Urban Agriculture: Determinants and Its Implication on Poverty Reduction: A Case of Bishan Guracha Town, West Arsi Zone, Oromia Regional State, Ethiopia

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Abstract

The main intention of this study is to analyze the determinants of urban agriculture and its implication on poverty reduction. To this end, convergent parallel mixed design was utilized. All individuals working on the three urban agricultures were comprised of the study population. Specifically, 228 participates were participated on the research of which 118, 53 and 52 households were selected from fishery, milk and animal fattening micro and small enterprises respectively. Study participants were selected via employing stratified random sampling method proportionally. Further, key informants were taken purposefully for the intent of qualitative data. Questionnaire, semi-structured interview and focus group discussion guides were used as tools of data collection method. To categorize the status of poverty as poor and non-poor Foster, Greer and Thorbecke (FGT) index was used. Whereas one-way ANOVA was computed to identify whether statistically significant differences among the income generated from the three types of urban agricultures or not. Binary logistic regression was employed to pinpoint the determinants of urban agricultures while qualitative data was analyzed thematically. The finding suggested that about 40% of urban agricultural practitioners are failed blow poverty line. The results revealed that there were statistically significant differ-

ences among the three types of urban agricultures by the income earned from it. Inexplicably, modern fish net, access to different credit services, shortage of local boat, conflict of interest and access to saving and sex, education level, market fluctuation, lack of veterinary institution, lack of attention to the sectors, lack of extension services, lack of training and shortage of access to transportation were found to be determinants of fishery. Extension service, access to market linkage, shortage of input and climate changes and lack of market linkage, improved livestock, shortage of land and access to transport were not found to be statistically significant association with the income of households who have been taking part on animal Fattening productions in the study area.

Subject Areas

Sociology

Keywords

Animal Fattening, Fishery, Local Milk Production, Poverty Reduction

1. Introduction and Background

More than half of the world's people depend on the food produced by smallholders, where livestock are an integral part of smallholder farming systems [1]. The percentage of urban residents in Sub-Saharan is expected to rise from 30 to 47 percent of the total population during the period lasting from 2005 to 2030. Nevertheless, as the recode showed in many of African countries particularly in Sub-Saharan regions, urban agriculture did not get much attention by policy makers.

The available report shows that over 1 billion African consumers are either extremely poor or poor living on less than US$ 1.25 and US$ 2 a day, respectively. The extremely poor and the poor spend a large, often the largest, share of their budget on food [2].

Consequently, an appropriate policy response might be to allow livestock production in urban areas increase incomes of urban poor communities while creating employment. The fact that urban livestock continues to be found in and around African cities implies advantages for local stakeholders [3]. As a result, in Africa, where the urban poor are numerous, in efforts to reduce poverty, governments in some cases introduce pro-poor policies designed to improve the living conditions of the needy [4].

If we take Zimbabwean agricultural policy, the urban agriculture is not classified as independent activities rather it is assumed as an illegal, therefore, it implies, as the country has no clearly laid down policy on urban agriculture [5]. In spite of lack of attention by policy makers, in Zimbabwe, urban farming has for years served as a vital input in the livelihood strategies of urban households [5].

Likewise, Ethiopia is one of the least urbanized countries in Africa with its urban population standing at about 20 per cent of the total [4]. Unlike Zimbabwe, Ethiopia has been formulated policy on livestock in its every five years strategic planning. In spite of written policy frameworks still over 70% of Ethiopia's exports are primary agricultural products such as coffee, oil seeds, chat, cut flower, pulses and others which fetch low prices country [6].

As far as livestock production and management are concerned, the issue of inputs is too much complicated. Study by [7] on some selected African cities such as Accra, Nairobi, Lima, and Bangalore suggested that as there is high competition for land between industrial, commercial, residential and agricultural uses, especially in the peri-urban transition and peri-urban areas. Contrary to this, [5] has found that agricultural land in urban areas of Zebwawe has the lowest value and is therefore considered uneconomic.

According to [5] access to land, land ownership, the use of inputs and the participation in other livelihood activities, urban agriculture activities favor educated, middle and/or upper class families in Zebwawe. However, in their finding the urban poor are more affected as they cannot manage to purchase expensive imported crop and livestock products. They have difficulties to access cheap food in rural markets due to transportation costs.

Furthermore, [8] was conducted research in Tanzania and came to conclude that the shortage of feeds (35%), high cost of inputs (20%), low prices of livestock products (18%), lack of capital (10%), death and poisoning of livestock (10%), theft of livestock (10%), lack of enough space (8%), infertility of livestock (6%) and predators (6%) are the major problems faced by livestock producers in urban areas. The experiences of developed countries like Portugel also shows that gardeners are use conventional and traditional means of production without technological resources, even if the use of trendy biological practices is increasing. Urban agriculture is a manual-based procedure [9].

Urban and peri-urban small- and large-scale dairy farmers mainly depend on purchased inputs such as feed, veterinary drugs, semen (AI services) and limited animal health services through private veterinary practitioners [10]. Similarly, [5] have reported water (36%) and in general shortage of inputs (20%) is major challenges they encountered. The study also noted that agricultural inputs were unavailable on the formal market and the prices on the parallel market were beyond the reach of most of the urban poor farmers in Zebwawe.

The informal market involves direct delivery of fresh milk by producers to consumers in the immediate neighborhood and sales to itinerant traders or individuals in nearby areas. The formal subsystem involves organized collection networks, bulk cooling, transport, processing and distribution. Dairy plants are at the core of the formal marketing subsystem [10]. A total of 47% of the respondents who sold their livestock for meat production used informal market [11].

The provision of credit facilities and insurance for dairy farms should be encouraged and promoted. Dairying constitutes an important part of the Ethiopian smallholder dairy sector, a careful planning of dairy policy is required for the generation of appropriate and demand driven technologies in order to attain sustainable dairy farm development [12]. In spite of these major market opportunities, local producers are unable to meet current demands and will find it increasingly challenging to satisfy the growing needs for animal protein [2]. Taken together, the main intention of this study is to analyze the determinants of urban agriculture and its implication in poverty reduction.

2. Methods and Materials

2.1. Research Design

In response to research aims convergent parallel mixed design was used.

2.2. Study Population

The total household who are also beneficiary the three selected urban agriculture is 546 of which 283, 127 and 136 fishery, animal fattening and milk production.

2.3. Sample Size Determination

Sample was calculated thoroughly in accordance with [13]'s formula.

$$n = \frac{N}{1 + N(e)^2}$$

where:

  n = *sample size;*
  N = *the size of the population;*
  e = *the margin of error;*
  CI = 95%.

$$n = 546/1 + 546(0.0025)$$
$$= 546/1 + 1.365$$
$$= 546/2.365$$
$$= 228$$

Therefore, the required sample size was 228.

2.4. Sampling Techniques

First, three urban agricultures such as fishery, local milk production and animal fattening out of five was selected by simple random sampling (lottery method). Then, through the use of stratified random sampling method the desired sample were taken from each stratum. The basis of stratification is types of enterprise and kebeles and therefore through proportional allocation 228 sample was drown which is 118, 57 and 53 participants from fishery, milk production and animal fattening respectively (*see* Table 1). However, we opted purposive sampling to

Table 1. Sample size distribution by types of UA and Kebeles.

Types of UA	Fishery		Fattening		local milk production		Total
	TPK 1	TPK 2	TPK 1	TPK 2	TPK 1	TPK 2	
Kebele	170	113	60	67	69	67	**546**
Sample size	71	47	25	28	29	28	**228**

NB: TPK1 = total population of kebele one, TPK2 = total population of Kebele two and UA+ = Urban agriculture.

select two persons from kebele chairperson and kebele managers, three experts from the town urban development and industries office, 15 householders who have been participating in urban agricultures, six key informants from hotel owners and Bishan Guracha Moyer.

2.5. Tools of Data Collection

Questionnaire, semi-structured interview, and focus group discussion guide was used. The questionnaire has different parts. The first part is items ask about the participants' general information like sex, age, religion, employment status, marital status, level of education, household size and etc. The second one is about determinants of urban agriculture. It was administered to households who engaged in three urban agricultures such as Fishery, milk and animal fattening.

On the other hands, semi-structured interviews were performed with the heads of the bottom level leaders key informants from hotel, Moyer and experts working Urban Development and Industries Office. Finally, three focus group discussion guides employed with key informants who have been participating on urban agricultures.

2.6. Data Quality Assurance

Cronbach's Alpha reliability testing technique was applied to check for reliability of the tools during pilot testing by distributing the questionnaire to 23 respondents. The items were found to be significant at Cronbach's Alpha 0.756, which is strong.

2.7. Ethical Consideration

Prior to conducting the study proposal was submitted to professionals on the areas for approval. In research, obtaining the informed consent of the organization or individual using language that is reasonably understandable to that person is one of the ethical codes expected from any researcher/s [14]. Therefore, permission obtained from the town head office before approaching the participants. Consequently, a consent form which is in written form on the first page of the questionnaire while for key informants' oral consent made. Furthermore, during data analysis as per the agreement with participants on consent form, their privacy and anonymity kept confidential. The researchers avoid reporting only positive results and thus an attempt was made to balance any contrary

findings via multiple perspectives such as using unbiased language appropriate for audiences of the research.

2.8. Methods of Data Analysis

To analysis the statues of poverty the Foster, Greer and Thorbecke (FGT) (1984) index was used. This index was chosen because it is one of the most practical method to analyze poverty index globally.

FGT index was computed to poverty level analysis that was used to enumerate the three well-known fundamentals of poverty: the headcount (H) index, the poverty-gap (PG) index, and the severity of poverty (PS) calculate index as followed.

Further, head-Count Index (H) is a measure most widely used in poverty analysis and is given by the percentage of the population living in households with consumption per capita less than the poverty line (Z) and mostly known as rate of poverty. Representing Q as the number of people earning income below the poverty line, N is the total population, and then the Head Count Index (H).

$$H = Q/N$$

Therefore, this can be rewrite e1, as follows, introducing, Yi is expenditure or income and Z is the poverty line, then;

The Poverty Gap Index (PG) measures how far an individual's income falls short from the poverty line. Since this index is based on the aggregate poverty deficit of the poor relative to the poverty line, it is by far better than the Head Count in Index and is known as moderately popular measure of poverty.

Therefore, taking the above representing style of variables and defining the poverty gap (Gi) as the difference of poverty line (Z) and the actual income (Yi) for poor individuals and the gap is assumed to be zero for everyone else, Mathematically, PG is computed as follows.

$$PG = 1/N \sum_{i=1}^{Q} (Gi/Z)$$

where $Gi = xi - z/z$

Poverty Severity Index (PS) it is also known as squared poverty gap index or the Foster-Greer-Thorbecke index, measures severity of poverty by squaring and averaging the gap between the income of the poor and poverty line.

$$PS = 1/N \sum_{i=1}^{Q} \left[(Z - Yi)/Z \right] \partial$$

The three status of poverty in the FGT index are the Head Count Index (P) which represents number of peoples who are poor,

Poverty Gap Index (P1) which calculate the status to which personal goes down the poverty line (the poverty gaps) as a proportion of the poverty line and

Poverty Severity Index (P2) that reveals not only the poverty gap but also the difference among the poor.

Let Z be the poverty line, Yi is the actual Expenditure or income of personals below the poverty line, N is number of people, Q is the number of poor people

normally those below the poverty threshold, α is poverty aversion parameter. Then, the FGT or $P\alpha$ is given by:

When the value of $\alpha = 0$, the FGT or the $P\alpha$ turn into the Head Count Index (P0) yet when α has value 1, $P\alpha$ is the Poverty Gap Index (P1).

Let the underlying response variable y^* is defined by the regression relationship

$$\mathrm{U} \times \mathrm{y}+ = \beta^* \tag{1}$$

where y_i^* is the status of household;

β_i is set of coefficients;

X_i is set of descriptive variables (determinants);

U_i is the error term and;

i represents households that run from 1 to n.

Thus, as y^* is hidden variable, what is observable is an event represent by a model variable y defined by:

$$\begin{aligned} y &= 1 \text{ if } y^* > 0, \text{ and} \\ y &= 0 \text{ otherwise} \end{aligned} \tag{2}$$

So, the response of the variable is binary, taking two values, 1 if the household is poor, 0 if not. The probability of being poor depends on a set of variables X so that,

$$\begin{aligned} \mathrm{Prob}\left(yi = 1\right) &= \left(\beta_x\right) \text{ and} \\ \mathrm{Prob}\left(yi = 0\right) &= 1 - F\left(\beta_x\right) \end{aligned} \tag{3}$$

where F is the cumulative distribution function for the error term U_i.

Therefore, our Logistic regression model is given by:

$$\mathrm{Logit}\left(p\right) = \ln\left[\frac{P}{1-p}\right] = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_n X_n \tag{4}$$

where β_1, $\beta_2 \cdots \beta_n$ are the predictor variables and P is probability that the household is poor or not.

First, the quantitative data coded, entered, cleaned and analyzed using SPSS computer software package version 21. Descriptive statistics was used to summarize the findings. From inferential statistics one-way ANOVA was employed to identify whether there is statistically significant differences among the income generated from the three types of urban agricultures. Binary logistic regression *was used to* analyze determinants of urban agriculture. A p-value of less than 0.05 taken to declare the independent variable as predictors of urban agricultures. On the other hands, researchers analyze qualitative data consisting of participants' expressions and researchers observations.

3. Results and Discussion

Of the initial sample, more than 96% of subjects completed and returned the questionnaire. The first set of analyses examined the magnitude of poverty in study site using the three poverty measures; head count index (P0), poverty gap

(P1) and poverty severity index (P2), 40% (head count index) of the population is living below the poverty line, *i.e.*, they are earning birr 36.25 per adult per a day. The poverty gap index is 36% and poverty severity index was found to be 13.1%. Hence, the incidence of poverty in study area (40%) seems higher relative to the national level in urban index 25.7% relatively in 2010/11(UNDP).

The result illustrate that 51% of respondents who engaged on fishery as urban agriculture fail into poverty incidences while 30% and 23% of respondents who engaged on animal fattening and milk production were categorized under poverty incidence (*see* Table 2).

The average estimated net monthly income generated from the three urban agricultural activities of HHs (fishery, milk and animal fattening) income was 6038.2 birr. The minimum and maximum monthly net income of the selected activities of HHs was 1000.00 and 12,000.00 Ethiopian birr respectively. According to the results, the participants who involved in animal fattening were earned better income compared to HHs participated in milk production and fishing as well (*see* Table 3).

The current finding bit inconsistent with the [15] analysis that Ethiopia in

Table 2. Shows Distribution of measurement of poverty index June 2019.

Variable	Particular feature	p0		p1		p2	
		Income	Expenditure	Income	Expenditure	Income	Expenditure
TUA	Fishery	0.51	0.69	0.45	0.27	0.204	0.07
	Milk	0.3	0.58	0.13	0.12	0.017	0.01
	Animal Fattening	0.23	0.5	0.11	0.11	0.012	0.01
Work experience	Two years	0.23	0.22	0.12	0.2	0.014	0.040
	Three years	0.16	0.14	0.15	0.11	0.023	0.012
Sex	Male	0.14	0.17	0.12	0.01	0.01	0.000
	Female	0.29	0.25	0.26	0.23	0.068	0.053
Education level	Illiterate	0.31	0.31	0.35	0.32	0.119	0.102
	Reade & write	0.01	0.01	0.01	0.01	0	0.000
	Primary	0.01	0.01	0.01	0.01	0	0.000
	Secondary	0	0	0	0	0	0.000
	College & above	0.03	0.02	0.02	0.01	0.001	0.000
Family numbers	1 - 2 family	0.02	0.01	0.02	0.01	0	0.000
	3 - 4 family	0.02	0.012	0.01	0.001	0	0.000
	5 - 6 family	0.11	0.01	0.1	0.001	0.01	0.000
	>6 family	0.26	0.23	0.23	0.2	0.053	0.040
Marital status	Married	0.33	0.35	0.3	0.31	0.09	0.09
	Single	0.068	0.06	0.061	0.058	0.004	0.003
	Overall	**0.40**	**0.44**	**0.36**	**0.43**	**0.131**	**0.19**

general found among the countries with lowest cost of milking production in the world. This could be attributed to the fact that the scope the study is much lesser than [15].

Conversely, the responses of Bishan Guracha SME experts are negating with the above figure that milk production is better than the remaining two urban agricultures. These experts further noted that next to Arsi Negele micro and small entrepreneurs' of milk their town milk entrepreneurs are the second by primarily supplying milk and milk results to Sheshamane town consumers and Hawassa. With regard to the fishery producers income status key informants who were interviewed suggested that these entrepreneurs often time reluctant to communicate their actual income when they are asked by concerned bodies. This is because according to report of SME experts they assumed that as the government snatch them fishing areas and handover to other microenterprises.

One-way ANOVA analysis result highlighted that there were statistically significant difference among the three urban agricultural activities. Up on calculation the mean of income among three urban agricultural activities: fishery (5620 birr), milk (6358.49 birr) and fattening (6636.54 birr). This result disclosed that the respondents participated in fattening job obtained highest income followed by milking production and fishing. To sum up, fattening and milking production are more effective in income generation in Bishan Guracha than fishing nevertheless the town is found facing Hawasa Lake (*see* Table 4).

Among many independent variables entered to binary logistic regression, it was found that using modern fish net, access to different credit services, having

Table 3. Shows distribution of Income of the three urban agricultures June 2019.

TUA	N	Mean	SD	Minimum	Maximum
Fishery	115	5620.00	2214.63	1000.00	12,000.00
Milk	53	6358.49	1899.84	2000.00	12,000.00
Animal Fattening	52	6636.54	1755.00	2000.00	10,000.00
Total	220	6038.18	2080.63	1000.00	12,000.00

Table 4. Shows One-way ANOVA comparison among the three urban agricultures with its income June 2019.

UA		Mean def	S.E	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Fishery	Milk	−821.18130*	330.3609	0.036	−1600.80	−41.5596
	Fattening	1042.62542*	332.5282	0.006	−1827.36	−257.889
Milk	Fishery	821.18130*	330.3609	0.036	41.5596	1600.80
	Fattening	−221.444	388.397	0.836	−1138.03	695.1376
Animal Fattening	Fishery	1042.62542*	332.5282	0.006	257.889	1827.36
	Milk	221.4441	388.397	0.836	−695.1376	1138.03

*mean difference is significant at the 0.05 level.

local boat, conflict of interest and access to saving were found to be associated with the income of participants (*see* Table 5).

Conversely, extension service, access to market linkage, shortage of input and climate changes were not found to be statistically significant association with the income of households who have been taking part on fish in the study area (*see* Table 2).

For example, the odds of using improved fishnet was 21.756, that is the income of people who used modern fishnet was 21.756 times more likely improved than their counterparts (AOR = 21.756, 95% CI: (1.742, 271.45)). In addition, the result of binary logistic regression shows that having local boat was significant association with households' poverty status. Respondents who came across conflict over the resources of the lake were found to be 16.95 times more likely at risk of losing income from this business compared to the condition when there is no conflict among the target groups (AOR = 0.059, 95% CI: (0.004, 0.834)).

The qualitative results strongly support the above findings. It was suggested that participants who have been supplying fish product to the consumer agreed that the mother of all problems are the inputs such as lack of modern nets, due to financial case unable to buy even local boat, and motor boat. These participants were illustrated the presence of recurrent conflict in the area over the resources. As the perceptions of focus group discussants, the causes for conflict could be attributed to cheating fishnets, boats and illegal fishing. As a result, it is instigating conflict between Oromo and neighborhood Sidama or other nations.

Table 5. Shows Determinants of fishery production and households' Poverty status June 2019.

Factors	Poverty status		OR (95% CI)		P-value
	Non-poor	Poor	COR	AOR	
Improved fish net:					
Yes	10	35	1:00	1:00	0.017*
No	31	39	1.04 (0.48, 2.23)	21.76 (1.74, 271.4)	
Local boat:					
Yes	22	34	1:00	1:00	0.027*
No	19	40	734 (0.34, 1.58)	0.091 (0.01, .76)	
Access to credit:					
Yes	14	36	1:00	1:00	0.009*
No	28	72	1.827 (0.879, 4.03)	45.42 (2.61, 79.9)	
Access to saving:					
Yes	1	23	1:00	1:00	0.000*
No	40	51	0.365 (0.166, .806)	0.001 (0.00, 0.049)	
Conflict of interest:					
Yes	23	31	1:00	1:00	0.036*
No	18	43	0.637 (0.288, 1.407)	0.059 (0.004, 0.834)	

These realities is also manifested in many countries that urban poor are more affected as they cannot manage to purchase expensive of inputs fishing products [5].

Moreover, participants who got an opportunity of access to credit from formal institutions were 0.022 times more likely to upgrade their income when compared to individuals who did not get this chance (AOR = 45.419, 95% CI: 2.605, 791.936). Similarly, the vice Mayer also strengthen this case as micro finances institutions like Oromia saving and credit Association/OSCA/and others are not providing enough money for those who want to take credit. Thus, the residents are raising these problems on different stage of meeting which is beyond the capacity of his office. Data received from the micro and small enterprise experts suggested that facilitating credit service for people who are participating on milk production has satisfactory beginning. The experts also did not hesitate to report the challenges behind giving credit for the target group and reported problem on confirmation of business plan submitted by the customers on time. Thus, the enterprises rarely get the amount of money the planned on their business plan. Besides, these micro finance institutions reduce the amount of asked money on business plan without enough reasons.

For those households who were not accustomed to culture of saving the probability to stay under poverty were 2.73 times when compared to households who have saving habit (COR = 0.365, 95% CI = (0.0166, 0.806)).

According the majority of key informants, majority of micro and small enterprise are unable to borrow money, because, they have no collateral resource that is prerequisite for micro finance institution to give credit. Other bottleneck problem is that since majority of the residents in the town are Muslim religion followers, they are reluctant to borrow money provided by micro finance with interest demands [2].

The finding indicated that sex, education level, market fluctuation, lack of veterinary institution, lack of attention to the sectors, lack of extension services, lack of training and access to transportation were found to be associated with the income of participants. On the other hand, lack of market linkage, improved livestock, and shortage of land were not found to be statistically significant association with the income of households who have been taking part on animal fattening productions in the study area (*see* Table 6).

In the current study the likelihoods of the male participants' who have been working on local milk and animal fattening were ten times effective than female households (AOR = 0.099, 95% CI = (0.020, 0.428). Unlike the result of quantitative, the qualitative findings are close to reality. All focus group discussion key informants were disclosed their perceptions and that of the mainstream society as it is not something accustomed for males milking cows, selling milk and milk result. It is offensive for male to take part on such activities. Due to the habit of these societies, a man who takes part on milking cows and asking his wife about where she keeps milk product is labeled as "*qorqodaa*" by Afan Oromo which is

literary equivalent to a husband who interfere on wife labor. Because of this, men left this task to their counterparts and undermined to actively participate on milk as a business. Consequently, there is no room where the males involve in its management to boost the profit.

With regards to educational levels and the income of the people, illiterate participants were 0.08 times less likely productive than literate householders whose business is local milk and animal fattening (AOR = 12.130, 95% CI = (0.1.416, 103.93)). The result noted that at a time when there is market fluctuation, respondents odds of earning good income from their enterprises were more than three times less likely than if there is no market fluctuation on the market (AOR = 0.266, 95% CI = (0.075, 0.941)).

Leaders of town reported that since Bishan Guracha Town is found between Hawassa and Shashemane Town, there is no problem of market co-existence for those who have been practicing milking and fattening farm. On the other hands, MSE experts did not agree with their leaders because their government reluctant to make market linkage for those who are practicing agricultural activities in Bishan Guracha town. As a result, practitioners are supplying their product to the nearest market by their own effort. The experts of the town also sort out key challenges kicking out the owners the businesses that brokers are praising merchants and disgracing the powerless producers because of poor supervision by government and in turn, it is taking them many steps back ward than moving on. The following quote was taken from key informant:

> … *the merchants who buy fattening animals are more beneficiary than us. For instance*, *the man who has engaged on fattening medium bull will averagely sell it to* 15,000 *up to* 20,000 *birr. However*, *merchant will sell one kilogram of meat to* 250 *up to* 300 *birr. If they slaughtered bull that has meat that can weight* 200 *kilogram in average*, *the merchant will collect around* 60,000 *birr from single bull.*

This shows that the merchants are more productive than those who are practicing fattening animals. The issue of market fluctuation is a hot potato for all business however, its magnitude vary from one to another. According to the idea of majority of the research participants, condition of market in the study area is similar with patient with diabetes. It may rise or fluctuate dramatically without enough reasons. Compared to the milk and meat production market abnormality is a bit sever.

Despite the fact that, eating the fish has a tremendous benefit for human diet, yet for the majority of study area people and their around having fish product as food is something unpalatable to swallow except in rear case such as Wednesday and Friday. Focus group discussion informants believed that nevertheless they could get market opportunities during Orthodox religion followers fasting for two months, most of the time they do not have market linkage where to sell their product the product he/she collects after many difficulties.

The present finding indicated that access to veterinary institution was posi-

tively associated with the entrepreneurs of milk and animal fattening income status. Thus, participants who had this services were approximately 8 times more likely to earn better income than individuals who did not have veterinary services (AOR = 7.964, 95%CI = (0.1.324, 47.903)). The result shown that shortage of different extension services for milk and animal fattening producers was affecting their income. For example, for respondents who had no such services, the odds of succeeding was more than five time less likely than unlike the participants who had get extension services in the study setting (AOR = 0.170, 95% CI = (0.041, 0.708). For example, [16] clearly wrote that due to lack of attention given to livestock sector Ethiopia lost the huge income generated by its livestock.

From this research, it is identified that training was not provided to the owners of milk and animal fattening producers yet. Moreover, participants' who were received the training was more than 13 times more likely effective by their business than who did not received training on the area by experts (AOR = 0.076, 95% CI = (0.015, 0.396).

The current results show that concerned bodies did not give attention to animal fattening and milk production and in turn, it has a negative impact on the income of urban residents. For example, participants who trend to perceive as the concerned organizations don't pay attention to these sectors the odds of getting better income was 29 times less likely than their counter parts (AOR = 0.034, 95% CI = (0.006, 0.207) (*see* Table 6).

Though it is not too difficult for government and private sectors to provide veterinary services to the people, it was found there is no agricultural extension and veterinary services. More importantly, participants disclosed micro enterprises who are working on milk products are unable to obtain productive and diseases resistant species of animals. As one key informant spoke it looking for veterinary services are as difficult as looking for mercury. Focus group discussion participants assumed that since they cannot get modern and productive species of milk animals easily, they are using local product.

From their tangible experiences these key informants reported that the local milk animals are unproductive and highly victim of different diseases such as one or two of its teat may unable to give milk while milking, it may not have intended amount of milk and it may not get fat due to its health problems. Besides, key informants noted entrepreneurs of milk and animal fattening have been travelling for around 20 kilometers to Shashemane Town to get better cattle vaccinate. In spite of these drawbacks, some enterprises have graduated to a better enterprise and became a role model to many more people. Study conducted by [17] strongly confirm the current findings that the Ethiopian Ministry of Agriculture have never put in place extension and veterinary services to urban farmers even if there is such services in rural areas of the country.

4. Conclusions

The evidence from this study suggests that the total poverty line for the study

Table 6. Shows Determinants of animal Fattening and milk production and households' Poverty status June 2019.

Factors	Poverty status		OR (95% CI)		P-value
	Non-poor	Poor	COR	AOR	
Sex					
Male	21	15	0.694 (0.308, 1.565)	0.099 (0.020, 0.428)	0.004*
Female	34	35	1:00	1:00	
Educational Status					
illiterate	19	14	0.357 (0.596, 0.114)	12.130 (1.416, 103.93)	0.023*
Literate	36	36	1:00	1:00	
market fluctuation					
Yes	36	35	0.812 (0.357, 1.846)	0.266 (0.075, 0.941)	0.040*
No	19	15	1:00	1:00	
Veterinary institution					
Yes	34	24	1.754 (0.806, 3.815)	7.964 (1.324, 47.903)	0.023*
No	21	26	1:00	1:00	
Attention to sectors					
Yes	27	35	0.413 (0.185, 0.925)	0.034 (0.006, 0.207)	0.000*
No	28	15	1:00	1:00	
Extension Services					
Yes	25	32	0.469 (0.214, 1.027)	0.170 (0.041, 0.708)	0.015*
No	30	18	1:00	1:00	
Lack of Training					
Yes	27	16	0.349 (0.155, 0.786)	0.076 (0.015, 0.396)	0.002*
No	30	45	1:00	1:00	
Access to transportation					
Yes	26	36	0.783 (0.363, 1.685)	0.675 (0.088, 5.177)	0.610
No	29	14	1:00	1:00	

area was corresponding to (36.25Birr or 1.25USD) per day per adult equivalent. The poverty head count is 40% and the poverty gap in the study area is 26% of the poverty line which means the average total consumption needed to bring the entire poor households at least at this poverty line is 26% of poverty line. The estimate of the severity of poverty among the poor household was 13%. This implies there is 13% of relative material scarcity among poor households.

The results of one-way ANOVA analysis suggested that there are statistically significant differences among the three types of urban agricultures by the income earned from it, for example, 5620 birr, 6358.49 birr and 6636.54 birr, fishery, milk and animal fattening respectively.

Inexplicably, modern fishnet, access to different credit services, shortage of local boat, conflict of interest and access to saving and sex, education level, market fluctuation, lack of veterinary institution, lack of attention to the sectors, lack

of extension services, lack of training and shortage of access to transportation were found to be determinants of fishing. Importantly, the qualitative findings confirm the above results. On the other hand, extension service, access to market linkage, shortage of input and climate changes and lack of market linkage, improved livestock, shortage of land and access to transport were not found to be statistically significant association with the income of households who have been taking part on animal Fattening productions in the study area. Even though, these are not the cases in quantitative analysis remarkable result obtained from the key informants that indicated that the above factors decidedly influencing the growth and development of this sector.

5. Recommendations

Based on the results the following recommendations suggested to concerned bodies.

- Fishery activities need high special attention because Bishan Guracha town is found near to the great lake Hawssa. Therefore, it is strongly recommended if the federal and regional government gives attention to it because it could play a great role to reduce poverty on the one hands and source of export for the country on the other hands.
- The study suggested that poverty is related with literacy therefore it is highly recommendable if the town education office alongside Oromia Education Bureau teaches these groups via an integrated functional adult education program.
- This study shows that there is lack of extension and veterinary service and other services, which are a kin to boost urban agricultures so there is an urgency to avail these services and other inputs to increase the quality and quantity of their products in the near future.
- The finding would seem to suggest that there is a need to offer training on entrepreneurship development and market linkage for these entrepreneurs' together with colleges and Universities.
- It is a good idea if the concerned institutions revise its directives used for credit to benefit the poor.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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