

2016

Assessing the Information Needs and Information Sources of Urban and Peri-urban Livestock Keepers in Kinondoni and Morogoro Urban Districts, Tanzania.

Consolata Angello 1

Sokoine University of Agriculture, ckangelo@yahoo.com

Jangawe Msuya 2

University of Dar es Salaam, jangawem@yahoo.co.uk

Doris Matovelo 3

Sokoine University of Agriculture, dmatovelo@yahoo.com

Follow this and additional works at: <http://digitalcommons.unl.edu/libphilprac>



Part of the [Library and Information Science Commons](#)

Angello, Consolata 1; Msuya, Jangawe 2; and Matovelo, Doris 3, "Assessing the Information Needs and Information Sources of Urban and Peri-urban Livestock Keepers in Kinondoni and Morogoro Urban Districts, Tanzania." (2016). *Library Philosophy and Practice (e-journal)*. 1363.

<http://digitalcommons.unl.edu/libphilprac/1363>

Assessing the information needs and information sources of urban and peri-urban livestock keepers in Kinondoni and Morogoro Urban Districts, Tanzania.

Consolata Angello¹, Jangawe Msuya² and Doris Matovelo³

¹Sokoine University of Agriculture, Department of Informatics, Morogoro, Tanzania.

²University of Dar es Salaam, Department of Information Studies, Dar es Salaam, Tanzania.

³Sokoine National Agricultural Library, Morogoro, Tanzania,

Corresponding author: Author 1, E-mail: ckangelo@yahoo.com

ABSTRACT

This paper discusses the information needs of urban and peri-urban livestock keepers and the various information sources used and their effectiveness in disseminating livestock information. Mixed method approach was the methodology used in the study whereby quantitative data was gathered using questionnaires while qualitative data was gathered using in-depth interviews and participant observations. Findings from this study revealed that livestock keepers had various information needs such as disease control (95.3%), nutrition and feeds (62.2%), markets (56.3%), housing techniques (29.1%) and loans (20.1%). Urban livestock keepers also used different sources of information to access information including veterinary shops (77.2%), extension services (63.8%), fellow livestock keepers (40.2%), print sources (39.8%) agricultural exhibitions (29.1%) and seminars (12.6%). It was concluded that most urban livestock keepers do benefit from various information sources (especially veterinary shops and extension officers) to access livestock information. The study recommended for improvement and regulation of policies concerning extension and veterinary services through relevant bodies for enhanced access to information on livestock husbandry, in order to improve the livestock husbandry practices and increase productivity for economic development.

Keywords: Information needs; Information sources; Urban livestock keepers; Developing countries; Tanzania

INTRODUCTION

An urban livestock system is characterized by a large variation of livestock systems that occur in and around densely populated areas and that strongly interact with the surrounding wealthy as well as poor human communities in different ways, at several levels of system-hierarchy and with nearby and distant rural areas (FAO, 2007). In nearly all developing countries, urban livestock keeping is becoming increasingly important, as urban demand for animal products rises. The demand for information on livestock production is also growing, both in the sense of demands expressed by the producers themselves, and in the more general sense of a growing potential for increasing production through the delivery of information (Morton and Matthewman, 1996). An effective and profitable livestock production cannot be achieved if information is neither available nor accessible to the livestock keepers. Information is very important because it will enable the livestock keepers to domesticate their animals in the most profitable way. This is emphasized by Brodnig and Mayer-Schönberger (2000) who reports that accurate and reliable information is a key element for sustainable development.

Livestock keepers need information on livestock diseases, nutrition, treatment and control of diseases, breeding techniques and markets for their products, among many other information needs. These information needs may be grouped into five headings: agricultural inputs; extension education; agricultural technology; agricultural credit; and marketing (Ozowa, 1995). A study by Kalusopa (2005) revealed that livestock keepers have several information needs. Information needs of livestock keepers can be grouped into dairy management, poultry management and technology depending on the type of livestock that they keep. Dairy farmers need information related to milk processing, housing and environment, building materials and equipment, feeds and feeding, food preservation, feed additives and dairy products. Most livestock keepers needed information on disease control. The survey also revealed that, poultry farmers needed information on poultry management, poultry equipment and accessories, hatching equipment, feed equipment, feed storage, feed manufacturing machinery, product handling/transport equipment, quality testing equipment and energy saving equipment. Livestock keepers in urban areas need information on how to prevent environmental pollution by their animals, in addition to

other information needs. All this information has to be made available, accessed and used by the livestock keepers in order to increase productivity and hence improve their livelihoods.

In most developing countries, farmers largely depend on agricultural extension services as their main sources of information. These services are usually offered freely by the government through extension officers. Kalusopa (2005) opines that, the government extension services provide relevant information for farming activities and most farmers still rely on indigenous farming methods due to lack of reliable information delivery systems. According to Matovelo (2008), the role of extension officers is to reach out to farmers through extension services such as; visits to individual farmers, demonstration/on-farm trials, agricultural exhibitions, radio and television programs and printed materials carrying agricultural messages. Sanusi et al (2010) also states that, the important task of extension is the exchange and sharing of information knowledge and skills.

Over the years agricultural extension services in Africa have either collapsed or failed to operate altogether. Where they operate, they have not effectively and efficiently addressed the problems of small-scale farmers (Munyua, 2008). According to Matovelo (2008) extension services have their own shortcomings in that they tend to be package oriented in solving farmers' problems. These approaches tend to assume that farmers are homogeneous in terms of their needs, priorities, abilities and attitudes towards farming activities. Relying on extension agents as main sources of information has also contributed to a delay in innovation diffusion since most farmers do not meet the extension agents for long periods of time. This is because of the shortage of extension agents who cannot visit all the farmers on time. Mathewman and Morton (1995) emphasizes that, extension services are expensive in that it costs a lot of money to produce and print extension materials and to train a whole chain of extension personnel to understand the new technology and to answer the possible queries from the farmers. Extension services are also time consuming because, for a message to pass from a source (research station or university) to the farmers, it involves many actors to understand and deliver the message to next layer; the process takes lots of time and efforts.

Research has shown that urban livestock keepers still lack adequate information on livestock keeping practices. This is because they mostly rely on advice services as sources of information which are usually insufficient (Gakuru et al, 2009). This research therefore aims at assessing the information needs of urban and peri-urban livestock keepers and the sources they use to access information in order to meet their information needs and solve their livestock keeping problems.

Statement of the problem

Research has shown that lack of access to information is one of the serious obstacles to development, including agricultural development. Livestock husbandry faces lack of research and services provision: information access and adoption of improved technologies is limited for small scale urban livestock keepers. This is made worse by the fact that existing services are not tailored towards their needs and circumstances (CIRAD, 2009). Lack of timely information is well known to be the largest constraint on small-scale agricultural production, a sector that provides livelihood for 70-80% of Africa's population. The lack of information leads to poor husbandry practices, which in turn leads to poor production. Other information-related problems that face the livestock sector in Tanzania include; poor husbandry practices (e.g. poor nutrition of the animals, poor housing and unhygienic conditions), poor disease control measures and lack of markets for the livestock products. Most Tanzanian livestock keepers depend mostly on the extension workers for information relating to livestock production. Various studies have shown that farmers view extension officers as important sources of information (Mgeni, 1978; Isinika and Mdoe, 2001). Nevertheless, Kalusopa (2005) opines that, the farmers only rely on local groups, relatives and personal experiences in their farming activities. This research therefore investigates the information needs of urban livestock keepers and the information sources used by urban livestock keepers to meet their information needs. The findings of this research will contribute to knowledge on the information needs and the sources used to access information. It will also recommend on better ways to access livestock information, thereby improving the livestock keeping practices in urban and peri-urban areas of Tanzania.

Objectives

The main objective of this study was to assess the information needs and information sources used by urban and peri-urban livestock keepers in Kinondoni and Morogoro urban Districts. This was achieved through the following specific objectives

- i) To find out the information needs of urban and peri-urban livestock keepers
- ii) To determine the information sources used by urban and peri-urban livestock keepers
- iii) To assess the effectiveness of the information sources used by urban and peri-urban livestock keepers
- iv) To recommend on ways to improve access and use of livestock information.

RESEARCH METHODOLOGY

Description of the Study area

The study was confined to the urban areas of Morogoro and Dar es Salaam regions. Morogoro Region is located on the eastern side of Tanzania Mainland. The Region lies between latitudes 5°58' and 10°00' South of the Equator and between longitudes 35°25' and 38°30' East of Greenwich. It is divided into six (6) districts, namely Kilosa, Kilombero, Ulanga, Mvomero, Morogoro Urban and Morogoro Rural Districts, (URT, 2008). Dar es Salaam is the commercial city of Tanzania. The City is located between latitudes 6°36' and 7°0' to the South of Equator and longitudes 39°0' and 33°33' to the East of Greenwich. It is bounded by the Indian Ocean on the east and by the Coast Region on the other sides. Administratively, Dar es Salaam is broken into 3 districts: Ilala, Kinondoni, and Temeke, (URT, 2004). The study was conducted in urban and peri-urban areas of Morogoro urban and Kinondoni districts. These two districts were selected purposively. Kinondoni was selected because of the relatively well developed ICT infrastructure and the many livestock keepers (3,513) compared to Ilala (2,156) and Temeke (2,587), (URT, 2003a; URT, 2003b; URT, 2003c). Morogoro urban was selected because it is more urbanized, hence more developed in terms of ICT infrastructure compared to other districts in Morogoro region.

Research design, sampling techniques and sample size

To meet the main aim and objectives of the study, a mixed method research design was adopted whereby a combination of quantitative and qualitative research methods was used. In this study, quantitative data was gathered using questionnaires in order to quantify the findings in terms of frequencies and percentages. Qualitative data on the other hand, was gathered using interviews and observations in order to confirm the findings obtained from quantitative data. The rationale for using a mixed method approach, (also referred to as multi-method, convergence or integrated method) is based on its major advantage of neutralizing or cancelling the biases of a single method (Creswell, 2003; Glazier and Powel, 1992). A combination of two non-probability sampling techniques was used in selecting the sample; purposive and snowball sampling techniques. The purposive (judgmental) method of non-probability sampling was used because it enabled the researcher to select cases that best answered the research questions in order to meet the objectives of the research. The extension officers helped the researcher to identify the respondents who were more informative. Purposive sampling was also used to select the wards that were included in this study. The researcher considered selecting wards with many livestock keepers. This was done to increase the response rate since some wards had very few livestock keepers because of limited space to keep livestock and the strict laws and regulations of keeping livestock in urban areas. Apart from purposive sampling technique, snowball sampling technique was also used to select the respondents that were used in the study. According to Saunders *et al*, (2007), this is a method of non-probability sampling design commonly used when it is difficult to identify members of the desired population. Snowball sampling requires one to make contact with one or two cases to identify further cases. The new cases are asked to identify further new cases (and so on) until the required sample size is obtained. In this case, one extension officer was selected from each of the selected wards. The extension officers then directed the researcher to the first few livestock keepers who in turn led the researcher to identify the rest of the livestock keepers. The researcher was forced to use this method due to the unavailability of the list of all the livestock keepers in the study areas.

In this study a sample size of 272 respondents was engaged out of 300 respondents who had been selected. This was because some of the respondents were not present in the field at the time of data

collection. Tabachnick and Fidell (2007) suggest a sample size of $N > 50 + 8 m$ for multivariate data analysis (where N is the sample size and m is the number of independent variables) and $N > 104 + m$ for testing individual predictors. This study had a total of 10 independent variables including; age, sex, education, occupation, experience, information needs, effectiveness of information sources, perceptions of ICT use, gaps in ICT use and strategies for improvement (i.e., each specific objective stands for one independent variable in addition to the respondents' characteristics). Therefore, the minimal sample size would be 114 (obtained from the formula; $N > 104 + m$, where $N = 300$ and $m = 10$). Thus a sample size of 300 respondents was deemed sufficient for this study.

Data Collection methods, instruments and analysis

Survey is the method that was used for data collection in this study. Both primary and secondary data was collected using various methods of data collection. Primary data was collected using questionnaires, observations and in-depth interviews, while secondary data was gathered from various sources including; government websites, government surveys (e.g. population censuses), media (e.g. television and radio), various publications (e.g. books, journals and CD-ROMS) and the Internet. The participation of both genders during primary data collection was put into consideration by the researcher to avoid gender biasness. A combination of various data collection instruments was used in order to increase the reliability of the data including questionnaire schedules, interviews guide and observations check list. The collected data was systematically organized, coded, recorded and analyzed. Statistical Package for Social Sciences (SPSS) was used to analyze quantitative data while content analysis was used to analyze qualitative data. In analyzing the quantitative data, both univariate and bivariate analyses were done.

RESULTS AND DISCUSSION

4.1 Information needs of urban livestock keepers

The first specific objective of this study was to identify different information needs of urban livestock keepers. The respondents were first asked to mention different information that they needed in their livestock keeping practice. The findings of the study reveals that, urban livestock keepers have a variety of information needs, most of which are similar in the two districts (i.e. Kinondoni and Morogoro urban),

except for a few information needs which are more in one and not in the other district. Some of the broad categories of information needs that were mentioned by the livestock keepers include; diseases, nutrition and feeds, housing, markets, chicks availability, by-laws and biogas information. Another study by (Ossiya *et al*, 2002) stated similar information needs of urban livestock keepers as modern methods, treatment, feeding, disease diagnosis, and poultry management. It should be noted that the agricultural information users are different from one to another based on their needs and requirements (Sanusi et al, 2010). This is supported by Aina (1991) who states that, every agricultural information users usually have specific information needs based on their peculiarity. Some farmers' information needs such as source of credit facilities, issues on land ownership and marketing of agricultural produce are quite different from those of major pests and diseases, proper handling of insecticides and best cropping methods. The information needs with their frequencies in each of the two districts under study are summarized in Table 1.

Table 1: Information needs of urban livestock keepers

N=152 (Kinondoni), N=102 (Morogoro urban), N=254 (Overall)

Information need	Kinondoni		Morogoro urban		Overall	
	Freq.	%	Freq.	%	Freq.	%
Disease control and treatment	145	95.4	97	95.1	242	95.3
Nutrition procedures and feeds	99	59.2	68	66.7	158	62.2
Markets and prices	68	44.7	75	73.5	143	56.3
Housing techniques	29	19.1	45	44.1	74	29.1
Availability of loans	29	19.1	22	21.6	51	20.1
By-laws	-	-	11	10.8	11	4.3
Availability of good breeds	8	3.1	-	-	8	3.1
Chicks availability	3	1.2	-	-	3	1.2
Biogas information	-	-	1	1.0	1	0.4

Source: Field survey, 2011

i) Diseases control and treatment

The findings from this study reveals that almost all of the respondents, that is, a total of 242 out of 254 (95.3%) need information on various types of animal diseases and how these can be treated or controlled to avoid deaths of animals and increase production. This type of information need is very important to both the livestock keepers in Kinondoni district (95.4%) and those in Morogoro Urban district (95.1%). The respondents complain that their animals are affected very much by diseases and this result to deaths of their animals which consequently results into major losses and economic instability. Regarding this information need, the livestock keepers also need information on availability of quality animal drugs because there are a lot of fake drugs in the market. This is a serious problem because the animals exposed to fake drugs build up drug resistance and consequently die from diseases.

In the discussions with the researcher, the respondents also complained of very expensive drugs and veterinary services. This is a problem because most of the livestock keepers fail to treat or control animal diseases because they cannot afford the services hence leaving their animals to suffer or die from diseases. The livestock keepers hence needed information on where they could buy affordable drugs and get affordable veterinary services. There is therefore a policy implication to impose strict regulations on the drug and vaccine subsidies provided by the government so that the intended livestock keepers can benefit from the subsidies. This is because of the complaint from some of the livestock keepers that they do not benefit from the subsidies provided by the government. Some of the livestock keepers complained of lack of veterinary services because the services are far from them. This also poses a threat to their animals because the animals cannot be attended appropriately. These livestock keepers need information on where they can easily get veterinary services to avoid losses of their animals.

ii) Availability of markets

Availability of markets for livestock products is a big problem for urban livestock keepers. This is another type of information need that was mentioned by many respondents (56.3%). This information was needed more by the respondents in Morogoro urban district (73.5%) compared to the respondents in Kinondoni

district (44.7%). This implies that the livestock in Morogoro urban district have a problem of readily available markets more than the respondents in Kinondoni district. In the discussions with the respondents, one respondent from Morogoro urban district claimed that she produced much milk than she could sell, such that the milk sometimes went bad and she was forced to pour the milk. This was because of lack of a readily available market. The respondents claimed that they had no common markets where they could sell their animal products. They also complained of lack of common prices for their products, some of them sold their products at high prices while others were forced to sell their products at very low prizes. Many urban livestock keepers have no markets to sell their products and even those with markets are forced to sell their products at low prices that are sometimes dictated by their customers.

Urban livestock keepers need information on markets which are readily available and reliable where they can be sure of selling their products without hesitation. Urban livestock keepers also need a regulatory body that can take care of their animal products in the market. This research calls for the government to avail common markets for animal products; this can be done by restricting importation of animal products from outside and instead promote local products from our livestock keepers. The government can also help avail markets for the livestock keepers by investing more on local industries that can buy and process local livestock products, which can in turn be exported outside the country to increase the foreign currency and raise the economy of the country. The government also needs to impose strict policy measures that will control the market prices of animal products through its regulatory bodies. This will help the livestock keepers sell their products at profitable prices which will lead to the development of the livestock keeping industry, increase of the livestock keepers' economic stability and poverty reduction.

iii) Nutrition procedures and feeds availability

Another information need of urban livestock keepers is information on nutrition procedures and feeds availability. This was mentioned by a total of 158 livestock keepers (62.2%). Many (66.7%) livestock keepers from Morogoro urban district mentioned nutrition procedures as one of their information needs compared to 59.2% of the respondents from Kinondoni district. This information need include procedures

of feeding animals, preparation of animal feeds, availability of quality feeds and availability of grazing areas.

Livestock keepers in urban areas are faced with a big problem of animal feeds. This is because of limited grazing areas in urban areas and the strict laws and regulations of keeping livestock in urban areas whereby the livestock are confined in-doors and are not allowed to graze around in order to protect the environment. Foeken (2004) points out that the Urban Farming Regulations of 1992 give guidelines, amongst others on the maximum plot size, the number of cattle, the rearing system for livestock, and a prohibition of any farming activity whenever it causes a nuisance. According to Kitilla (2001) and Mlozi (2001a), the regulation of urban agriculture lies with the urban authorities. By-laws regulating both crop cultivation and livestock keeping exist in all Tanzanian towns and municipalities, and specific by-laws concerning the keeping of livestock include the required purchase of a special permit from the Town or City Director; a maximum of four head of cattle, only to be kept in zero-grazing and in specific structures; and the compulsory removal of manure, liquid waste material and other animal waste. This poses a great threat to livestock in urban areas because the livestock keepers have to buy animal feeds or employ people who go far in search of grass, which is the reason why the livestock keepers need information on where they can graze their animals or where they can get quality and affordable feeds for their animals. Livestock keepers who keep chicken also need information on how to prepare animal feeds and where they can get quality feeds. This information need is directly related to keeping livestock in urban areas because the livestock keeper has to abide by the rules and regulations of keeping livestock in urban areas; this is by keeping a few animals in-doors which results to a problem in feeding the animals because of the expenses incurred.

iv) Housing techniques

Housing techniques was also mentioned as an information need by a total of 74 (29.1%) respondents most of whom were in Morogoro urban district (44.1%) compared to 19.1% respondents in Kinondoni district. Despite the fact that many urban and peri-urban livestock keepers are educated, experienced and employed, they still lack the knowledge on good husbandry practices. A similar study in Kisumu also

revealed livestock housing as a major constraint on livestock keeping in the city (Onim, 2002). These findings mean that, urban livestock keepers lack the necessary knowledge that can help them build good livestock houses for their animals hence the necessity of this information need. The difference between the two districts can probably be due to the fact that most livestock keepers in Kinondoni district keep animals in large numbers compared to the livestock keepers in Morogoro urban, hence they are more knowledgeable and can afford good housing structures than the livestock keepers in Morogoro urban district. Another reason for the difference between the two districts can be because of the strict rules imposed to the livestock keepers in Kinondoni district to restrict the animals from roaming around as opposed to those in Morogoro urban district, whereby the by-laws of urban livestock keeping seem to be taken less seriously as stated by Mvena *et al*, (1991) that virtually all the by-laws are ignored by most urban farmers.

Observations from this study revealed that in Morogoro urban district, many animals were seen roaming around outside their sheds as opposed to Kinondoni district. The observations also revealed that some of the livestock keepers in Kinondoni district were not knowledgeable on how to construct good houses for their animals as it is shown in Figure 1, where a poor structure was constructed for a calf with no shade to protect the calf from adverse weather conditions.

Figure 1: A house structure for a calf in Kinondoni - Mbweni ward



Source: Photograph taken by researcher, 2011

This information need is also related to urban livestock keeping because of the limited space of most urban livestock keepers which forces them to require smaller structures with good waste disposal facilities to avoid environmental pollution and safe guide the health of the livestock keepers and their neighbors. Poor housing and lack of proper disposal of animal waste has resulted to animals roaming around the streets and causing bad smell, thus leading to conflicts between urban livestock keepers and other urban residents.

Urban livestock keepers therefore need to be informed on proper housing techniques in order to confine their animals and avoid conflicts. The urban livestock keepers also complained of lack of areas set aside for keeping their animals and grazing. The livestock keepers need the government to set aside separate areas (outside their homes) with enough space so that they can keep their animals freely to avoid contaminating the environment and conflicts with their neighbors. This could help the livestock keepers solve their problem of housing and lack of grazing areas because the livestock keepers could build good, permanent structures for their animals and the animals could have ample space for grazing.

v) Availability of loans

Some of the respondents (20.1%) mentioned the availability of loans as another information need. This information need was mentioned more (21.6%) by the respondents in Morogoro urban district compared to 19.1% of the respondents in Kinondoni district. This implies that the livestock keepers in Morogoro urban district need loans more than those in Kinondoni district. This difference between the two districts could be because most of the livestock keepers in Morogoro urban keep small numbers of animals hence they need more capital in order to increase the numbers of animals and thereby increase their profit margins. These respondents also need loans to improve the management practices through improved animal houses, improved feeds, improved nutrition, improved waste management, improved breeds and improved control of diseases. The availability of loans could enable the livestock keepers to move a step forward in expanding their activity and increasing their income.

vi) By-laws of urban livestock keeping

Findings from this study revealed information on by-laws as another information need of urban livestock keepers. This information need was mentioned by a few (4.3%) respondents. This may have been probably because most of the urban livestock keepers are well informed of the by-laws which they are supposed to abide by, or maybe the respondents are ignorant of the existence of the by-laws, that is why it was mentioned by a few respondents. Though it was mentioned by a few respondents, information on by-laws is very important to urban livestock keepers. This is because it gives guidelines to the livestock keepers on the do's and don'ts of livestock keeping in urban areas.

One of the by-laws that the livestock keepers are supposed to obey is the limitation of the number of livestock that they are supposed to keep. Urban livestock keepers are permitted to keep livestock at a maximum of four animals, especially for large animals like cattle as opposed to small animals like sheep, goats and chicken. Another rule is that keeping livestock in urban areas entails confining them in order to avoid environmental pollution and conflicts between neighbors. Despite this rule, observations revealed that many animals were roaming around in search for food. This could be because the livestock keepers are ignorant of the by-laws. Jacobi *et al*, (2005) quotes the Agricultural and Livestock Policy by the Ministry of Agriculture and Cooperatives (MoAC 1997) which states that; “only zero-grazing is allowed and the number of cattle is restricted to four cattle per person” and “any farming activity which is deemed to constitute a nuisance in the form of noise or smell or pose a physical danger to the safety of the public shall not be permitted in areas other than those zoned for urban agriculture”.

vii) Biogas information

This was another information need of urban livestock keepers that was mentioned by only 1 (0.4%) respondent. This information is also very important to urban livestock keepers despite being mentioned by only one respondent. One of the reasons why this information need was mentioned by a few livestock keepers could be because the livestock keepers were not aware of its existence. As reported by Matovelo (2008), lack of knowledge and existence of particular information leads to lack of demand for the information. Livestock keepers can benefit a lot if they have knowledge on making biogas because they

will have disposed their animal wastes effectively and they will use biogas as another source of energy. Biogas information can help prevent environmental pollution and contamination by livestock in urban areas if only the information is disseminated to the livestock keepers and this can be possible through use of ICTs such as radio, television and the Internet.

4.1.1 Extent of need of information

In relation to their information needs, the respondents were also asked to explain the extent to which they needed each of the information. In response to the question, the respondents said that some of the information were needed most, while others were needed less and others were needed the least. Some of the information needs were not mentioned at all by some of the respondents hence labeled in the table as 'not applicable'. The level of need of each of the information is summarized in Table 2.

Table 2: Extent of need of various types of information

N=254

Type of information need	Extent of need of information							
	Most needed		Less needed		Least needed		Not applicable	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Diseases	183	72	32	12.6	27	10.6	12	4.7
Feeds	102	40.2	39	15.4	18	7.1	95	37.4
Markets	95	37.4	24	9.4	24	9.4	111	43.7
Housing	46	18.1	19	7.5	13	5.1	176	69.3
Loans	46	18.1	7	2.8	4	1.6	197	77.6
Breeds	9	3.5	-	-	-	-	245	96.5
Chicks	3	1.2	-	-	-	-	251	98.8
By-laws	2	0.8	5	2.0	5	2.0	242	95.3
Biogas	1	0.4	-	-	-	-	253	99.6

Source: Field survey, 2011

As indicated in Table 2, the findings from the study revealed that the most needed information by respondents was the information on diseases. This was mentioned as the most needed information by 183 (72%) respondents. Another information need that was most needed by many respondents 102 (40.2%) was the information on nutrition and feeds availability, followed by the information on markets availability which was mentioned by 95 (37.4%) respondents. Other types of information needs that were mentioned by relatively a few respondents as the most needed information were information on housing 46 (18.1%) and loans 46 (18.1%) respectively. Information on biogas, chicks and breeds were mentioned by very few respondents as most needed information while other respondents did not mention them at all as information needs, probably due to lack of knowledge on their existence.

In conducting the interviews, the extension officers were first asked on the kind of information that they disseminated to the livestock keepers according to their needs and the extent of need of each of the information they disseminated. The information needs that were mentioned are listed below in order of their importance, starting from the most needed information.

- a) Livestock diseases; treatment and control measures
- b) Livestock feeds and nutrition procedures
- c) Livestock housing techniques
- d) Good livestock husbandry/management practices
- e) Good livestock breeds/species
- f) Urban livestock keeping and environmental hygiene
- g) Markets and prices for livestock and livestock products
- h) Urban livestock keeping laws and regulations

The information needs mentioned by the extension officers in interviews are more or less similar to those that were mentioned by the livestock keepers in the questionnaires. Results from interviews reveal that the extension officers disseminate the same information needs that were mentioned by the livestock keepers.

Information sources used by urban livestock keepers

Findings from this study revealed that livestock keepers use different information sources. The information sources that were mentioned include; extension and/or veterinary services, veterinary shops, agricultural exhibitions, fellow livestock keepers, meetings/seminars and print sources. Table 3 shows each of the information sources that were mentioned by respondents in Kinondoni and Morogoro urban districts comparatively.

Table 3: Information sources used by urban livestock keepers

N=152 (Kinondoni), N=102 (Morogoro urban), N=254 (Overall)

Information source	Kinondoni		Morogoro urban		Overall	
	Freq.	%	Freq.	%	Freq.	%
Veterinary shops	142	93.4	54	52.9	196	77.2
Extension officers	72	47.4	90	88.2	162	63.8
Fellow livestock keepers	70	46.1	32	31.4	102	40.2
Print sources	51	33.6	50	49.0	101	39.8
Agricultural exhibitions	14	9.2	60	58.8	74	29.1
Meetings/seminars	30	19.7	2	2.0	32	12.6

Source: Field survey, 2011

i) Veterinary shops

Results from this study show that veterinary shops are one of the information sources mostly used by urban livestock keepers (77.2%). Unlike respondents in Morogoro urban who use extension officers more than other sources, most respondents (93.4%) in Kinondoni use veterinary shops more than other sources of information. The reasons given by these respondents is that they are not being visited by extension officers hence their reason for using veterinary shops. Lack of, or limited extension services in Kinondoni district force most of the respondents in Kinondoni to go for veterinary shops where they can

get veterinary services and information on livestock keeping. Use of veterinary shops as a source of information in both districts is hampered by lack of professional expertise in the veterinary shops and in some areas the veterinary shops are located very far hence the livestock keepers have to travel for long distances in search of the services. Veterinary shops are also said to be expensive in terms of drugs and vaccines. A study by Ossiya *et al*, (2002) reported similar constraints of veterinary services as; expensive drugs, expensive services, adulteration of drugs, few qualified veterinarians, high transport costs, expired drugs, slow response to service request and unethical service providers. A policy concern to the government is to impose strict rules through relevant authorities that will ensure that the veterinary services offered in veterinary shops are of quality and that the drugs sold are authentic and affordable to the livestock keepers, to avoid drug resistance and deaths of animals.

ii) Extension/veterinary officers

Results from this study reveal extension and/or veterinary officers as another type of information sources that is used by many respondents 162 (63.8%). Results show that most of the respondents in Morogoro urban (88.2%) use extension/veterinary officers in accessing livestock information as opposed to the respondents in Kinondoni district (47.4%). This result may have been due to the fact that, there are many extension/veterinary officers in Morogoro than in Kinondoni where most of the wards have no extension officers. Use of extension and/or veterinary officers in accessing information is one of the common sources of information used by most of the urban livestock keepers. This is because through use of extension/veterinary service, the livestock keepers can get more than just information; the livestock keepers can also get other services like treatment and vaccination of their animals, advice on proper husbandry practices and exchange of ideas on various issues on livestock keeping. According to Daudu *et al* (2009), the choice of extension agent could probably be as a result of farmers' observation and participation in result demonstrations, carried out by extension agents. This agrees with Swanson (1997) that farmers do better in what they see and practice than what they hear only.

Though extension and veterinary services are a common source of information to many livestock keepers, it has been realized that the extension services are unreliable because of few extension officers

who are not always available when needed. The veterinary services are also said to be far in some areas and expensive hence not all livestock keepers can afford them. Despite the pitfalls of extension/veterinary services, many livestock keepers still need and use the services because the benefits of using extension/veterinary services are far more than the consequences of not using the services at all. Observations of this study confirmed the use of extension officers in dissemination of information. In most of the wards in Morogoro urban district, it was observed that the livestock keepers benefited so much from extension officers because of the good relationship that existed between the extension officers and the livestock keepers as opposed to Kinondoni district where it was observed that most livestock keepers did not know the existence of the extension officers and had never got their services. The reason given by all the extension officers was that they were very few hence could not visit all of the livestock keepers in Kinondoni District. This is a policy implication for the government to increase the number of extension officers to cater for the needs of all the livestock keepers in urban areas. The few extension officers that are available can also be motivated to do their jobs by providing them with incentives.

iii) Fellow livestock keepers

Fellow livestock keepers are another source of information that was mentioned by a total of 102 (40.2%) respondents. This information source is used more by respondents in Kinondoni (46.1%) compared to respondents in Morogoro Urban (31.4%). This result means that respondents in Kinondoni are interacting more than those in Morogoro urban district in terms of exchanging ideas concerning livestock keeping. This result may also have been because the livestock keepers in Kinondoni district face a problem of limited extension services compared to respondents in Morogoro urban district; hence they have to rely more on other sources of information including the fellow livestock keepers. This source of information is useful to the livestock keepers in both districts because it has no cost and the livestock keepers can learn different experiences from their fellows. The livestock keepers can also advice each other on various issues including nutrition and feeds, treatment and control of diseases, good breeds, and good husbandry practices.

iv) Print sources

Findings of this study also reveal that print sources are another information source used by urban livestock keepers. Results from this study show that this source of information is used slightly more by respondents in Morogoro urban (34.8%) than the respondents in Kinondoni district (33.6%). This result may mean that the respondents in Morogoro urban have more access to these print sources than the respondents in Kinondoni district. This may be due to the presence of the Sokoine National Agricultural Library and the agricultural exhibitions that are held in Morogoro every year, where the livestock keepers can access the print sources of information. Use of print sources by the livestock keepers is limited by their unavailability. If the print sources are made available, the livestock keepers can read more and gain more knowledge on livestock keeping. Availability of print information sources can be made possible through extension or through the introduction of agricultural information centres in urban areas (as in rural areas) where the livestock keepers can visit and access information freely.

v) Agricultural exhibitions

Another source of information used by urban livestock keepers is agricultural exhibitions. These agricultural exhibitions (famously known as 'Maonyesho ya nanenane' in Swahili) are held every year in the country at regional and zonal levels. As expected, the respondents in Morogoro urban district (10.6%) attended the exhibitions more than those from Kinondoni district (9.2%). This was probably due to the fact that the exhibitions are usually held in Morogoro at zonal level. The agricultural exhibitions are very important sources of information to the livestock keepers because the exhibitions show various experiences on good animal husbandry practices. The livestock keepers can learn from these experiences and they are given a chance to ask questions which are answered by professionals. The agricultural exhibitions also offer free leaflets, brochures and booklets on livestock keeping practices. Livestock keepers should be given a chance to attend to these agricultural exhibitions so that they can increase their knowledge and improve their practice of livestock keeping.

vi) Meetings/seminars

The last but not least information source that was mentioned by only a few respondents (12.6%) is the meeting or seminars. Only a few respondents from both Morogoro urban (18.9%) and Kinondoni (19.7%) districts have attended the livestock meetings/seminars. This means that urban and peri-urban livestock keepers have limited opportunities to attend to the meetings or maybe the respondents may be ignorant of the importance of the seminars. Seminars can be very important to the livestock keepers because the seminars can impart knowledge on the livestock keepers on proper husbandry practices. The government should facilitate and increase provision of seminars to the livestock keepers through extension. Urban livestock keepers should also attend to relevant meetings so that they can get informed on various issues concerning livestock keeping and express their concerns to the relevant stakeholders. This can only be possible if the livestock keepers form organizations through which they can meet, discuss and come up with solutions to their problems.

In relation to the information sources, the respondents were also asked to mention the frequency of use of each of the information source. Findings revealed that some of the information sources mentioned above are used most frequently; others are used less frequently while others are used least frequently. Results presented in Table 4 indicate that 156 (61.4%) respondents mentioned veterinary shops as the most frequently used source of information. This could have been probably due to the fact that extension officers were few hence their services could not reach all the livestock keepers. This was followed by extension officers who were mentioned by 97 (38.2%) respondents as the most frequently used source of information. Fellow livestock keepers were mentioned as the most frequently used information sources by a few 47 (18.5%) livestock keepers. Some of the sources were mentioned by relatively many respondents as the least frequently used information sources. Examples of these include print sources that were mentioned by 57 (22.4%) respondents and agricultural exhibitions that were mentioned by 36 (14.2%) respondents. Other information sources are not used at all by some of the respondents and these have been labeled as 'not applicable'.

Table 4: Frequency of use of different information sources**N=254**

Type of information source	Frequency of use of information source							
	Most frequently		Less frequently		Least frequently		Not applicable	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Veterinary shops	156	61.4	29	11.4	13	5.1	56	22.0
Extension	97	38.2	26	10.2	41	16.1	90	35.4
Fellows	47	18.5	25	9.8	30	11.8	152	59.8
Print	19	7.5	27	10.6	57	22.4	151	59.4
Agr. exhibitions	16	6.3	22	8.7	36	14.2	180	70.9
Meetings	9	3.5	6	2.4	14	5.5	225	88.6

Source: Field survey, 2011

From these findings, it may be concluded that, urban livestock keepers mostly rely on veterinary shops for livestock information. This is because of the few extension officers in urban areas who offer limited services that are not sufficient enough to cater for all the information needs of urban livestock keepers. Print sources and seminars are the least frequently used information sources due to unavailability of print sources and lack of opportunities to the seminars respectively.

Effectiveness of information sources

The respondents were required to indicate the effectiveness of these information sources. Out of 254 respondents, 116 respondents (45.7%) said that the information sources were very effective, 124 respondents (48.8%) said that the information sources were satisfactory and a few respondents 14 (5.5%) said that the sources were not effective. Results presented in Table 5 explain the effectiveness of different information sources.

Table 5: Opinions about effectiveness of information sources**N=254**

Livestock keepers' opinions on the effectiveness of information sources		Effectiveness of information sources			Total
		Effective	Satisfactory	Not effective	
Very good veterinary/extension services	N*	86	1	0	87
	%	(74.1%)	(.8%)	(.0%)	(34.3%)
Unreliable extension/veterinary services	N	0	17	2	19
	%	(.0%)	(13.7%)	(14.3%)	(7.5%)
Few extension officers hence not always available	N	1	39	2	42
	%	(.9%)	(31.5%)	(14.3%)	(16.5%)
Extension officers are always available	N	28	2	0	30
	%	(24.1%)	(1.6%)	(.0%)	(11.8%)
No visits at all from extension officers	N	1	0	4	5
	%	(.9%)	(.0%)	(28.6%)	(2.0%)
No professional advice from agricultural shops	N	0	30	5	35
	%	(.0%)	(24.2%)	(35.7%)	(13.8%)
Veterinary services are expensive	N	0	34	0	34
	%	(.0%)	(27.4%)	(.0%)	(13.4%)
Print sources not readily available	N	0	0	1	1
	%	(.0%)	(.0%)	(7.1%)	(.4%)
Veterinary services are far	N	0	1	0	1
	%	(.0%)	(.8%)	(.0%)	(.4%)
Total	N	116	124	14	254
	%	(100.0%)	(100.0%)	(100.0%)	(100.0%)

N* is the number of respondents

*Source: Field survey, 2011***i) Effectiveness of veterinary/extension services**

Findings presented in Table 13 show that 86 out of 116 respondents (74.1%) acknowledged that the services that were offered by extension/veterinary officers were very effective and these respondents

were satisfied with the services because they got all the help and advice they needed on time; these were the respondents who happened to use the government extension and/or veterinary services because of their closeness to these services and their ability to afford the services. These respondents said that the veterinary/extension services were very good because the services to solve all the problems of the livestock keepers appropriately. Another reason why the respondents felt that the services were effective was that the extension officers were always available. This reason was given by 28 out of 116 (24.1%) of the respondents who said that the extension services were very effective and the respondents were satisfied with the services. These respondents said that the extension officers paid frequent visits to them and always responded when they were called. Some of these respondents belonged to some on-going livestock projects thus the reason why they were always attended frequently by the extension officers.

Out of 124 respondents who said that the information sources were satisfactory, 39 (31.5%) respondents explained that there were few extension officers who offered limited services that could not reach all the livestock keepers in an efficient manner, while 17 (13.7%) of the respondents explained that the extension and/or veterinary services were not reliable hence the livestock keepers could not get the necessary advice or service when needed. These respondents said that extension/veterinary officers visited them only once in a while and could not solve their problems on time. Only four respondents (28.6%) claimed that the extension services were not effective because the extension officers did not visit them at all. Some of these respondents did not even know the existence of extension officers and the services they offered. This finding is supported by a similar study in Kampala whereby most of the urban livestock keepers have never received visits from extension officers (Ossiya *et al*, 2002). This could have been due to the fact that some wards had no extension officers at all, while others had many livestock keepers all of whom could not be attended by one extension officer. Some of the respondents who used extension services complained that these services were not effective at all. The reasons given were that the extension officers were few (14.3%), the services were unreliable (14.3%) and that there were no visits from extension officers (28.6%).

ii) Effectiveness of veterinary shops

The respondents also gave explanations for effectiveness of veterinary shops. Table 13 shows that 30 (24.2%) of the respondents claimed that the veterinary services offered in veterinary shops were not effective enough due to lack of professional expertise in these shops. These respondents claimed that some of the workers in veterinary shops were not professionals hence could not solve their problems effectively because the advice that they offered to the livestock keepers was not appropriate. As a policy implication, this calls for the government authorities to inspect each of the veterinary shops and realize the services offered and the availability of professionals in these shops. A total of 34 (27.4%) of the respondents who claimed that information sources were satisfactory complained that the veterinary services were very expensive hence the livestock keepers spent so much money on them and the services could not be afforded by many small scale livestock keepers. These respondents claimed that the veterinary drugs were also very expensive and that the veterinary officers needed to be paid for their transport and the services they offered. In other similar studies, Onim (2002) reported that private veterinary (and extension) services are too expensive for the poor city livestock keepers. This finding is also supported by Daudu et al, (2009) who states that financial constraint is one of the major limitations of using some of the information sources by the farmers. The prices for veterinary drugs and services thus need to be regulated by the government to enable all the livestock keepers to benefit from the services. As stated by Onim (2002), veterinary (and extension) services should be improved for better livestock production in the city. A few respondents (0.8%) mentioned long distances to veterinary shops as reason for ineffectiveness of information sources. These livestock keepers lived relatively far away from centres where they could access the veterinary services hence had to spend more time following the services. Veterinary shops and services hence need to be brought closer to the livestock keepers so that all the livestock keepers can benefit from them. Results from observations revealed that there are several agricultural shops both in Kinondoni and Morogoro urban districts from which the livestock keepers can get information. Most of these agricultural shops are located in central urban areas whereas most of the livestock keepers are located far from these areas (in peri-urban areas). Access to services from these

shops requires the livestock keepers to travel for long distances to get the service which is expensive and time consuming to most of the livestock keepers.

iii) Effectiveness of print sources

Another explanation that was given by very few respondents (7.1 %) was about the unavailability of print sources. These respondents claimed print sources were not effective sources of information because the sources were not readily available though they were very important to them. These respondents need the print sources to be made available to them and this can be made possible through extension or through introduction of information centres from where they can access the print sources.

Other information sources used by extension officers

During the interviews, the extension officers were asked on the types of information sources that they used to access and disseminate information and the effectiveness of each of the information sources. The information sources that were mentioned by the extension officers are discussed below starting from the most frequently used sources to the least frequently used information sources.

j) Face to face dialogues

It was revealed that, all the extension officers use the face to face dialogues in communicating with the livestock keepers. The reasons for using face to face dialogues that were explained by some extension officers are quoted below;

“Face to face dialogues enable us to exchange ideas and obtain instant feedback from the livestock keepers.” – Extension officer from ‘Mji Mpya’ Ward in Morogoro Urban District

“We are able to see for ourselves the real situation in the field and take appropriate actions.”- Extension officer from ‘Boma’ Ward in Morogoro urban District

Though face to face dialogues, we are able to perform practical (on-farm) demonstrations for the livestock keepers to understand better.”- Extension officer from ‘Bunju’ Ward in Kinondoni District

Some of the extension officers said that face to face dialogues were effective due to the fact that the dialogues enabled them to better understand the livestock keepers through facial expressions.

Despite the effectiveness of face to face dialogues, some extension officers complained of the dialogues being ineffective. One of the reasons given was that face to face dialogues require the extension officers to travel long distances in order to visit the livestock keepers. This hampers the role of extension services of disseminating information through face to face dialogues because some of the livestock keepers live far and the extension officers have no means of transport; most of the extension officers were forced to walk or use their own means of transport to reach the livestock keepers. Another reason for ineffectiveness of face to face dialogues is the few numbers of extension officers which affects greatly the extension services because only a few livestock keepers can be attended depending on the convenience of the extension officers (i.e. only those livestock keepers who are close to the extension services are being attended).

ii) Meetings/seminars

Another source of information that the extension officers use to access and disseminate information to the livestock keepers is meetings and seminars. Once in a while, meetings and seminars are conducted by the government and/or non-government organizations in order to educate the livestock keepers on various issues on good livestock husbandry practices. Meetings and seminars are said to be less effective because the livestock keepers are exposed to very few seminars and meetings (once in two to three years) such that they are not benefitting much from the seminars. Some of the livestock keepers have never been exposed to such seminars.

iii) Letters/memos

A few extension officers mentioned letters or memos as another way they used in communicating and disseminating information to the livestock keepers. This method is not used frequently probably because of being one of the oldest methods of communication. It is said to be ineffective because it was not fast/quick in delivering information hence was not used by many extension officers.

CONCLUSION

This study concluded that Urban livestock keepers have many information needs that must be met in order to improve their livestock husbandry. Some of these needs are diseases control, nutrition procedures, housing, breeds and loan facilities. The livestock keepers also have use a variety of sources to access livestock information including; extension officers, veterinary shops, agricultural exhibitions, fellow livestock keepers, print sources and meetings/seminars. The effectiveness of these information sources is hampered by several factors including; lack professional advice in veterinary shops, expensive veterinary services, lack of incentives to extension officers, unavailability of print sources and lack of seminars. The information needs of urban livestock keepers must be addressed in order to help the farmers keep their livestock in the most profitable way. In addition, the information sources used can be very useful to the livestock keepers if their limitations taken into considerations and rectified.

RECOMMENDATIONS

- **Promote and improve use of extension services**

In order to meet the various information needs of the urban livestock keepers, it is important for the government to improve the extension services in urban areas. The number of extension officers in urban areas should be increased by the government. This will enable all or most of the livestock keepers to get the extension services which are a very important source of information to the livestock keepers. The extension officers should also be provided with incentives like communication and transport allowance to enable them communicate with the livestock keepers and visit them regularly. The extension officers should also be provided with IT skills; this can be facilitated by the government through provision of training opportunities and funding of the training; computers and Internet facilities should also be provides in government offices. All these efforts by the government will help in improving the services offered by the extension officers to improve the livestock industry.

- **Regulate and improve veterinary services**

Findings from this study have revealed that veterinary shops are the most common and important sources of information for urban livestock keepers. Considering this in mind, this study recommends that

the government through its relevant bodies (e.g. TFDA), should ensure that the services offered to the livestock keepers through veterinary shops are authentic. This can be made possible through instituting strict laws on private veterinary shops that will guide and regulate the provision of quality services; including the prices of drugs and feeds and the importation and distribution of quality veterinary drugs and equipment. This will result in prohibition of fake drugs and will lead to improvement of the services offered in veterinary shops. The government should also ensure that the services in veterinary shops are offered by qualified professionals. This will prevent losses of animals that occur due to lack of professional advice and will enable the livestock keepers get good and reliable advice. The veterinary drugs and equipment should also be made available by the government at subsidized prices. This will enable the livestock keepers to afford the drugs which are currently very expensive and scarce.

REFERENCES

- Aina, L. O. (1991), "Agriculture information and Choice of strategies for rural development; heading issue in rural development." *ACENA*, pp. 19 -29
- Brodnig, G. and Mayer-Schönberger, V. (2000), "Bridging the Gap: The role of spatial information technologies in the integration of traditional environmental knowledge and western science", *The Electronic Journal on Information Systems in Developing Countries*, Volume 1, www.iapad.org/.../bridging_the_gap_the_role_of_spatial_info_tech_in_integrating_itk.pdf retrieved on 22nd October, 2010
- CIRAD (2009), *Livestock keeping in urban areas: A review of traditional technologies based on literature and field experience*, http://pigtrop.cirad.fr/resources/library/referenced_books/production_and_genetics/livestock_keeping_in_urban_areas retrieved on 22nd October 2009
- Creswell, J. W. (2003), *Research Design: Qualitative, Quantitative and Mixed Methods Approaches*, Second Edition. Thousand Oaks: SAGE Publications

- Daudu, S., Chado, S. S. and Igbashal, A. A., (2009), "Agricultural Information Sources Utilized By Farmers In Benue State, Nigeria." *Production Agriculture and Technology* 2009; 5 (1): 39-48
<http://patnsukjournal.net/Vol5No1/p5.pdf> retrieved on 27th May 2013
- FAO (2007), *Livestock keeping in urban areas*, <http://www.fao.org/DOCREP/004/Y0500E/y0500e02.htm>
 retrieved on 15th March, 2007
- Foeken, D., Sofer, M. and Mlozi, M. (2004), *Urban agriculture in Tanzania Issues of sustainability*. African Studies Centre, 2004 <https://openaccess.leidenuniv.nl/bitstream/handle/.../ASC-1241504-003.pdf>
 retrieved on 24th May, 2013
- Gakuru, M., Winters, K. and Stepman, F. (2009), *Inventory of Innovative Farmer Advisory Services using ICTs*, For: The Forum for Agricultural Research in Africa (FARA).
www.fara-africa.org/.../Innovative_Farmer_Advisory_Systems.pdf retrieved on 3rd March, 2011
- Glazier, J. D. and Powel, R. R. (1992), *Qualitative Research in Information Management*, Englewood: Libraries Unlimited
- Isinika, A.C. and Mdoe, N.S.Y. (2001), *Improving farm management skills for poverty alleviation: the case of Njombe District*. REPOA Research Report No. 01.1, Dar es Salaam, Mkuki na Nyota
- Jacobi, P., Amend, J., and Kiango, S. (2005), *Urban agriculture in Dar Es Salaam: Providing an indispensable part of the diet*. Resource Centres on Urban Agriculture and Food Security (RUAF) Foundation www.ruaf.org/sites/default/files/DaresSalaam.PDF retrieved on 28th May, 2013
- Kalusopa, T. (2005), "The challenges of utilizing Information Communication Technologies (ICTs) for the small scale farmers in Zambia", *Library Hi Tech*, Vol. 23, No. 3, 2005, pp 414-424,
www.emeraldinsight.com/0737-8831.htm. Retrieved on 8th January, 2011

- Kitilla, M. (2001), Urban agriculture: Current policies and recent developments. In *Proceedings of the National Workshop on Urban Agriculture – Potential, Support and Information Needs, Dar es Salaam, Tanzania, 11-13 June, 2001*, pp. 76-86. Dar es Salaam: Urban Vegetable Promotion Project and University of Dar es Salaam, Faculty of Arts and Social Sciences.
- Mathewman, R. and Morton, J. (1995), *New challenges for livestock extension: Information needs, Institutions and Opportunities*, Natural Resources Institute, Chatham, UK
- Matovelo, D. S. (2008), *Enhancing Farmers Access to and Use of Agricultural Information for Empowerment and Improved Livelihoods: A case of Morogoro Region, Tanzania*, A PhD Thesis, University of Dar es salaam
- Mgeni, B.C. (1978), *Diffusion of Agricultural innovation-hybrid maize in Njombe District*. A Thesis submitted for the degree of Master of Arts in the University of Dar es Salaam
- Mlozi, M. R. S. (2001a), Political economy of urban agriculture in Tanzania. In *The political economy of urban and peri-urban agriculture in eastern and southern Africa. Proceedings of the MDP/IDRC workshop, Harare, Zimbabwe, 28 February to 2 March, 2001*, pp. 50-56. Harare: Municipal Development Programme.
- Morton, J. and Mathewman, R. (1996), *Improving livestock production through extension: information needs institutions and opportunities*,
<http://www.odi.org.uk/nrp/12.html> retrieved on 16th August. 2007
- Munyua, H. (2008), *Final Report. ICTs and small-scale agriculture in Africa: a scoping study*, Report prepared on behalf of the International Development Research Centre (IDRC),
<http://ideas.repec.org/p/iim/iimawp/2005-11-04.html> retrieved on 30th September, 2009

Mvena, Z., Lupanga, I. and Mlozi, M. (1991), *Urban agriculture in Tanzania: A study of six towns*.
Morogoro: Sokoine University of Agriculture, Department of Agricultural Education and Extension.
Unpublished research report.

Onim, M. (2002), *Scoping study of urban and peri-urban livestock keepers in Kisumu City, Lagrotech, Kisumu, Kenya*. <http://r4d.dfid.gov.uk/PDF/outputs/ZC0201f.pdf> retrieved on 28th May, 2013

Ossiya, S.; Ishagi, N.; Aliguma, L. and Aisu, C. (2002) Urban and Peri-urban livestock keeping in Kampala City – a scoping study, Ibaren Konsultants, Kampala, Uganda.

Ozowa, V. (1995), "Information Needs of Small Scale Farmers in Africa: The Nigerian Example", *Quarterly Bulletin of the International Association of Agricultural Information Specialists, IAALD/CABI* (v. 40, no. 1, 1995)
www.worldbank.org/html/cgiar/newsletter/.../9nigeria.html retrieved on 2nd April, 2008

Ramkumar, S.R.G. (2005), *Dissemination of animal health knowledge for landless Indian dairy cattle owners*, <http://www.dfid-ahp.org.uk/index.php?section=1> retrieved on 23rd June, 2009

Sanusi, M. A., Petu-Ibikunle, A. M. and Mshelia C. M., (2010). 'The influence of Information and Communication Technology (ICT) on the dissemination of agricultural information among urban farmers in the Northern Guinea Savannah Zone of Nigeri'. *African Scientist* Vol. 11, No. 2, June 30, 2010

Saunders M., Lewis, P. and Thornhill, D. (2007), *Research Methods for Business Students*, 4th Edition, Pearson Education Limited, London

- Swanson, B. E, (1997). "The Changing Role of Extension in Technology Transfer." *Journal of International Agriculture and Extension Education* 4(2), pp 87 – 94
- Tabachnick, B. G. and Fidell, L. S. (2007), *Using Multivariate Statistics*, 5Th Edition, Boston, Pearson Education Inc.
- URT (2003a), *Population and housing Statistics, District profile. Kinondoni*, National Bureau of Statistics, Vol. IV, pg.76.
- URT (2003b), *Population and housing Statistics, District profile. Ilala*, National Bureau of Statistics, Vol. IV, pg.76.
- URT (2003c), *Population and housing Statistics, District profile. Temeke*, National Bureau of Statistics, Vol. IV, pg.76.
- URT (2003d), *Population and housing Statistics, District profile. Morogoro Urban*, National Bureau of Statistics, Vol. IV, pg.76.
- URT (2004), *Dar es Salaam city profile*, Document Prepared by Dar es Salaam City Council With advice from Cities and Health Programme, WHO Centre for Development, Kobe, Japan. pg. 4
- URT (2008), *Morogoro region*, [http://www.tanzania.go.tz/ regions/ MOROGORO. pdf](http://www.tanzania.go.tz/regions/MOROGORO.pdf) retrieved on 13th September, 2009