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M. O. D. Ayieko, E. K. Bett & L. W. Kabuage

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Analysis of Indigenous Chicken Marketing Participation Decisions: The Case of Producers from Makueni County, Kenya

M. O. D. Ayieko, E. K. Bett and L. W. Kabuage

Department of Agribusiness Management and Trade, Kenyatta University, Nairobi; Department of Agricultural Resource Management, Kenyatta University, Nairobi

ABSTRACT

Indigenous chickens are important in Kenya for food security, income generation, employment and improved livelihoods. However, despite these benefits producers are constrained from participating in the high value markets. A purposive multi-stage sampling was used to sample 130 households from Makueni County. The data were collected using a structured questionnaire, key informant interviews and focus group discussions. These data were then analysed using descriptive statistics and a probit econometric model. The decision to participate in the indigenous chicken high value market was influenced by the education level of the household head, processing, the age of the household head, group membership, the flock size and region. Therefore, it is recommended to form farmer groups for increased productivity, collective marketing and enhanced value addition.

KEYWORDS

Kenya; Makueni County; producers; indigenous chickens; marketing participation decisions; analysis

Introduction

Agriculture contributes 25% to the Kenyan Gross Domestic Product (GDP) through export earnings (65%) and by offering informal employment to 18% of Kenyan citizens (Government of Kenya, 2010). There is a strong link between the agriculture sector and the growth of the economy, which is shown by the prominent role of agriculture in Vision 2030 (Government of Kenya, 2010). According to the Government of Kenya (2010), livestock is one of the major sub-sectors of agriculture. This sub-sector includes dairy, beef, camel, poultry and other emerging livestock such as fishery and bee keeping. First, it provides raw materials to other industries such as agro processing. Secondly, it uses inputs from other industries. Consequently, any external interference to this sub-sector impacts on the supply chain and the economy of Kenya. The indigenous chicken (Gallus domesticus) is found within the livestock sub-sector and constitutes 76% of the poultry flock in Kenya (Government of Kenya, 2010). Nearly all rural and peri-urban families in Kenya keep a small flock of free range chickens, with an average number of 13 birds, which contributes to their social, economic and cultural welfare (Nyaga, 2007). The per capita consumption in meat has risen from 14.9 kg in 1991 to 16 kg in 2007 and is expected to rise to 22 kg in the year 2050. This rise has been due to preference given to indigenous chicken in comparison to exotic chicken and red
meats (Upton, 2000). Indigenous chicken is lean, with an organic origin and fetches a premium in the markets (Ndewga et al., 2000). Finally, urbanization has also been a factor associated with the rise in demand for indigenous chicken in urban and peri-urban areas (Delgado, 2005). The indigenous chicken market has three levels that vary in terms of the operations, products, location and number of participants that are found at each level (Bett et al., 2012). At the third level, consumers are willing to pay higher prices to get safe and quality products; with product differentiation, value addition, packaging of products and no division of indigenous chicken into smaller units (Gamba et al., 2005). Makueni County is one of the main producers of indigenous chicken in Kenya. However, the producers of indigenous chicken are faced with production and marketing challenges. These challenges prevent the producers from fully participating in the indigenous chicken high value markets. This consequently impedes on the ability of indigenous chicken to alleviate poverty and improve the livelihoods of the producers. Therefore, there is a need to determine the influence of socioeconomic factors on producer participation decision in the indigenous chicken high value market. These consequently result in recommendations on improving the participation of producers in the indigenous chicken high value market. The overall objective of this research was to analyse the participation of producers of indigenous chicken from Makueni County in the high value markets. This was achieved by determining the factors that affect the decision to participate in the indigenous chicken high value market. Zeberga (2010) studied the marketing of eggs in Yigrelam and Alaba regions of Ethiopia. Bett et al. (2012) studied linking utilization and conservation of indigenous chicken genetic resources to value chains. These studies analysed the participation of producers in specific market segments. One of the segments not studied is the high value market segment of the indigenous chicken market. This study attempted to fill the information gap on the participation of producers in the indigenous chicken high value market.

Methodology

Study site

Makueni District lies between latitude 10° 35′ South and longitude 37° 10′ East and 38° 30′ East. It covers 8009 km² with an altitude of 600 to 1900m. Rainfall ranges between 800 and 1200 mm per year in the hilly areas and less than 500 mm per year in the other regions. The temperature range in the District is 20.2–24.6 °C (Government of Kenya, 2010). The study area was one of the areas that was targeted by the KAPAP (Kenya Agricultural Productivity and Agribusiness Project) project for intervention in the meat value chains for enhanced income to producers and poverty alleviation for improved livelihoods.

Sampling design and sample size

The sampling design that was used was a survey design. This comprised three stages. First, a purposive random sampling was used to select the Makueni area from the indigenous chicken producing areas of Kenya. Secondly, a simple random sampling was used to select three regions (divisions). These divisions were Kee, Kaiti and Wote in Makueni, from where 130 households were selected using a simple random sample. Thirdly, a structured questionnaire was used for data collection.
Data collection

Data collection was carried out by trained enumerators from the locality to overcome challenges in language and due to their familiarity with the locality. The study used both primary and secondary data.

Data analysis

The data obtained were analysed through qualitative and quantitative means. The data collected were used to analyse participation in the high value markets. This section presents the methods that were used to analyse data collected from the households.

The probit model

It is also assumed that the dependent variable follows a normal distribution. The Probit Model was used to identify the factors that affect the decision to participate by producers from Makueni County in the high value market. This equation was a maximum likelihood probit equation. The dependent variable is a dummy showing the decision to participate in the indigenous chicken high value market (PHVM).

\[ Y = X_i \beta_i + U_i \quad U \sim N(0, 1) \]

\[ PHVM = 1 \text{ if } Y > Y^* \quad PHVM = 0 \text{ if } Y \leq Y^*, \]

where PHVM is participation in the indigenous chicken high value market. Where \( Y_i \) is a latent dependent variable which is not observed and \( Y^* = 0. X_i \) is a vector of variables that was assumed to affect the household decision to participate in the indigenous chicken market. \( \beta_i \) is a vector of the unknown parameter in the participation equation. \( U_i \) is the residuals that were independently and normally distributed with a mean of zero and a constant variance.

Results and discussion

Factors influencing participation in the indigenous chicken high value market

Six out of the 12 independent variables influenced the decision to participate in the indigenous chicken high value market. These were age of household head, education of the household head, family size, number of indigenous chickens owned and the region dummy, as shown in Table 2.

The age of the household head had a negative effect on the decision to participate in the indigenous chicken high value markets. This may imply that household heads are less likely to decide to participate in the indigenous chicken high value market as age increases. The results are consistent with those of a study by Berhanu et al. (2011) that found a negative relationship between age of household head and participation in milk value addition by dairy farmers in Ethiopia.

The education of the household head has a positive effect on the decision to participate in the indigenous chicken high value market. This may imply that household heads that were literate made the decision to participate. The literate households may have information on the benefits of the high value market. This may lead them to decide to participate in the indigenous chicken high value market. These findings are consistent with those of Bett et al. (2012) that found education to positively influence participation in the indigenous chicken high value market in Kenya.
The summary of the results of the descriptive analysis for the households socioeconomic characteristics are shown in Table 1.

The results show that producers who belong to farmer groups are likely to participate in the indigenous chicken high value market. This may be a result of the benefits that are offered to the group. These benefits may include access to market information, discounts and bargaining power. These results are consistent with those of Jagwe et al. (2010), which show that farmers who belonged to farmer groups were likely to participate in the banana markets in Burundi, Rwanda and the Democratic Republic of Congo.

The number of indigenous chickens owned had a positive influence on the decision to participate in the indigenous chicken high value market. This may imply that those with more indigenous chickens are likely to make the decision to participate in the indigenous chicken high value market. This may be due to the fact that they are sure of a continuous supply of indigenous chickens. These results are consistent with those of Bett et al. (2012) that showed that the number of indigenous chickens owned positively influences participation in the indigenous chicken market, since the size of the flock allowed producers to participate in the indigenous chicken market.

The form in which indigenous chicken is sold has a positive influence on the decision to participate in the indigenous chicken high value market. This may imply that producers that sold their indigenous chickens after slaughter were likely to decide to participate in the indigenous chicken high value market. It may also imply that the indigenous chicken high value market accepted processed indigenous chicken. The results are

### Table 1. Summary of results of household socioeconomic characteristics.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age of household head (years)</td>
<td>43.9</td>
<td>13.8</td>
<td>21.0</td>
<td>86</td>
</tr>
<tr>
<td>Distance to main road (km)</td>
<td>3.2</td>
<td>2.3</td>
<td>0.3</td>
<td>11</td>
</tr>
<tr>
<td>Distance to market (km)</td>
<td>6.5</td>
<td>3.4</td>
<td>0.5</td>
<td>15</td>
</tr>
<tr>
<td>Credit access (KES)</td>
<td>4,776</td>
<td>6,828</td>
<td>0.0</td>
<td>70,000</td>
</tr>
<tr>
<td>Family size (number)</td>
<td>6.1</td>
<td>2.2</td>
<td>2</td>
<td>11</td>
</tr>
<tr>
<td>Total indigenous chicken owned (number)</td>
<td>13.0</td>
<td>9.2</td>
<td>0</td>
<td>50</td>
</tr>
<tr>
<td>Other livestock owned (number)</td>
<td>6.5</td>
<td>5.3</td>
<td>0</td>
<td>28</td>
</tr>
</tbody>
</table>

n=130; SD = standard deviation.

### Table 2. Results of the probit equation.

| Variable                  | Coefficient | SE   | Z   | P>|Z|
|---------------------------|-------------|------|-----|-----|
| Age of household head     | -0.02       | 0.01 | -2.00 | 0.07* |
| Sex of household head     | 0.01        | 0.25 | 0.04 | 0.98 |
| Education of household head| 0.69      | 0.32 | 2.16 | 0.03** |
| Family size               | -0.04       | 0.07 | -0.57 | 0.58 |
| Land size                 | -0.03       | 0.06 | -0.50 | 0.69 |
| Other livestock unit      | -0.04       | 0.03 | -1.33 | 0.16 |
| Distance to road          | 0.21        | 0.29 | 0.72 | 0.47 |
| Distance to market        | 0.48        | 0.30 | -1.60 | 0.11 |
| Market price              | -0.00       | 0.00 | -0.00 | 0.89 |
| Flock size                | 0.03        | 0.01 | 3.00 | 0.03** |
| Group member              | 0.52        | 0.25 | 2.10 | 0.04** |
| Processing                | 0.66        | 0.34 | 1.94 | 0.05** |
| Region                    | 0.50        | 0.27 | 1.85 | 0.06* |
| Constant                  | 2.35        | 1.55 | 1.52 | 0.13 |

*, **: significant at 10%, 5%, respectively; n=130; SE = standard error.
consistent with those of Agbogo et al. (2011) who showed a positive relationship between processing and participation by women in cassava markets in Nigeria.

The results show that the region where the producer is found has a positive influence on the decision to participate in the indigenous chicken high value market. This is comparable to results by Jagwe et al. (2010) who reported that the region positively influenced the participation of farmers in banana marketing.

Conclusions and recommendations

The aim of this study was to determine the factors that affect the decision of producers to participate in the indigenous chicken high value market. The decision to participate in the high value market was influenced by the processing of indigenous chickens, age of household heads, education level of household heads, farmer group membership, flock size (number of indigenous chickens owned) and the region where the producer came from. Therefore, it is recommended that collective action should be used to enhance the productivity, processing and marketing of indigenous chicken. The Government should also improve on the infrastructure. Improving on the dissemination of technology through extension and access to market information will also enhance productivity.

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