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Rural-Urban Interdependence in Food Systems in Nsukka Local Government Area of Enugu State, Nigeria

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Abstract

The paper explored the rural-urban interdependence in food systems in Nsukka Local Government Area, of Enugu State in Nigeria. Using a stratified sampling technique, 270 household heads participated in the study, comprising of 180 respondents from two rural communities and 90 respondents from the urban area. Descriptive and inferential statistics were used for data analysis. Results show that household socio-economic characteristics such as age, income, education and occupation play significant role in rural-urban interdependence by influencing the decision to migrate, remain in the rural area, or provide urban services in rural areas. The interdependence revolves around five key aspects namely; the urban supply of food and raw materials, migration, labour supply, remittance, and socio-cultural obligations which facilitate the extent of flow of money, goods, and services between rural and urban economies. Large scale production mainly cassava, pepper, and maize occurs in the rural areas whereas small to medium scale production, mainly vegetables, are practiced in the urban areas. Most rural households use rudimentary farm implements and inputs which limit their capacity to increase agricultural production and maintain the flow of agricultural goods in the rural-urban food systems. Factors such as migration; lack of access to land, market and infrastructure; political instability; and poor policy support affect the rural-urban interdependence and hence will require the diversification of enterprises; provision of requisite infrastructure, technologies and farm inputs; and the provision of enabling environment for the interdependence to thrive.

Keywords: rural, urban, interdependence, food systems, remittance, migration

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Introduction

The majority of people in urban areas in developing countries depend directly on agriculture for food or indirectly for their livelihoods through employment in the transport and industrial sectors that deal on agricultural goods and services. Studies have shown that meeting the food demands of urban markets and households can function as an engine of economic growth and social development in rural areas as well as help create a market for local producers, food suppliers, processors and vendors (World Urban Forum, 2010). This brings to the fore the issue of rural-urban interdependence in food systems. Emerging trends in socio-economic development indicate strong interaction and interdependence between rural and urban areas in food systems which are often ignored. This interdependence and interaction between rural and urban areas is vital for the existence and sustainability of a food system.

The rural-urban interdependence and interaction refers to the flow of people (migration), natural resources, agricultural commodities and services, information and money, or in the form of income diversification such as urban agriculture and non-farm rural employment between rural and urban areas (Tacoli, 2002). These reflect a dynamic process of ecological, economic, social and cultural transformation that needs to be better understood. In food systems, the rural-urban interaction and interdependence are highly evident, and processes can be beneficial or detrimental to either or both areas depending on the prevailing conditions. A Food system is thought to be a set of activities ranging from production through to consumption. It covers the dynamic interactions between and within biophysical and human environments which result in the production, processing, distribution, preparation and consumption of food (Gregory et al. 2005).

The prevailing division between ‘urban’ and ‘rural’ is based on the assumption that the physical distinction between the two areas is self-explanatory and uncontroversial (Tacoli, 2004). However, one major problem with this view is that demographic and economic criteria used to define what is ‘urban’ and what is ‘rural’ can vary widely between nations, making generalizations problematic. For example, in Nigeria, the current official designation of rural, medium, and urban is based mainly on population, that is a community with, 5000 people is regarded as rural, 5,000–20,000 as medium, and above 20,000 as urban (Okali et al, 2001; Tacoli, 2002; Maziya- Dixon et al, 2006), whilst in Europe and Latin America, there is a relatively low population threshold of 2,000 or 2,500 urban inhabitants. Therefore, the extent of rural-urban interdependence in food systems may vary depending on location, wealth, gender, and ethnicity. This is driven by access to assets, which include natural resources such as land and water; labor and human capital (education, skills and health); financial capital, including access to credit; and infrastructure, including roads, transport and markets (Tacoli, 2002).

There are three academic views about the development implications of rural-urban interdependence for rural areas. On one side, there are those who are

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skeptical of the implications of rural-urban independence on the development trajectories of rural areas (Dabson, 2007). Work in this context focuses on the adverse consequences of strong linkages between rural and urban areas on local networks and production systems in the former as well as changes to the local communities. On the other side, there are academics that advance the view that increased rural prosperity is inextricably linked with strengthening rural-urban interdependencies (Kubisch, 2007). They place emphasis on rural-urban interdependence as a means of widening the resource base of rural areas. The third body of academic opinion views rural-urban interdependence as not necessarily beneficial or detrimental to the development of rural areas (Ward, 2006).

Croppenstedt and Muller (2000) emphasized the importance of understanding the linkages between rural and urban household's economic, environmental, resource, legal, and human issues that shape rural and urban communities, which in their view was critical for good and efficient interdependencies in food systems between the rural and urban citizens. Kammeier (2005) in a good attempt systematically defined rural-urban linkages into five interrelated categories namely: agriculture-based; physical or spatial (for example, roads, waterways, and other channels of transport); economic; consumption and service; and socio-political linkages. This current study rightly fits into the agricultural based category although it is closely linked with all other categories mentioned. By systematically examining rural-urban activities in a food system, we are able to unravel the inherent complexities within the system. Such an approach is aimed at enhancing the understanding of the rural-urban interactions and interdependencies which can potentially help urban residents to satisfy their growing food demand and to improve the income and livelihood of rural food producers.

Rural-urban interdependencies create challenges and opportunities that require the understanding of policymakers and development planners in infrastructure planning. Urban and rural areas have customarily been classified as opposing and competing fields for the purposes of planning, development and investment (Dabson, 2007). Both national and local governance structures have either failed or have been unwilling to seek approaches to take advantage of the existing interactions between rural and urban places. However, there is a realization now about the existence of an economic, social, cultural and environmental interdependence between urban and rural areas and a need for balanced and mutually supportive approaches to planning and development that is beneficial to both areas (Okpala, 2003; Dabson, 2007). Benefits of rural-urban inter-dependencies far outweigh any purported competition especially when considered from economies of scale principles, in terms of integrated planning approach by urban and rural societies (Bradshaw, 2000; Tandoh-Offin, 2010).

In Nigeria, a strong interdependence is exhibited in urban food security which is directly dependent on the rural food production. At the local level, the rural

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system provides sources of various products and labour for the urban system's use. As a result, the urban systems, through heavy extraction and consumption of resources mainly supplied from rural systems, have contributed heavily to the current state of environmental degradation in many parts of the rural areas. A shift towards a balance in rural-urban interactions through resource efficiency, equitable allocation and distribution is most ideal in exploring the rural-urban interdependence in food systems. Boosting agricultural productivity while ensuring environmental, economic and social sustainability (including the fight against land degradation/ desertification and coping with climate change) is a challenge but essential in lifting poorer rural households out of poverty, ensuring rural employment and the livelihood of the farming community as well as providing food for an increasing urban population.

Purpose of the study

The main purpose of the study was to explore the rural-urban interdependence in food systems in Nsukka Local Government Area of Enugu State of Nigeria. Specifically, the study sought to characterize the forms and extent of interdependence existing between the rural and urban households; characterize the rural and urban household assets as a basis for understanding their food systems; examine the food production systems of the rural and urban households; examine the factors militating against rural-urban interdependence in the food system; and identify strategies for strengthening linkages between the rural and urban areas in food systems.

Methodology

Study area

The study was carried out in Nsukka Local Government Area (L.G.A), one of the seventeen Local Government Areas in Enugu State of Nigeria. Nsukka LGA has an area of 1,810 km² (Enugu State Government Official website: http://www.enugustate.gov.ng/nsukkaLGA.php) and lies within latitudes $6^0 45^1$N and $7^0 00^1$N, and longitude $7^0 15^1$E and $7^0 30^1$E of the Greenwich meridian (Ofomata, 1995). Nsukka shares boundaries with Igbo-Etiti L.G.A on the South, Uzo-Uwani L.G.A on the West, Udenu L.G.A on the East and Igboeze-North L.G.A on the North, all in Enugu State. Nsukka has a population of 309,633 from the 2006 Nigerian census (Enugu State Government Official website: http://www.enugustate.gov.ng/nsukkaLGA.php).

The area is made up of moderately rolling plains and group of hills. It lies within the derived savannah vegetation zone, characterized by incomplete canopy cover which affects soil moisture (Ofomata, 1995). The soils are mainly reddish brown, pale clay and gravel. The climatic conditions are characterized with high temperature ranges from 27^0c - 28^0c. There are two seasons, the wet and dry seasons. The wet season extends from April – October, while the dry season extends from November – March. The annual rainfall range is 1680mm – 1700mm. Farming constitutes their economic activities, although, some of them engage in petty trading especially in the urban areas. Some domesticate

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animals such as poultry, goats, sheep, pigs, etc. However, crop production is the main source of their livelihood. The University of Nigeria Nsukka Community is also a part of the Local Government Area. The target population for the study constitutes household heads in the rural and urban areas in Nsukka L.G.A. In the study area, Nsukka has a rural and urban divide consisting of farmers in and around rural, peri-urban and urban areas. The choice of the target group is because of high level of interdependence of these two divides in food and other goods and services.

Data collection procedure and analysis

A stratified sampling technique was used to select respondents from the urban and rural areas in the study area. In the first category, Nsukka urban was purposively selected for being the only urban center in the Local Government Area. A total of 90 households were selected in this category. In the second category, two rural town communities Opi and Obimo were randomly selected from the 17 rural communities that make up the L.G.A. Also, 90 households each were selected through the list of households given by the village heads in the communities. The household head in each category formed the sampling unit (respondents) as they often take major decisions in the households.

Primary data were collected from the respondents using interview schedules. The instruments for data collection were divided into five sections based on the objectives of the study. Household heads were grouped based on socio-economic characteristics such as age, marital status, size of household, level of education, and years of farming experience. Information on the forms and extent of interdependence of the rural and urban people was also collected using a four point Likert-type scale namely: to a great extent (4); to some extent (3); to little extent (2); and to no extent (1). Any activity with mean value of ≥2.5 was considered a significant factor portraying this interdependence. On the other hand, any activity with mean value <2.5 was not considered a significant factor showing interdependence.

In characterizing rural-urban household assets as a basis for understanding the food system in the rural and urban areas, household assets ranging from crude to modern implements were grouped based on ownership. Assets include; cutlass, hoe, wheel barrows, motorcycle, vehicle, corrugated iron building, and tractors, etc. Assets were assigned scores from low rudimentary implements (1) e.g. Cutlass, hoes, rakes to high modern implements (2) e.g. tractor, *garri* (dried cassava) processing machines, vehicles, corrugated iron houses. A final score of 50% and above was used in delineating the assets in the two divides. Food production systems of the rural and urban households were also classified. This included the type of production engaged in e.g. crop, animal, fishery, etc. It also included, the scale of production e.g. backyard, small, medium and large scale production. Also included here were the sources of information for their production, the sources of credits and types. A five point Likert-type scale was adopted to rank the level of important factors militating against, and/or strategies for strengthening rural-urban interdependence. This

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was rated on a scale of 1-5 as: to a very great extent (5), to a great extent (4), to some extent (3), to little extent (2), to no extent (1). Any factor with value ≥0.40 (10% overlapping variance, (Comrey, 1962) was considered a significant factor militating against or strengthening linkages between rural-urban interdependence in food systems and used in naming the factors, whilst, any item with a mean score <0.40 is not considered as significant as the case may be. Data were analyzed using frequency counts, mean and percentage scores, and factor analysis with Varimax rotation.

Results and Discussion

The socio-economic characteristics of the respondents

The average age of the household heads was 55.5 years with greater proportion (36.3%) ranging from 41- 50 years. Fifty five percent of the household heads were males and dominated the households as heads following the prevailing social structure in the area. This makes them have dominant access to productive resources such as land, finances, and decision making. About 79.7% of household heads were married and this is a typical phenomenon in rural areas where wives have assisted in agricultural production, processing, marketing, and food utilization. Marriage is also a strong factor that determined out-migration in rural areas (Gibson and Gurmu (2012). About 41 % of the household heads had only primary education and only 8.0% of household heads from urban areas had higher education qualifications (Higher National Diploma). Education is a major component of human capital and provides a 'quality' dimension to the simple availability of labor (Zezza et al., 2007). It is also a key asset determining household ability to access higher return activities (whether in agriculture or non-farm activity) and an escape from poverty (Davis et al., 2007). The majority of household heads (85.0%) in rural areas had farming as their primary occupation and were engaged in food production for urban supply. In urban areas, the analysis indicates that a greater proportion of the household heads (50%) were traders in farm produce from rural areas with only 20% being involved in farming.

The average household size in the rural areas was about 7 persons, a considerably large size typical of rural settings in many developing countries like Nigeria. Large household size could as well be a useful source of labour for farming activities. It may also serve as cheap urban labour following migration to urban areas thereby making labour scarce in rural areas (Xinshen Diao, *et al.* 2004). The distribution of farm size shows that the average rural farm size was 2.2 ha. This confirms that most of the household heads were small scale farmers, with insufficient land for adequate agricultural production. This is the same in the urban area where the average farm size was 2.0 ha of farmland. Future projection depicts a decreasing farm size with the increasing trend in population growth and pattern of land tenure system in the communities where land is fragmented among the children of the farmers. The majority (88.3%) of

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household heads belonged to one form of social organization or the other. Membership of social organizations has been found to influence the awareness of innovations in communities because of the opportunity of social interactions among them. It can also influence learning and adoption rates of new agricultural technologies in communities. Quisumbing and McNiven (2005) observed that, social networks are key factors that influence rural-urban linkages. Social networks facilitate access to inputs, information on markets, knowledge on agricultural production, and trade opportunities. The summary of socio-economic characteristics is presented in Table 1.

Opportunities and constraints are socially embedded and reflect roles ascribed to gender, age and ethnic positions, and to migrant status (Tacoli, 2002). According to Okali et al, (2001) characteristics such as age, gender, ethnic background, socio-economic status, educational status, and religion do influence the decision to migrate to the city, remain in or return to the village, practice urban agriculture or provide an urban service in the rural areas, visit home regularly or not at all, and so on. The social norms and values in a locality may be significant determinant of the type and intensity of such reactions. For instance, Chukwuezi (1999) found that many Igbo families in Anambra State in Nigeria encouraged members to migrate, believing that staying in the village will not bring financial success.

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Table 1: Distribution of respondents according to household socio-economic characteristics

Socio-economic Characteristics	Percentage (%)(n= 270)	Mean ( )
Age (years)		
31-40	11.7	
41-50	36.6	55.5
51-60	33.3	
61-70	18.4	
Sex		
Male	55	
Female	45	
Marital Status		
Married	79.7	
Single	1.7	
Divorced	2.7	
Widowed		
Educational Status		
No education	13.3	
Primary	40.7	
Secondary	38.0	
Tertiary	8	
Household Size		
1-5 persons	18.3	
6-10 persons	78.2	6.0
11-15 persons	3.5	
None	–	
Primary Occupation		
Farming	85.0	
Artisans	3.0	
Trading	10.0	
Civil servant	2.0	
Secondary Occupation		
Farming	85.0	
Trading	10.0	
Artisans	3.0	
Civil servant	2.0	
Farming Experience		
15-30	40.1	
31-45	51.5	33.2
46-60	8.4	
Farm Size (ha)		
3	31.7	
2	10.0	
2	11.7	2.2
4	25.0	
4.5	13.3	
5	8.3	
Social Organization		
None	11.6	
Religious group	61.7	
Political group	26.7	
Sources of Farm Labour		
Family labor	36.7	
Hired labour	63.3	
Average Monthly Income		
15,000-20,000	58.0	
10,000-19,000	32.0	18500
Less than 10,000	10.0	

Note: N160 is equivalent to 1 US$

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The forms and extent of interdependence between the rural-urban divides

Table 2 highlights the significant interdependencies that exist between the rural and urban areas in the study area. Urban dependence on rural areas principally revolved around the provision of food, raw materials and labour supply. This was significant in this study with the sale of agricultural commodities, and the supply of labour from rural to urban areas each recording a mean score of 4.00. Rural areas depend on urban areas for their farm and non-farm income, remittances and as a source for processed materials. Remittance from urban to rural areas recorded a mean score of 3.30, whilst the supply of processed agricultural produce from urban to rural areas recorded a mean score of 3.80. Remittances are a crucial component of rural households' incomes and a key element of the continued links between migrants and their homes (Bah *et al*, 2003). They are used for the purchase of farm implements, seeds, fertilizers, and other farm inputs as well as food itself when crop failure occurs. Other forms of rural dependence include attendance of traditional festivals by urban dwellers ($\bar{x}$ = 4.00) who contribute to fund raising activities during such occasions for the development of rural areas; and attracting development opportunities from relatives in urban areas to rural residents ($\bar{x}$ = 4.00). Successful migrants send remittances to relatives in rural areas for investments with a view to returning home (rural area) upon retirement or earlier or setting up business. In so doing, they may also inject financial resources and new skills into the rural economy (Bah *et al*., 2003).

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Table 2: Forms and extent of interdependence between the rural and urban dwellers

S/n	Activities	$\overline{X}$	S.D
	Urban dependence		
1.	Sale of agricultural commodities from rural to urban areas	4.00*	0.00
2.	Labour supply to the urban areas	4.00*	0.00
3.	Supply of foodstuff to relatives in urban area	3.10*	0.79
4.	Attendance to marriage ceremony from rural to urban areas	3.90*	0.12
5.	Attendance to funerals from rural to urban areas	4.00*	0.00
6.	Attendance to religious crusade from the rural to urban areas	4.00*	0.00
7.	Holiday making in urban areas	2.50*	0.98
8.	Supply of firewood from rural relatives to urban residents	3.20*	0.55
	Rural dependence		
9.	Remittance from urban to rural areas	3.30*	0.65
10.	Sale of processed agricultural commodities from urban to rural areas	3.80*	0.4
11.	Supply of improved farm implements to relatives in rural areas	2.1	1.04
12.	Provision of health facilities and assistance by urban residents to rural relatives	3.18*	6.24
13.	Provision of materials such as clothing to rural residents by urban residents	3.28*	0.55
14.	Attendance to traditional festivals such as new year in rural areas	4.00*	0
15.	Water supply to rural areas	3.01*	1.01
16.	Attracting development opportunities by relatives in urban areas to rural residents	3.65*	0.6
17.	Educational exchange at primary and secondary and university level	4.00*	0

** ≥ 2.5; S.D = Standard deviation*

The results show that rural and urban dwellers are mainly tied dependently on each other through agricultural product supply and socio-cultural obligations. These rural-urban interdependencies imply that factors affecting agriculture will have an impact on urban areas (for instance influencing food availability and price). Conversely, factors affecting urban areas will similarly have an impact on rural areas (for instance, disruption in urban demand for agricultural produce and disruptions to goods and services provided by urban enterprises to agricultural and rural households (Teng *et al*, 2011).

The rural and urban household assets

The assets of the rural and urban households in the study area are shown in Table 3. All rural household heads possessed basic farm implements such as cutlass, rake, hoe, digger, and wheelbarrow. All rural households own houses that are made of thatch and mud blocks. In addition to the thatch and mud houses, 50% of rural household heads also own cement block houses covered

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with corrugated iron sheets. All household heads own a bicycle while some own a motorcycle. Very few household heads own vehicles (2%) and garri processing machines (2%). In the urban areas, all urban household heads are in possession of basic farm implements such as cutlass, hoe and rake, with very few of them (2%) having farm tractors. All urban houses for the household heads are made of cement blocks and corrugated iron sheets. Half of the urban household heads own equipment such as garri processing machine, storage facilities, and vehicles.

These results show that both the rural and urban respondents still use rudimentary technologies for agricultural production. It also shows the income level difference between rural and urban residents who have modern assets such as vehicles, tractors, storage facilities, processing machines etc. Agricultural households in the developing countries mostly rural areas lack most modern productive inputs such as pesticides, mechanization and technical assistance which are key features of a functioning agricultural economy. Given this outlook, and the prevalence of agriculture as a livelihood strategy in rural areas, it is unlikely for poorer households to escape poverty using the current agricultural pathways.

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Table 3: The rural-urban household assets

S/n	Assets in Rural Areas	Percentage (%)(n= 270)
1.	Cutlass	100
2.	Hoe	100
3.	Rake	100
4.	Thatched houses	100
5.	Mud houses	100
6.	Digger	100
7.	Wheel barrow	100
8.	Bicycle	100
9.	Motorcycle	50
10.	Tractor	0
11.	Vehicle	2
12.	Cement block houses	50
13.	Garri processing machine	2
	Assets in Urban Areas	
1.	Vehicle	50
2.	Garri processing machine	50
3.	Storage facilities	50
4.	Cement block houses	100
5.	Corrugated iron roof	100
6.	Tractor	2
7.	Cutlass	100
8.	Hoe	100
9.	Rake	100
10.	Thatched houses	0
11.	Mud houses	0

≥ *50%*

The food production systems of the rural and urban households

Food production systems of the rural and urban households are divided into crop production and livestock production enterprises. Table 4a shows a 100% rural and urban household's engagement in crop production in the study area. On the scale of crop production in the rural areas, the majority of rural farmers engaged in large-scale production of cassava (73.3%), vegetables (46.7%), pepper (45%) and maize (91.7%). Most farmers engaged in cocoyam (43.3%) and palm oil (51.7%) production on medium scale whilst the majority of farmers (57%) produced yams on a small scale. Livestock production was mainly supplemental and on small scale or at a backyard scale (Table 4b). About

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69.5% and 43.3% of rural households were engaged in goat and sheep production respectively whilst about 85% were engaged in traditional poultry rearing in their backyard. In urban areas, both crop and animal productions were on small scale or at a backyard scale (Table 4a & 4b).

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Table 4a: Crop production system of the rural and urban households

	Activities	% (Rural) (180)	% (Urban) (90)
	Type of Crop/Scale of Production		
1.	*Cassava*		
	Small scale	1.7	53.3
	Large	73.3	10.0
	Medium	25.0	30.0
	None	0.0	6.1
2.	*Vegetable*		
	Small	13.3	40.0
	Medium	38.3	43.3
	Large	46.7	13.0
	None	1.7	3.3
3.	*Yam*		
	Small	31.7	16.7
	Medium	13.3	
	Large	5.0	
	None	18.3	43.3
4.	*Backyard*	31.7	40.0
5.	*Pepper*		
	Backyard	5.0	53.3
	Small	8.3	16.7
	Medium	41.7	3.3
	Large	45.0	26.7
6.	*Maize*		
	Small	1.7	33.3
	Medium	6.7	53.3
	Large	91.7	13.3
7	*Cocoyam*		
	None	1.7	13.3
	Backyard	3.3	36.7
	Small	43.3	48.3
	Medium	28.3	
	Large	18.3	
8.	*Palm tree*		
	Small	46.7	73.3
	Medium	51.7	3.3
	Large	1.7	
	None	0.0	23.3

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Table 4b: Animal production system of the rural and urban households

	Activities	% (Rural) (180)	% (Urban) (90)
	Animal Production		
1.	*Broiler*		
	None	52.5	20.0
	Backyard	10.2	63.3
	Small	28.8	16.7
	Medium	8.5	
2.	*Layers*		
	None	96.6	100
	Small	3.4	
3.	*Goats*		
	None	5.1	43.3
	Backyard	69.5	56.7
	Small	25.4	
4.	*Pigs*		
	None	25.0	86.7
	Backyard	21.7	
	Small	53.3	13.3
5.	*Sheep*		
	None	43.3	89.7
	Backyard	43.3	10.3
	Small	13.3	
6.	*Traditional poultry*		
	None	6.7	36.7
	Backyard	85.0	63.3
	Small	8.3	

Sources of credit

Credit sources for agricultural production were mainly from friends, relatives and personal savings. A bulk of the credit came from personal savings (95%). In addition, about 60.0% and 52.0% of rural household heads sometimes received credit from friends and family members respectively. Also, 65.5% of the respondents received credit from money lenders. Table 5 shows the summary of credit sources and the frequency at which credit was offered to farmers. In urban households, the majority of the farmers sometimes received credit from banks (81%), friends (63%), and relatives (63%), in addition to credit from their personal saving. Access to credit from banks and micro-credit institutions was very limited particularly to rural farmers due to the stringent procedures of access and re-payments of loans. In Nigeria, credit recovery problems and parastatal institutions mismanagement have severely restricted farmers' access to formal credit (Tacoli, 2002). The impact of some NGOs who operate credit systems has been minimal and localized. In many cases the

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local government is underfunded and has limited opportunity to offer credits. More so, the requirement to pay upfront for local government services such as tractor hire, seeds, and fertilizers makes the facilities inaccessible for low-income farmers (ibid). Agricultural households in the rural areas of this study have limited access to credit which features prominently in most rural agricultural economy. Most farming households lack access to inputs such as pesticides, mechanization, and hired labour which require monetary payments. Clearly, a revision of the formal credit system is essential and should form an integral part of any sustainable rural livelihood strategy.

Table 5: Sources of credit for production

S/N	Financial Institutions	Rural Household (%)	Urban Household (%)
1.	*Microfinance bank*		
	Never	98.3	100
	Sometimes	1.7	
2.	*Agricultural banks*		
	Never	98.3	10.3
	Sometimes	1.7	89.7
3.	*Friends and relatives*		
	Sometimes	60.0	70.0
	Often	11.7	16.7
	Very often	28.3	13.3
4.	*Family members*		
	Sometimes	51.7	70.0
	Often	18.3	10.3
	Very often	30.0	19.7
5.	*Personal savings*		
	Never	3.3	
	Sometimes	1.7	
	Very often	95.0	100
6.	*Money lenders*		
	Never	32.8	90.0
	Sometimes	65.5	6.7
	Often	1.7	3.3

Sources of information for production

Table 6 shows the summary of information sources for production and the frequency at which information is offered to farmers. Sources of information for production were principally from the market, friends/relatives, churches and agrochemical dealers. The majority (96.7%) of rural farm households received production information from the markets. In the urban areas, all farm households frequently received information from the market. Agrochemical dealers also play an important role in the dissemination of production information up to 57%. Most of rural and urban households never received production information from the government's *Agricultural Development*

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Programme (*ADP*) extension service. Very few rural households occasionally received information from media platforms such as television and newspapers, whilst almost half of both rural and urban households received information via radio. The results bring out the weak government machinery in disseminating agricultural information to farmers. This observation was made by Aina (1995) who argued that agricultural information is available but there is a problem of lack of access to such information, and the inability of extension officers to disseminate relevant information to farmers due to their inadequate numbers, the inadequate literacy of farmers, and the general lack of infrastructure in the various rural communities, among others.

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Table 6: Sources of production information/inputs

S/N	Source of information for production	Rural household (%)	Urban household (%)
1.	*Government ADP*		
	Never	94.9	80
	Sometimes	5.1	20
2.	*Private agencies*		
	Never	76.3	69.0
	Sometimes	23.7	31.0
3.	*Market*		
	Never	1.7	
	Sometimes	1.7	
	Very often	96.7	100
4.	*Friends/relatives*		
	Sometimes	25.0	30.0
	Often	50.0	30.0
	Very often	25.0	40.0
5.	*Extension agents*		
	Never	93.2	100
	Sometimes	6.8	
6.	*Television*		
	Never	93.3	63.3
	Sometimes	5.0	36.7
	Often	1.7	
7.	*Churches*		
	Never	26.7	33.3
	Sometimes	26.7	13.3
	Often	13.3	3.3
	Very often	33.3	
8.	*Newspapers*		
	Never	96.6	76.7
	Sometimes	1.7	23.3
	Often	1.7	
9.	*Radio*		
	Never	55.0	56.7
	Sometimes	45.0	43.3
10.	*Posters*		
	Never	95.0	43.3
	Sometimes	5.0	56.7
11.	*Agrochemical dealers*		
	Never	35.0	26.7
	Sometimes	50.0	56.7
	Often	13.3	6.7
	Very often	1.7	10.0

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Sources of land for production

Table 7 shows the various forms of land acquisition for production in both rural and urban agricultural systems. The majority (80%) of rural households' lands for production were inherited while others were either leased or purchased. Share cropping is uncommon among rural households and is practiced frequently by only 5% of the rural households. The implication is that, the majority of rural households have full ownership of their land. However, such an arrangement is prone to constant transfer of land rights through inheritance which has led to land fragmentation and thereby reducing farm size (Eze *et al*, 2011). The average farm land size of 2.2 ha for rural households extremely limits commercial production and adoption of innovation in agriculture in the study area. Population demand for land in the urban areas places constraints on urban agricultural land. Urban residents purchase about 90% of their food (Garret and Ruel, 2000) which presents rural farmers with a market opportunity to produce this food. The security of access to land in rural areas is essential to ensure that people do not lose the farming component of their livelihood.

Table 7: Sources of land for production

S/N		Rural household (%)	Urban household (%)
1.	*Family inheritance*		
	Very often	80.0	-
	Sometimes	15.0	100
	Often	5.0	-
2.	*Leased*		
	Never	5.0	60.0
	Sometimes	70.0	36.7
	Often	23.3	3.3
	Very often	1.7	3.3
3.	*Purchased land*		
	Never	13.3	33.3
	Sometimes	66.7	63.3
	Often	16.7	3.3
	Very often	3.3	-
4.	*Share cropping*		
	Never	69.5	94.7
	Sometimes	25.4	5.3
	Very often	5.1	

Factors militating against rural-urban interdependence in food systems

Table 8 shows the output of factor analysis using Varimax rotation to determine the factors that affect rural-urban interdependence. Three factors namely; socio-economic and infrastructural issues, policies and programmes, and social and environmental issues were extracted based on the responses from the household heads.

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The socio-economic factors were dominated by migration from rural to urban areas with a factor of 0.67. Results show that about 50 to 80% of rural households have at least one migrant member irrespective of the level of wealth. According to Tacoli (2002), this is because economic motivations (which are the main reason for moving), overlap with socio-cultural expectations of widening one's experience and the desire by younger generations to escape from obligations and control from their elders. Rural-urban migration is considered to pose serious hindrance on the development of rural agriculture and production system. Conversely, it can equally increase the volume of remittances delivered to the rural areas. There is also the potential for injection of financial resources and new skills into the rural economy by successful migrants as they invest in their villages with the intention of returning home upon retirement. However, from the urban perspective, though rural-urban migration has contributed to the labour market, it is seen as essentially contributing to uncontrolled growth and related urban management problems in many large cities in the South (Tacoli, 2004).

Infrastructural factors include lack of access to infrastructure such as tractors (0.73), lack of access to land (0.46), and lack of good access to markets (0.55). Rural-urban linkages are usually manifested through the flow of agricultural and industrial goods and services, capital and labour and through sectoral linkages, facilitated by adequate infrastructure. Poor or lack of physical infrastructure may significantly affect rural-urban interdependencies in food systems with far-reaching consequences for producer prices and, in the long run, affects production and activity patterns. Small producers and poor farmers are often much more affected than large farmers and may be forced to abandon farming their own land and turn to waged agricultural employment and migration (Bah *et al*, 2003). Additionally, factors such as the lack of inputs (land, tractors, and markets) and a bad economy will definitely affect both food production and remittances. In such situations, interdependencies among the rural urban divides tend to decline tremendously.

All the issues related to policy and programmes were very significant. The policies and programmes of government greatly affect the level of interdependence of the rural and urban people. Policies and programmes that encourage rural developments such as the agricultural development programmes (ADPs), subsidy on agricultural inputs, credit availability to farmers, and wage/salary increments for extension workers, will boost food production, increase people's income and hence increase interdependence among the rural and urban households. However, in unstable situations such as in religious, political, or electoral crisis, the extent of rural-urban interdependence tends to diminish as people do not feel safe to go about their normal businesses.

Social and environmental issues were seen to significantly influence rural-urban interdependence. This implies that the lack of conducive environment and peaceful societal atmospheres contribute negatively by distorting the

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linkages between the rural and urban divides. The rural-urban economy is not based solely on agriculture but rather on a diverse array of activities and enterprises based on livelihood diversification (Ellis, 1998).

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Table 8: Factors militating against rural-urban interdependence in food systems

Factors	Socio-economic & infrastructural issues	Policies and programmes	Social and environmental issues
Socio-economic and infrastructural issues			
Migration from rural to urban areas	0.67*	0.36	0.04
Poverty (low income)	0.85*	0.15	0.04
Lack of access to land	0.46*	0.00	0.07
Lack of access to infrastructure such tractor, harvesters etc	0.73*	0.23	0.15
Lack of good access to market	0.55*	0.00	0.25
Lack of growth in rural non-farm activities	0.04	0.37	0.62*
Lack of access to inputs such as fertilizer, hybrid seeds etc	0.32	0.74*	0.07
Policies and programmes			
Lack of transparency in project management	0.29	0.84*	0.19
Political instability	0.16	0.64*	0.25
Lack of good policy support from government	0.01	0.68*	0.08
Lack of security of tenure	0.50*	0.11	0.36
Lack of access to information communication technology	0.19	0.66*	0.26
Social and environmental issues			
Social vices such as kidnapping and robbery	0.01	0.13	0.82*
Corruption	0.48*	0.34	0.06
Unemployment	0.42*	0.33	0.06
Conflict in rural areas	0.19	0.00	0.76*
Environmental hazards such as soil erosion	0.33	0.17	0.78*
Lack of good family planning	0.05	0.16	0.54*
Economic meltdown	0.63*	0.21	0.23
Environmental changes e.g. climate change	0.10	0.11	0.57*

**P≤ 0.05; Extraction Method: Principal Component Analysis with Varimax Rotation*

Strategies for strengthening rural-urban interdependence in food systems

Table 9 presents the analytical results of strategies for strengthening the rural-urban interdependence in food systems using principal components with Varimax rotation. The result identified three factors namely; employment opportunities, provision of infrastructure and farm inputs, and provision of enabling environment as the main strategies for strengthening rural-urban interdependence in food systems in the study area.

Issues under employment opportunities are highly significant in strengthening

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linkages between rural and urban areas. These include; provision of other income yielding activities (0.71), growth in rural non-farm activities (0.68), off-farm employment opportunities (0.75), and creation of employment (0.77). There is no doubt that the creation of employment opportunities in both rural and urban areas will encourage rural-urban interdependence in food systems. For example, an increase in the wage of urban dwellers and an increase in the opportunities to get jobs in urban areas will increase the amount of remittances given to kith and kin in the rural areas. Similarly, an increase in rural income through employments can lead to more investment in large scale commercialized farming using modern equipment such as tractors and harvesters. This scenario will increase the urban food security when there is an increase in food production in rural areas.

Factors considered under the provision of infrastructure and farm inputs play important roles in strengthening rural-urban interdependence. Basic infrastructure such as good roads, electricity, water supply, and health services together with the necessary farm inputs such as fertilizers, improved seeds, agrochemicals, and credit facilities will support the production of adequate food in rural areas and the subsequent marketing and value addition of the products. In this way the interdependence in terms of sale of food to urban areas, processing and preservation in the urban areas and the return of the processed foods to rural areas will be maintained.

In providing an enabling environment for strong rural-urban interdependence, secured accesses to land (0.40), cooperative societies (0.53), establishment of modern markets (0.81), access to mechanized farming (0.79), and policies that encourage non-farm activities (0.68) are highly crucial and significant. For any system to work properly, the enabling environment must be conducive for the different actors to thrive. In this regard, access to land is the first basic requirement for food production before other processes, linkages, or interdependencies can commence. Again, there are great opportunities for farmers and urban dwellers in joining cooperative actions as it does not only build capacity, awareness, and knowledge, but also leads to economies of scale, increases bargaining power, and provides access to credit for members among other benefits. Enabling environment also means that there is freedom and relative peace and that the polity is not tensed. It includes opportunities for private sector investments in large scale agricultural production, processing and the entire lines in the value chain. When these conditions are in existence, the interdependence between the rural and urban people tends to grow and strengthen. Adell (1999) recommends that linkages between rural and urban divides could be strengthened through integrating markets, opening up the flows of labour, and access to income earning opportunities between urban and surrounding rural areas.

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Table 9: Strategies for strengthening rural-urban interdependence in food systems

Strategies	Employment opportunities	Infrastructure and farm inputs	Enabling environment
Employment opportunities			
Provision of other income yielding activities	0.71*	0.36	0.12
Growth in rural non-farm activities	0.68*	0.30	0.08
Off farm employment opportunities	0.75*	0.15	0.09
Creation of employment	0.77*	0.15	0.39
Provision of infrastructure and farm inputs			
Provision of credit infrastructure to rural farmers	0.24	0.83*	0.13
Lowering interest rate	0.05	0.49*	0.17
Provision of basic human amenities such as access roads, electricity, housing, portable water, etc.	0.11	0.92*	0.08
Provision of farm inputs at subsidized rate such as chemical fertilizer, seeds, herbicides etc.	0.14	0.92*	0.02
Enabling environment			
Provision of security of access to land	0.14	0.11	0.40*
Provision of technical vocational training in urban and rural areas	0.59	0.61	0.20
Government policies that encourage non-farm activities	0.68*	0.06	0.03
Formation of cooperative societies	0.36	0.15	0.53*
Access to mechanical farming	0.20	0.08	0.79*
Encouraging youths in agriculture	0.13	0.41	0.64
Establishment of modern markets	0.02	0.05	0.81*
Encouragement of peoples culture and festivals	0.43	0.16	0.52*

**P Significant Factors; Extraction Method: Principal Component Analysis with Varimax Rotation*

Conclusion

Whilst to some extent interdependence existed between rural and urban areas, their scales and strengths are determined by the nature of historical, economical, socio-cultural, and environmental factors. The study showed that the nature and scope of rural–urban interdependence were influenced by several factors, ranging from socio-cultural (age, gender, marital status, education, household size, and membership of social organizations among others), demographic characteristics (including population density, migration, labour availability, remittances, household organization and agricultural production systems), farming systems (based on land tenure and access to natural resources such as land and water) to access to credit and infrastructure including roads and transport networks linking rural areas to urban centres where markets and services are located. At the national level, such interdependence may foster a balanced growth and development strategies

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including the provision of infrastructure, credit facilities for small and medium-sized producers, basic services (education, health, water and sanitation), equitable distribution and access to land, revenue support to local government, and regulated institutional structure for markets. At the local level, effective rural-urban interdependence may strengthen linkages among agriculture, industry and service sector and foster better integration of local development strategies in national planning.

Recommendations

The public policies should recognize and harness the dynamic nature of the rural-urban interdependence in food systems by adapting to prevailing economic, political, and social conditions, and encouraging the flow of goods, services, and resources in the sector. In order to correct past urban development bias, resource allocation for rural development in the food systems should take into account the specific rural needs which create opportunities for productive investments in rural areas. Government and Donor funds should seek to help improve access to off-farm employment and diversification, so that rural-urban migrants can channel their remittances and savings into other income and employment generating activities in rural areas. Development policies should formulate business linkage models that encourage big urban businesses to outsource contracts and make franchising arrangements with small rural food producers to ensure sustainable economic activities in rural areas.

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