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The impact of socio-economic factors on livestock farmers' knowledge and skills in the Eastern Cape Province: The case of Marselle farmers

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Marselle farmers have continued to struggle to produce effectively despite obtaining free land and funding from the Land Bank. One key challenge thought to be behind this poor performance is the farmers' lack of proper livestock farming skills and knowledge. This study thus sought to determine the effect of various socio-economic factors on the acquisition of critical livestock rearing skills and knowledge of Marselle farmers. The long term plan was to pave a way to improve the farmers' skills and knowledge; thereby, enhancing their productivity based on the findings of this study. The gender of farmers had an influence on their skills and knowledge acquisition, followed by education. On the other hand, the famers' marital status was not an issue at all, whereas family labour only affected the farmers' health care knowledge. Thus, planned capacity building interventions should be tailored to ensure that they suit every individual farmer and are in accordance with their respective socio-economic characteristics.

Key words: Animal healthcare, feeding, housing and handling, marketing, slaughtering, veld condition.

INTRODUCTION

The Land Reform Programme (LRP) in South Africa started in 1994 as a World Bank recommendation to address the skewed distribution of land in the country by providing the poor citizens of the Republic land for residential and productive purposes in order to improve their livelihoods (CPLO, 2010). Through this programme, the 630Ha Forest Hill farm was procured by government and given to former farm labourers in the Alexandria, Kenton and Port Alfred areas in 2000 (Thornton and Gibb, 2005). Some of them were retrenched farm

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labourers while others left farm work on their own accord to later settle in Marselle after the ownership of their employers' farms changed. The Forest Hill farm was given to them specifically for agricultural production purposes and this led to the birth of the Marselle Stock Farmers Association (SFA), a farmers' association made up of livestock farmers only.

However, despite several individuals benefiting from the national programme, evidence from countries like Zimbabwe and Namibia suggests that redistribution of land alone is not enough. In fact, beyond redistribution, it is critical to invest in research, extension services, seed and fertilizer delivery systems, capacity building, etc. if the recipients are to be any successful (Machingura, 2007). Bernstein (2009) further argued that most land beneficiaries were the rural poor with neither enough skill nor resources to work on the land. It is on these grounds that the members of the SFA in Marselle received financial assistance from Land Bank soon after being resettled to help them procure all the necessary farming inputs so that they may become efficient producers. Nevertheless, several years later, several interactions with them revealed that they were still unable to produce efficiently and use their livestock for livelihood purposes. One of the key challenges they faced was their severe lack of farming skills and knowledge, a challenge that made them not to use the donated finances appropriately.

For that reason, this study was the first part of a multi-stage intervention aimed at capacitating the farmers with the necessary skills to make them more efficient and productive in their farming activities. The main objective of this study was therefore to assess and determine the influence of certain socio-economic factors on the Marselle Stock Farmers Association members' (i) Livestock housing and handling; (ii) Feeding; (iii) Animal healthcare; (iv) Livestock slaughtering; (v) Veld condition management practices; and (vi) Livestock marketing knowledge and skills so that the capacity building intervention could be structured in accordance with the impact or influence of these factors.

MATERIALS AND METHODS

Brief description of the study area

The Marselle community is found in a quaint seaside location situated between the Kariega and Bushman's Rivers, along the Sunshine Coast in Eastern Cape, South Africa called Kenton-on-Sea (usually referred to as Kenton). It is located in the Ndlambe Local Municipality of the Sarah Baartman District Municipality and is approximately halfway between the industrial centres of East London and Port Elizabeth, on the R72 Road from East London (EL) to Port Elizabeth (PE). The region receives an average of 471 mm of rainfall per year, most (53 mm) of which falls in the month of October, with a very dense ecosystem consisting of the Fynbos, Grassland, Thicket and Karoo, which make up four of the South Africa's major biomes (Mucina and Rutherford 2007). Parkin et al. (2006) and Shackleton et al. (2007) further described the vegetation as shrubby (Fynbos) grassland on the hilltops and dense woody thicket in the valleys. Vegetation is natural and its sustainability depends on the way its users protect and make use of them.

Method

This study sought information specifically on the farmers' education, gender, age, marital status, occupation, household size, farming experience, use of family labour in farming activities and use of loans to improve the business, to determine how these affected their livestock farming skills and knowledge levels. A standardized questionnaire was used as the data collection instrument, with the unit of analysis being farming households. This questionnaire was standardized so that each respondent could be exposed to the same questions and system of coding responses. According to Siniscalco and Auriat (2005), this approach ensures that differences in responses to questions can be interpreted as reflecting differences among respondents, rather than differences in the processes that produced the answers. Questionnaire-based face-to-face interviews were carried out with the heads of the households but in cases where they were absent at the time of the interview, data was obtained from other senior household members.

Due to the small number of the SFA members in Marseille, all (32) of them were interviewed, making the study a case study. Despite the evidence put forward by Osborne and Costello (2004) that larger samples are better than smaller ones in research, this study relied on conclusions from Zucker (2009) that the case study approach involving in-depth interviews with few but key informants to obtain correct information on the issues being investigated.

Data analysis and interpretation

As proposed by McCollough (1974), descriptive statistics in the form of frequency distribution tables and figures were used as means to describe, summarize and reduce to manageable form, the properties of an otherwise unwieldy mass of data. This approach was limited to describing the socio-economic profile of respondents. On the parametric tests side, the Binary Logistic Regression (BLR) model was used to determine the extent certain socio-economic factors influence the skills level and consequently the farmers' productivity. The dependent variable was dichotomized with a value of 1 if a farmer possessed the skill in question and 0 if not. The dependent variables assessed include (i) Livestock housing and handling skills; (ii) feeding skills; (iii) animal healthcare skills; (iv) livestock slaughtering skills; (v) Veld condition management practices; and (vi) livestock marketing skills.

Nine predictor variables, based on the farmers' socio-economic characteristics were regressed against the binary dependent variables of farming skills. The underlying assumption for this investigation was that farmers needed these particular skills to enhance their productivity which in turn would enhance their household income and thus ameliorate the challenge of household food insecurity.

According to this binary logistic regression model, households were inferred to have the motivation to acquire such skills as having them yielded higher utility than not doing so. The binary logistic regression model used was adopted from Gujarati (1992) and its equation is given as follows:

$$ln\left\{\frac{P\left(\left(Y=\frac{1}{x}\right)\right)}{\left(1-P\left(Y=\frac{1}{x}\right)\right)}\right\} = \alpha + \beta_1X_1 + \beta_2X_2 + \ldots\ldots\ldots\ldots \beta_nX_n \quad (1)$$

Where, P = the predicted probability of having a particular farming skill; 1 – P = the predicted probability of not having a skill; α = the constant of the equation, β = the coefficient of predictor variables and X = the predictor variables. By fitting the variables into the model, the model could be presented as:

$$ln\left\{\frac{P\left(\left(Y=\frac{1}{x}\right)\right)}{\left(1-P\left(Y=\frac{1}{x}\right)\right)}\right\} = \alpha + \beta_1AGE + \beta_2Education + \beta_3Gender + \beta_4MaritalStatus + \beta_5Occupation + \beta_6HHSize + \beta_7Loan + \beta_8Years\ Farming + \beta_9\ Family\ Labour$$

The outcomes of this model are presented for each of the six skills which were identified, namely (i) livestock feeding; (ii) slaughtering; (iii) veld management practices; (iv) marketing; (v) animal healthcare; and (vi) livestock housing and handling). The *Nagelkerke* R^2 value was computed at the expense of the Cox and Snell's R^2 value since the latter has a weakness of not achieving the maximum value of one, even when the model perfectly predicts all the outcomes (Nagelkerke, 1991; Hosmer and Lemeshow, 1989).

RESULTS AND DISCUSSION

Farmers' socio-economic profile

Household head gender distribution

The results from the data collected show that households in Marselle were dominated by male heads as shown in Table 1. At least 85% of the heads are males, with 15.6% are females. The Commission for Gender Equality (2009) attributed such a bias to the high number of males (64%) that received agricultural land under the land redistribution and tenure programme in the province from 2005 to 2010.

Household head distribution by age

The household heads' ages were categorized into four age groups as follows: those (i) below the age of forty; (ii) between forty and fifty five; (iii) between fifty six and sixty five, and; (iv) older than sixty five. As illustrated in Table 2, at least 22% of the household heads were between the ages of 40 and 55 years, whereas only 3% younger than 40 years. The highest number of farmers (40%) comprised heads already over the age of 65 years. Thus, pensioners were the main farmers in the community. This is followed by those between the ages of 55 to 65 years as there were at least 35% of the households in the group. The same trend was noted by Perret (2002) who established that at least, half of the household heads in the former Transkei region of the Eastern Cape Province were older than 59 years. After investigating the composition of Limpopo farmers, Ngqangweni and Delgado (2003) also came to the same conclusions but further noted that as the youth got older and weaker, they returned home from the big cities to practice agriculture for livelihood purposes thereby increasing the number of older farmers in the sector. Nevertheless, there were some farmers in this study that indicated having started farming when still in their youth due to various reasons such as their failure to get salaried jobs, lack of skills and education required in other sectors, the desire to continue with family farming legacies, etc.

Table 1. Household head gender distribution in Marselle (N=32).

Variable	Frequency	Percentage
Male household heads	27	84.4
Female household heads	5	15.6
Total	32	100

Education levels of household heads

To understand the education levels of Marselle farmers, respondents were categorized into five different classes, namely those with: (i) no basic education at all, (ii) lower primary education (Grade 1-4); (iii) junior secondary education (Grade 5-7); (iv) senior secondary education (8-12); and (v) tertiary education. The findings are presented in Figure 1 and show that most farmers (81.5%) did not go beyond the fourth grade. From this group, fourteen (44%) never went to school and the remaining twelve (37.5%) went as far as fourth grade. Four farmers (12.5%) passed their junior secondary whilst another two (6%) had matric certificates, with none going beyond the matric level.

Association between socio-economic factors and the identified cattle farming skills and knowledge

As per the main objective of this study, various socio-economic factors were tested statistically to identify their association with the farmers' farming knowledge and skills. A summary of these findings is presented in Table 3.

Livestock housing and handling skills

Research from Grandin (1998) established that

Table 2. Household distribution by age in Marselle.

Age group	Below 40 years	40 – 55 years	56 – 65 years	Over 65 years
No. of respondents (%)	3	22	35	40

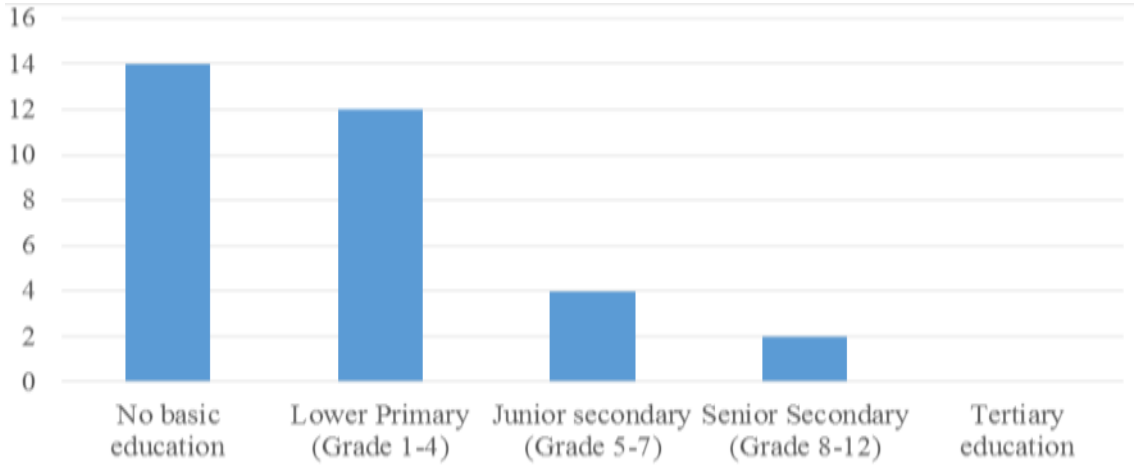

Figure 1. Farmer distribution by education.

proper handling of livestock is key to satisfactory livestock productivity as it reduced livestock stress which, in turn, enabled the animals to gain weight and improve both their meat and milk quality. Therefore, livestock injuries should also be avoided as much as possible through proper handling approaches. These approaches could depend on certain socio-economic factors that have a direct bearing on the farmers' animal housing and handling knowledge.

In the case of farmers in Marselle, this study concluded that livestock housing and handling skills were not affected by the level of education ($p = 0.557$), availability of family labour to assist ($p = 0.157$), size of the farming household ($p = 0.436$) and the marital status of the household head ($p = 0.624$) as shown in Table 3. On the issue of loans, an insignificant relationship ($p = 0.212$) between the farmers' use of loans and livestock housing and handling was found. Further interaction with the respondents revealed that even though they wanted loans, their lack of collateral and loan repayment abilities influenced them to seek donations of the required equipment or grants that they would not have to pay back.

The association between cattle handling skills and gender of household head ($p = 0.023$) concurred with literature that recognized livestock handling activities as being dominated by males due to its physically demanding and risky nature. For example, Dogan and Demirci (2012) revealed that a number of people have suffered serious injuries and deaths every year as a result of animal-related accidents that usually occurred as farmers loaded their animals onto trucks/trailers to move them to various locations e.g. for artificially insemination, vaccination or dehorning.

The study uncovered a positive and significant influence ($p < 0.05$) on the handling skills and the farmer's number of farming years as shown by a beta value of 1.420. The inference is that the farmers' livestock handling skills could be enhanced by as much as 1.420 units for every single year spent in livestock farming. Stafford (2005) explained that such a relationship was true because cattle required particular handling skills which farmers acquired overtime especially by observing and learning from others.

Animal healthcare skills

The Eastern Cape Province faces numerous health challenges such as ticks. Transferring animal healthcare skills to the Marselle farmers to deal with these health challenges is therefore crucial. Table 3 presents the estimated parameters whose influence on Marselle farmers' animal healthcare knowledge and skills was assessed. As seen from the table, a *Nagelkerke* R^2 value of 0.790 suggests that at least 79% of the variation in the

Table 3. Association between socio-economic factors and the identified cattle farming skills and knowledge.

Farming skill/ knowledge	Feeding knowledge		Health care knowledge		Marketing skills		Housing & handling skills		Veld management		Slaughtering Knowledge	
Explanatory variable	**β**	**P**	**β**	**P**	**β**	**P**	**β**	**P**	**β**	**P**	**β**	**P**
Gender of HH head	13.335	0.021*	13.148	0.039*	-2.849	0.043*	7.944	0.023*	5.000	0.018*	4.326	0.043*
Age of HH head	-0.096	0.369	-0.331	0.022*	-0.005	0.885	-0.153	0.047*	0.015	0.757	-0.023	0.649
Farming experience	2.442	0.021*	-0.609	0.292	-0.356	0.198	1.420	0.013*	0.179	0.442	0.677	0.117
Use of family labour	-3.277	0.247	13.655	0.037*	2.106	0.123	3.260	0.157	-1.156	0.431	1.225	0.494
Household size	0.738	0.152	-0.153	0.798	-0.698	0.019*	0.327	0.436	0.775	0.061	0.886	0.046*
Marital status	1.537	0.528	2.565	0.268	-0.533	0.644	0.741	0.624	4.500	0.075	-1.262	0.490
Education	8.870	0.033*	5.927	0.038*	-3.022	0.009**	-0.688	0.557	3.138	0.036*	5.547	0.027*
Farmer status	5.064	0.042*	6.001	0.076	-2.899	0.039*	3.830	0.036*	2.071	0.175	6.641	0.026*
Loans	-4.964	0.134	-1.427	0.639	1.920	0.200	-2.456	0.212	-4.744	0.026*	-2.243	0.262
Intercept	-49.527	0.022	-40.165	0.021	16.423	0.019	-18.997	0.032	-21.929	0.027	-32.153	0.011
Nagelkerke R^2	0.83		0.79		0.56		0.73		0.68		0.73	
LR chi-square (df=9)	31.39		28.49		17.28		25.18		22.68		25.58	

* and ** indicates significance at 0.05 and 0.01 probability level, respectively.

dependent variable (animal healthcare skills) was explained by the selected independent variables, with an overall prediction percentage of 87.5%. Of the nine independent variables analyzed, gender (p = 0.039); age (p = 0.022) and education status of household head (p = 0.038); together with the availability of family labour (p = 0.037) were found to have a significant effect on the farmers' animal healthcare skills.

Gender bias was more towards male farmers, contrary to what other researchers discovered in other developing communities. In India, for example, Ghotge and Ramdas (2002) discovered that female farmers performed more than half the daily activities associated with livestock care and Narmatha et al. (2009) later concluded that females were more heavily involved in livestock healthcare by looking after the newly-born than vaccinating, deworming, de-ticking and delicing.

The association between education and the constant was also found to be positive (5.927) and significant (p = 0.038) to suggest that at *ceteris paribus*, a unit positive change in the farmer's education level was likely to yield a positive 5.927 unit change in that farmer's animal healthcare skills. The rationality of this outcome was provided by McNeal (2012) and Simela (2012) who claimed that in as much as a hands-on or "learning by doing" approach could enhance the farmers' animal healthcare skills, some critical skills needed such disease surveillance, diagnosis, early treatment of diseases, just to mention a few required education or semi-technical learning.

This study further revealed another significant (p = 0.022) relationship between the farmers' animal healthcare skills and their age. As shown in Table 3, if all the other predictor variables are held constant, increasing the household head's age by one year should trigger a 0.331 unit decrease in that individual's animal healthcare skills. In simple terms, as farmers grew older, their access or ability to acquire this knowledge declined. Contributing to this in Marselle was the poor health of farmers caused by old age which resulted in some of them withdrawing from

attending the regularly held focus group meetings meant to help them overcome the health challenges affecting their livestock due to old age and illness. They had resorted to relying on their younger farming colleagues to help them with their animals.

Livestock slaughtering skills

As illustrated by the *Nagelkerke* R^2 value of 0.734 in Table 3, the deviation between the dependent variable is explained by at least 73% of the independent variable, with an overall prediction percentage of 87.5%. This study showed that in Marselle, increasing the household size by a single member improved the livestock slaughtering knowledge in that household by close to one unit (0.886) at 95% confidence level, *ceteris paribus*. This was because all farmers in the area made use of manpower for slaughtering as they had no machinery or other equipment such as stun guns used by commercial farmers. Such dependence on manpower in cattle slaughtering gave larger households with more manpower an added advantage as compared to smaller households as also reported by Chimonyo et al. (1999) and Mapiye et al. (2009).

Drawing from another study conducted in the Amatole, Chris Hani and Alfred Nzo District Municipalities of the Eastern Cape Province, Musemwa (2009) concluded that participation in livestock slaughtering activities was done mostly by males as women were already heavily involved in other household chores and looking after the kids. Similar conclusions were arrived at in Marselle at 5% level ($p = 0.043$), with a positive sign on the correlation coefficient value of 4.326 confirming the bias in cattle slaughtering towards males. Perhaps this was a result of the physical demands of the slaughtering task particularly if one takes into consideration, the possible dangers highlighted by Dogan and Demirci (2012) which were associated with handling fully grown cattle.

The very strict regulations in animal agriculture could explain the statistically significant association between the farmers' education level and their livestock slaughtering skills at the 95% confidence level ($p = 0.027$). These regulations demand that certain standards be adhered to if animals are slaughtered for selling purposes, especially through formal channels. Some of these standards demand the humane ways of slaughtering such as those that first render the animals unconscious to pain before lifting, blood draining and cutting to maintain the meat quality for longer time which in turn helps the farmers get better prices (Grandin, 1993). The fact that these requirements and standards are communicated through print and online media puts the educated farmers at an advantage as they can easily search for and read about them as compared to their less educated counterparts.

Veld condition management practices

As shown in Table 3, this study did not find the farmers' veld management knowledge being influenced by six of the nine chosen socio-economic variables, namely the age of household heads ($p = 0.757$), their number of years in farming ($p = 0.442$), use of family labour ($p = 0.431$), household size ($p = 0.061$), marital status ($p = 0.075$) and whether they practiced farming on a part- or full-time basis ($p = 0.175$).

Proper pasture management requires cattle to be monitored as they graze regularly. However, Marselle farmers just put their livestock on the farm without further shepherding as they grazed, only checking on them on Wednesdays of the dipping weeks. This practice could be the cause of the insignificant influence ($p = 0.431$) of the family labour on pasture management in Marselle as extra labour adds no value at all to pasture management. The insignificant influence ($p = 0.442$) associated with the number of years farmers spent in livestock farming and their knowledge in veld management could be a result of the fact that the despite the farmers collectively leasing the farm, they practiced individualism which meant that even those with the necessary veld management knowledge had little influence on how pastures on the entire farm were managed.

The farmers' level of education was found to have a positive ($\beta = 3.138$) and significant influence ($p = 0.036$) on the veld management practices (Table 3). Despite the majority not having much formal education, they indicated that they were aware of and interested in acquiring proper pasture management skills. This was probably influenced by their correct perception that the farm was overgrazed, a challenge which made their animals starve during winter. The farmers indicated their desire to learn how to calculate proper stocking levels and grazing rates and also the techniques of planting palatable pastures. Results from studies done by other scholars support theoretical expectation that educated farmers would be more aware of the hazards of poor veld management practices such as overstocking which could put a strain on the palatable plants than farmers with less education (Allsop, 1999; Milton and Dean, 1995).

In contrast though, the relationship between the household head's age and veld management skills was found to be insignificant ($p = 0.757$). Magnitude of the correlation coefficient value of less than 1 ($\beta = 0.015$) indicates a mild but positive influence of the farmers' age on their veld management skills. The direction of association however, contradicted Bembridge (1975) whose studies provide evidence that a farmers' age is usually inversely related to their acceptance of veld

management practices.

Livestock marketing skills

Out of all the nine explanatory variables investigated, the age of household head, years of farming experience, marital status of the household head, availability of loans and use of family labour were insignificant. Despite the influence of the household head age variable being insignificant, it was biased towards younger farmers (β = -0.005) probably because they still had the energy to drive long distances such as Port Elizabeth in search of better markets, whereas older farmers only relied on their local neighbours for a market. It is through travelling that younger farmers most likely got their marketing knowledge. Shiimi (2010) report supports this perception that younger farmers were more business-minded and profit-oriented hence they always sought the best markets and were, thus, most likely to have better marketing skills. Gebremedhin and Jaleta (2010) further explained that older farmers usually chose not to drive long distances in search of markets and immensely relied on the same markets due to trust issues, hence the bias towards the younger farmers in terms of marketing skills.

On the financial side, Table 3 suggests a lack of any significant relationship (p = 0.200) between cattle marketing and funding even at 10% significance level. This could be a result of Marselle farmers not making use of financial institutions despite their critical role in assisting the smallholder farmers overcome transaction cost barriers and partake in more profitable markets. This study also uncovered that increasing a farming household size by one member could lead to a 0.698 unit decrease in cattle marketing skills, contrary to the *a priori* expectation of a positive relationship. The extent of this relationship between these two variables was also significant (p = 0.019) as shown in Table 3. The expected relationship between household size and cattle marketing was positive as larger households were expected to have better access to adequate and cheaper labour to carry out the various marketing duties. However, in line with the findings in Marselle, Nkhori's (2004) studies concluded that an increase in household size could also lead to increased competition and pressure for food within the household which in turn could adversely affect livestock marketing activities.

Feeding skills

Regarding the farmers' feeding knowledge and skills, a significant relationship at 5% significance level was established with the gender of household head as shown by a positive beta value of 13.335 and a significant p-value of 0.021 to suggest that increasing the number of male-headed farming households at *ceteris paribus* by a single unit could enhance livestock feeding knowledge by 13.335 units. Similar deductions were drawn by Ndebele et al. (2007) who posited that males in this sector usually made all cattle-related decisions such as feeding, albeit in consultation with their marital partners and elder children.

A significant relationship (p = 0.021) between the number of years spent by a farmer in livestock farming and their level of feeding knowledge and skills was found. In other words, farmers that had been in livestock farming for longer time were estimated to possess better livestock feeding skills than those that had been involved for shorter periods. Majority of the resettled Marselle farmers spent most of their adult years working on commercial farms mostly to herd and feed livestock prior to being resettled in Marselle and becoming farmers themselves, having already acquired livestock feeding skills. The correlation co-efficient value of 2.442 suggests the direction of relationship between the dependent and independent variable was also positive as predicted.

The results in Table *3* further indicate that in Marselle, the level of farmers' education had a significant and positive (p = 0.033) influence on the constant. This means that more educated farmers possessed better livestock feeding skills than the less educated. Based on the correlation coefficient, the results of the study indicate that in relation to livestock feeding, each Marselle farmer stood to enhance their feeding skills by as much as 8.870 units by going to the next higher education level, beyond the primary education possessed by the majority of farmers in Marselle. As such, there is still room for them to enhance their feeding skills by going a step further academically.

The availability of family labour to assist in livestock feeding, marital status of the household head and size of the farming household did not have any significant influence on the acquisition of the livestock feeding knowledge and skills. Even though Ikerd (2000) posited that most females in the rural communities of developing nations usually had reasonable livestock feeding and other necessary agricultural knowledge due to their marriage into families with farming enterprises, their livestock feeding influence in Marselle could not be established.

Conclusion

The main objective of this study was to determine the influence of certain socio-economic factors on six of the Marselle Stock Farmers Association members' farming knowledge and skills. This objective was achieved, with each socio-economic factor's influence being assessed

separately to determine the extent and direction of association with the dependent variable. Education, for example, had the biggest and positive influence on all but one (livestock housing and handling skills) of the nine selected variables. This is because education helps farmers understand new technologies or farming techniques much better and faster whilst also making it possible for them to adapt with ease. Nevertheless, the reality in Marselle is that none of the farmers are well-educated and all of them fall within the "poor" bracket. As such, as much as education has been proven to be important, interventions should be designed in such a way that the intended outcomes can also be achieved by farmers with less education. One approach that could suitably be adopted in Marselle is that of using local commercial farmers as mentors. The advantage with this approach apart from it being cheaper is that it would allow smallholder Marselle farmers a more hands-on approach to skills acquisition. In general, people usually learn better through observing others as they perform their tasks over time then attempting the same tasks themselves through trial and error over time than by participating in formal academic courses. When interacting with the farmers, they stated that they would actually be more comfortable having a local person who understands their challenges and history, train them in their farm than having them taken to distant formal schools for trainings. Therefore, such hands on approach would most likely yield better results as compared to the classroom teaching route.

Age was discovered to be another influential factor in farming, especially due to the physical demands and possible dangers of handling live animals. As such, training programmes in Marselle should incorporate the youth so that the transferred skills could be used deep into the future. As these trained youth grow older, they could act as indigenous knowledge sources and pass on their knowledge to other farmers in the community.

At the same time, this study uncovered that gender had an influence on some of the skills critical in farming; hence a gender balance should be struck when training farmers. Thus, in addition to the youth being encouraged to join farming, women and the disabled should not be kept out of capacity building interventions as livestock farming involves more than just physically handling animals and poverty affects all of them equally. Trainings for the physically challenged could cover less physically risky or demanding tasks like bookkeeping, marketing, etc.

The basis to assess the socio-economic factors that have a reasonable influence on the farmers' skills was to ensure interventions is applied to exactly where they are needed and in accordance with the beneficiaries' socio-economic characteristics, thereby eliminating the misdirecting of efforts and resources. Based on the above findings, it is clear that there are some socio-economic factors that are critical to consider when planning a knowledge and skills transfer intervention. These include the farmers' gender, age and level of education. However, their degree and direction of influence varied between different farming knowledge and skills considered in this study, hence each intervention should be based on the influence on the dependent variable by each socio-economic factor separately without any generalization.

CONFLICT OF INTERESTS

The author declares that there is no conflict of interest.

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