Marketing of Free Range Local Chickens in Dar es Salaam city: Some implications for Rural Extension Services in Tanzania

Malongo R.S. Mlozi[1], M.M.Mtambo[1], John E. Olsen[2]
Improving the Health and Productivity of Rural Chickens in Africa (IHEPRUCA) Project,
[1]Sokoine University of Agriculture, P.O. Box 3002 Chuo Kikuu, Morogoro, Tanzania;
[2]KVL, Denmark. malom2003@yahoo.co.uk

Abstract

This study was conducted from 29th April, 2003 to 6th May, 2003 with the main aim of of the study was to investigate the marketing strategies and the income that village buyers and the urban middle-persons earned from the free-range local chicken (FRLCs), i.e. the latter bought FRLCs in the rural villages and the former sold them in the city of Dar es Salaam. The study interviewed 160 respondents involved in the marketing of FRLC, and of these, 88 were village buyers and 72 were middle-persons. The village buyers went out in the rural areas, bought FRLCs and transported them to Dar es Salaam city and sold chicken to the middle-persons who in turn sold them to urban consumers. To cover the 13 markets scattered in the three Districts (Kinondoni, Ilala, Temeke) in the region of Dar es Salaam, three trained enumerators were temporarily employed to interview village buyers and urban middle-persons using a pre-tested and validated questionnaires. The study found that most the people involved in the FRLCs business were younger (30 to 45 years of age) and over 90 percent were males. Tuesdays and Thursdays were the days when most of the FRLCs were brought in from the up-country destinations. Most of the FRLCs sold in 13 markets in the city of Dar es Salaam originated from Dodoma and Singida regions—further proving earlier proof that these two regions produced the most FRLCs sold in the city. Most of the FRLCs were transported on trains and that the tenga was the most common container used for transporting chicken to the markets. Cocks were priced highly than hens, and that August, September and October FRLCs fetched high prices. Respondents showed that most of the FRLCs showed disease symptoms in September. The urban middle-persons earned more profits from selling FRLCs than did the village buyers. There are a number of implications for rural extension services that emanate from this study that could improve the husbandry of FRLCs, hence, contributing to household income and poverty alleviation in rural areas. Furthermore, the findings of this study have demonstrated the enormous potential of FRLCs a resource that few have tapped leaving out the smallholder to get a pittance. Therefore, this study makes recommendations at six levels of operation: the extension officers, the researchers, the village buyers and urban middle-persons, the NGOs and the Government.

INTRODUCTION

There are many advantages of keeping chicken, however the traditional way in which chicken are raised and kept in Africa cannot sustain the livelihood of most rural households. One reason being their low off-take; that there is hardly any surplus mainly

due to succumbing to diseases and their low genetic potential. In Africa, however, the potential of the local chicken as an industry is promising as "Africa has 800 million chicken mainly free range local chicken (FRLC)" (Boki, 2000; Pedersen *et al.*, 2000; Olaboro, 1990; Sonaiya, 1990; Williams; 1990; Kulube, 1990). The livestock, chicken, and human population in the world are given in Table I. The mere size of the chicken population indicates the importance of chicken. Livestock and poultry can make significant contribution to the households as well as to the national economies in Africa.

Table1. Livestock, chicken, and human population (in millions).

	World	Africa	Tanzania
Cattle	1,278	182	15.6
Goats	502	163	10.7
Sheep	1,158	195	3.7
Pigs	840	12	0.3
Chicken	9,445	800	28
Human	5,000	590	30

Source: Smith, 1990.

The livestock industry in Tanzanian contributes about 18% to the gross domestic product (GDP) and 30% of the agricultural GDP. About 70% of the livestock GDP originates from cattle and 30% from other livestock including poultry, which contributes about 16% (Boki, 2000; Melewas, 1989; MOAC, 1997). In Tanzania, recent estimates show that there are approximately 28.3 poultry, and of these 26.6 million (94%) are FRLC, while 0.5 million (1.8%) are commercial broilers and layers, and the remaining 2.2 million (4.2%) are other poultry, mainly ducks (3.4%) (MOA, 1997). About 72% of rural households keep the 26.6 million chickens with an average of 10 chicken per household (MOA, 1995), although other and more recent studies have reported a higher figure of 23 chicken per household (Mwalusanya, 1998). The remaining 2.7 million are ducks and geese, turkeys, and Guinea fowl. About 2.5 million households keep poultry out of the 3.7 million agricultural households, compared to 1.0 million households keeping cattle. It is estimated that in Tanzania, the chicken industry is worth Tshs. 40.5 billion (US $ 50.6 million) (Boki, 2000; Minga *et al*.,; 2000; World Bank, 1994).

This large potential of rural chicken is yet to be fully tapped. The main constraints to realising the potential are poor husbandry, low genetic potential, poor marketing and diseases such as Newcastle disease. Due to these factors, the productivity indices are low

and the off-take rate is also low. Thus the average egg production per hen per year is about 70 and the average adult weight of a hen is 1.54 kg and for a cock is 1.85 kg (Minga *et al.*, 1996; Mwalusanya, 1998). Studies have revealed that the FRLC differ phenotypically and a number of breeds have been reported from a number of countries in Africa. Although chicken production on a commercial scale started in the 1960s, it has made minimal impact economically and nutritionally.

In Tanzania, like in most other third world countries, smallholder farmers have not accepted the importance of improving free range local chicken (FRLCs) in their farming systems due to lack of information compared to the improved chicken. Yet, these birds play an important role that most governments have barely recognized. Thus for many years now, especially in Tanzania there have been little efforts towards improving the 26 million or so FRLCs in rural areas, despite the failed hybridization impetus of the 1970s. There is a general feeling among most rural extension agents to disregard FRLC as not contributing anything to smallholders' income, something that is seen even among most policy makers, researchers, academicians, NGOs, and the public at large.

For example, 26 smallholder farmers from the eastern zone attending a farmers' forum in 2002 on local chicken production held at Kibaha, Pwani region in Tanzania agreed that "although they depended on income from FRLCs for most of their needs, they did not keep FRLCs commercially. A farmer would sell a chicken because she/he had a problem to solve and not even its real value depending on cost of production" (TARP II, 2002: 7). At this forum too, researchers, extension officers and traders/business persons ranked FRLCs last in importance, but they agreed that if husbandry was improved they could significantly contribute to household income. Despite the acclaimed importance of FRLCs, rural and national marketing of FRLCs and its economic contribution to national economy is not known. Recent studies on FRLCs have been carried out mainly on diseases (Minga et al., 1989; Yongolo, 1996; Peter, 1998; Mdegela, 1998), productivity and nutritional status (Mwalusanya, 1998, Mwalusanya *et al*., 2001), on transportation (Mlozi, *et al*., 2000) and on marketing (Mlozi *et al*., 2003).

The overriding quest of this study was to understand the marketing strategies and earnings derived from FRLCs that would contribute to improving the conduct of the rural extension agents in providing knowledge and skills to smallholder farmers. This knowledge would in turn be used by rural extension services to teach smallholder farmers to improve FRLCs management, for them to sell more birds and alleviate the rampant rural poverty and malnutrition, *ceteris paribus*. One reason for this is that FRLC are omnipresent in most households (74%) in rural areas, they require minimum management, and in many cases birds belong to women bird—and when a bird succumbs to diseases it is not a big deal to a family compared to a cow—mostly owned by men. But, it is this bird that village buyers and much so the urban middle-persons make a living out of it. This article is about this aspect.

STUDY OBJECTIVES

General objective

The main aim of the study was to investigate the marketing strategies and the income that village buyers and the urban middle-persons earned from the free-range local chicken (FRLCs), i.e. the latter bought FRLCs in the rural villages and the former sold them in the city of Dar es Salaam.

Specific objectives

The specific objectives of this study were:

1. To assess the different sources of FRLCs sold in the city markets and ways used to transport them to the city markets.
2. To examine the various handling strategies of FRLCs on transit to minimize mortality rates.
3. To identify the different carrying capacity of *tengas* for the hens and cocks.
4. To assess months with high supply and high prices, and number of *tengas* bought and sold in different months in a year.
5. To explore months in which FRLCs showed disease symptoms.
6. To analyze the cost incurred in the FRLCs business and the gross margin of the business

METHODOLOGY

Study area

The study was carried out in the city of Dar es Salaam in its three Districts (Kinondoni, Ilala, Temeke), which comprise the region of Dar es Salaam. The study covered 13 markets scattered in all three Districts. The 13 markets covered included: Magomeni, Mwenge, Mwananyamala, Kinondoni, Manzese, Kinondoni I and Msasani in Kinondoni District; Buguruni, Kisutu, Tanzara and Kisutu in Ilala District; Kurasini and Temeke in Temeke District.

Sample size and sampling procedure

The study interviewed 160 respondents involved in the marketing of FRLC, and of these, 88 were village buyers and 72 were middle-persons. The study adopted a non-probability sampling procedure to interview the village buyers and middle-persons in the 13 urban markets in the city of Dar es Salaam. Persons interviewed for this study could not be sampled because of their constant travel to the rural villages to buy FRLCs and transport them to city markets. Structured direct observations were also employed in data collection through the researchers' and enumerators' observations in the 40 days of the study. All observed information was recorded in note-books and later analyzed. However, every person of the 160 was interviewed once.

Data collection

Two separate questionnaires were constructed: one for the village FRLCs buyers and the other for the urban middle-persons. Both questionnaires were pre-tested using village buyers and middle-persons in Morogoro town and adjusted accordingly. The questionnaires were content and construct validated by four academic members of staff at Sokoine University of Agriculture. This study was conducted from 29th April, 2003 to 6th May, 2003, and interviewed 160 respondents involved in the marketing of FRLC. And of these, 88 were village buyers who bought FRLCs in rural villages, transported to them to the city markets and sold to the urban middle-persons, and 72 urban middle-persons who

bought FRLCs from the village buyers and sold them to urban consumers in the 13 markets in the city of Dar es Salaam.

Data analysis

All field data were coded, entered and analyzed using a Statistical Package for Social Science computer programme at Sokoine University of Agriculture in Morogoro, Tanzania. The programme yielded frequencies, means, standard deviations, p-values, chi-square, and cross-tabulations, which were further used in the interpretation of the study findings.

RESULTS AND DISCUSSION

Characteristics of respondents

Table 2 shows the four aspects of the village buyers and middlepersons who brought chicken and those who marketed the FRLCs in the city of Dar es Salaam. A total of 160 respondents involved in the marketing of FRLCs were purposively selected and interviewed in the 17 markets in which they sold FRLCs to urban consumers. Of these, 88 were village buyers and 72 were urban middlepersons, and of the 88 village buyers, 81 (92.2% were males and 7 (8.%) were females, while of the 72 urban middlepersons, 70 (97.2%) were males and 2 (2.8%) were females (Table 2). It is interesting to note that women were slowly entering in this business, as the business was formerly taken to be a men's preserve. However, the sex differences of the means between the two groups were not statistically significant at p< 0.157.

Of the 88 village buyers, 42 (47.7%), 34 (38.6%), 11 (12.5%) and one (1.1%) they were less than 30, between 30 and 40, between 41 and 50, and over 50 years of age, respectively. The findings showed that most of the village buyers were younger from less than 40 (86.3%) years of age. Similarly, urban middle-persons were also younger as of all, 16 (22.2%), 36 (50.0%), 13 (18.1%), and 7 (9.7%) were less than 30, between 30 and 40, between 41 and 50, and over 50 years of age, respectively. About 52 (72.2%) of the urban middle-persons were younger between 30 and 40 years of age, while 76 (86.3%)

between these age ranges meaning that more village buyers were younger than their counterparts. There was a highly statistical significance difference between the means of age between the two groups at p<0.002 (Table 2).

Table 2. Characteristics of respondents

Variable	Village buyers	Middle-persons	Total	χ^2-value	P-value
Age	**(n =88)**	**(n =72)**	**(n=160)**	14.93	0.002
<30	42(47.7)	16(22.2)	58(36.3)		
30-40	34(38.6)	36(50.0)	70(43.8)		
41-50	11(12.5)	13(18.1)	24(15.0)		
>50	1(1.1)	7(9.7)	8(5.0)		
Sex	**(n =88)**	**(n =72)**	**(n =160)**	2.00	0.157
Male	81(92.2)	70(97.2)	151(94.4)		
Female	7(8.0)	2(2.8)	9(5.6)		
Education level	**(n =88)**	**(n = 68)**	**(n =156)**	1.34	0.72
No formal education	1(1.1)	1(1.5)	2(1.3)		
Primary	66(75.0)	50(73.5)	116(74.4)		
Secondary	21(23.9)	16(23.5)	37(23.7)		
Colleges		1(1.5)	1(0.6)		
Marital Status	**(n =88)**	**(n =71)**	**(n =159)**	1.603	0.205
Married	63(71.6)	57(80.3)	120(75.5)		
Single	25(28.4)	14(19.7)	39(24.5)		
Household size	**(n =42)**	**(n =61)**	**(n =103)**	2.716	0.257
1-2	1(2.4)	-	1(1.0)		
3-5	29(69.0)	49(80.3)	78(75.7)		
>5	12(28.6)	12(19.7)	24(23.3)		

Source: Survey data, 2003. Figures in parentheses are percentages and those out of parentheses are frequencies

Another respondents' characteristic asked was their educational levels. Of the 88 village buyers, 66 (75%), 21 (23.9%), and 1 (1.1%) indicated that they had finished primary education, finished secondary education, and had no formal education, respectively (Table 2). Of the 72 urban middle-persons, 50 (73.5), 16 (23.5%) and one (1.1%) for each showed that they had had completed primary, secondary and college education, and had no formal education, respectively. The study findings show that there were no statistical significance differences between means of education level between the village buyers and the urban middle-persons at p< 0.72. Of the 88 village buyers, 63 (71.6%) and 25 (28.4%) were married and single, respectively, while of the 72 urban middle-persons, 57

(80.3%) and 14 (19.7%) were married and single, respectively. The study findings show that there were no statistical significance differences of the means of marital status between the village buyers and the urban middle-persons at p< 0.2 (Table 2). Furthermore, the study found that of the 88 village buyers, 42 gave their responses and, of these, 29 (69%), 12 (28.6%) and 1 (2.4%) indicated that their household sizes were one to two, three to five, and over five persons per household, respectively. The number of persons' means per household not statistically significant different between the two groups at p< 0.26.

Number of FRLCs per *tenga*

The common container in which FRLCs are placed and transported to the urban markets is called a *tenga* in Kiswahili. This container is commonly made of tied together pieces of poles, or bamboo splits using twine robes or locally derived ropes of miombo tree (*Brachtegia* spp). The original *tenga* was small holding about 20 to 30 chicken, but the current ones are big and can hold from 70 to 100 FRLCs. The present *tenga* has not changed much from the original one except that the current ones are more robust and big. *Tenga* use a lot of forest-related local materials and many people think that they are environmentally unfriendly—because after their use they are left to litter towns.

Village buyers gave the number of chickens they carried in different sizes of *tengas,* and of the 88, 50 (56.8%), 27 (30.7%), nine (10.2%), and two (2.3%) showed that they carried from 76 to 100, 50 to 75, less than 50, and over 100 chickens in a *tenga,* respectively (Table 5). The study findings show that over half of the respondents ferried FRLCs to the urban markets using big tengas, which carried from 76 to 100 chickens per *tenga*. Empirical evidence shows that this was done to maximize transportation cost. The mean of chickens per tenga was 77 with a standard deviation of 27 (Table 5).

Table 5. Number of chicken held in different sizes of *tengas*
when transporting to the city markets (n = 88).

Number of chicken	Frequency	Percentage
<50	9	10.2
50-75	27	30.7
76-100	50	56.8
>100	2	2.3

Source: Survey data, 2003; Mean = 76.50; Standard deviation = 27.06.

Number of hens and cocks transported in a *tenga* to the city markets

Table 6 shows that both hens and cocks were placed in one *tenga* and transported to the city markets. Of the 88 village buyers, 58 responded to this question. And half of these (29) gave numbers of the different types of FRLCs that they transported in a *tenga*. Of the 29 village buyers, 15 (51.7%), seven (24.1%), five (17.3%), and two showed that they transported 30 to 40, less than 30, over 50, and 41 to 50 hens in the same *tenga*, respectively. While ten (34.5%), seven (24.1%), and six (20.7%) for each of the 29 village buyers showed that they transported 30 to 40, over 50, less than 30 and 41 to 50 cocks in the same *tenga*, respectively. The study findings show that there were more cocks (a mean of 43) than hens (a mean of 39) per *tenga* transported to the urban markets. However, there were no statistical significance differences of means between the number of hens and cocks transported to the urban markets in a *tenga* at $p<0.19$ (Table 6).

Table 6. Number of hens and cocks transported in a *tenga* to the city markets.

Number	Category		χ^2-value	P-value
	Hen	Cock		
	(n =29)	**(n =29)**	4.784	0.188
<30	7(24.13)[1]	6(20.69)		
30-40	15(51.72)	10(34.48)		
41-50	2(6.9)	6(20.69)		
>50	5(17.25)	7(24.14)		
Mean	39.44	42.97		
Standard deviation	16.80	18.99		

Source: Survey data, 2003; [1]Figures in parentheses are percentages and those out of parentheses are frequencies.

The implications of these findings to rural extension agents is that they would encourage smallholder farmers to rear more cocks by having more aggressive rearing programmes. This would mean teaching smallholder farmers to reduce day old chicks' mortality by improving management, controlling predators, teaching farmers to recognize the menace of diseases and convince them buy and vaccinate their flocks, especially against the pandemic Newcastle disease. This would increase smallholders' income (hence reduce rural poverty) as they would relatively sell more cocks that were preferred by the village buyers because they fetched high prices in the urban markets. Currently, there is lack of

awareness among the rural extension agents and smallholder farmers about the market information of FRLCs, which appear apparent by the village buyers of FRLCs. Rural extension agents would also access vaccines and drugs to farmers, and promote group formation so that farmers could mobilize resources better and buy vaccines and drugs to treat FRLCs.

Number of FRLCs and *tengas* bought per month

One profound interest of the researchers was to ascertain the number of FRLCs and tengas sold and bought per month, and data for this is presented in Table 7. Of the 78 village buyers, 26 (33.3%), 23 (29.5%), 17 (21.8%), and 12 (15.4%) showed that they bought 400 to 800, less than 400, 801 to 1,200, and more than 1,200 FRLCs per month, respectively. On the other hand, of the 72 urban middle-persons, 50 gave their responses and of these, 25 (50%), 16 (32%), six (12%), and three (6%) indicated that they bought 400 to 800, less than 400, 801 to 1,200, and more than 1,200 FRLCs per month, respectively. The means of FRLCs bought per month by the village buyers was 876, while it was 605 for the urban middle-persons and, that the former were above the total mean by . . . of 741. This was . . .percent higher meaning that village buyers handled more FRLCs than their counterparts. There was a highly statistical significance differences in the means between the numbers of FRLCs that the two groups bought per month at $p<0.008$ (Table 7).

Table 7. Number of FRLCs and *tengas* bought per month.

Variable	Village buyer	Middle-persons	Total	χ^2-value	P-value
Number of FRLCs bought per month	**(n=78)**	**(n=50)**	**(n=128)**	**11.878**	**0.008**
<400	17(21.8)	16(32.0)	33(25.8)		
400-800	26(33.3)	25(50.0)	51(39.5)		
801-1,200	12(15.4)	6(12.0)	18(14.1)		
>1,200	23(29.5)	3(6.0)	26(20.3)		
Mean	876.07	604.96	741.4		
Standard deviation	485.14	373.35	360.00		
No of tenga bought per month	**(n=78)**	**(n =51)**	**(n =129)**	**14.032**	**0.003**
<5	19(24.4)	17(33.3)	36(27.9)		
5-10	27(34.6)	21(41.2)	48(37.2)		
11-15	5(6.4)	9(6.4)	14(10.9)		
>15	27(34.6)	4(7.84)	31(24)		
Mean	13.08	8.39	11.23		

Standard deviation	8.27	4.3	7.2

Furthermore, Table 7 shows the number of *tengas* that the two groups bought per month. Of the 78 village buyers, 27 (34.6%) for each, 19 (24.4%), and five (6.4%) indicated that they bought five to ten, more than 15, less than five, and 11 to 15 *tengas* per month, respectively. Of the 72 urban middle-persons, 55 (%) gave their responses and, of these, 21 (41.2%), 17 (33.3%), 9 (6.4%), and 4 (7.8%) showed that they bought five to ten, less than five, 11 to 15, and over 15 *tengas* per month, respectively. The mean *tengas* bought per month for the village buyers was 13, while it was 8 for the urban middle-persons and, that the former were above the total mean of 11 by . . . This was . . . percent higher meaning that village buyers handled more *tengas* than the urban middle-persons. There was a highly statistical significance difference in the means between the numbers of *tengas* that two groups bought per month at $p<0.003$ (Table 7).

Buying and selling price per *tenga* of FRLCs

Table 8 shows the buying prices of a *tenga* of FRLCs that the two groups paid. Of the 78 villagers buyers, 27 (%) gave their responses and, of these, 13 (48.1%), seven (25.9%), four (14.8%), and three (11.1%) indicated that they bought a *tenga* of FRLCs for less than Tanzanian shillings (Tshs.) 130,000, 130,001 to 150,000, 150,001 to 170, 000, and above 170,001, respectively. On the other hand, of the 72 urban middle-persons, 43 gave their responses and, of these, 19 (44.2%), 12 (27.9%), 11 (25.6%), and one (2.3%) showed that they bought a *tenga* of FRLCs for less than Tshs. 130,000, 130,001 to 150,000, above 170,001, and 150,001 to 170,000, respectively (Table 7). The mean price of buying one *tenga* of FRLCs was Tshs. 130,302 for village buyers, while it was 146, 211 for the urban middle-persons and, that the latter were above the total mean of Tshs. 138,256 (US$ . .) by . . . . . This was . . .percent higher meaning that the middle-persons earned more than the village buyers. There were no statistical significance differences in the buying mean prices per *tenga* of FRLCs between the village buyers and middle-persons at $p<0.08$ (Table 8).

Table 8. Buying and selling of a *tenga* of FRLCs.

_____

Buying price of a *tenga* (Tshs.)	(n = 27)	(n=43)	(n = 70)	5.439	0.082
<130,000	13(48.1)[1]	19(44.2)	32(45.7)		
130,000 –150,000	7(25.9)	12(27.9)	19(27.1)		
150,001-170,000	4(14.8)	1(2.3)	5(7.1)		
> 170,000	3(11.1)	11(25.6)	14(20.0)		
Mean	130,301.9	146,211	138,256.4		
Standard deviation	15,967	17,320	20,000		
Selling price of tenga (Tshs.)	(n = 43)	(n = 42)	(n = 85)	10.065	0.018
<130,000	19(44.2)	7(16.7)	26(30.6)		
130,000 –150,000	12(27.9)	13(31.0)	25(29.4)		
150,001-170,000	1(2.3)	6(14.3)	7(8.2)		
> 170,000	11(25.6)	16(38.1)	27(31.8)		
Mean	143,251.2	170,404	156,668.2		
Standard deviation	23,050	36,013	27,112		

Source: Survey data, 2003; Figures in parentheses are percentages and those out of parentheses are frequencies

Furthermore, Table 8 shows the selling prices of *tengas* for the two groups who gave their responses. Of the 88 urban villager, 43 (%) gave their responses and of these, 19 (44.2%), 12 (27.9%), 11 (25.6%), and one (2.3) indicated that they sold a *tenga* of FRLCs for less than Tshs. 130,000, 130,001 to 150,000, over 170,001, and 150,001 to 170,000, respectively. Similarly, of the 72 urban middle-persons, 42 gave their responses and, of these, 16 (38.1%), 13 (31%), seven (16.7%), and six (14.3%) showed that they sold a *tenga* of birds for over 170,001, 130,000 to 150,000, less than 130,000, and 150,001 to 170,000, respectively. The means of the selling price per *tengas* of FRLCs for the village buyers was Tshs. 143,251 while it was 170, 404 for the urban middle-persons and, that the latter were above the total mean by . . . of Tshs. 156,668 (US$ . .). This was . . .percent higher meaning that the middle-persons earned more than the village buyers from selling *tengas* of FRLCs. There was a statistical significance difference in the means between the selling prices of *tengas* of FRLCs of the two groups at $p<0.02$ (Table 8).

Cost incurred in buying and transporting FRLCs to markets

Money used to buy FRLCs in the villages. Table 11 shows the amount of money per month that village buyers spent to buy FRLCs in the villages. Of the 72 village buyers, 32 (43.8%), 16 (21.9%), 14 (19.2%), and 11 (15.1%) showed that each spent Tshs. 500,001 to 1million, more than 1,5 million, less than 500,000, and 1 million to 1.5 million per

month to buy FRLCs, respectively. One of the prime cost in the FRLCs business was the transportion cost of *tengas* with FRLCs from the originating villages to a 'loading center' (i.e., a village, roadside, market center, settlement). Of the 88 village buyers, 28 (. . . %) gave the cost incurred for transporting one tenga, and of these, 11 (39.3%) for each, and six (21.4%) showed that they incurred less than Tshs. 2,000, more than 2,000, and 2,000 to 5,000, to transport a *tenga* from an original village to a loading center, respectively. The mean cost for transporting a *tenga* with FRLCs to a loading center was Tshs. 4,930 with a standard deviation of Tshs. 2,934 (Table 11).

Table 11. Cost incurred in buying and transporting FRLCs to the city markets.

Variable	Percent	Mean	s.d.
Transport cost per *tenga* by chicken collector (Tshs.)	**(n=28)**	**4,929.62**	**2,934**
<2,000	11(39.3)[1]		
2,000-5,000	6(21.4)		
>5,000	11(39.3)		
Transport cost from village to city market (Tshs.)	**(n=87)**	**11,385.63**	**5,132**
<5,000	7(8.1)		
5,000-10,000	36(41.4)		
10,001-15,000	23(26.4)		
>15,000	21(24.1)		
Tax per *tenga* (Tshs.)	**(n=60)**	**7,347.25**	**5499**
<5,000	23(38.3)		
5,000-10,000	27(45.0)		
10,001-15,000	3(5.0)		
>15,000	7(11.7)		

Source: Survey data; 1Figures in parentheses are percentages and those out of parentheses are frequencies; s.d = Standard deviation

Furthermore, of the 88 village buyers, 87 gave their responses on the cost incurred thereafter, and of these, 36 (41.4%), 23 (26.4%), 21 (24.1%), and seven (8.1%) indicated that they paid a transportation cost per *tenga* ranged from Tshs. 5,000 to 10,000, 10,001 to 15,000, more than 15,001, and less than 5,000, from the loading center to the city markets in Dar es Salaam, respectively. The mean cost that village buyers incurred in transporting a *tenga* from a loading center to the final destination to the city markets was T.shs. 11,386 with a standard deviation of 5,132 (Table 10). Upon arrival at the final destinations, village buyers paid municipal tax per *tenga* as they were off-loaded. Of the

88 village buyers, 60 (%) gave their responses about the taxes they paid per *tenga* at the city markets, and of these, 27 (45%), 23 (38.3%), seven (11.7%), and three (5%) showed that they paid from Tshs. 5,000 to 10,000, less than 5,000, more than 15,000, and 10,000 to 15,000, respectively (Table 11). The variation in taxes paid per *tenga* was a reflection of the different sizes of the containers of FRLCs that village buyers brought to the city markets. The mean tax that village buyers paid per *tenga* was Tshs. 7,347 with a standard deviation of 5,499 (Table 10). Therefore, the mean total cost of transporting a *tenga* of FRLCs to the city markets was Tshs. 16,316 (US$ . . .), with a standard deviation of Tshs. 8,066 (US$ . .).

Table 12 shows the amount of money that each village buyer used per month to buy FRLCs in the villages. Of the 78 village buyers, 32 (43.8%), 16 (21.9%), 14 (19.2%) and 11 (15.1%) showed that they spent per month from Tshs. 500,000 to 1 million, over 1.5 million, less than 500,000 and 1 to 1.5 million to buy FRLCs in the villages (Table 12).

Table 12. Amount of money that village buyers used per month to buy FRLCs in the village (n = 73).

Variable	Frequency	Percent
Amount in Tshs.		
< 500,000	14	19.2
500,001-1,000,000	32	43.8
1,000,001-1,500,000	11	15.1
>1,500,000	16	21.9

Source: Survey data, 2003.

Data in Table 12 clearly shows the importance of FRLCs in improving the economy of small holder farmers. Despite this potential little has been realized by most people dealing with rural development, especially the rural extension services. For example, if we assume that the 16 village buyers bought FRLCs worth Tshs. 9 million, and if half of this money (4.5 million) was invested in the FRLCs originating villages, this amount could suffice to build 3 modern houses in a village, each at a cost of Tshs. 1.5 million. But, because most us do not see this, most of the village buyers of FRLCs invest this most of this money in urban areas.

In the same vein, the next section, therefore, discussed the gross margin of analysis of FRLCs that both urban village buyers and urban middle-persons earned.

Gross margin of analysis of FRLCs

Table 13 shows the gross margin analysis of village buyers and middle-persons. The study findings showed that total variable cost (TVC) per month for the 78 village buyers amounted to Tshs. 1,797,248 (US$ . .), with a standard deviation of Tshs. 625,450 (US$ . .), while that of 51 urban middle-persons was Tshs. 1,227,025 (US$ . .), with a standard deviation of Tshs. 536,400 (US$ . .). The TVC for the village buyers was higher by …. % from that of the urban middle-persons. There was statistical significance difference in the means between the TVC of the two groups at $p<0.025$ (Table 13). Further analysis showed that the gross income per month of the 78 FRLCs village buyers was Tshs. 1,875,119 (US$ . .), with a standard deviation of Tshs. 415,210 (US$ . .), while that of the 51 urban middle-persons was Tshs. 1,430,057 (US$ . .), with a standard deviation of Tshs. 355,210 (US$ . . .). Similarly, there were statistical significance differences in the means between the gross income per month that the two groups earned at $p<0.043$.

Table 13. Gross margin analysis of the FRLCs business

Variable	Category		T-value	P-value
	Village buyer n = 78	Middle-pers. n= 51		
Total variable costs per month (Tshs.)	1,797,248 (625,450)[1]	1,227,025 (536,400)	-2.263	0.025
Gross income per month (Tshs.)	1,875,119 (415,210)	1,430,057 (355,210)	-1.863	0.043
% of buying price increase	9.80 (4.61)	14.6 (5.24)	4.899	0.000
Gross margin per month (profit) (Tshs.)	77,870 (35,400)	203,031 (62,003)	6.006	0.000

Source: Survey data, 2003; [1]Figures in parentheses are standard deviations; Middle-pers. = Middle-person

Furthermore, Table 13 shows that the percent increase in the buying price per month of village buyers and urban middle-persons earned. The percent increase in the buying price of FRLCs for the 78 village buyers was 9.8 with a deviation of 4.6, while that of the 51

urban middle-persons was 14.6 with a deviation of 5.2. There was a highly statistical significance differences in the means between the percent of buying price increase of FRLCs for the two groups at p<0.000. The FRLCs gross margin (profit) per month of the two groups varied substantially. The study findings showed that the gross margin (profit) per month of the 78 village buyers was Tshs. 77,870 (US$ . .), with a standard deviation of Tshs. 35,400 (US$ . .), while that of the 51 urban middle-persons was Tshs. 2,023,031 (US$ . .), with a standard deviation of Tshs. 62,003 (US$ . . .). There was a highly statistical significance differences in the means between the gross margins per month of the two groups at p<0.000 (Table 13).

Hypothetically, this meant that in twelve months, an urban middle-person made about Tshs. 2,436,372 (US$ 2,320), while a village buyer made about Tshs. 934,440 (US$ 890) profit. It is this disparity in profit that is important to note. First, that the urban middle-persons made about 50 more profit per month from selling FRLCs in the city markets than the village buyers. Second, that an urban middle-person's profit per month was about three times the salary of a government-employed primary school teacher (a salary of Tshs 70,000 or US$ 67) who had completed an "O" level general education and taken a two-years course in education.

The gross margins (profits) per month that both the village buyers and urban middle-persons earned from sale of FRLCs had two folds of implications for rural extension services. First, it is crucial for rural extension services to recognize the economic contribution that FRLCs could make in the rural economy, and that some people had recognized and were getting good money from it. It is, therefore, imperative to step up educational efforts to improve the management of these birds in rural areas. Second, FRLCs are a resource that can alleviate rural poverty among smallholder farmers if they were taught how to manage them. But, there is also a wider perspective of the nutritional contribution of FRLCs that often gets forgotten. The study findings show that it was mostly the individual urban dwellers who bought FRLCs in the city markets for home consumption. Rural extension services should view FRLCs as a potential commodity for

export comparable to crops such as cotton, coffee, tea—this aspect is not apparent for most of the rural extension services' paradigm.

CONCLUSION AND RECOMMENDATIONS

Conclusion

In Tanzania, recent estimates show that there are approximately 28.3 poultry, and of these 26.6 million (94%) are FRLC, and about 72 percent of rural households keep them with an average of 10 chicken per household. This large potential of rural chicken is yet to be fully tapped. The main constraints to realizing the potential are poor husbandry, low genetic potential, poor marketing and diseases such as Newcastle disease. The main aim of this study was to investigate the marketing strategies and the income that village buyers and the urban middle-persons earned from the free-range local chicken (FRLCs), i.e. the latter bought FRLCs in the rural villages and the former sold them in the city of Dar es Salaam, and the perceived implications for the rural extension services.

The findings showed that most of the village buyers were younger compared to the urban middle-persons, and for all groups most had completed primary education, were males, married and lived with 3 to 5 persons in a household. The study has yet confirmed that most of the FRLCs originated from the central zone regions that include Dodoma and Singida. These findings support Mlozi et al. (2000) results in a study on the efficiency of transportation of local chickens to urban markets of Morogoro and Dar es Salaam. In the villages most FRLCs were bought between morning and afternoon time. Most village buyers transported FRLCs to the city markets on lorries and less than half of the village buyers fed their FRLCs on transit. But, those who fed the FRLCs, sorghum was a common feed, and few gave water to the birds.

Most of the village buyers bought FRLcs from the village markets, others used their FRLCs village collectors and still others bought them from the village households. Most FRLCs were carried to the city markets in *tengas*, and large ones were preferred which carried from 76 to 100 birds and most village buyers carried more hens than cocks in a *tenga*. On average, the village buyers bought more FRLCs and *tengas* of FRLCs per month that did the urban middle-persons in all cases. But, on average the urban middle-person bought a tenga of FRLCs at a price than did the village buyer, but the urban middle-person sold a *tenga* of FRLCs at a much higher price than did her/his counterpart.

This case was similar for the buying and selling of hens and cocks. Over half of the urban middle-persons sold from 10 to 30 FRLCs per day, with an average of 23 birds. And most of these chickens were for home use and most customers bought individual chickens than FRLCs in a *tenga*. Respondents indicated that there were high supplies of FRLCs in March, May, August, February and May, while prices of FRLCs were high in August, September and October, and these were the months when most of the FRLCs were indicated to show signs of diseases. Over half of the village buyers spent between Tshs. 500,000 to 1.5 million per month to buy FRLCs in the villages, with an average of Tshs. 1 million. The study findings showed that the gross margin (profit) per month of the village buyers was lower compared to that of the urban middle-persons. The urban middle-persons made about 50 more profit per month from selling FRLCs in the city markets than the village buyers, and these findings supported by those of Mlozi *et al*. (2000, 2001, 2003).

In several sections the paper discusses implications for rural extension services, and these span from teaching smallholder farmers to improve management of FRLCs to diagnosing disease symptoms and vaccinating birds, especially against Newcastle disease. The aim is for FRLC contribute to smallholder' income, welfare improvement and alleviating the pervasive rural poverty among rural communities.

Recommendations

This study calls upon all those involved in rural development to take serious measures in empowering smallholder farmers through educational efforts so that they can realize the potential of FRLCs in alleviating rural poverty, improve their nutrition and their welfare. This study, albeit using a small sample, has demonstrated the enormous resource that few have tapped leaving out the smallholder to get a pittance. Therefore, this study makes recommendations at six levels of operation:

1.   The extension officers should teach smallholder farmers on how they can improve the management of FRLCs by creating awareness on the importance of marketing and the contribution in the household income, nutrition and welfare improvement.

2. Researchers (from universities, government, bilateral agreement, NGOs) should collaborate with extension officers and farmers to find appropriate ways that are easy and possible (i.e. the Bangladesh model) to implement at their level in order to improve FRLCs productivity.

3. Village buyers and urban middle-persons should collaborate with organized and trustworthy farmers and provide them with credit for buying drugs, feed and materials for improving housing so that they would be assured of quality FRLCs.

4. Non-governmental organizations should also consider of sensitizing smallholder farmers towards improvement of FRLCs and enable some progressive farmers to practice and demonstrate to others improved husbandry practices so as to contribute to household income generation, nutrition and welfare improvement.

5. City/municipal/town councils should see that they use part of the money earned from FRLCs taxation to improve the husbandry practices so as to enable smallholder farmers produce quality FRLCs.

6. The government should provide an enabling environment by providing policies that support the improvement of FRLCs for increased farmers' and national income.

References

Boki, J.K. 2000. Poultry industry in Tanzania-with emphasis on smallscale rural poultry. *In: Proceedings of the Workshop on the possibilities for smallholder poultry projects in Eastern and Souther Africa, Morogoro, Tanzania, 22-25 May 2000.*

Gebreyesus, A. H. 2000. Smallholder poultry production in Eritrea. *In: Proceedings of the Workshop on the possibilities for smallholder poultry projects in Eastern and Souther Africa, Morogoro, Tanzania, May 2000.*

Kulube, K. 1990. Smallholder rural production in Zimbabwe. *Smallholder rural poultry production.* Volume 2. Country report. 9-13 OCTOBER, Thessaloniki, Greece.

Melewas, J. 1989b. Poultry production. *Proceedings of smallholder poultry production in developing countries.*

Minga, U.M, Yongolo, M.G.S Mtambo, M.M.A. Mutayoba, Lawrence, N.A. Mwalusanya, A. Katule and M.R.S. Mlozi. 2000. The potential for Rural poultry production and Health in Africa. *The proceeding of the workshop on the possibilities for smallholders poiltry projects in Eastern and Southern Africa , Morogoro, Tanzania, 22-25 May.*

Minga, U.M., Katule, A.M., Yongolo, M. and Mwanjala, T. 1996. The rural chicken industry in Tanzania. Does it make sense? *In: Proceedings of the 14th Tanzania Vetrinary Association (TVA) Scientific Conference held at Arusha International Conference Centre, Arusha, Tanzania.* Dec. 3 – 5; TVA vol. 16 (Suppl. No. 2).

Ministry of Agriculture and Cooperatives 1997. *National Sample Census of Agriculture* 1994/95- Report Volume II. MOAC.

Mlozi, M.R.S, A.V.M. Kakengi, U.M. Minga, M.M.A. Mtambo, and J.E. Olsen. 2003. Marketing of free-range local chickens in Morogoro and Kilosa urban markets, Tanzania. *Livestock Research for Rural Development*, 15(2), 1-12.

Mlozi, M.R.S., U.M.Minga, M.M.A. Mtambo, A.M. Katule, S.K. Mutayoba, S.K. Mwangulumba, and J.C. Kisanga. 2000. Efficiency in transportation of local chickens to urban markets of Morogoro and Dar es Salaam in Tanzania. Paper presented at the 18th Tanzania Veterinary Association Annual Scientific Conference held at Arusha International Conference Centre, Arusha, Tanzania, 5-7th, Decemeber.

MOA, 1995. National Sample Census of Agriculture, 1995. Ministry of Agriculture Report Vol. II.

Mukiibi-Muka, G., Ebong, C., Olweny, J. and Dalsgaard, J. P. T. 2000. Poverty alleviation through free range poultry improvement – The livestock systems research programme in Uganda. *In: Proceedings of the Workshop on the possibilities for smallholder poultry projects in Eastern and Souther Africa, Morogoro, Tanzania, May 2000.*

Mwalusanya, N.A. 1998. *Productivity and nutritional status of local chicken under village management conditions*. MSc Thesis, The Royal Veterinary and Agricultural University, Copenhagen.

Olaboro, G. 1990. Summary of Evaluation report of the rural poultry programme of the christian rural service (C.R.S) of church of Uganda. *Smallholder rural poultry production.* Volume 2. Country report. 9-13 OCTOBER, Thessaloniki, Greece.

Pedersen, G, Permin, A and Minga, U.M. 2000. Edited in: *the proceedings of workshop on the Possibilities for smallholder poultry projects in Eastern Africa*.Morogoro, Tanzania. 22-25 May 2000.

Sonaiya, B. 1990. Economic,financial and marketing determinants of poultry development – requirement to support private initiatives (WG 4). *Smallholder rural poultry production.* Volume 1. Country report. 9-13 OCTOBER, Thessaloniki, Greece.

Statistical Analysis System (SAS) 2000. User's Guide, Statistical Analysis System Institute, Inc, Cary, N.C., pp. 1028.

Williams, G.E.S. 1990. Smallholder poultry production in Ghana. *Smallholder rural poultry production.* Volume 2. Country report. 9-13 OCTOBER, Thessaloniki, Greece.

Tanzania Agricultural Research Project II (TARP II). (2002). *Local chicken: Does production meet market demand*? TARP II: Sokoine Univerisity of Agriculture, Morogoro, Tanzania. pp. 38.