

Mobility and Relational Connectivities on Access to Urban Agriculture Among Residents of Informal Settlement in Eldoret City, Kenya

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ABSTRACT

Urban agriculture has emerged as an important means of survival for many. It is not only a means of improving household food security and nutrition, but also a source of income, employment and a means to social and economic empowerment especially for urban poor. However, it has been characterized by restrictive policies and practices prevalent in many urban areas in Africa as well as limited access. Mobility has been identified as an important factor in mediating access to livelihood for individuals and for their households. However, the role of mobility in shaping access and functioning of urban agriculture has received tangential treatment in urban agriculture research. On the other hand, interpersonal relationships and social networks are central to promoting access to livelihood activities. Nevertheless, there is dearth of information on how relational connectivities impact on access and participation in urban agriculture. This study was intended to offer important insights into understanding the dynamics of how mobility and relational connectivities are integral to urban farming as a livelihood option to urban residents. The theoretical perspective that guided this study was the social practice theory. The research was conducted through a survey method using concurrent mixed method approach. Data were collected using questionnaire, key informant interviews, focus group discussions, and direct observation. The study participants were drawn from three purposively selected informal settlements in Eldoret City that is, Langas, Huruma and Munyaka. The study generated both quantitative and qualitative data. Quantitative data were analyzed using both descriptive and inferential statistics. Chi-square was used to determine the relationship between gender and the influence of mobility in access to urban farming. Qualitative data were transcribed and analyzed deductively through themes. The results revealed that mobility plays an import role in access to farming space mainly through enabling connection to or reaching the person/people who enabled acquisition of the farming space, providing the means or platform to reach and locate the farming space and obtaining information on the availability of the farming space. The results of the study further revealed that gender had no significant influence on mobility impact on access to farming space. In terms of access to market, the results of the study showed that mobility influenced access to the market for farm produce mainly through the connection to the people who help the urban farmer get market for their products, aided their ability to locate and reach the market and helped in obtaining information on where to sell the farm products. It also aided in obtaining agricultural technologies and innovations by the farmers. Finally, the results revealed that interpersonal relationships and social networks (relational connectivities) are central to promoting access and participation in urban farming mainly through family relationship and friendship ties. This study highlights the importance of human mobility and relational connectivities in advancing urban farming particularly among poor urban dwellers.

Keywords: Mobility, relational connectivities, urban farming, Eldoret, informal settlements

INTRODUCTION

Urban agriculture has emerged as an important means of survival for many. It is not only a means of improving household food security and nutrition, but also a source of income, employment and a means to social and economic empowerment (Simiyu, 2012) especially for the urban poor. However, it has been characterized by restrictive policies and practices prevalent in many urban areas in Africa. In addition, access to farming space, market and agricultural innovations including information about new farming technologies depends on many factors, key among them is mobility. Mobility has been identified as an important factor in mediating access to

livelihood for individuals and for their households. People move to survive; they move in search of food money, water and essentially to sustain their livelihoods (Kago, 2022).

Mobility refers to the extent to which people are able to move around inside and outside their communities to access various resources and services (Lodin *et al.*, 2019). Mobility is vital to individual and household livelihood pursuits, involving travel to paid formal or informal work, travel to agricultural fields, and travel to meet family and friends that forms one's social network (Bryceson *et al.*, 2003). A person's mobility enables her/him to build and maintain formal and informal social networks and relations, and to collaborate and coordinate with others to access, share and process relevant information and knowledge (Lodin *et al.*, 2019). Therefore, mobility is key to urban farming/agriculture as a source to livelihood for many urban residents particularly the poor who lack access to steady employment and land ownership. However, the role of mobility in shaping access and functioning of urban agriculture has received tangential treatment in urban agriculture research.

A broad definition of urban agriculture was introduced by the United Nations Development Programme (UNDP, 1996), which describes urban agriculture as "[...] an activity that produces, processes and markets food and other products, on land and water in urban and peri-urban areas, applying intensive production methods and reusing natural resources and urban wastes, to yield a diversity of crops and livestock." Urban agriculture plays a key role in food security, providing fresh produce and a range of social benefits. It not only serves as a source of employment and a livelihood survival strategy for some urban dwellers in Africa but also serve as a contributor to urban food security and climate change resilience (Tuffour, 2023; Azunre *et al.*, 2019). In poor and disadvantaged areas, urban garden provides a powerful vehicle for food production and local access (Amirtahmasebi, 2008). Residents of informal settlements make use of the urban commons and assert their right to the city through farming and gardening (Sultana, Birtchnell and Gill, 2020). However, urban farming is a contested land use activity in urban areas in Africa. Many urban authorities across sub-Saharan Africa have continued to omit urban farming from urban land use and restrict its practice, even criminalizing its practice through prohibitive and punitive policies, yet its importance to the well-being of individual and urban community is immense (Simiyu, 2012). According to Cashman (2018) while public opinion about producing food in cities is mixed, this contestation of space nevertheless transforms urban areas. For the urban poor, access to freely available space, even when prohibited by restrictive or punitive policies, is often contingent upon their mobility. As such, mobility and immobility are fundamental to understanding the complex intersection between urban farming and access to urban space. This study mainly focuses on how mobility influences access to farming space, market and agricultural innovations including information about new farming technologies.

On the other hand, interpersonal relationships and social networks are central to promoting access to livelihood activities. These networks can facilitate knowledge, information, and technology spread as interactions between network members influence individual behavior and encourage cooperations (Cassidy and Barnes, 2012; Beaman and Dillon, 2018; Wang *et al.*, 2021).

For example, initial access to casual jobs is often facilitated by family members or friends. Therefore, such ties play an important role in access to resources. Nevertheless, there is dearth of information on how relational connectivities impact on access and participation in urban agriculture. Therefore, this study further analyzes the relational connectivities among urban farmers and its impact on access and participation in urban farming. In overall, the study is designed to offer important insight into understanding the dynamics of how mobility and relational connectivities are integral to urban farming as a livelihood option to urban residents.

The theoretical perspectives that guided this study is the social practice theory. Social practice theory begins with the premise that people participate in multiple and variable social contexts. From the standpoint of social practice theory, the complexity and diversity of practices in which people participate is not necessarily a burden but is an enriching aspect of life. By moving across settings of social practice, people are able to pursue diverse concerns and become aware of new possibilities for action and arrangements for participation in practice (Dreier, 2008). In addition, they are confronted with dilemmas and contradictions that motivate change and learning (Engeström & Sannino, 2010; Mørck, 2010). Mobility is conceived as a social practice

METHODS

The design that was used in this study is cross-sectional survey design that utilizes concurrent mixed method approach. According to Johnson and Onwuegbuzie (2004) mixed method enables researchers to increase both the scope and the level of possible analysis. The strength and the value of the mixed methods approach is that it provides researchers with a broader set of analysis and a more substantial way of data interpretation and hence more robust results (Muskat *et al.*, 2012). It also helps in highlighting important factors, which may not be effectively explored by using only a single method. Mixed methods approach therefore allowed the researchers to draw important insight into understanding the dynamics of how mobility and relational connectivities are integral to urban farming as a livelihood option to the urban poor residents. The study was conducted within Eldoret City in three selected informal settlements of Langas, Huruma and Munyaka settlements. These settlements were selected because they are among the largest informal settlements in Eldoret City, their spatial variability, and because of their population are mixed in terms of ethnicity thus fair representations of Eldoret urban population. The study participants were comprised of heads of urban farming households and key informants that included county government officials, ministry of agriculture, and community leaders. The sample size for the farming households was 260 respondents. The sample size was determined using Fisher *et al.*'s (1998) formula for estimating sample size for populations greater than 10,000. A questionnaire was used to gather information from this group. Also included in the study were key informants that include selected urban farmers, county government and ministry of agriculture officials and community leaders. Survey respondents were then picked using random sampling from each of the selected informal settlements; this was preceded by preliminary survey to identify the farming households. For qualitative part, between 6-10 heads of farming households were purposively picked to form groups for the Focus Group Discussions (FGD) taking care of sex composition. In total there were 6 FGDs (2 for each informal settlement). The FGDs were used to gather in-depth information on the experiences in regard to the impact of mobility and relational connectivities in access and participation in urban farming. Further, 4 Key Informants, 2 each from county government officials, and ministry of agriculture officials also provided qualitative data. Interview schedules were used to collect data from the key informants on zoning regulation, and attitude towards urban agriculture and location of urban farms.

Data obtained using the questionnaires were analyzed using descriptive and inferential statistics. Descriptive statistics involved the use of frequencies, totals and percentages. While inferential statistics involved performing Chi-square analysis to determine the relationship between gender and the influence of mobility in access to urban farming. Qualitative analysis considered the inferences that were made from the opinions of the respondents during the KIIs and FGDs (Mugenda and Mugenda, 1999). The qualitative data were transcribed and analysed deductively through themes using critical discourse analysis.

RESULTS

Table 1 presents the demographic characteristics of the respondents. The survey covered 260 farming households from three study localities. Of those surveyed, 60.0% were from Langas, (the largest informal settlement in Eldoret) and 20.0% were from Huruma and Munyaka respectively. Of these majority originated from the local Uasin Gishu County (39.0%), followed by Western region of Kenya (17.3%), Central region (16.9%), while those from Nyanza region were 12.7% and other parts of Rift Valley outside Uasin Gishu County were 11.2%. Those originating from the Eastern region of Kenya constituted 1.9% and the least came from Nairobi and the Coastal regions (0.4% respectively). Majority of the respondents had resided in Eldoret City for over 10 years (67.3%). In terms of sex, majority (57.3%) were female, while male constituted 42.7%. The dominance of women in urban agriculture was elaborated during the FGDs. The informants reported that men are less interested in urban farming. This was affirmed by a female farmer who explained;

"There are many women who are practicing urban farming. More women are working in the urban farms because they are providing food and other basic needs to their children. Most men have negative attitudes towards working at the urban farm and prefer formal employment. Some men indulge in alcohol and cannot find time to work at a farm."



Thus, the study illustrates differential gender power relations in regard to participation in urban farming by urban farmers which influence their capacities for agricultural innovations. In a similar study in Dire Dawa city in Ethiopia, Nigus *et al* (2024) found that women were the dominant participants in urban farming. FAO (2007) observes that women represent an important portion of urban farmers since they tend to have most of the responsibility for feeding the household, while men tend to seek other urban employment.

Table 1: Demographic Characteristics of the Respondents

Household Characteristics of Respondents	frequency	%
Residence		
Langas	156	60.0
Huruma	52	20.0
Munyaka	52	20.0
Area of origin		
Uasin Gishu (Local)	102	39.2
Western Region of Kenya	45	17.3
Central Region of Kenya	44	16.9
Nyanza Region	33	12.7
Rift Valley (outside Uasin Gishu)	29	11.2
Eastern Region of Kenya	5	1.9
Nairobi	1	0.4
Coast Region of Kenya	1	0.4
Length of residence in Eldoret City (years)		
Less than 1	2	0.8
1-2	17	6.5
3-4	36	13.8
5-10	30	11.5
Over 10	175	67.3
Sex		
Male	111	42.7
Female	149	57.3
Age Category (years)		
18-30	53	20.4
31-40	60	23.1
41-50	75	28.8
51-60	37	14.2
Above 60	35	13.5
Marital Status		
Single	44	16.9



Married	197	75.8
Divorced/Separated	6	2.3
Widowed (widows and widowers)	13	5.0
Educational Attainment		
No formal education	22	8.5
Primary	80	30.8
Secondary	107	41.2
Tertiary/college	37	14.2
University	14	5.5
Religion		
Christian	254	97.7
Muslim	2	0.8
Traditional African	1	0.4
Others	3	1.2
Average monthly income (KES)		
Below 1,000	86	33.1
1,001-10,000	112	43.1
10,001-20,000	33	12.7
20,001-30,000	15	5.8
30,001-40,000	8	3.1
40,001-50,000	1	0.4
Over 50,000	5	1.9
Size of household		
1-2	49	18.8
3-5	137	52.7
6-8	60	23.1
9-10	12	4.6
Over 10	2	0.8
Ability status		
Living with disability	15	5.8
Not living with disability	245	94.2

The respondents were also differentiated in terms of age category, education level, religion, average monthly income, size of household and ability status. Over 71% of the respondents were falling in the age category of 50 years and below, while majority were married (75.8%), 16.9% single, 5.0% widowed and 2.3% widowed or separated.

The majority of the respondents (41.2%) had received secondary school level of education, 30.8% had received up to primary level of education, 14.2% tertiary level, and 5.5% had university education. While up to 8.5% had

no formal education. In terms of religion, and overwhelming majority (97.7%) were Christians, 0.8% Muslims, 0.4% Traditional African Religion, while up to 1.2% indicated other religious affiliations.

Since income has a bearing on livelihood choices including preferences for engaging in farming activities, data on respondents' average monthly income was also collected. Over 66% of the respondents had an average monthly income of below KES 10,000 (USD\$ 76), while those with an average monthly income KES 10,000 (USD\$ 76) and above only constituted 23.9%. In terms of the size of household, most respondents were from households with 3 to 5 members (52.7%), followed by 6 to 8 members (23.1%), then 1-2 members (18.8%) and 9 to 10 members, while only 0.8% were from households with over members. Finally, in regard to ability status, up to 5.8% of the respondents were living with disability, while the majority 94.2% were not living with any disability.

Type of farming products

The results presented in Table 2 show that 68.1% of the farmers surveyed engaged in vegetable farming, this was followed by cereals and poultry farming (51.5% respectively), then fruits (38.8%) and animal husbandry (35.8%). Other farm products included flowers (20.0%), tree seedlings (20.0%).

Table 2: Farming Products

Farming products	frequency	%
Vegetables	177	68.1
Cereals (e.g. Maize, sorghum, beans)	134	51.5
Poultry/Birds (e.g. chicken, duck, guinea fowl)	133	51.2
Fruits	101	38.8
Animals husbandry (e.g.cattle, goat, sheep, pig, rabbit)	93	35.8
Flowers	52	20.0
Tree seedlings	52	20.0
Others	44	16.9

Through direct observation it was established that horticultural activities dominated the urban farming spaces in the informal settlements. Horticultural production include; vegetables, beans, peas, potatoes, onions, tomatoes, among others. Cash crops such as maize and wheat production is not practised on the limited urban farming and gardening spaces. Tree seedlings nurseries and horticultural plants were observed to be done by the adult and youthful men and women along river banks for commercial purposes.

Men are majorly involved in the business of fruit-tree nurseries which are managed by private individuals. Some of the urban farmers reported that they have planted fruit- trees such as apples, dragon fruits, melon and avocados in their limited farming spaces. Animal keeping was noted as one of the urban farming activities. Pigs, dairy cows, goats, sheep, chicken and rabbit farming were reported by farmers across the three informal residential areas.Previous studies have also reported that vegetables, cereals and poultry were the most agricultural practices by urban farmer in Kenyan and other towns in eastern Africa (Foeken & Owuor, 2006; Githugunyi, 2014; Omondi, Oluoch-Kosura and Jirstrom, 2017: Nigus *et al.*, 2024).

The results presented in Table 3 indicate that more than half of the farmers (over 50%) have engaged in urban farming in Eldoret City for five years or more, while only 8.5% have practiced urban farming for less than one year. The results presented in Table 3 indicate that more than half of the farmers (over 50%) have engaged in urban farming in Eldoret City for five years or more, while only 8.5% have practiced urban farming for less than one year.

Table 3. Length of Time Engaged in Urban Farming in Eldoret City

Length of time (years)	n	%
Less than 1	22	8.5
1-2	48	18.5
3-4	54	20.8
5-10	27	10.4
Over 10	109	41.9
Total	260	100.0

The majority of the farmers (70.8%) had resorted to urban farming for self-consumption and as the main economic activity (57.7%) (Table 4). Over 46% engaged in urban farming as a means of cost saving, 23.8% as hobby, 2.3% for exercising self-therapy, relaxation and calmness, while 0.8% do it to spend time with friends. Previous studies have shown that most urban farmers engage in urban farming for self/family consumption and sale to earn income (Foeken & Owuor, 2006; Omondi *et al.*, 2017)

Table 4: Purpose of Initiating Farming Activity

Purpose	frequency	%
Self-consumption	184	70.8
Main economic activity	150	57.7
Cost saving	120	46.2
Hobby	62	23.8
Exercising, Self-therapy, relaxation and calmness	6	2.3
Spend time with friends	2	0.8

In terms of the location of the farm (Table 5), majority of the farmers practiced their farming activities on the front yard (43.1%), followed by open field (33.8%), roadside (23.5%), and backyard (20.4%). At least 5.4% practiced indoor farming, 2.3% balcony/window farming, while 1.9% practiced river bank farming, and lastly 1.2% practiced farming on rooftop. In a similar study on urban farming in Nairobi city, Ogendi *et al* (2019) found that urban farming was mainly carried out in open field, on rooftops, balcony and to some extent in greenhouses.

Table 5: Location of Farming Activity

Location	frequency	%
Front yard	112	43.1
Open field	88	33.8
Roadside	61	23.5
Backyard	53	20.4
Indoor	14	5.4
Balcony/window sills	6	2.3
River bank	5	1.9
Rooftop	3	1.2



The average distance from the house of resident to the farm was reported by most of the urban farmers (76.2%) as less than 1km (Table 6). However, at least 5.4% indicated that the farming space was located over 5km away.

Table 6. Average Distant from the House to the Farm

Distance (KM)	n	%
Less than 1	198	76.2
1-2	26	10.0
3-4	16	6.2
5	6	2.3
Over 5	14	5.4
Total	260	100.0

In terms of frequency of visiting the farm (Table 7), majority (76.9%) visited their farms on a daily basis, 12.7% after every two to three days and 5.8% twice a week.

Table 7. Frequency of Visiting the Farm

Frequency	n	%
Daily	200	76.9
After every two to three days	33	12.7
Twice a week	15	5.8
Fortnightly	2	0.8
Monthly	5	1.9
After more than a month	3	1.2
When need arises	2	0.8
Total	260	100.0

Influence of Relational Connectivities in Access and Participation in Urban Agriculture

It has been observed that interpersonal relationships and social networks or what is referred to as relational connectivities are central to promoting access to livelihood activities. The study sought to establish from the study participants the determinants of access to urban farming space and whether relational connectivities played a role. The results in Table 8 reveal that family relationship was the main connection that enabled access by most of the urban farmers (38.8%), this was followed by friends (12.3%), neighbors (3.8%), social groups (1.2%), work colleagues (0.8%) and religious groups (0.4%).

Other mode of access to farming space included through ownership (23.1%), renting or leasing (12.3%), living near an empty space (3.8%), inheritance (1.9%) and local urban authority (1.5%). In general, relational connectivities played an important role to access to urban farming space to majority of the urban farmers (57.3%). The influence of relational connectivities in accessing farming became more apparent when all the study respondents were asked to state whether relation connection helped the acquire or access the farming space.

Table 8: Determinant of Access to Farming Space

Relational connectivities	n	%
Family	101	38.8



Land owner	60	23.1
Friends	32	12.3
Renting/leasing	32	12.3
Neighbor(s)	10	3.8
Living near an empty space	10	3.8
Inheritance	5	1.9
Local urban authority	4	1.5
Social group(s)	3	1.2
Work colleague(s)	2	0.8
Religious group(s)	1	0.4
Total	260	100.0

The results in Table 9 show that over 90% of the respondents stated that relational connectivities played a role in their access/acquisition of the farming space.

Table 9. Did Relational Connectivities Play a Role in Gaining Access to Farming Space

Relational Connectivities Play a Role in Gaining Access to Farming Space	n	%
Yes	236	90.8
No	24	9.2
Total	260	100.0

This clearly demonstrate that even in the cases of land ownership, inheritance and other forms of farming space acquisition, relational connectivities played an integral part. For example, 100% of those respondents who indicated that they accessed their farming space through inheritance or renting/leasing stated that they were able to access/acquire farming through these means because of relational connectivities, while 83.3% of those who indicated they own the land stated that they were able to own the land where they are undertaking the farming through because of relational connectivities.

A comparison between the influence of relational connectivities on access to farming space and gender indicate an almost a similar trend with 91.9% of female farmers and 89.2% of male farmers stating that it had an influence. The Chi-square test performed to examine the relation between gender and the influence of relational connectivities on access to farming space was not significant ($X^2 = 0.577$, $df=1$, $p= 0.449$). This means that both male and female urban farmers are likely to acquire their farming space through relational connectivities.

The importance of relational connectivities in access to farming space for the urban farmers came to fore during in-depth interview with a female farmer who observed that;

I used to buy fresh vegetables from my neighbor and noticed that she was not only earning good money from the sales, but also spent less on purchasing farm produce. So, I asked her to help me get some space next to her farm so that I could also practice vegetable farming. She was very helpful, because she readily took me to her farm next to the river, introduced me to the other farmers as her sister who was to assist her in the farm. So, they easily allowed me to take up the free space between her farm and the other farms. Were it not for my good neighbor and friend, I would not have gotten the space, because as I came to learn later, the farmers there don't accept strangers and strive to protect their space.

This was further confirmed by participants in FGDs who observed that social connections were key not only to gaining access to urban farming space but also in initiating the farming activity. These connections, they

elaborated, provide information about the availability of the space, link or introduce one on how to get the space, presents a demonstrations arena for the prospective farmer, and at times provide necessary support to acquire farming space and for initiating the farming activity. Other studies have demonstrated the link between relational connectivities to urban food security. Nosratabadi *et al.* (2020), Ayuya (2024) and Crush and Battersby (2016) observe that social connectedness contributes to food security through the synergy created by the interrelationships among urban community members at every stage of the food system.

Influence of Mobility in Access and Participation in Urban Agriculture

Human mobility has been attributed to improved wellbeing and quality of life (Luo *et al.*, 2023). This study sought to establish from the study population whether mobility played a role in their access to the farming space. The findings reveal that over 83% indicated that mobility enabled them to access the farming space (Table 10).

Table 10. Did the Ability to Move and Interact Play a Role in Gaining Access to Farming Space

Ability to Move and Interact Play a Role in Gaining Access to Farming Space	n	%
Yes	218	83.8
No	42	16.2
Total	260	100.0

This was mainly through enabling them to connect/reach the person/people who helped them get the farming space (46.8%), the ability to move by having the means to travel easily (such as motorcycle or bicycle) or money enabled them to reach and locate the farming space (35.3%), ability to move around frequently helped them obtain information on farming and the availability of the farming space (29.8%), and visiting family/relatives, friends, religious group colleagues, social group colleagues among others. enabled them to reach, identify and acquire the farming space (13.3%) (Table 11).

Table 11: Role of Moblity in Gaining Access to Farming Space

Role of Moblity in Gaining Access to Farming Space	frequency	%
The ability to move enabled me to connect/reach the person/people e.g. friends who helped me get the farming space	102	46.8
The ability to move by having the means or money enabled me to reach and locate the farming space	77	35.3
Being able to move around frequently helped me obtain information on farming and the availability of the farming space	65	29.8
Moving around to visit family/relatives, friends, religious group colleagues, social group colleagues e.t.c. enabled me to reach, identify and acquire the farming space	29	13.3
Others	11	5.0

Underlying the importance of mobility in access to urban farming space is the distance from the residential area to the urban farming space. The findings further revealed that most of the farmers who indicated that mobility influenced their access to the farming space resided over 3km from where they practiced farming (97.2%) as compared to those who resided less than 3km (81.7%). However, more salient is that in both cases mobility was a crucial factor in accessing the farming space.

A comparison between the influence of mobility on access to farming space and gender indicate an almost a similar trend with 83.8% of male farmers and 83.9% of female farmers stating that it had an influence. The chi-square test performed to examine the relation between gender and the influence of mobility on access to farming space was not significant ($X^2= 0.01$, $df=1$, $p= 0.981$). This means that mobility has a significant influence on access to farming space for both male and female farmers.

Influence of Mobility in Access to Market for Farm Produce

The study also sought to get insight into the role of individual farmer's ability to move in influencing access to the market for urban farm produce. To bring this into perspective, the respondents were asked to indicate whether they sell their farm produce or not. Farmers who sell their produce were found to be 76.2% (Table 12).

Table 12. Do you Sell your Farm Product(s)

Do you sell your farm product(s)	n	%
Yes	198	76.2
No	62	23.8
Total	260	100.0

Out of these 58.9% sell their farm produce at the farm, meaning they don't have to move, 25.8% utilize their ability to move to connect or reach the person/people who get them the market for their farm products, 21.2% indicated that the closeness of the market make it very accessible, 20.2% noted that their ability to move enabled them reach and locate the market for their farm products, 18.2% stated that their ability to move enabled them connect/reach the person/people who purchase their farm products, while 17.2% indicated that moving around help them identify customers for their farm products (Table 13).

Table 13: Role of Moblity in Gaining Access to Market for Farming Product

Role of Moblity in Gaining Access to Market	frequency	%
I sell some of my farm produce at the farm	116	58.9
The ability to move enable me connect/reach the person/people who get me the market for my farm products	51	25.8
The market is very accessible because it is very close to where I carry out the farming	42	21.2
The ability to move enabled me to reach and locate the market for my farm products	40	20.2
The ability to move enable me connect/reach the person/people who purchase my farm products	36	18.2
Moving around help me identify customers for my farm products	34	17.2
My farm area is located next to the road from where I easily access my customers	32	16.2
Moving around has helped me get information on where to sell my farm products	27	13.6
Having a motorcycle/bicycle enabled me to reach the market for my farm products	15	7.6
I sell my farm produce through online	14	7.1
I move around with the farm produce on handcart	7	3.5
Others	7	3.5

Other forms of mobility influences reported by the urban farmers included; the location of the farm next to the road made it easily accessible to the customers (16.2%), being able to move around helped them get information on where to sell their farm products (13.6%), possessing a motorcycle/bicycle enabled them to reach the market for their farm products (7.6%), selling farm produce through online platform (7.1%), and using handcart to move farm produce to the customers/market.

Influence of Mobility in Access to Agricultural Innovations and Technologies

The aim of this section is to establish the influence of mobility in access to agricultural innovations and technologies by urban farmers. Urban farmers unlike their rural counterparts are faced with the constraints of space which calls for innovative ways of using the limited space, and at the same time the desire to obtain higher yields require use of technologies. The results in Table 14 reveal that majority (86.2%) of the farmers were applying agricultural technologies and innovations in their farming practices.

Table 14. Do you Apply any Agricultural Technologies/Innovations in your Farming Practices

Do you sell your farm product(s)	n	%
Yes	224	86.2
No	36	13.8
Total	260	100.0

Among the main agricultural technologies and innovations applied by the farmers (Table 15) were irrigation through rain water harvesting (46.4%), application of fertilizers/organic manure (31.7%), sack gardening (26.3%), recycled container gardening (18.3%), diversification of farming (16.5%), zero grazing (13.8%), irrigation through waste water recycling and irrigation through river water (11.6% respectively).

Table 15: Agricultural Technologies/Innovations in Farming Practices

Role of Moblity in Gaining Access to Market	frequency	%
Irrigation through rain water harvesting	104	46.4
Application fertilizer/organic manure	71	31.7
Sack gardening	59	26.3
Recycled container gardening	41	18.3
Diversity farming	37	16.5
Zero grazing	31	13.8
Irrigation through waste water recycling	26	11.6
Irrigation through river water	26	11.6
Seeking extension services	8	3.6
Vertical farming (cultivating plants on vertically inclined surfaces)	8	3.6
Greenhouse technology	5	2.2
Cultivation on wooden boxes	3	1.3
Others e.g Improved poultry farming, cross breeding	2	0.9

Other agricultural technologies and innovations applied by the farmers include seeking extension services (3.6%), vertical farming (3.6%), greenhouse technology (2.2%), cultivation on wooden boxes (1.3%) and improved poultry farming and cross breeding (0.9%). In a similar study, Omondi *et al* (2017) found that the dominant agricultural technologies/innovations applied by farmers in Kenyan towns are rainwater harvesting for irrigation, and use of recycled domestic water for irrigation.

Majority of the urban farmers acquired the knowledge about the agricultural technologies and innovations (Table 16) through friends (54.5%), family/relatives (36.2%), fellow farmers (34.4%), TV (29.0%), neighbors (22.3%), and social groups (19.6%). This shows that relational connectivities play an important role in the acquisition of knowledge about the agricultural technologies and innovations.

Table 16: Method of Acquisition of Knowledge on Agricultural Technologies/Innovations for Farming Practices

Method of acquisition knowledge/information	frequency	%
Through friend(s)	122	54.5
Through family/relative(s)	81	36.2
Through fellow farmers	77	34.4
Through TV	65	29.0
Through a neighbor(s)	50	22.3
Through social group(s)	44	19.6
Through extension officers	33	14.7
Through radio	23	10.3
Through mobile phone	16	7.1
Social media	13	5.8
Through acquaintance(s)	4	1.8
Through religious group/acquaintance(s)	3	1.3
Through educational tours	2	0.9

Through FGDS it was affirmed that informal social networks and relations played a key role in coordinating with other urban farmers to access, share and process relevant information and knowledge on new farming technologies and market for their products. The urban farmers confirmed that word of mouth, referrals, phone connectivity and online marketing strategies have been applied in order to access a wider market base for their farm produce within town and villages. The farmers reported that in some places they have ready market for their farm produce in urban market spaces, supermarkets and residents living in rented houses.

Other methods of acquisition of knowledge about the agricultural technologies and innovations included through extension officers (14.7%), radio (10.3%), mobile phone (7.1%), social media (5.8%), acquaintances (1.8%), religious group (1.3%) and educational tour (0.9%).

The County government of Uasin Gishu through the agricultural extension officers and other private agencies such as One Acre Fund were affirmed by the urban farmers as key sources of agricultural innovations and information. This was confirmed by a farmer who narrated that;

“We are in groups such as the One Acre Fund which teach new farming methods and sell subsidized seeds. One Acre Fund also gives loans to the farmers. Everyone who is interested in agriculture from youth to older persons across gender can be eligible to register with One Acre Fund. This agency also encourages animal husbandry but more emphasis is placed on crop farming.”

In the FGDs the informants reported various mechanisms of communication through which they get access to market and agricultural innovations including information about new farming technologies. Emphasis was placed on television and radio programmes on agricultural innovations. These included the Citizen Television programmes; Kenya’s Gold, *Kilimo Biashara* and *Shamba shape-up* among others. Majority of the urban farmers prefer Television programmes because they are audio-visual where demonstrations are seen and can be emulated by the viewer. Radio programmes in English, Kiswahili and vernacular languages were reported to be good means of communication; however, it is only audio kind of communication which was noted to be limited in terms of demonstrating practical farm work. Newspapers for instance Daily Nation has Seeds of Gold magazine on every Saturday containing agriculture news, market place, updates and tips for farmers and consumers was expressed to be very informative to farmers in informal settlements.

To assess the impact of mobility in the acquisition of knowledge, the farmers were asked to indicate whether their ability to move influenced their acquisition of knowledge on agricultural technologies/innovations and if so in what ways. The results in Table 17 show that 83.5% of the farmers reported that the ability to move influenced their acquisition of knowledge on agricultural technologies/innovations.

Table 17. Does your Ability to move Influence your Acquisition of Knowledge on Agricultural Technologies/Innovations

Does your ability to move influence your acquisition of Knowledge	n	%
Yes	187	83.5
No	37	16.5
Total	224	100.0

The mobility of the farmers influenced their acquisition of knowledge on agricultural technologies/innovations (Table 18) mainly through enabling them to acquire information and innovations on farming practices and new farming technologies to apply in their farms (83.4%), enabling them to know which inputs are required, where to purchase the inputs, and how they should be applied (51.3%), and enabling them to see methods other farmers are using in their farms (35.3%). It also enabled them learn about how to use digital technologies and social media to acquire information on new farming methods (23.0%), and educational trips enabled them learn from other established farmers (7.0%).

Table 18. How Mobility Influence Acquisition of Knowledge/Information on Agricultural Technologies/Innovations for Farming Practices

Influence of ability to move on acquisition of knowledge	frequency	%
The ability to move and interact with others enabled me acquire information and innovations on farming practices and new farming technologies to apply in my farm	156	83.4
The ability to move around and going to town time and again enable me to know which inputs are required, where to purchase the inputs, and how they should be applied.	96	51.3
Moving around enables me see the methods other farmers are using in their farms	66	35.3
Moving around enabled me to interact and learn about how to use digital technologies/social media to acquire information on new farming methods	43	23.0
Organized educational trips enable me learn from other established farmers	13	7.0

CONCLUSIONS AND RECOMMENDATION

Relational connectivities and mobility influences access and participation in urban agriculture. Our study also suggests that mobility played a great role in access to agricultural innovations and technologies by urban famers and the market for urban farming products.

Conflict of Interests

The authors have not declared any conflict of interests.

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