

# Marketing of Urban Agriculture Produce in Three Municipalities in Tanzania: Opportunities and Challenges

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## ABSTRACT

This study investigated Urban Agriculture (UA) produce marketing of three municipalities in Tanzania. Study findings show that UA farmers had no pre-arranged contracts with buyers which limited their produce marketing. UA farmers sold their produce mainly to retailers, individual consumers, wholesalers, and vendors. Farmers used various sources to get market information for their produce. Marketing problems that UA respondents faced include poor packaging, bylaws, taxes and farmers meeting consumer preferences. Other problems faced included their lack of direct link with the retailing and consumer units like supermarkets, hotels and restaurants to which they could sell their UA produce directly. UA respondents' use of different markets was found to be statistically significant at  $p \leq 0.05$ . Municipal authorities' liaising with Urban Agriculture and Livestock Extension Agents should assist urban farmers produce commodity associations. This will enable them to collect large volumes of produce, control quality and sell to large urban markets and consumers.

**Keywords:** *Urban Agriculture (UA), Marketing, Opportunities, Challenges, Cities*

## I. INTRODUCTION

Future urban human congestion brings about a re-thinking of how UA activities by the year 2050 will be as "nearly 80% of the earth's population will reside in urban centres" [1] and [2]. Applying the most conservative estimates to current demographic trends, future human population will increase by about three billion people [3]. And UNDP estimates that 800 million people are currently engaged in UA worldwide, with the majority in Asian cities, and of these, 200 million are considered to be market producers, employing 150 million people full time [4].

According to [5] in the next decade, urbanization will build up in many parts of the world, but Africa and Asia will eyewitness the largest part in urban expansion, and these countries are the least well-prepared to assure their food desires, and many already depend riskily on food imports. Therefore, UA could remain one way to augment city food supplies, while also increasing the incomes of the poor. The potential of UA will be on its uses of resources, products, and services found in and around the city area and, in turn, often supplies resources, products, and services to that area. UA is therefore, an important supply source of food for some poor municipal households because it affords a cheap, simple, and flexible tool for productively using open urban spaces, treating and recovering urban solid and liquid wastes and generating employment and income. Also, it can add value to products, manage freshwater resources more sparingly, and resolve otherwise incompatible urban land use issues.

Equally, Tanzania had been losing jobs in the formal and immigrants to urban areas resort to undertaking UA. As towns grow into cities, UA practices within and outside it also change. One outstanding institutional support of UA in towns and cities is reliable urban markets for UA produce. UA complements, rather than supplant, rural supplies and imports of food and will continue to do so, and UA can provide significant amounts of food at small scales, can generate goods valued at tens of millions of dollars in any given major city [6]. By growing their own food, town and cities will lower their food deficits and obtain an important source of fruits, vegetables and livestock products. UA provides an estimated 15% of all food consumed in urban areas and is likely to double that share in the next couple of decades [7]. Cities with more advanced UA sectors, particularly in Asia, have become largely self-sufficient in higher-valued, nutritious perishables and some cities even export surpluses abroad [7].

UA is omnipresent in Tanzanian towns and cities. For example, farming is practiced in the urban and per-urban areas which in the towns and cities are known as "the green belts". However, with population increase, and increased urban sprawl even "the green belts" have been built up, as the case of Mkundi areas in Morogoro municipality. In Tanzanian towns and cities UA is practiced in the open spaces, undeveloped plots, road reserves, swampy areas, riverbanks and flood plains, in residential houses and areas designated as hazardous. Improved dairy cattle

keeping feature more in low-and medium density areas due to large plot sizes.

## II. RESEARCH METHODOLOGY

This study was carried out in Arusha Municipal Council (AMC), Dodoma Municipal Council (DMC), and Kinondoni Municipal Council (KMC). The sampling frame included all urban farmers keeping dairy cattle, raising broilers, keeping layers and growing vegetables in the three density areas in Arusha, Dodoma and Kinondoni Dar es Salaam municipal areas. In each municipality a random sample of 90 UA farmers was selected, thus making a total sample size of 270 respondents.

The study adopted a cross-sectional approach. According to [8] and [9], the design allowed data to be collected at a single point in time to capture important aspects in UA practices. Data on marketing of UA produce, challenges and opportunities and entrepreneurship skills of UA farmers were collected. The design was feasible, economical and data collected were used to determine and compare responses between different cities.

A structured questionnaire was designed to elicit answers from the respondents. Data on explaining various UA indices related to marketing of UA produce Data from the primary source were verified, coded and analyzed using different qualitative and quantitative statistical software [including Statistical Package for Social Sciences (SPSS), Frequencies and Chi-square test were employed to determine variations between municipalities on various attributes related to UA production and marketing indices.

## III. RESULTS AND DISCUSSION

### Socioeconomic Characteristics of UA Farmers

A total of 270 UA farmers were interviewed. One hundred and twenty three (45.6%) of the 270 respondents, resided in low-density areas, 74 (27.4%) resided in medium-density areas, and 73 (27.0%) resided in high-density areas. This implied that UA was practiced in all density areas. Similar observations were reported by [10] in Morogoro and Mbeya municipalities, [11] in DMC and [12] in KMC. About two thirds, 188 (69.6%) of the respondents indicated that they were migrants to the cities comprising of different tribes. Of these, 77 (28.5%), 71(26.3%) and 40 (14.8%) were migrants found in KMC, Dodoma Municipal Council (DMC) and Arusha Municipal Council (AMC), respectively.

Respondents indicated to have migrated to cities for various reasons. Of the 270 respondents, 75 (40.5%), 37 (20.0%), 38 (20.5%) 18 (9.7%) and 17 (9.2%) indicated that they had migrated to the cities/towns to seek employment, follow spouse, on official transfer, to join parents and, attend school, respectively. These results confirm findings of [13], who found that the majority of UA farmers in Dar es Salaam were migrants

and came to cities from various regions in the country. Of the 270 respondents, 154 (57.0%) were females, while 116 (43.0%) were men. With exception of AMC, women dominated UA practices in KMC and DMC. These results are similar to [14] in Dar es Salaam and [15] in Kisumu municipality, Kenya, who found that women dominated UA activities, however, the results are contrary to the results by [16] and [13] in Dar es Salaam, who found male dominance in UA as women were involved in petty trades. Of all the respondents, less than half, 108 (40%) indicated to have completed primary education, 72 (26.7%) to have had finished form four, 32 (11.9%) to have had completed their first degrees. Yet, of all, 30 (11.1%), 21 (7.8%), and seven (2.6%) indicated to have had attended adult literacy classes, completed form two and had not attended any formal education, respectively. These results implied that UA in the studied cities/towns is practiced across all density areas and different urban dwellers of varying socioeconomic status did it.

Of the 270 respondents, 87 (32.2%), 81 (30.0%), 57 (21.1%) and 45 (16.7%) indicated that their main UA practices were dairy farming, growing vegetables, keeping broilers and raising layers, respectively. Of the 270 respondents, 155 (57.4%), 43 (15.9%), 36 (13.3%) and 27(10.0%) indicated that they undertook UA activities mainly for income generation, household food security, self employment and as poverty alleviation initiative, respectively, while seven (2.6%), and one (4.0%) each, indicated that it was only for complementing meagre incomes from employments, as a culture and for utilizing the available land, respectively. This implied that UA activities served multiple purposes in the households. The results confirms findings by [17], [5], [6], [18] in Accra, Ghana, and [19] and [20] and [21] in Lilongwe and Blantyre, Malawi, who found UA farmers undertaking UA activities to supply food for home use, and some as their employment.

Apart from the main UA enterprises, urban farmers were found to engage in complementing additional UA activities (Plate 3) and other non-agricultural activities to supplement their household needs. The behaviour of most respondents to undertake a combination of UA activities could be an indication of their entrepreneurial acumen among most urban dwellers in trying to cope up with the economic crises in the city. Observations showed that problems faced by UA farmers sometimes necessitated UA farmers to change the type of UA enterprise for profit maximization.

Out the 270 respondents in the three cities/towns, 68 (25.2%) of them indicated to have had changed type of UA they practiced due to a number of reasons. Of the 68 respondents, 30 (44.1%) indicated that they had changed their UA enterprise due to lack of capital. The other 20 (29.4), 11(16.2%), five (7.4%) and two (2.9%) respondents, indicated that they were forced to change their UA enterprises because of enterprise not being profitable, lack of markets, shortages of labour and lacking necessary inputs, respectively. Training of UA farmers by UALEAs improved their skills (Plate 4). All the parameters assessed with exception of the main type of UA practice they conducted

and age of respondents, were statistically significantly different at  $p < 0.05$

### Market and Price Variability of UA Products

Table 1 shows the UA produce marketing situation in KMC, DMC and AMC. Of the 270 respondents, most, 199 (73.7%) showed that they had no pre-arranged contracts with buyers for the UA products they produced. Of these, more than a third, 80 (40.2%) were from KMC, while 76 (38.2%) and 43 (21.6%) were from AMC and DMC, respectively. Such a situation of producing without having a pre-arranged contract with the buyers, could limit increasing production of the UA products as farmers need to be certain of disposing their products to avoid losses if produced in excess. However, on the other hand it could be an indicator that they marketed all their UA products whenever they wanted and this implied that UA produce had high demand. The results confirm findings by Stevenson et al. (1994) in Dar es Salaam, who found that on average about 60% of the vegetables produced under UA were sold. Of all the respondents, 129 (47.8%) indicated that they sold their products at place of production (farm gate), while 97 (36.3%) indicated to had sold UA produce to local markets, and 26 (9.6%), ten (3.7%) and seven (2.6%) showed to selling their UA produce at central market, in super markets, and in own kiosks, respectively. Of the 270 respondents, 106 (39.3%), 97 (35.9%); 41 (15.2%) and 26 (9.6%) showed that their main outlets for UA products were the retailers, individual consumers, wholesalers, and vendors, respectively. Generally, these study results agree with findings by [22], [23] in Dar es Salaam, [24] in Mbeya and Morogoro and [11] in Dodoma municipality who found that UA farmers used varying market channels to sell the UA products. Of all the respondents, 265 showed that they had varying sources of marketing information for their UA products. Of these, 127 (47.9%) and 71 (26.8%) showed that they depended on buyers and market centres as sources of market information for their UA products. However, 43 (16.2%), 23 (8.7%) and one (0.4%) of the respondents indicated that fellow farmers, agriculture and livestock extension agents and media were sources of market information for their UA

products. Of the 270 respondents, 119 (44.1%) mostly from KMC and DMC, showed that they did not face problems in marketing of their UA products, and of the 151 (55.9%) respondents who indicated to facing problems, only 145 revealed the marketing problems faced. Of these, 66 (45.5%) said it was due to poor quality (Table 3).

Other marketing problems that respondents faced were related to poor packaging, bylaws, high, many taxes and not meeting consumer preferences as indicated by 26 (17.9%), 17 (11.7%), 12 (8.3%) and 24 (16.6%), respectively. Of the 270 respondents, a few, 78 (28.9%) showed that there were city markets created for UA products and 131 (48.5%) of the respondents showed that they had access to other city markets. However, most, 226 (83.7%) of the respondents showed that they were not linked to retailing and consumer units like supermarkets, hotels and restaurants to which they could sell their UA produce directly. Again, most, 261 (96.7%) of the respondents denied being involved in the food value adding techniques (like canning, pickling).

Marketing problems in UA produce were also reported by [30] in Dar es Salaam, who found that a one-quarter of the UA producers had problems with marketing of their products. Despite of the claim advanced by [30] that city authority requires a license in order to be able to sell farm produce in public, proliferation of UA and being a better livelihood alternative might have pulled more residents to conduct UA and hence narrowing its marketability. The differences on marketing situations were found to be statistically significant at  $p < 0.05$  in all the attributes with an exception on involvement in food value adding techniques which showed no statistical differences between study sites.

**Table 1: Marketing of selected UA products (N=270)**

Statement	KMC		DMC		AMC		Total	p-value
	n	%	N	%	n	%		
UA produced on pre-arranged contracts								
Yes	10	3.7	47	17.4	14	5.2	71 (26.3)	0.0123
No	80	29.6	43	15.9	76	28.1	199 9(73.7)	
Points of sale for UA products								
Farm gate	54	20.0	47	17.4	28	10.4	129 (47.8)	0.002
Local markets	29	10.7	31	11.5	38	14.1	97 (36.3)	
Super markets	4	1.5	1	0.4	19	7.0	10 (3.7)	
Central market	2	0.7	5	1.9	5	1.9	26 (9.6)	
My own Kiosk	1	0.4	6	2.2	-	-	7 (2.6)	
Main outlets for UA products								

Retailers	28	10.4	41	15.2	37	13.7	106 (39.3)	
Individual consumers	26	9.6	37	13.7	34	12.6	97 (35.9)	0.015
Vendors	23	8.5	-	-	3	1.1	26 (9.6)	
Wholesalers	13	4.8	12	4.4	16	5.9	41 (15.2)	
There are problems in marketing								
Yes	35	13.0	43	15.9	73	27.0	151(55.9)	0.014
No	55	20.4	47	17.4	17	6.3	119 44.1)	
Problems in marketing UA products								
Quality of products required	20	13.8	24	16.6	22	15.2	66 (45.5)	
High/many taxes imposed	4	2.8	4	2.8	4	2.8	12 (8.3)	
Packaging of product	6	4.1	5	3.4	15	10.3	26 (17.9)	0.032
Consumer preference not mate	3	2.1	5	3.4	16	11.0	24 (16.6)	
Marketing regulation/by-laws	1	0.7	-	-	16	11.0	17 (11.7)	
Source of marketing information								
Traders/buyers	27	10.2	57	21.5	43	16.2	127 (47.9)	
Visiting market centres	34	12.8	18	6.8	19	7.2	71 (26.8)	
Fellow farmers	13	4.9	5	1.9	25	9.4	43 (16.2)	0.047
Extension agents	11	4.2	9	3.4	3	1.1	23 (8.7)	
Media (Television and radio)	-	-	1	0.4	-	-	1 (0.4)	
Aware of presence of markets for UA								
Yes	45	16.7	21	7.8	12	4.4	78 (28.9)	0.036
No	45	16.7	69	25.6	78	28.9	192 (71.1)	
Accessing existing city markets								
Yes	47	17.4	63	23.3	21	7.8	131 (48.5)	0.017
No	43	15.9	27	10.0	69	25.6	139 (51.5)	
Linked to consumer organisations								
Yes	25	9.3	6	2.2	13	4.8	44 (16.3)	0.0175
No	65	24.1	84	31.1	77	28.5	226 (83.7)	
Involvement in value adding techniques								
Yes	3	1.1	4	1.5	2	0.7	9 (3.3)	0.45
No	87	32.2	86	31.9	88	32.6	261 (96.7)	

NB: Numbers in parentheses are total percentages of the attributes

### Challenges in Marketing UA Products

Table 2 shows challenges and price determinants for UA products in KMC, DMC and AMC. Of the 270 respondents, 177 (65.6%) agreed that their supply did not meet the demand, as 174 (64.4%) indicated that they were able to market all the UA products when due, and the differences between the three municipalities were statistically significant at  $p=0.028$ . This could be an opportunity for UA farmers to expand their UA activities if all they introduced pre-arranged contracts with consumers and/or buyers. However, most, 222 (82.2%) of the respondents showed that they have had no training on accessing markets for their UA products. Of the 268 respondents who revealed challenges in marketing UA products, slightly more than half, 143 (53.4%) showed that one of the major challenges they faced in marketing was having many similar UA products in the same market. This aspect, as a few, 34 (12.7%) of the respondents thought that it led to receiving low market prices for their UA products.

Other challenges were, consumers demanding high standard products as shown by 12 (4.5%) of the respondents, high demand than could supply and failure to meet consumers preferences was reported by 74 (27.6%) and five (4.5%) of the respondents, respectively. Differences between cities on challenges faced by UA farmers on marketing their products were statistically significant at  $p=0.013$ . More than a third, 113 (41.9%) of the respondents, showed that market demand and supply pattern to the market was one of the determinants of selling price of UA products. Other respondents, 87 (32.2%), 32 (11.9%), 23 (8.5%) and 15 (5.6%) showed that UA products selling price were determined by cost of production, seasonality, consumer's purchasing power and sales history of the product, respectively, and the differences in price determinants between municipalities were found to be statistically significant at  $p=0.024$ .

**Table 2: Challenges and price determinants for UA products (N=270)**

Statement	KMC		DMC		AMC		Total	p-value
	n	%	N	%	N	%		
Supply meet market demands								
Yes	41	15.2	24	8.9	28	10.4	93 (34.4)	0.026
No	49	18.1	66	24.4	62	23.0	177 (65.6)	
Market all the UA products								
Yes	75	27.8	47	17.4	52	19.2	174 (64.4)	0.028
No	15	5.6	43	15.9	38	14.1	96 (35.6)	
Received training on marketing								
Yes	32	11.8	10	3.7	6	2.2	48 (17.8)	0.001
No	58	21.5	80	29.6	84	31.1	222 (82.2)	
Challenges faced in marketing								
Marketing similar product	45	16.8	69	25.7	29	10.8	143 (53.4)	0.013
Low market prices	10	3.7	6	2.2	18	6.7	34 (12.7)	
High standards required	10	3.7	-	-	2	0.7	12 (4.5)	
Failure to meet preferences	1	0.4	-	-	4	1.5	5 (1.9)	
High demand than supply	22	8.2	15	5.6	37	13.8	74 (27.6)	
Determinants of selling prices								
Cost of production	47	17.4	23	8.5	17	6.3	87 (32.2)	0.024
Seasonality	19	7.0	5	1.9	8	3.0	32 (11.9)	
Demand and supply pattern	15	5.6	59	21.9	39	14.4	113 (41.9)	
Purchasing power	7	2.6	2	0.7	14	5.2	23 (8.5)	
Sales history	2	0.7	1	0.4	12	4.4	15 (5.6)	

NOTE: Numbers in parentheses are total percentages of the attributes

### Entrepreneurial Skills and Networking of UA Producers

The entrepreneurial skills, linkages and networking of respondents are shown in Table 3. Of the 270 respondents, 120 (44.5%) indicated that they were linked to other UA farmers producing similar products, and of these, 65 (24.0%) were from DMC and 46 (17.1%) were from KMC, however, only a third, 92 (34.1%) of the respondents were linked to other UA farmers producing different products, again, of those, 49 (18.1%) were from DMC followed by 36 (13.3%) from KMC. It seems there are good UA farmers' linkages in DMC and KMC and as such promoting UA activities. However, such UA farmer linkages are not under a defined coalition of farmer associations, hence not legal. This calls for a need to establish well set urban farmer networks that will assist them in sharing information on various issues on UA activities. As UA farmer groups, they will have more powers to negotiate and influencing proper development of UA in Tanzanian municipalities. As Malta (2005) puts forward that UA farmers' networks will among other things, provide information, technology and market access to its members and hence promote UA activities. The differences on

linkages of UA farmers within UA farmers producing similar products and between those producing different UA products between the three studied municipalities were found to be statistically significant at  $p=0.011$  and  $p=0.029$ , respectively.

Of the 270 respondents, about two thirds, (64.4%) indicated that they promoted their UA products to improve their sales, and more than half, 55.5%, and a few, 35.6% of the respondents indicated that there were weak networking and UA product promotions. As shown in Table 5 majority of the respondents (78.1%) showed that they set higher targets and about two third (62.2%) took risks to produce with anticipation of getting higher prices later, but they could not make it, hopefully due to lack of linkages and poor information flow between producers and consumers. However, failure of most, (91.9%) respondents to carve new market niches for their UA products might have contributed highly on retarding UA development. Differences on entrepreneurial skills and networking attributes between the municipalities (with exception of attending business events), were found to be statistically significant at  $p < 0.05$

**Table 3: The entrepreneurial skills and networking for UA (N=270)**

Statement	KMC		DMC		AMC		Total	p-value
	n	%	N	%	n	%		
Linked to UA farmers producing similar UA product								
Yes	46	17.1	65	24.0	9	3.3	120 (44.5)	0.011
No	44	16.2	25	9.3	81	30.0	149 (55.5)	
Linked to UA farmers producing different UA products								
Yes	36	13.3	49	18.1	7	2.6	92 (34.1)	0.029
No	54	20.0	41	15.2	83	30.7	178 (65.9)	
Promote UA product								
Yes	61	22.6	48	17.8	65	24.1	174 (64.4)	0.011
No	29	10.7	42	15.6	25	9.3	96 (35.6)	
Made mistake that threatened UA								
Yes	9	3.3	49	18.1	3	1.1	61 (22.6)	0.045
No	81	30.0	41	15.2	87	32.2	209 (77.4)	
Carved a new market niche								
Yes	4	1.5	15	5.6	3	1.1	22 (8.1)	0.032
No	86	31.9	75	27.8	87	32.2	248 (91.9)	
Have targets for UA production								
Yes	72	26.7	78	28.9	61	22.6	211 (78.1)	0.016
No	18	6.7	12	4.4	29	10.7	59 (21.9)	
Take risk anticipating price rise								
Yes	62	23.0	38	14.1	68	25.2	168 (62.2)	0.022
No	28	10.4	52	19.3	22	8.1	102 (37.8)	
Attend business events								
Yes	52	19.3	59	21.9	51	18.9	162 (60.0)	0.13
No	38	14.1	31	11.5	39	14.4	108 (40.0)	

NB: Numbers in parentheses are total percentages of the attributes

#### IV. LITERATURE REVIEW

In Buguruni and Manzese wards, about 40 percent of the low income people who left formal employment in the 1980s went into urban farming [25]. As time went on, UA in Dar-es-salaam changed to include people of high and medium social economic status [26]. In the city of Dar es Salaam, [27] found that in 1985 there were 3318 heads of improved dairy cattle, which rose to 7105 in 1988. In the year 1991, in Oyster Bay, a salubrious area of the city of Dar-es- Saalaam, 90% of the elite kept an average of eight improved dairy cattle [28]. In 1991, in Dar es Salaam city, an urban farmer got average annual revenue of Tanzania Shillings (Tshs) 241 300 (US\$ 965.20) and 115 000 (US\$ 460.00) profit from UA activities [29]. This amount was 1.6 times more than from an annual income of a minimum salary of Tshs 72 000 (US\$ 288.00). Furthermore, in 1991, 10 229 UA enterprises realized an annual gross output of Tshs 6.8 billion (US\$ 27.4 million) and the annual value added was Tshs 2.8 billion (US\$11) [12] cited in [31]. The average gross output

was Tshs 583 billion (US\$ 2.3 billion) with average value added of Tshs. 239 billion (US\$ 956 million) [12] cited in [31].

In 1993, [26] found that improved dairy cattle in the city of Dar es Salaam had increased to 9 081. In 1993, in Kinondoni District, 49% of the urban farmers indicated that UA provided them with between 20-30% of household food [30]. Furthermore, in 1993, some 44% of the low-income urban dwellers in Kinondoni District indicated to have farms [13].

[26] carried out a survey in Kinondoni Block A, Kinondoni Block 41, Kalenga, Shaaban Robert, and Oyster bay areas of Dar es Salaam city and found that farmers earned profit amounting to Tshs. 37.4 million (US\$ 77,917), from raising livestock such as improved dairy cattle, exotic crosses of layers and broiler chicken. The study showed that of the total profit, 79.1% was earned by those in Oyster bay (a low density area) followed by Kalenga and Shaaban Robert areas (medium

density areas). The profit that each respondent made from UA was about seven times higher than the annual salary of a senior government official earning Tshs. 240 000 (US\$ 500), and ten times higher than the annual minimum wage income of Tshs 72 000 (US\$ 150) [31].

Data were collected from 270 respondents in the three studied municipalities. Results showed that UA was found across all density areas and majority of city dwellers practice it. Municipalities recognized UA and set regulations for regulating and controlling it. Despite of urban farmers having entrepreneurial acumen, they faced several challenges in resources and marketing. Land size, total variable costs, and extension service charges impacted on TEI. The highest TEI was achieved by keeping broilers, followed by keeping dairy cattle. Keeping layers ranked third and growing vegetables had lowest TEI. TEI levels declined as on moves from low to high density area. TEI were relatively higher with lower UA units in large animals (cattle) and higher for those who kept larger numbers of poultry. It was recommended to; (a) revisit the set municipal bylaws for regulating and controlling UA; (b) revamp a sound agricultural extension delivery system; (c) Improving support services delivery for promoting uptake of innovations by UA farmers. Further, Exploring profitable innovations for promoting UA in urban setting, carrying out TEI analysis of all UA practices to ascertain TEI levels and UA units for profitable UA enterprises combined with thorough market analysis of UA products and undertaking feasibility study on possibility and profitability of undertaking other types of UA enterprises like fish farming in tanks and or concrete ponds, would highly enhance UA in our cities.

## V. CONCLUSIONS

The following conclusions were drawn from this study:

- UA is practiced across all density areas and different urban dwellers of varying socio-economic status are practicing it.
- UA is practiced under different systems and economics guided UA practices in terms of choice and expansion
- Generally, UA is a profitable undertaking although doers were confronted by marketing problems
- Mainly UA produce are sold at farm gate and local markets
- Extension services provision for UA is inadequate and limited
- Overall mean TEI was 0.72 and an overall mean TEI of 0.77 was found in UA respondents keeping dairy cows, TEI of 0.76 ( keeping layers), a TEI of 0.76 for( keeping broilers) and 0.66 for (growing vegetables)
- Combining different UA activities it was found to be relatively possible and profitable to undertake UA in

low-medium density areas, and taken singly in high density areas

## VII. RECOMMENDATIONS

Based on the conclusions drawn from the findings, recommendations for enhancing UA should aim at investing in combinations of strategies to: (a) revisit the set municipal bylaws for regulating and controlling UA enterprises in Tanzania towns/cities; (b) revamp a sound agricultural extension delivery system for UA; (c) Improving UA support services delivery for promoting uptake of innovations by UA farmers. To achieve these, the study recommends intervention in the following areas.

### Recommendations on revamping extension delivery system for UA

Urban farmers rarely benefit from urban agricultural extension services due to their availability and accessibility as sometimes extension service provision is biased making poorer UA farmers unable to afford some of the recommended technologies. Although the UALEAs and their offices are situated in cities/towns, they are hardly accessible for offering advisory services to UA farmers. Again, advisory services offered are inadequate due to the nature of training they went through which may leave important elements in the whole UA production chain. It is therefore recommended that:

- (a) The ministries concerned (Ministry of Livestock Development and Fisheries and Ministry of Agriculture and Food Security) should retool UALEAs through short courses and seminars.
- (b) UALEAs should organize UA in every area/neighbourhood and offer specific training. For example, it is imperative for the UALEAs in KMC to educate UA farmers on number of UA units they should abide to for improving their TEI in the different UA enterprises and imparting skills and knowledge that will allow intensive production. Given the small plot sizes found in cities one should undertake UA with minimal number of UA units to match with the resources found in cities.
- (c) UALEAs should develop extension packages based on empirical evidence on TEI for the different UA enterprises. For example, with lower TEI in keeping layers and broilers in AMC, UALEAs can train UA farmers to keep local chicken or cross-bred chicken so that they can capture the market of local chicken meat and eggs. In AMC, UALEAs should advise UA farmers to keep dairy cows in low-density areas where there are more resources like forage and can obtain maximum TEI.
- (d) For the purpose of changing mind sets of different stakeholders and graduates, aspects related to UA

should be introduced and taught in the curricula of agriculture, environment and urban land planning.

- (e) Universities and research institutions should direct their teaching on applied research activities towards addressing the problems of UA. They should participate effectively in the formation of instructive materials that will be used in the training of UA farmers.
- (f) UALEAs should turn their focus and train UA farmers on proper handling of manure by introducing composting systems to reduce foul smell and flies in the compound.
- (g) UALEAs and land use planners should train UA farmers on preparing alternative water sources like ponds and wells to reduce water scarcity for UA enterprises.

### Recommendations on improving support services for UA

The following are recommended for improvement of support services in UA:

- (a) Carryout a thorough market chain analysis of UA products.
- (b) Credits for UA should be availed to support UA farmers to conduct UA activities.
- (c) UA should be integrated into urban land use planning and linked to solid waste and water waste management.

### Recommendations for further Research

The following areas are recommended for further studies to enhance UA in Tanzanian cities.

- Explore profitable innovations for promoting UA in urban setting
- Carryout technical efficiency analysis of all UA practices to ascertain TEI levels and UA units for profitable UA enterprises
- Carryout thorough market analysis of UA products to enhance marketability and explore ways of promoting markets for the same
- Undertake feasibility study on possibility and profitability of undertaking other types of UA enterprises like fish farming in tanks and or concrete ponds.

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Improving support services for UA enterprises requires a thorough understanding of a situation in which UA operates. There are factors that influence one engaging in UA enterprises and factors limiting undertaking UA. A balance sheet between driving forces and restraining forces will help determine ways of diminishing restraining forces for improving UA enterprises in a given locale by using Force Field Analysis tool. Force Field Analysis theory developed by Kurt Lewin (1951) provides a framework for looking at forces that influence a situation. The approach allows breaking down common misconceptions and determining their basic elemental construct. Improvements in support services geared towards reducing opposing forces to UA will help eliminate misconceptions that are held against UA and hence improve UA TEIs. Services for supporting the development of UA are so minimal and sometimes are expensive. A number of constraints for the promotion of UA are described in Fig. 17. Such limiting factors include lack of credits for UA for the poor UA farmers, inability to prevent post-production losses, lack of know-how on UA like composting, container farming, and few agents who supply the necessary UA inputs.

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