that 45.1% of the farmers have below matric. This indicates a very low level of education among woolgrowers in the study area. 32.9% have matric and 22% have tertiary education. Education is essential for collaborative success in commercial activities including agriculture. The dual impact of education includes limiting the free riding (Lyne et al., 2008) and increasing individuals’ capacity to assimilate more content and put it into practice (Caswell et al., 2001; Fernandez-Cornejo, 1998).

The results also indicated that 77.3% of the respondents were having between 3-7 members in their households. About 17.3% had between 8-12 members, while 1.3% had 13 and above. These figures are indicative of a high birth rate. The mean value for the number of household is 5.97. This figure contradicts the statistics given by (Trollip, 2011) of the Human Sciences Research Council (HSRC) which showed that Eastern province experienced a general decline in household size in the past decade. According to Trollip (2011), the average household size has declined from 4.4 in 2002 to 3.8 in 2009.

Logistic regression analysis results: The regressed results in Table 3 show that 4 out of the 18 variables regressed significantly influenced woolgrowers’ participation in the high value market. The variables are; gender (Est = -412, Sig=.006); wool growing experience (Est. =.033, Sig = .000); skill acquisition programme (Est. =.728, Sig=.000) and sale price of wool (Est. =.071, Sig. = .000).

Gender of farmers had a negative (Est = -412, Sig=.006) but statistically significant influence on farmers’ participation in the high value market. The implication is that increase in the number of male wool farmers decreases their chances of participating in the high value market. This result correlates with the findings of Joekes (1999) which show that the impact of expanding agricultural exports is generally less favourable to women, and varies according to prevailing socio-cultural factors. In a similar vein, a study by Zamasiya et al. (2014) shows similar findings where gender negatively influenced market participation amongst soya bean farmers in Zimbabwe. Governing and gender division of monetary and employment benefits also appear to be larger for men. Women work less on the more commercialised agricultural produce than do men, and also have less chances of being hired as labourers who are also mostly men (von Braun and Kennedy, 1994).
Wool growing experience had a positive and statistically significant (Est. =.033, Sig = .000) influence on the participation of farmers in the high value market. This suggests that the longer the woolgrowers farming years the better his products, and the higher his chances of been accepted in the highly paid market. This result however contradicts the finding of Oyinbo et al. (2012), who observed that farmers’ productivity decrease with age due to low interest in innovative practices and productive information. Older farmers are less critically receptive to farming dynamics than the younger ones.

Skill acquisition programmes attended by farmers also had a positive and significant impact (Est.=.728, Sig=.000) on farmers’ participation in the high value market. The implication of this is that, numerous records of skill acquisition programmes attended by farmers boost their chances of participating in the high value market. This corroborates the findings of Saikia et al. (2017) who found that training among pig farmers on the improved methods of farming and the level of education among respondents are that determine participation of woolgrowers in highly paid markets. There is a low participation of the younger population in wool farming; female participation in wool production per sheep as well as to the production of quality wool.

CONCLUSION

This study was carried out to identify the factors that determine participation of woolgrowers in highly paid markets. There is a low participation of the younger population in wool farming; female participation in wool farming and the level of education among respondents are low. The Logit regression analysis reveal that gender, experience, participating in the skill acquisition programme and sale price of wool were factors which significantly influenced the participation of farmers in the high value markets.
markets. The findings of this study therefore suggest that government policies must be designed in such a way that can attract the youths or younger generation into agriculture in general and the wool industry in particular. One way could be to put in place some incentives that can make the sector more attractive to the youths. In that way, the future continuity of the wool sector can be secured. Moreover, policies that encourage the inclusion or involvement of women in wool farming should also be put in place in order to empower women economically. It is widely believed that as compared to men, women are most likely to channel their financial gains towards their households ensuring that their families have access to adequate and nutritious food. It is also recommended that extension services should be intensified in ensuring that woolgrowers are constantly kept abreast with the dynamics of wool production. Market access is a universal challenge especially among smallholder farmers in developing countries. Producing a good product quality is one story, but getting a market for it is another. Therefore, initiatives that aims at linking farmers to the markets can position the farmers to accrue the economic benefits that come with trading their products. This may result in improved productivity, marketable surpluses, income and better livelihoods amongst the rural farmers.

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