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Constraints, Opportunities and Challenges of Cattle Fattening Practices in Urban and Peri-Urban Kebeles of Dessie Town, Ethiopia

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Abstract

The present study was conducted to investigate the constraints, opportunities, and challenges of cattle fattening in the urban and peri urban *kebeles* of Dessie town. Complete enumeration technique was used to select urban and peri urban *kebeles*. To select individual cattle fatteners, systematic random sampling and complete enumeration techniques were applied for peri urban and urban *kebeles*, respectively. A total of 190 cattle fatteners were included and interviewed using pre tested structured questionnaire. In addition to structured questionnaire, group discussions and key informant interviews were carried out to support the survey data. Recurrent drought and feed shortage (1st), feed price increment (2nd), unsuitability of the environment (3rd), Illegal brokers (4th), inaccessibility of cattle market (5th), credit based market (*'dube'*) (6th) were the major identified constraints in per urban cattle fattening practices in their order of importance, whereas, feed price increment (1st), recurrent drought and feed shortage (2nd), unsuitability of the environment (3rd), capital problem (4th), illegal brokers (5th), credit based market (6th) limited brewery grain access (7th), difficulty to compare with peri urban and rural cattle fatteners (7th), lack of cooperation with in the association member's (7th), limited access to credit (7th), lack of processed and mixed ration feed suppliers (11th) unpredictable cattle market (11th) were the major recognized constraints in urban cattle fattening practices in Dessie town. In consistence with different constraints the cattle fattening sector in Dessie town tightened with so many challenges which needs short and long term solution. Better housing system (clustering approach), absence of endemic health problem of fattening cattle, presence of five functional flour factories, increase demand for meat, presence of federal as well as regional government great emphasis, motives and interest of the educated society to be part of the sector, availability of infrastructure such as road and electric access were the identified opportunities related to cattle fattening practices in Dessie town.

Keywords: Cattle; Challenge; Constraint; Opportunities; Peri-urban; Urban

Introduction

Great population pressure in and around cities, coupled with the economic crises throughout North Ethiopian Highlands has led to a tremendous increase in the last decade of total city area under food production. This activity is known as urban and/or peri-urban agriculture. Urban and peri-urban agriculture is practiced for a variety of reasons, from commercial reasons to food self-sufficiency to food security [1]. Cattle fattening is one of the newly incipient activity. The sector is an emerging for employment and income generation for urban and peri urban dwellers. Particularly, for those vacant farmers due to urbanization and cattle fattening associations organized at small scale micro finance level. Cattle fattening is an effective tool for poverty alleviation and become an important business sector. Simultaneously, attention needs to be focused on smallholder cattle fatteners as well as private sector as engines of economic vitality. In Ethiopia, governmental and non-governmental organizations currently encourage the emerging small scale as well as commercial fattening farms and support establishments of the sector either in cooperative or private form. However, there is limited information about their constraints, opportunities, challenges, economic efficiencies, production potentials and performances of beef animals under this sector [2] and also particularly, the constraints, opportunities and challenges faced were not properly assessed. Moreover, the important aspects and limitations of the different farming systems in the urban and peri-urban areas of North western Ethiopia were not yet well studied and documented. Among them, the level of integration, the limitations and the advantages of farming systems seem to be most important [1]. Conversely, majority of previous research works focused on rural cattle fattening practices. As a result, information regarding urban and peri urban cattle fattening practices, is rather limited [3]. Therefore, more work and investigation are required in order to pinpoint the current overall activities and performance in the sector to design appropriate improvement technologies. Accordingly, all these conditions require generating information on constraints, opportunities, motives, challenges, appropriate feeding and management strategies for urban as well as peri urban cattle fattening practices. Cognizant of this, and recognizing the fact that, the Amhara Regional Government, in its recent comprehensive plan for agriculture [4], has given particular attention to the promotion of cattle fattening development.

Therefore, it is essential to generate information regarding constraints, opportunities, challenges and motives of the newly emerging urban and peri urban cattle fattening practices. Accordingly, based on the above background, this study was designed to identify the constraints, opportunities, challenges and to assess motives of cattle fattening in the urban and peri urban *kebeles* of Dessie town.

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Materials and Methods

Study area

The study was conducted in Dessie town. Dessie is located in northern part of Ethiopia in Amhara National Regional State, South Wollo zone at a distance of 400 km from Addis Ababa. Its astronomical location is at 11°8′N-110 46' North latitude and 39°38′E-410 13' East longitude. Relatively it is bounded by Kutaber Woreda in the north, Dessie Zuriya Woreda in the east, by Kombolcha town in the south. The topography of Dessie is a highland type surrounded by 'Tossa' mountain [5]. Its elevation ranges between 2,470 and 2,550 meters above sea level. Dessie is one of the reform towns in the region and has a city administration consisting of municipality, 10 urban and 6 peri urban *kebeles*.

Sampling procedure and sample size

Urban and peri urban *kebeles* was selected using complete enumeration technique (censes) whereas, individual and group cattle fatteners in per urban and urban *kebeles* nominated via systematic random sampling and complete enumeration procedures, respectively. Accordingly, all peri urban and urban *kebeles* who practices cattle fattening were totally considered. In the case of individual and group cattle fatteners' selection due to manageable number of cattle fatteners, the entire individual and group cattle fatteners with in each urban *kebeles* was totally nominated. However, because of large number and homogenous cattle fattening tactic systematic random sampling approach was applied in the selection of individual cattle fatteners' in each peri urban *kebeles*. Basically, the urban cattle fatteners organized in to three sub class of associations called '*mahiber*' depend on the number of members they bounded. '*Yegel*' is an association which has one member only. '*Shirikina mahiber*' is associations which comprise two to nine members. *'Mahiber'* is an association which comprises the largest number of participants which incorporate ten and more than that. Micro and Small Enterprise Office collaborate with the Agriculture Office organize and provide already prepared cattle fattening shade (cluster of fattening in one zone) with five years contract agreement. Generally, for this study urban and peri urban *kebeles* as well as individuals and groups who practices cattle fattening within each *kebeles* were completely considered.

Accordingly, Segno-Gebeya (01), Arada (03), and Bowanbo-wuha (010) were selected from urban *kebeles* which holds different structured cattle fatteners. Tita (011), Kurkur (012), Boru-Selase (013), Kelem-Dereba (014), Gerado-bilen (015) and Gerado Endodber (016) were selected from peri urban *kebeles* for the study. Thus, peri urban individual cattle fatteners were selected via systematic random sampling approach from the registered list of cattle fatteners from each selected peri urban *kebeles*. Accordingly, 22, 42, 7, 32, 31 and 15 registered peri urban cattle fatteners were selected systematically from Tita (011), Kurkur (012), Boru-Selase (013), Kelem-Dereba (014), Gerado-bilen (015) Gerado Endodber (016), respectively. As well, one *'yegel'* which has one member, one *'shirkina mahiber'* hold 9 participates and two *'mahiber'* embraces 31 cattle fatteners were completely considered from Segno-Gebeya (01), Arada (03), and Bowanbo-Wuha (010) urban *kebeles.* The sample size in each peri urban *kebeles* was determined based on the proportional to size sampling method where as in urban *kebeles* all cattle fattening participants under '*Yegel*', '*Shirkina Mahiber*' and '*Mahiber*' were considered. Therefore, totally, sample sizes of 190 (41 urban and 149 peri urban) cattle fatteners were considered for the survey. The sample size (n) was determined using the formula recommended by [6]. N=0.25/SE2 Where: N: number of sample, SE: standard error, with the assumption of 4% SE, 190 households were sampled.

Data collection and analysis

Information about households (cattle fatteners) characteristics, major constraints, opportunities, challenges and motives of urban and peri urban cattle fattening practices were collected using a structured questionnaires. Key informant interviews were carried out regarding major constraints, opportunities and challenges with Agricultural Office Experts and Developing Agents. Furthermore, formal and informal group as well as individual discussion carried out with urban and peri urban cattle fatteners. Researcher personal observations together with his practical experience in the study town related to cattle fattening were also incorporated. Consequently, all the collected data were coded and entered into a data base using statistical package for social sciences (SPSS). Descriptive statistics such as mean, percentiles, frequencies and GLM of the statistical software were used to analyze the data using the SPSS statistical software. Index was calculated to provide ranking of constraints of urban and peri urban cattle fattening practices according to the following formula.

Index of cattle fattening constraints was calculated. First a weighted value was given for each constraint based on their rank (3 for the 1st constraint, 2 for the 2nd constraint, and 1 for the 3rd constraint). The number of HHs response for a particular constraint was multiplied by a given weighted value. Then the rank was given by dividing the value of each constraint to the total sum of all constraints.

Results

Constraints of urban and peri-urban cattle fattening practices: The major identified constraints come across by urban cattle fatteners in the study town were feed price increment (1st), recurrent drought and feed shortage (2nd), unsuitability of the environment (3rd), capital problem (4th), illegal brokers (5th), credit based market (6th), limited brewery grain access (7th), difficulty to compare with peri urban and rural fatteners (7th), lack of cooperation with in the association member (7th), limited access to credit (7th), lack of processed and mixed feed suppliers (11th) and unpredictable cattle market (11th), in order of importance (Table 1). although, recurrent drought and feed shortage (1st), feed price increment (2nd), unsuitability of the environment (3rd), Illegal brokers (4th), inaccessibility of cattle market (5th), credit based market (6th) were the major constraints happen up on in peri urban cattle fattening practices in order of significance (Table 1).

Challenges on cattle fattening practices

On top of the constraints, urban and peri urban cattle fattening practices in Dessie town tightened with so many challenges which need short and long term solution. As per the group discussions and key informant interviews held with urban and peri urban cattle fatteners, Agricultural Experts and Development Agents (DAs), the identified cattle fattening challenges in urban and peri urban areas were summarized in Tables 2 and 3 with their degree of severity

Household characteristics of urban and peri urban cattle fatteners

Sex of household heads: The data revealed that almost all of the household heads, involved in cattle fattening practices in Dessie town were male headed (93.4%) when compare to female's (6.6%) (Table 4). This is may be due to the nature of the sector, it needs intensive energy for proper handling of the cattle and the management practices such as feed collection, feeding, cattle purchasing and selling process. On the other hand, urban female participants were slightly higher (8.5%) than the peri urban (4.7%). This is due to the influence of urban agriculture. Male participants were almost comparable in both areas (Table 4).

Constraints		Peri urban *kebeles* (n=149)						Urban *kebeles* (n = 41)					Rank
		Constraint priority			TW	Index	Rank	Constraint priority			TW	Index	
		1st	2nd	3rd				1st	2nd	3rd			
1	Recurrent drought & feed shortage	88	40	21	365	0.408	1	12	10	6	62	0.252	2
2	Feed price increment	33	37	42	215	0.24	2	22	20	15	121	0.492	1
3	Unsuitability of the environment	25	31	29	166	0.186	3	4	6	2	26	0.106	3
4	Illegal brokers	3	17	23	66	0.074	4	0	2	2	6	0.024	5
5	Inaccessibility of cattle market	0	13	20	46	0.051	5	0	0	0	0	0	0
6	Credit based market	0	11	14	36	0.04	6	0	0	3	3	0.012	6
7	Capital problem	0	0	0	0	0	0	3	3	3	18	0.073	4
8	Limited brewery grain access	0	0	0	0	0	0	0	0	2	2	0.008	7
9	Difficulty to compare with peri urban and rural cattle fatteners	0	0	0	0	0	0	0	0	2	2	0.008	7
10	Lack of cooperation with in the association members	0	0	0	0	0	0	0	0	2	2	0.008	7
11	Limited access to credit	0	0	0	0	0	0	0	0	2	2	0.008	7
12	Lack of processed & mixed ration feed suppliers	0	0	0	0	0	0	0	0	1	1	0.004	11
13	Unpredictable cattle market	0	0	0	0	0	0	0	0	1	1	0.004	11

Table 1: Constraints of cattle fattening practices in peri urban and urban kebeles of Dessie town.

Challenges	Urban	Peri urban
Challenges raised by urban and peri urban cattle fatteners		
Ø Lack of governmental feed processing factories	√√	√
Ø Limited practical experience of experts and development agents	√√	√√
Ø Negative impact of urbanization, farm lands allocation for investors, and urban expansion	√	√√
Ø Lack of manual and guide for cattle fatteners, and absence of quick reference	√√	√
Ø Kombolcha ELFORA, meat processing factory gather emaciated cattle processing, and absence of readiness to take fattened cattle	√√	
Ø Transport cost and challenge to get molasses from Afar region	√	
Ø Lack of simple cattle handling equipment, such as nose ring to protect human damage from aggressive cattle	√√	√√
Ø Absence of market information from governmental offices and different medias	√√	√√
Ø Completely lack of well-designed cattle transportation path and transportation system	√√	√
Challenges raised by Agricultural Experts and Development Agent's		
Ø Less consideration is given for animal science sector compare to other agriculture sector like crop and natural resource sector at office level. In addition, Animal's science expertise engaged and evaluated by other agriculture related activities, particularly, in peri urban *kebeles*. Similarly, in urban *kebeles* other than animal scientists other agriculture specialties assigned for guidance (Researcher observation also). Consistently, less activity performed to update the practical skill of office and *kebele* expertise and also Animal scientists by themselves are not practical model in the fattening sector. Drifting of animal science experts to other field of study. During reporting great emphasis was given for other agricultural science than animal science.	√√	√√
Ø Fattening activities considered as side line job. Farmers give great focus for crop than cattle fattening. It is considered as a byproduct of farming. Traditional cattle handling culture is more dominate.		√√
Ø Absence of live-weight based price marketing	√√	√√

Number of signs (√) increased designates the degree of severity of the challenge.

Table 2: Challenges of cattle fattening practices upstretched by cattle fatteners and Agricultural Experts and Development Agent's with degree of severity in urban and peri urban kebeles of Dessie town.

Generally, female participations as owner was less in the cattle fattening practices in Dessie town when compare to the male participants.

Age of the household heads: It is revealed that the overall cattle fatteners involved in the study were between in the age of 27.4 to 55.4 years. The average age was 37.2 years (Table 4) which indicated that the middle age category of the community involved in the cattle fattening sector in the current study town. In the urban and peri urban *kebeles*, the average age was 32.9 and 41.4 years, respectively which revealed that the urban cattle fattening accomplished by young generation and also the sector is premature compare to the peri urban *kebeles*.

Education status of household heads: Out of the household heads included in the current study, about 3.7% and 8.4% were taken religious and basic education ('*Meserete timihert*') whereas, the rest accounted for about 16.5%, 36.9%, 23% and 11.7% had formal education background of 1st cycle primary school (1-4), 2nd cycle primary school (5-8), secondary school (9-10), and preparatory school (11-12), respectively. When associate the education level of urban and peri urban cattle fatteners, all of urban cattle fatteners were achieved the 2nd cycle primary school (5-8),(42.9%) secondary school (9-10) (35.8%), and preparatory school (11-12) level) (21.3%) while with some exception (12%) majority of peri urban cattle fatteners (88%) was with in and below 2nd cycle primary school (5-8) (Table 4). The difference may be due to the way of living and degree of focus for education. Such educational achievement in the peri urban participants has negative impact for the introduction of modern cattle fattening technology as well as adoption of modern fattening approach.

Family size of the households/member's size of the associations: According to the result, at study town level, the average family size of the HH is 7.5 persons per family. The maximum and minimum HH sizes were 9.2 and 5.9 persons per family in Dessie town (Table 3). When relate the average family size of the urban and peri urban cattle fatteners, 9.6 and 5.3 people per family or member per association, respectively. The urban result was higher, due to the number of participants in each association considered as a family member in the current study.

Challenges raised by professionals (Agricultural Experts and Development Agent's) and urban and peri urban cattle fatteners in common	**urban**	**Peri urban**
Ø Lack of modern cattle fattening experience	√	√√
Ø Environmental challenge		
Ø Absence of market linkage	√√	√
Ø Poor cattle market infrastructure. In any of the cattle market no service other than fencing.	√√	√√
Challenges upstretched by Kombolcha ELFORA meat processing factory		
Ø The meat factory complains there is no urban and peri urban cattle fattening farm which has continuous capacity to supply up to the factory demand.	√√	√
Challenges observed by the researcher		
Ø Lack of organized and computerized recording system at town office and *kebele* level. In addition, partially less consistent recording at individual urban cattle fatteners level where as no at all in peri urban fattening.	√	√√
Ø Presence of old meat processing house with old infrastructure. Lack of veterinary equipment for pre and post mortem diagnosis in meat slaughtering house called '*kera*'. No recorded data to check and trace back the pervious health history of cattle specially, for proper controlling of drug withdrawal period. Generally, no equipment's and laboratory for meat inspection (it also manager suggestion)	√√	
Ø Individual or groups open cattle fattening farm without professional license	√	√√
Ø Cattles to be fattened trek long distance without feed, and rest. No reserved area for rest and service such as water and watering area with minimum cost	√√	√√

Number of signs (√) increased designates the degree of severity of the challenge.

Table 3: Challenges of cattle fattening practices raised by professionals, cattle fatteners, meat processors and researcher observation with its degree of severity in urban and peri urban kebeles of Dessie town.

Household characteristics	**Peri urban *kebeles***	**Urban *kebeles***				**Overall mean n=190**
	n= 149	**YM**	**SM**	**M**	**Mean**	
		n =1	**n = 9 (1)***	**n = 31(2)***	**n = 41**	
Sex of household head						
· Male	95.3 (142)	100 (1)	77.8 (7)	96.8(30)	91.5 (38)	93.4
· Female	4.7 (7)	0	22.2 (2)	3.2(1)	8.5 (3)	6.6
Age of the household head (years)						
· Min.	25	37	26	26	29.7	27.4
· Max.	73	37	38	38	37.7	55.4
· Mean	41.4	37	32.8	29	32.9	37.2
Education status of household head						
· Religious knowledge	7.4 (11)	0	0	0	0	3.7
· 'Meserete timihert'	16.8 (25)	0	0	0	0	8.4
· 1st cycle primary school (1-4)	32.9 (49)	0	0	0	0	16.5
· 2nd cycle primary school (5-8)	30.9 (46)	100 (1)	22.2 (2)	6.5(2)	42.9	36.9
· Secondary school (9-10)	10.1(15)	0	33.3 (3)	74.2 (23)	35.8	23
· Preparatory school (11-12)	2.0 (2)	0	44.4 (4)	19.4 (6)	21.3	11.7
Family size of the household/members size of the association (persons)						
· Min.	3	4	9	13	8.7	5.9
· Max.	8	4	9	18	10.3	9.2
· Mean	5.3	4	9	15.9	9.6	7.5
Income sources of household head/association members						
· Cattle fattening	0.7 (1)	0	88.9 (8)	100	63	31.9
· Farming	96 (143)	0	0	0	0	48
· Civil servant	0.7 (1)	100(1)	11.1 (1)	0	37	18.9
· Other trade other than cattle	2.0(3)	0	0	0	0	1
· Cattle trade	0.7 (1)	0	0	0	0	0.35
Livestock holding						
· Yes	91.9 (137)	0	0	0	0	45.97
· No	8.1 (12)	100 (1)	100 (9)	100 (31)	100	54.02
Cattle fattening experience (years)						
· Min.	1	3	2	2	2.33	1.7
· Max.	13	3	2	2	2.33	7.7
· Mean	7.4	3	2	2	2.33	4.9

Table 4: Sex, age, educational status, family size, income source, livestock holding and fattening experience of urban and peri urban cattle fatteners in Dessie town (%).

Income sources of household head: Farming (48.0%), cattle fattening (31.9%), civil servant (employment in different organization) (18.9%), other trade other than cattle (1%), and cattle trade (0.34%) were the identified income sources for those cattle fatteners participated in the study town. Farming different crops (96%) followed by other trade other than cattle (2%) were the income sources of peri urban cattle fatteners. The rest, secure their income via employment in government institutions and NGO as civil servant (0.7%), cattle trade (0.7%) and cattle fattening (0.7%) (Table 2). The data show that, in urban *kebeles*, cattle fattening (88.9%) and employment in government institutions and NGO as civil servant (11.1%) was the only source to secure their income. Particularly, cattle fattening take the major share,

this is may be due to the influence of urban agriculture and educated urban dwellers become part of the sector and/or due to urbanization the peri urban cattle fatteners forced to be part of a business in urban area which requisite small exercising land. But in the case of peri urban cattle fattening was take the least position. This is due to peri urban cattle fatteners consider the sector as aside line business.

Reason of livestock holding: The survey data indicated that except (8.1%) all most all of the cattle fatteners (91.9%) in peri urban *kebeles* have livestock. This is due to respondents were used livestock's as an input to secure their food security. On the other hand, none of cattle fatteners were in urban *kebeles* holds livestock. As indicated in Figure 1 more than half of the peri urban cattle fatteners (67%) hold livestock for income generation activities. This is may be due to cattle fatteners exposed to different expense for home consumption, children school management, expense of fertilizer; in addition, living near to town is a means for extra expense. The rest hold livestock for milk production for family consumption (25%), draft power purpose (4.4%), profit (1.5%) and as wealth (1.5%) (Figure 1). Based on the researcher observation and group discussions, culturally, in the previous year's peri urban cattle fatteners keep a pair of oxen for long years for farming purpose but currently, due to recurrent drought and feed shortage peri urban cattle fatteners in the current study area possess mostly the female animals than males. This is one of coping mechanism of the feed scarcity. Accordingly, when the farming season reached they purchase a pair of oxen for a specific farming season. Finally, after finish the farming activities put the cattle for fattening Purpose.

Reason of cattle fattening: At urban level all of the participants were fatten cattle's for two main reasons, income (39%) and profit (61%) while, even if the reason was diversified in peri urban areas the dominate reason is similar to that of urban. They were maintain for profit (48.3%), income source (43%), to diversify income (2.7%), for better farming power (2.7%), as bank (1.3%) and to change life (2%) (Figure 2).

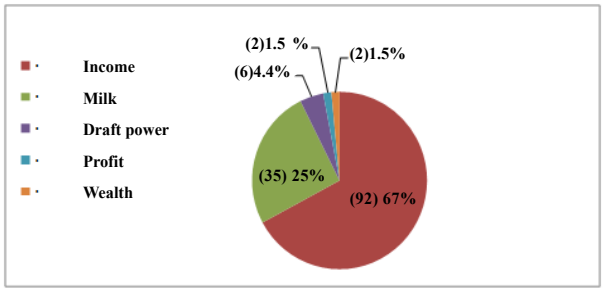

Figure 1: Reason of livestock holding by peri urban cattle fatteners in Dessie town.

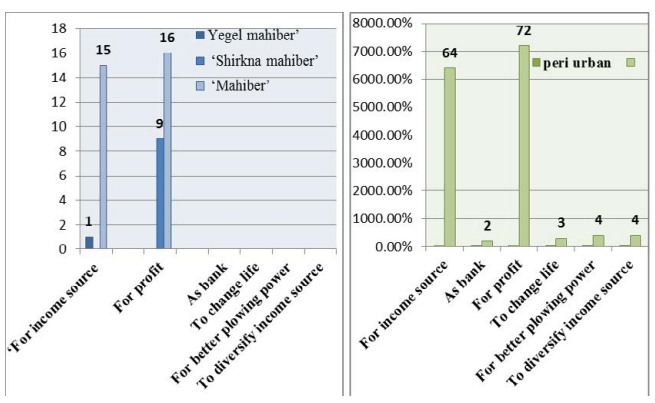

Figure 2: Reason of cattle fattening by urban and Peri urban cattle fatteners in Dessie town.

Cattle fattening experience: Based on the survey data, the overall average of cattle fattening experience in Dessie town was 4.9 years which indicates the sector is very young compare to other part of the country such as Hararage highlands. At urban and peri urban level the cattle fattening sector score 2.3 and 7.4 years, respectively.

Opportunities for cattle fattening practices: Identified opportunities related to housing, feed resources, cattle market, government considerations and supports, infrastructure and veterinary services were presented as follows

a) Opportunities interrelated to cattle housing: Presence of new cattle handling or housing approach called clustering system: The new approach is concerned with preparation of large cattle fattening shade (house) in a studied site based on the master plan of the town. The shade has a capacity to hold 10 to 12 different certified, licensed, trained and weekly monitored organized cattle or small ruminant fattening associations. The organized groups structured in to three sub class of associations such as: *'yigel mahiber', shirkina mahiber'* and *'mahiber'* based on their interest. Such activities guided and monitored by Micro and Small Enterprise Office of the town collaboration with the Agriculture Office. With five years contract agreement the shade was given for each structured cattle fattening association. After five year each association supposes to leave the shade or cluster for the new comers. Because the government expect, they upgrade and pass to the second level of production phase and economic level.

b) Opportunities associated to feed resources: Presence of five functional flour factories which have better efficiency and serviced as a byproduct sources. Presence and advancement of micro and small scale feed processers at individual and group wise level. The advancement of milling house served as a source for different processed and leftover feeds. Presence of one strong poultry farm (Dessie Gerado) and additional newly emerging small scale poultry farms in the town used as a source of poultry litter. Establishment of sugar factory around the boundary region (Afar region). The byproducts of the factory, such as molasses, sugarcane tops and leaf parts could be potential feed supplement for cattle fattening. Good hay preparation experience of the farmers in the peri urban *kebeles* and the vicinity *woredas*. The accessibility of the study town near the capital city of Addis Ababa, Mekele, Afar region which will be additional cattle market and feed sources. The centrally of the study town for different rural and urban *woredas* in the study region especially for Kutaber, Dessie Zuriya, Hayik, Woryilu, Borena, Tenta, and Ajibar *woredas* provide better advantage to get different feeds. Since there is a huge coverage of crop production (maize, teff, wheat) in and around the study town which is one possibility as a source of feed supplier. This finding agree with Gebreegzabeher and Gebrehiwot [6] report urban livestock keeping offers an opportunity to make use of household wastes, agro-industrial by products such as molasses and brewery residues, weed and grass from public lands and crop residues from market and urban farmers.

c) Opportunities linked to cattle market: The increase in demand for meat due to the increase in number of hotels, and restaurants in the town. Emerging middle-class urban dwellers with higher income and more buying power. The study town becomes more urbanized than before and urban dwellers increased the use of animal product, particularly, meat comes from fattened cattle aggressively. Being there of ten and more cattle market in different days in and around the study town. The central location of town with Afar and Tigray Region

has another advantage, which could be used as a potential source of fattening cattle. This opportunity enables the study area to use the unexploited cattle resources of Afar, Raya Azebo and Wollo high land zebu cattle comes from Kutaber, Dessie Zuriya, Hayik, Woryilu, Borena, Tenta, and Ajibar woredas. Presence of huge meat processing factory (Kombolcha ELFORA) with in 23 km distance. For the future served as a customer for marketable fatten animal in and around the study town. In addition, presence of large number of cattle population in and around the study town, the vicinity and within the region.

d) Opportunities related to government considerations: At federal as well as regional government level great emphasis was given for urban agriculture which includes cattle fattening as one of the development structure. The 2nd growth and transformation plan of the Amhara Region considered cattle fattening as primary and most focused important activity. Moreover, the inclusion of urban agriculture in the town master plan of the study towns in general and cattle fattening in particular helps in getting more attention for the future by the concerned higher officials of the town. At each structural level presence of assigned experts and DAs at *kebele* and woreda level for the technical support and extension services.

e) Opportunities associated to motives and supports: Motives and interest of the educated society to be part of the sector in the study town. Not only animal scientists but also graduates from other field of study. Different supports and motivations from government side for jobless urban and rural dwellers and investors. Indigenous cattle fattening knowledge and cultural medication of fattening cattle. Urban and peri urban cattle fatteners' idea sharing, copying and better adoption tradition from model cattle fatteners. The already prepared shade or fattening zone which makes the monitoring and guidance activities more easy and it creates better media for experience sharing.

f) Opportunities interrelated to infrastructure: Availability of infrastructure such as road, electric access and communication means (mobile) and availability of adequate quality and quantity water supply.

g) Opportunities related to veterinary services and animal health: Absence of endemic fattening cattle health problem. Availability of better veterinary services in and out of the office (satellite medication site) which organized by Agriculture Office with a minimum veterinary drug price.

Discussion

Reason of cattle fattening

Cattle fattening was holds the major share of income sources for household heads in urban areas of Dessie town. This is may be due to the influence of urban agriculture and educated urban dwellers become part of the sector and/or due to urbanization the peri urban fatteners forced to be part of a business in urban area. This finding agree with Ehui et al. [7] which indicates livestock are important source of cash income and play an important role in ensuring food security and alleviating poverty. As a whole, in Dessie town cattle fatteners mainly fatten cattle's for the purpose of generating income and profit. Particularly, the first and second purpose of cattle fattening in urban and peri urban areas is similar, this is due to the way they live near to urban town leads to different cash expense to run the day to day life. Generally, the current study indicate that cattle fattening become one means of job opportunity and income source for urban and peri urban cattle fatteners. The current finding agrees with [1] reported that urban and peri-urban agriculture is practiced for a variety of reasons, from commercial reasons to food self-sufficiency to food security. On the other hand, cattle fatteners experience clearly indicate that urban cattle fattening practices in the study area was relatively young and newly emerging sector compare to the peri urban. The cattle fatteners was no long year experience hence, they need strong technical support for the sustainable improvement.

On the other hand, in the study area, there were a lot of opportunities to boost up the sector. For example presence of huge meat processing factory within 23 km distance, hotels and restaurants, presence of large number of cattle population in and around the study town and the region and existence of different cattle markets were their own contributions for the improvement of fattened cattle marketing condition. Similarly Gebreegzabeher and Gebrehiwot [6] reported that the existence of different abattoirs and live animal exporters in and around peri-urban, urban towns and large cities such as Addis Ababa, Adama, Mojo, Dukam and Debre-Zeit/Bishoftu created a favorable environment for live animal market. In addition presence of different feed suppliers such as flour and brewery factories, small food processors and poultry farms, food traders with in a town used as a feed source for cattle fattening practices. Likewise, the same author reported that urban livestock keeping offers an opportunity to make use of household wastes, agro-industrial by products such as molasses and brewery residues, weeds and grass from public lands and crop residues from market and urban farmers.

Establishment of cattle fattening zone and presences of already prepared new cattle housing

Selected *kebeles* level was one of the major identified opportunities in Dessie town which makes the cattle fattening practices more easy for guidance and monitoring, manageable, and largely motivate cattle fatteners. Such housing system in the study area called clustering system. Clustering system was new approach which is concerned with preparation of large shade (house) for cattle fattening purpose in a premeditated site based on the master plan of the town. One shade was a capacity to hold 10 to 12 different certified, licensed, trained and weekly monitored organized cattle or small ruminant fattening associations. Therefore, cattle fatteners particularly the urban, organized in to three sub class of associations such as: *'yigel mahiber', shirkina mahiber'* and *'mahiber'* based on their interest. Generally, the overall activities guided and monitored by Micro and Small Enterprises Office collaboration with the Agriculture Office. With five years contract agreement the shade (house) was given for each organized cattle fattening association. After five year each association supposes to leave the shade for the new comers. Because the government expect, they upgrade to the second level of production phase and economic level. In addition, the study town becomes more urbanized than before and urban dwellers increased the use of animal product, particularly, meat comes from fattened cattle aggressively. Similarly, in Ethiopia, the demand for livestock products is increasing due to the growing urban population, while farm areas are shrinking much as a result of an increase in the rural population Siegmund-Schultze et al. [8]. In contrast, the urban and peri-urban cattle fattening practices in the current study town were caught up with so many constraints and challenges which necessitate short and long term solutions. Accordingly, the major constraints and challenges of urban and peri-urban cattle fattening practices were discussed and presented as follows:

Limited feed resources

Recurrent drought, feed shortage, price increment, lack governmental feed processing factories and suppliers, limited brewery grain access, poor distribution of the available feed resources, illegal cattle feed traders, difficulty to access molasses, transport cost to collect different feeds from different feed suppliers were constraints reported

by cattle fatteners in Dessie town. The current result is in line with [9] which reported that inadequate feed supply is one of the major constraints hampering market oriented livestock development in the Amhara National Regional State (ANRS) in particular and in Ethiopia in general. Particularly, clarify feed shortages are root causes for the poor performances of the livestock sector in general and fattening in particular. Similarly, Belete explain the fattening practice is constrained by high feed cost, poor quality and low availability of feed resources, inadequate veterinary services, and weak extension services as well as good management practices and proper policy support for livestock development. Therefore, producing a high quantity and quality of feed for animals is a key factor in raising healthy and productive livestock sector [2]. In Dessie town especially September to December relatively there is abundant feed resources. On the other hand, the feed shortage and price increased severely towards January to June. This finding support the idea which shows alternating periods of surplus and deficit result in a very low level of production for the entire year [10]. Similarly, agro industrial by products are available with relatively low cost during September up to December. This is because, the indicated months are the major period to harvest different crop in and around the study areas which will be inputs for factories. Consistently, in the peri urban *kebeles* farmers particularly, cattle fatteners use their own feed resource comes from the farm. According to Tessema, seasonal variations in feed quality and quantity are the main limitation to animal production and cause fluctuation in productivity throughout the year, particularly in the dry seasons during which feed is limited. Generally, the government intervention is recommendable to decreases feed transportation costs problem and difficulties, to solves poor distribution and limited access of the feed resource.

Unsuitability of the environment

All of cattle fatteners in Dessie town reported that the environment condition of Dessie was so challenging for cattle fattening practices. The survey data indicate that, both cattle fatteners were explained unsuitability of the environment, it is the most limiting factor next to feed. This is due to, Dessie is found between the elevation ranges of 2,470 and 2,550 meters above sea level [5]. The environment leads to higher feed cost expense and management difficulty. To alleviate the indicated problem, cattle fatteners must provide better consideration during house preparation and site selection. The housing system should be full shade and short length. The internal environment of the house had better to be modified to decrease the coldness of the housing environment. During site selection relatively deep areas should be considered. Totally, it is advisable to fatten cattle's with in the house especially when the environment is cool. Hence, it is advisable to focus on site selection and house preparation.

Illegal brokers and absence of live-weight based cattle marketing

In the current study town, cattle market was bursting of brokers. A cattle owner has no privacy to sell cattle without the influence of brokers. There is locally adopted Amharic word called *'masser'* which means, if one broker comes and see Mr X cattle, other brokers may not come since Mr X cattle already hold by the former broker, such process locally called in Amharic *'tassrewal or tayitewal'*. Occasionally, other broker came and purchases the cattle, the former broker report for the market society *'ene yaserkuten esu afarso gezabign'* which means 'after i negotiate the owner, the latter broker alter his idea' and fighting may happen. With this condition, brokers ask large many from the cattle fatteners and also from the purchaser. Sometimes brokers collect better benefits than the cattle fattener with an hour. If the brokers are not satisfied with the benefit they try to misguide the purchaser called *'mafares'*. Finally, the cattle fatteners forced to return back the proposed cattle to sell. Such precondition leads additional management cost and discouragement for cattle fatteners. Besides, in all marketing areas there was no other option to sell the already fattened cattle like live-weight based cattle marketing. The entire market participants were forced to exchange via agreement with the influence of brokers. Such limited options expose fatteners for the influence of brokers. This outcome similar to that of Bezahegn [2] explained that there are many brokers either organized or individually engaging groups of middlemen that are participating in negotiating the buyers and sellers. In addition, buying and selling are completed through bargaining practice. In the process of cattle marketing middlemen and butchers are involved [11].

Capital problem and limited credit access

The cattle fatteners in both study areas reported that lengthy process, diverse formalities', fear to take risk in collaboration with the association members were the hindering factor to get credit in order of importance. Majority of the association's members are dislike lengthy process, diverse formalities' and was not ready to take the risk in collaboration due to dissimilar performance and risk taking ability of the members with in association. On the other hand, few cattle fatteners due to religious aspect requisite credit without interest.

Credit based market '*dube*' and market problem

Peri urban and urban cattle fatteners were complain Kombolcha ELFORA currently gathers emaciated cattle for meat processing from cattle trader. Apart from this, even if, there were large number of hotels and restaurants in and around the towns have no potential to purchase in cash. They attempt to buy in credit approach which leads to fighting and discontinuation of relationship with in the cattle fattener and hotel owners. Generally, there was credit based market which is largely guided by brokers. In contrast to the cattle fatteners, the meat factory complains there was no urban and rural cattle fattening farm which has continuous capacity to supply up to the demand of the factory. Currently due to limited supply on average the factory processing 70 cattle/day but the factory has potential to purchase up to 200 cattle/day with different standards. Therefore, to alleviate the market problem and create market linkage the government body should consider the demand of the meat factory such as amount of cattle required pre day, body condition score (level of fattening), live weight standards and age groups. Based on the information collected from the factory, the government body particularly Agriculture Office should provide practical and intensive training for those already organized group with collaboration of meat factory and Agriculture Office expertise. The training should focus on the standards of the meat factory. Finally, the meat factory as well as the supplier association put in agreement for the sustainable market linkage.

Inaccessible cattle market and poor infrastructure

Inaccessible cattle market and poor infrastructure was one of constraint reported by the peri urban cattle fatteners. Some peri urban cattle fatteners found in Tita and Boru-selase raised the inaccessibility of the major cattle market so called 'Segno gebya'. Fatteners retreat to fatten as they wished due to difficult to trek fattened cattle long distance and fear of aggressive cattle impact on human. Market establishment should consider the centrally of the position for the vicinity user (cattle fatteners). Such solution became remedy for cattle fatteners who face distance market problem. On the other hand, poor cattle market infrastructure was another hindering factor reported. Cattle marketing area at least full of appropriate infrastructure and provide

different service for the cattle fatteners. In and around the study town there were more than ten cattle market other than fencing totally there was no market infrastructure. Simply provides the cattle marketing space with 5-7 birr per ox service charge. The current research finding agrees with Shitahun who described that marketing system was one of the least developments of the livestock sub-sector in the study area. It was characterized by a large number of highly dispersed markets, which generally lack basic infrastructural facilities like fencing, cattle pens, weighting scale, watering, feeding, resting, and quarantine place. Similarly, Teshager et al. [12] indicate no facilities for between different market places feeding, watering, housing and weighing.

Absence of cattle transportation path and service while trekking

In the study area all of the cattle fatteners were (100%) used trekking. The current result similar to Shitahun which indicate fattening cattle trekked on foot while purchasing and selling. In Dessie town, besides, cattle fatteners fear the damage of cattle during trucking, trekking is economical when compare to trucking. Because, in one marketing day a marketer has a capacity to buy averagely 3-4 cattle so it is not economical to assigned a truck and pay averagely 3000-4000 birr/car or 300 birr per ox. On the other hand, some of cattle fatteners were reported that trekking is desirable for feed lot cattle to avoid recall of the previous management system and to adopt the new one. They believe that, after long distance trekking and fasting cattle will not be selective. Due to this reason, instead of trucking urban fatteners (100%) follows trekking by paying 70-100 birr per cattle for laborers. During trekking, laborers in the current study area except watering without additional service trek cattle long distance. No rest and feeding unless otherwise cattle unable to move. Laborers think about their time and in addition no reserved area for feeding and watering. Watering service also depends on the availability of water sources across the path. Generally, such practices were the dominate activity in the study area. With some exception rural cattle fatteners give time for rest and grazing while trekking. This is due to, rural cattle owners trek by themselves. In addition, absence of well-structured cattle path was reported. Sometimes aggressive cattle disturb human being and cars with in the town. Largely, there was poor trekking system. Hence, to protect and avoid the impact of aggressive cattle to human and others cattle path should be considered during road construction.

Difficulty to compare with rural fatteners

Difficulty to compare with rural fatteners was the major problem reported by urban cattle fatteners in Dessie town. Mainly after long period of fattening duration peri urban cattle fatteners and farmers allow their animal to the market at different festivals. The current study, agreement with Takele and Shewangizaw *et al.,* which explained majority of farmers marketed their fattened cattle during the main holidays and the sector is a seasonal operation. Such practices cause over supply of cattle in the market and leads to low value earning for farmers, peri urban and urban cattle fatteners. The condition becomes worst for those urban cattle fatteners used different feed resources come from market such as agro-industrial by products. It leads to discouragement and termination of the fattening practices. Stagnate traditional cattle marketing strategy and timing must be modified with strong extension service and advices. Similar to the current finding, Alemayehu [13] explained due to these unfavorable marketing systems and discouraging price on the producers' side they are not encouraged to improve the quality. The off-take of their animals prices of beef cattle vary from places and depend on the availability and volume of supply [14].

Lack of cooperation with in the association member's

Lack of cooperation with in the association member's was other constraint reported by urban cattle fatteners who organized in to different associations. Within each association there were active participants and observers. Accordingly, there should be continuous performance monitoring of each members with in the association, provision of certified motivation for those strong members and strict exclusion of idle participants. Unless otherwise lack of cooperatively with in the association member's may be the basic reason for the collapse of urban agriculture specially, the fattening sector. Therefore, at association level there has to be motivation activities to initiation strong association and do accordingly for the non-active ones. Such action maintains the integrity of the members and the association's as a whole.

Lack of market information access

Lack of market information access was a constraint indicated by cattle fatteners in Dessie town. Totally cattle fatteners acquire information from marketer but all cattle fatteners reported that no information accesses neither governmental offices nor different medias about cattle fattening market. Unless otherwise the new emerging urban agriculture particularly cattle fattening practices guided by appropriate, accurate and quick information, such information gap may be one of the hindering factor of the growth of the sector. Consistently, it is difficult to predict and suggest about seasonal cattle price variation and cattle market. According to Adion et al. [14] explained that, livestock raisers can maximize benefits from cattle production provided they are equipped with scientific information and knowhow on the use of available resources to minimize production cost. According to Belay [15] 72.8% of cattle fatteners obtain market information before cattle sale through neighbors, relatives, own visits and extension agents. Similarly, Daniel [16] revealed that 92% of the producers in Borena zone, acquire market information before they sell their cattle.

Traditional cattle fattening practices and handling culture

As per the key informant interview, in the study town peri urban fatteners and farmers were considered cattle fattening activities as side line job and give great focus for crop than cattle fattening. Generally, it is considered as a byproduct of farming. This is due to primarily farmer's purchase cattle for farming objective. After they finish farming allocate cattle's for fattening. Generally, cattle fattening was not scientific and the traditional practices more dominate at peri urban and farmer's level. On the other hand, urban cattle fatteners allocate a bulk of feed for group of cattle or single cattle once per day. Such approach not economical and only aggressive cattle may be the user. In addition, such practices increase the amount of refusal feed. Thus, urban fatteners feeding practices should be guided to be live-weight based. Extension workers and experts with strong extension service should initiate the fattening sector to follow scientific cattle feeding approach [17-22].

Lack of cattle handling equipment and farming aids

Lack of cattle handling equipment was another stated constraint. In Dessie town due to non-existence of cattle handling equipment's particularly, nose ring one cattle fattener disabled. Therefore, to maintain the safety of the cattle fatteners at least cattle handling facilities like nose ring should be distributed at agriculture office level with minimum cost.

Poor record system at cattle fatteners' level

There was no any record concerning cattle handling and

management aspect (researcher observation) at cattle fatteners' level. Few of urban cattle fattening farm with the guidance of governmental office, try to record information like marketing price. But, in the cattle handling and management aspect no recording system totally. Such limitation severely affects the sector and makes it difficult to purse to the modern production approach.

Less focuses and professional considerations

As per the key informant interviews and group discussions with town and *kebele* Agricultural experts less consideration was given for animal science profession compare to other agriculture field such as crop science and natural resource sector. Majority of the works were undertaken in group wise and other agriculture related sector was taken the largest coverage. During reporting great emphasis was given for other agricultural related sector. Accordingly, animal science expertise engaged and evaluated by other agriculture activities. Generally, such practices have negative impact on study area specialization, and create difficulty to support cattle fatteners with equipped practical and modern skill, and drifting of animal science experts to other field of study.

Inadequate practical support and limited practical experience of experts

Inadequate practical support and limited practical experience of experts were the challenges which affect the cattle fattening sector in Dessie town. They explained that majority of trainings and technical supports are theory based. Even, the experts have no practical skill. Cattle fatteners build their capacity in so many try and error approach through sharing experience from model cattle fatteners.

Conclusion

To alleviate and minimize the indicated constraints as well as challenges, the effective approach is to focus on and due emphasis in the identified opportunities of cattle fattening practices in the study town. Specially to strengthen the newly emerging cattle fattening practices in the study area, the proper thought on identified opportunities should be the primary attention. Particularly, to minimize the major hindering factors in the current study town the following proposed solution were suggested as follows:

- With strong extension service it is valuable to advice cattle fatteners to collect feed resources and enriched their feed bunk before the feed scarcity and price increment observed. The agriculture offices should take action by doing feed demand and supply analysis and coordinate the feed suppliers with that of the demand and do accordingly. For proper distribution and usage of poultry litter, molasses and brewery grain, peri urban and urban cattle fatteners should be organized and scheduled based on their feed demand. In the long term, the government should initiate private micro and small enterprises to be part of the feed processing sector. In addition, governmental cattle feed processing plant could be established. Hay preparation practices as well as experience of poultry litter usage should be supported and strengthened via strong extension services.
- To alleviate cattle market problem, the government body may possibly identify the minimum and maximum continuous supply capacity of urban and peri urban cattle fatteners. Collaborate the association to Kombolcha ELFORA meat processing factory with agreement. The cattle marketing system should be facilitated by governmental bodies for sustainable market service, infrastructure fulfillment, to protect the negative influence and interference of the broker. Live-weight based cattle marketing systems should be considered as one option, secondly, at micro and small enterprise level the government should attempts to make those illegal brokers responsive via consolidating in to different association and training. To avoid market discouragement due to timing, strong information system supported with market analysis data should be arranged in the government side. Cattle market establishment should consider the centrally of the position for all users. The market area must be restructured with full of appropriate facilities and services such as loading and unloading chute, water and watering area, shade from sunlight, marketer protective mechanism from aggressive cattle, toilet, and ground scale service with minimum cost.
- To strengthen the financial capacity of the cattle fatteners and to solve capital shortage, credit could be arranged considering individual risk taking techniques for each association member with smooth and short process.
- To encourage newly emerging cattle fattening sector the movable veterinary centers should be strengthen via considering the death risk of cattle.
- The government body should arrange cattle resting area during transportation with water and feed service with reasonable price. In addition, to avoid impact of aggressive cattle on human during transportation well-designed cattle path must be arranged.
- Proper monitoring approach must be developed for the cooperatively and sustainability of each fattening association. Within each association equity distribution approach must be developed. Work division and benefit always must focus the work load and performance of each individual. Besides, in the course of structuring the associations it is better to show clearly the benefits, the destitution and commitment required from each participant.
- The government body must assign practically equipped and licensed professionals for the respected sector. Therefore, urban as well as rural fattening program must be guided by those specialized animal scientists. Expertise must be allocated for his own specialty only. Consistently, educated individuals especially animal scientists should take the first floor to be model in the sector of fattening. Training should be delivered by those practically equipped experts. In addition, training should be supported with manuals (quick reference).
- Modern cattle fattening practices, findings, research output must be gathered from different experienced areas and delivered to the cattle fatteners. Hence, periodically, feed and cattle market analysis should be carried out at Agriculture Office level. With this, current and updates information should be delivered at cattle market site in different marketing days using information display technique.
- For sustainable improvement, the newly emerging urban agriculture should be guided with well organized, computerized, consistent, and complete documentation scheme at all structure level.

Generally, there should be functional linkage b/n different governmental offices, cattle fatteners, feed suppliers, and purchases. Broadly, to boost up the newly emerging urban as well as peri urban

cattle fattening sector those intensive plans intended to do by regional as well as federal government must be implemented practically.

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