

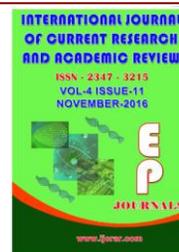


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### An Assessment of the Performance of Some Vegetable Markets and End Users in the Upper East Region of Ghana

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#### KEYWORDS

Aggregators, consumption, end users, storage, transportation, vegetable.

#### A B S T R A C T

A study was undertaken in some selected districts in the Upper East Region of Ghana to assess aggregators and end users of vegetable in the region. Districts were selected based on their history of vegetable production. The Bawku municipality, Binduri district, Bolgatanga municipality, Bawku west and the Kassina Nankana west district qualified for selection. A purposive sampling method was used to select respondents for the study, and these were interviewed using a check list of questions, comprising both open and closed-ended questions, to gather information. The main aim of the research was to identify and assess the potentials of aggregators and end users of vegetables in the region. Hotels/guesthouses, restaurants/chop bars and institutions (schools) were the selected end users for vegetables. These end users were categorized into 'very large', 'large' and 'medium', based on the number of guests/customers served food in a day. A total of fifty (50) aggregators, ten (10) from each district were selected and interviewed based on the volume of vegetables aggregated and sold, where their produce were sold, their prospective buyers, methods/facilities of storage, mode of transporting aggregated produce to the end user or storage point, the various challenges and relationships with the producer and end user regarding contracts. Data obtained from the checklist was analyzed using Statistical Package for the Social Scientists (SPSS version 17.0) and Microsoft Excel, and summarized into percentages and means. Tomatoes, Fresh okra, onion, Dry okra, cabbage, carrot, chilli pepper and sweet pepper were the commonly aggregated and consumed vegetables in the Upper East Region. Tomatoes and fresh Okra were the most aggregated and consumed vegetable by end users per an annual average of 27,090 kg, followed by onion (26,418 kg). Fresh tomatoes were the most consumed vegetable in the 'very large' category of end users, with annual consumption of 1,560kg for guest house/Hotel and 8,736kg for the restaurants/chop bars category. The restaurants/chop bars consumed the highest in terms of fresh tomatoes with a yearly consumption of 8,736kg. The tricycle, popularly called 'Motor king' in the study area was the most patronized (30%) means of transporting aggregated vegetables to aggregation centers or end users. There is a higher prospect for vegetable business in the Upper East Region of Ghana, with the capacity of adequate supply across all regions of the country, in particular and the export market, in general. Actors in the value chain have to grapple with the constraints of finance and storage facilities.

## **Introduction**

The world today is dependent on agriculture for poverty reduction, food security and economic growth. According to Balarane and Oladele (2011), agriculture is the backbone of Africa's economy.

Tita (2008) has also stated that 86 percent of rural people depend on agriculture as a livelihood and provides jobs for about 1.3 billion smallholder farmers.

In Africa, most especially South Africa, the agricultural sector comprises the well-developed commercial farming (Antwi and Seahlodi, 2011), operated by few individuals mostly whites (Senyolo *et al.*, 2009), and more subsistence-based production in the deep rural areas (Antwi & Seahlodi, 2011) operated by black farmers (Senyolo *et al.*, 2009).

Agriculture in Ghana, particularly the Upper East Region (UER) has long been based on subsistence farming where people derive their living from fragmented plots of land cultivated in difficult conditions. (MOFA, 2014)

The Upper East Region is highly recognized in terms of its vegetable production potentials in Ghana and its strategic linkages to Burkina Faso and Niger who are power houses in the production of vegetables especially onion.

The production of vegetables have been enhanced because of the availability of irrigation facilities and suitability of the climate to the production of vegetables especially onion.

Several people, especially females, are engaged in the marketing of vegetables in the region as a means of their livelihoods.

This trade has been enhanced because of the trends of market days in the region. A market day comes on a frequency of every three days.

Ideally, the trends are good for most farmers and marketers of the highly perishable vegetables. Onion, tomatoes, okro, green pepper, Chilli pepper, cabbage, carrots are among a host of vegetables produced in the region.

The vegetables are mostly sold in some bigger markets like the Bolgatanga, Bawku and the Navrongo markets.

Aggregators, who are the major players in this business, mostly offer support to farmers of these vegetables with inputs such as weedicides, pesticides, fertilizers, among others, to augment and facilitate their production. The farmers pay the services of the aggregators with produce and they, in return, sell to retailers in the market.

Institutions, Restaurants, Chop bars and Hotels are among the end users of these vegetables for the preparation of various dishes in the region.

Sadly, majority of the vegetables produced by farmers in the region are transported to markets in Kumasi, Accra, Techiman, Tamale, etc. for sale as they reportedly get better profit margins.

This research sought to identify the major vegetables marketed and consumed in the region, the various end users available and quantities consumed, the various storage methods used for these perishables, the marketing linkages involved as well as potential markets where producers can sell on credit, as it is a very common practice in the study area.

## **Materials and Methods**

### **Study area**

The research was conducted in the Upper East Region. The Bawku Municipality, Kassina Nankana West, Binduri District, Bawku West and Bolgatanga Municipality were selected for the research based on their history of vegetable production, marketing potentials and the availability of irrigation facilities aiding all year round production and marketing.

### **Research design**

The study used a descriptive research design. This was to ensure an objective conclusion on the relationship existing between the marketing and the various end users of vegetables in the Upper East Region. The study comprised data from both primary and secondary sources. The secondary data was collected from various institutions that regulate their activities. The primary data, was also gathered from respondents.

### **Sampling method**

A purposive sampling method was used to select respondents for the study. The selected respondents were interviewed using a check list of questions to gather information. Each of the sets of checklist used comprised both open and close-ended questions to ensure detailed expressions by the respondents. The language of the checklist was very simple and straightforward eliciting the types of vegetables and quantities used and sold, storage methods employed and the various markets available for the sale of these vegetables.

Institutions (schools), Hotels/guest houses and Restaurants/chop bars were the various major end users identified for the study.

Heads of these identified categories were selected and interviewed based on their involvement in the purchase of vegetables.

The identified categories were further classified into 'very large', 'large' and 'medium'. Under the institution category, the following definitions were used;

### **Institutions**

Secondary data on enrolment in institutions (Boarding schools) was collected from the Ghana Education Service, Bolgatanga.

These institutions were selected and considered for the study based on their usage of vegetable for food preparation.

### **Categorization for institutions**

A "very large" end user of vegetables is defined as an institution with a student population of above two thousand (2000).

A "large" vegetable end user is an institution with a student population between 1500 to 2000 while a "medium" end user is an institution with a student population of 1000 to 1499.

### **Hotels/Guest houses**

Secondary data on registered hotels and guest houses were collected from the Ghana Tourist Board, Bolgatanga, and were also categorized into 'Very large', 'large' and 'medium'. A consideration was given to hotels and guest houses that prepare food for their guests.

### **Categorization for hotels/guest houses**

A 'very large' hotel/guest house should have 30 beds and above, conference room with a seating capacity of 100 and above; receive

guests almost every day, cook three or more times a day.

A 'large' hotel/guest house should have between 20-30 beds, conference room of a seating capacity of between 50 – 99; receive guests almost every day and cook at least two times in a day while a 'medium' hotel/guesthouse should have between 10-19 beds, conference room of a seating capacity of between 40-49; receive guests almost every day and cook at least once a day for its guest.

### **Restaurants/chop bars**

Secondary data on registered chop bars/restaurants was collected from the food and drugs Authority in Bolgatanga for the research. These were also categorized into 'Very large', 'large' and 'medium' restaurants and chop bars.

### **Categorization of restaurants and guest houses**

A 'very large' chop bar should serve a minimum of 600 people in a day and prepare food three times in a day for customers.

A 'large' chop bar should serve at least 400 people in a day and prepare meals at least two times a day while a 'medium' restaurant/chop bar should serve at least 200 customers a day and cook at least once.

The above mentioned categories of end users were considered in order to help producers target and plan future potential markets for their vegetables. The concrete location of these end users were enough to serve as collateral to the producers and aggregators of vegetables, especially if a producer or an aggregator is contracted to sell on credit or is compelled by circumstances beyond the producer or

aggregator's control, as it is very common in the study region. Individual end users were not targeted because of uncertainties regarding their location.

### **Aggregators of vegetables**

For the purpose of this study, an aggregator is defined as an individual who serves as a middle man between a producers and end users.

The role of these aggregator were to buy the vegetables from the producers (farmers) and sell immediately or store and sell later. These aggregators were sampled and interviewed in the five selected districts/municipalities in the study area. A total of fifty (50) aggregators, ten (10) from each district were selected and interviewed based on the volume of vegetables aggregated and sold, where their produce were sold, their prospective buyers, methods/facilities of storage, mode of transporting aggregated produce to the end users or storage point, the various challenges and business relationships with the producers and end users regarding contracts.

### **Data Analysis**

Data obtained from the checklist was analyzed using Statistical Package for the Social Scientists (SPSS version 17.0) and Microsoft Excel, and summarized into percentages and means where applicable.

### **Results and Discussion**

Figure 1 shows that Tomatoes, Fresh okra, onion, Dry okra, cabbage, carrot, chilli pepper and sweet pepper were the commonly aggregated and consumed vegetables in the Upper East Region. The figure further shows that tomatoes and fresh Okra are the most aggregated and consumed

vegetable by end users, recording the highest in annual average consumption of 27,090 kg and 27,000kg respectively. This is followed by onion with an annual average of 26,418 kg.

A study conducted by Danso *et al.*, (2003) revealed that about 70% of the vegetables produced in Ghana is marketed and consumed fresh.

Vegetables are produced on a large scale in some parts of the country including the Upper East Region. Tomato, pepper and garden egg are the most popular vegetables in Ghana (Nkansah *et al.*, 2002). This is confirmed by the current study.

Table.1 shows the monthly and yearly consumption of vegetables in the Upper East Region of Ghana for the 'very large' category of end users of the vegetables. Fresh tomatoes was the most consumed vegetable in the 'very large' category of end users, with annual consumption of 1,560kg for Hotels/guest houses and 8,736kg for the restaurants/chop bars category. The restaurants/chop bars consumed the highest in terms of fresh tomatoes with a yearly consumption of 8,736kg.

Institutions (schools) did not used fresh tomatoes because of storage constraints. This confirms the findings of Kwarteng and Towler (1994) that, many agricultural produce are perishable; some of which deteriorate fast and have to be stored or processed to avoid spoilage.

The restaurants/chop bars consumed more because five (5) end users qualified under the category, while the institutions and hotels consumed lesser because each had two (2) end users per that category.

This finding goes to suggest that aggregators and even producers should target the restaurants/chop bars for the marketing of their vegetable produce.

### **Monthly and annual demand for 'large' categories**

Table.2 shows the yearly consumption of vegetables by the 'large' end user category in the Upper East Region of Ghana.

From the survey, fresh okra was consumed more by the restaurants/chopbars with an average annual consumption of 23,670 kg; three restaurants/chop bars qualified under the 'large' category.

Institutions in the large category from the survey do not use fresh tomatoes in the preparation of their meals because they have aggregators and marketers who supply food items to them on credit; since tomatoes is very perishable, they are supplied canned tomatoes instead.

This is in line with the research findings of Kwarteng and Towler (1994). Their findings stated that agricultural produce have a short shelf life and that they deteriorate easily, thus demand appropriate storage and or processing to avoid deterioration and loss of revenue.

### **Monthly and yearly demand for vegetable in the 'medium' end users**

Table.3 shows the monthly and yearly consumption of vegetables in the Upper East Region of Ghana by the 'medium' end users. Five (5) end users were identified in each category, an indication that the 'medium' category of end users was the majority in terms of the categorization.

The most consumed vegetable was onion both for the hotel/guesthouse and the institutions categories recording an annual consumption of 4,380kg in each case. The institutions category consumed more dry okra (15,600kg). This is because the dry okra has a longer shelf life and easy to process into powder to serve large number of students in a meal. Aggregators of vegetables can target the 'medium' end users in the region because they are the majority group of consumers.

Transportation is a major challenge for most aggregators of vegetables. A research study by Matsane and Oyekale (2014) confirms the current results stating poor road networks and transportation as a major challenge militating against vegetable aggregation and marketing. The tricycle, Donkey cart and the trucks were the major means of transporting vegetables aggregated in the region. The tricycle, popularly called 'Motor king' in the study area was the most patronized (30%) means of transporting aggregated vegetables to aggregation centers or end users.

Results in figure 3 revealed that market/room storage, market hats, warehouses and open storage were the commonly used storage methods adopted by aggregators and marketers.

Room storage was the commonly used storage method (35/50) by aggregators and marketers of vegetables. This was followed by the use of market hats (10/50), open storage (4/50) and warehouses (1/50).

In Ghana, vegetables do not undergo any effective storage practices to improve their shelf life. Abbot (1984) affirmed that changes in perishable produce such as fruits and vegetables depend largely on storage temperature. Therefore it is necessary to

permanently maintain the produce in appropriate conditions of temperature from time of harvest to the time of consumption to reduce postharvest losses and loss of revenue.

Results from the study as revealed by table 4 indicates that vegetables are aggregated in some districts and communities in the region (Bawku, Bazua, Navrongo and Zebila) and outside the region (Techiman and Burkina Faso). The aggregated vegetables, especially onion are mostly sold outside the region (Kumasi, Accra, Tamale etc.) due to relatively higher profit margins. Those vegetables aggregated outside the region (Techiman and Burkina Faso) are mostly sold in some popular markets (Bolgatanga, Bawku, Navrongo). These are made available by aggregators who are mostly women.

According to the result of the study (Figure 4), the most prevailing challenge of vegetable marketing in the Upper East region was inadequate storage facilities (40%). This was followed by breach of trust (24%), with inadequate credit facilities recording the last (8%) in terms of the challenges.

A study by Matsane and Oyekale (2014) highlighting the factors (constrains) to vegetable production among small scale farmers in Mahikeng, South Africa corroborated the current study.

Kwarteng and Towler (1994), also affirmed the above factors.

## **Conclusion**

The current study has proved to be most significant in identifying the various end users of onion and other vegetables as it pertains in the Upper East Region as; very

large’, ‘large’ and ‘medium’ categories. The categories were created with stipulated criteria ranging from number of beds, seating capacity of conference room, number of times meals were prepared for guests (for the hotel/guest house and restaurants/chop bars groupings) to population size, frequency of meals prepared and number of bags used (for the institutional categorization). The categories indeed contributed significantly to the differences observed.

Nonetheless, the restaurants/chop bars consumed more per the five listed end users in the category with the same quantity of

consumption while the institutions and hotels consumed lesser amounts. The observed differences in the current study was however evident in the consumption of vegetables depicted as follows; onion, cabbage, tomatoes, Chilli pepper, fresh okra, dry okra, sweet pepper, as vegetables commonly consumed in the Upper East region

The study proved positive for the use of dry okra mostly by the institutions, due to its longer shelf life. Similarly, the use of fresh tomatoes was not popular because they do not store longer; can tomatoes were the obvious choice.

**Table.1** Total monthly and yearly demand for ‘very large’ end users

Very Large category	Number	Vegetables	Monthly Volumes (Kg)	Yearly Volumes (Kg)
<b>Guest Houses/Hotel</b>	2	Onion	146	1,752
		Tomatoes	130	1,560
		Fresh Okra	120	1440
		Chili pepper	24	288
		Cabbage	225	2700
		Carrot	200	2400
		Sweet pepper	102	1224
<b>Restaurants/chop bars</b>	5	Onion	366	4,380
		Tomatoes	728	8,736
		Chilli Pepper	24	288
<b>Institutions</b>	2	Dry Okra	120	1,440
		Chilli pepper	128	1,536
		Onion	146	1,752

Source field survey 2015

**Table.2** Monthly and annual demand for ‘large’ categories

Large category	Number	Vegetables	Monthly Volumes (Kg)	Yearly Volumes (Kg)
<b>Hotels/ Guesthouses</b>	2	Onion	146	1,752
		Tomatoes	255.5	3,066
		Chili pepper	16	192
		Cabbage	175	2100
<b>Restaurants/chopbars</b>	3	Onion	182.5	2,190
		Tomatoes	364	4,368
		Fresh Okra	1,980	23,760
		Chilli pepper	36	432
		Cabbage	75	900
<b>Boarding Institutions</b>	2	Onion	146	1,752
		Chilli pepper	128	1,536
		Dry okra	120	1,440

Source; field survey, 2015

**Table.3** Monthly and yearly demand for vegetables for the ‘medium’ end users

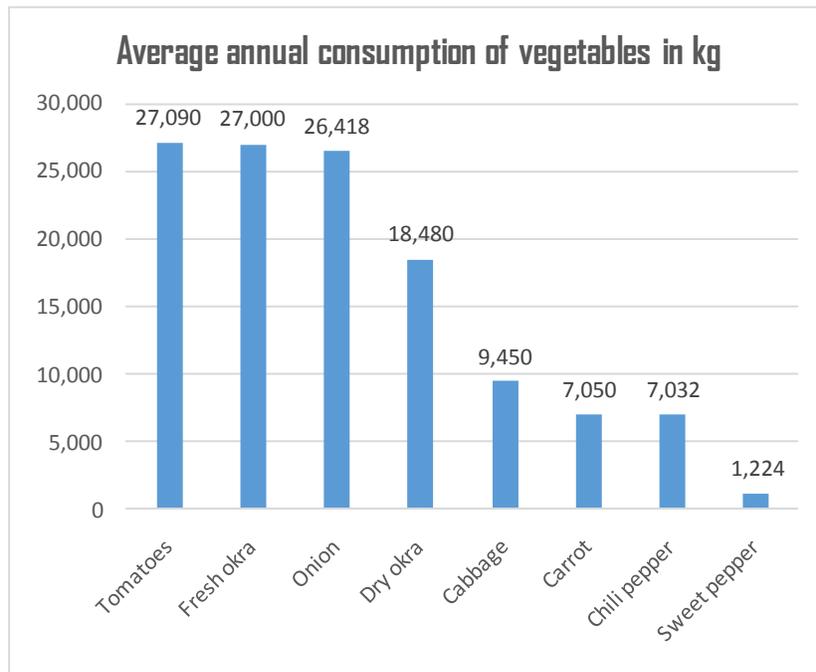
Medium Category	Number of hotels in category	Vegetables	Monthly Volume (Kg)	Estimated Annual Volumes (Kg)
<b>Hotels/ Guest houses</b>	5	Onion	365	4,380
		Tomatoes	260	3,120
		Fresh Okra	150	1800
		Chilli pepper	30	360
		Cabbage	312	3,750
<b>Restaurant/chop bars</b>	5	Onion	340	4,080
		Tomatoes	520	6,240
		Fresh Okra	150	1,800
		Chilli pepper	40	480
<b>Boarding Institutions</b>	5	Onion	365	4,380
		Chilli pepper	160	1,920
		Dry okra	300	15,600

Source; field survey, 2015

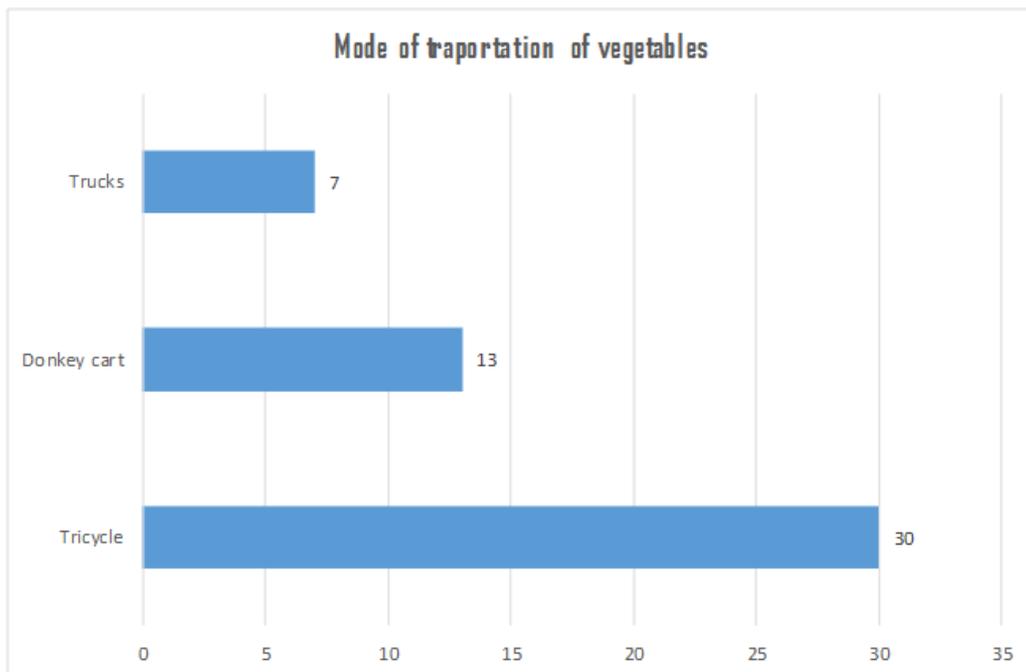
**Table.4** Vegetable profiling in the Upper East Region

<b>TYPE OF VEGETABLE</b>	<b>QUANTITY SUPPLIED PER MONTH (KG)</b>	<b>QUANTITY SUPPLIED PER YEAR (KG)</b>	<b>POINT OF AGGREGATION</b>	<b>LOCATION OF END BUYERS</b>	
<b>CABBAGE</b>	22000	264000	Navrongo	Bolga market	
<b>GREEN</b>	960	11520			
<b>PEPPER</b>	10000	120000			
<b>CARROTS</b>					
<b>TOMATOES</b>	15600	187200	Navrongo	Bolga market	
<b>GREEN</b>	1200	14400			
<b>PEPPER</b>	4000	48000			
<b>CARROTS</b>	10000	120000			
<b>CABBAGE</b>	1620	19440			
<b>GARDEN</b>					
<b>EGGS</b>					
<b>TOMATOES</b>	93600	1123200	Techiman	Bolga and Accra Markets	
<b>CHILLI</b>	2560	30720	Bawku	Bolga Market	
<b>PEPPER</b>					
<b>CHILLI</b>	4800	57600		Bawku Main Market	
<b>PEPPER</b>					
<b>TOMATOES</b>	20800	249600	Burkina Faso	Bolga Market and Zebilla	
<b>CHILLI</b>	320	3840			
<b>PEPPER</b>					
<b>TOMATOES</b>	26000	312000		Zebilla market	
<b>CABBAGE</b>	7500	90000		Bolga and Techiman market	
<b>TOMATOES</b>	20800	249600			
<b>GARDEN</b>	2025	24300		Bawku and Tamale markets	
<b>EGGS</b>	18200	218400	Techiman		
<b>TOMATOES</b>	10000	120000			
<b>CABBAGE</b>					
<b>ONION</b>	43800	525600	Zebila	Kumasi, Accra and Tamale	
<b>ONION</b>	29200	350400			Accra, Kumasi and Techiman
<b>ONION</b>	29200	350400			Accra, Kumasi and Techiman
<b>ONION</b>	36500	438000	Bazua	Accra, Kumasi and Techiman	
<b>ONION</b>	29200	350400		Kumasi and Accra	
<b>ONION</b>	7300	87600		Tamale, Kumasi, Techiman, Accra	
<b>ONION</b>	43800	525600		Kumasi and Banda (V/R)	
<b>ONION</b>	41610	499320	Bawku	Kumasi	
<b>ONION</b>	14600	175200			Bawku Market

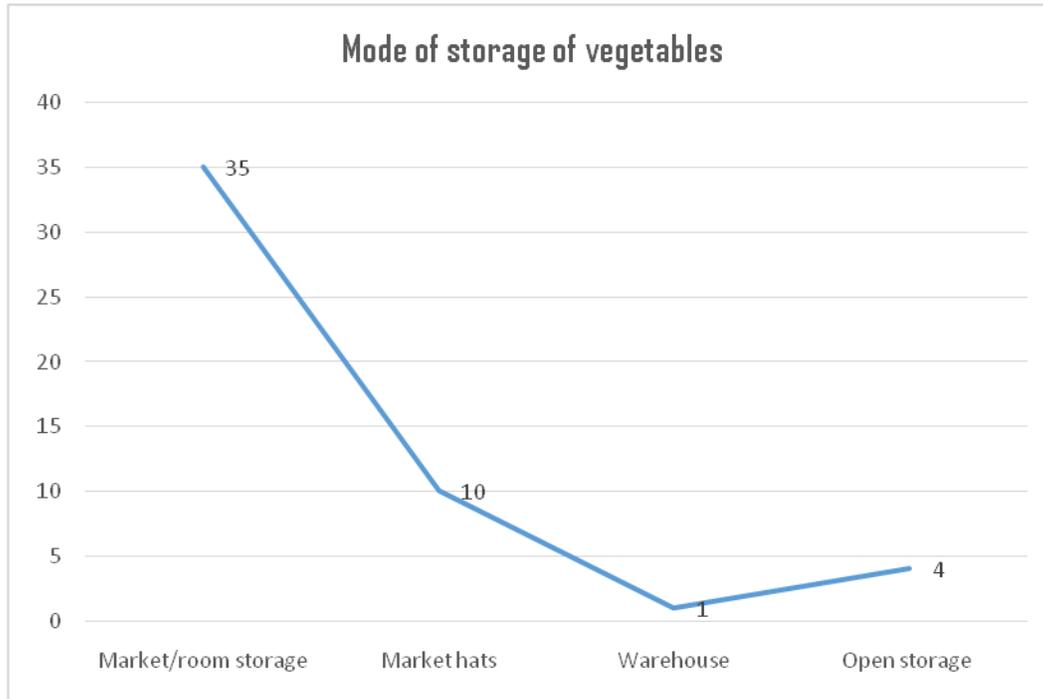
**Fig.1** Vegetables aggregated and consumed in the Upper East Region of Ghana



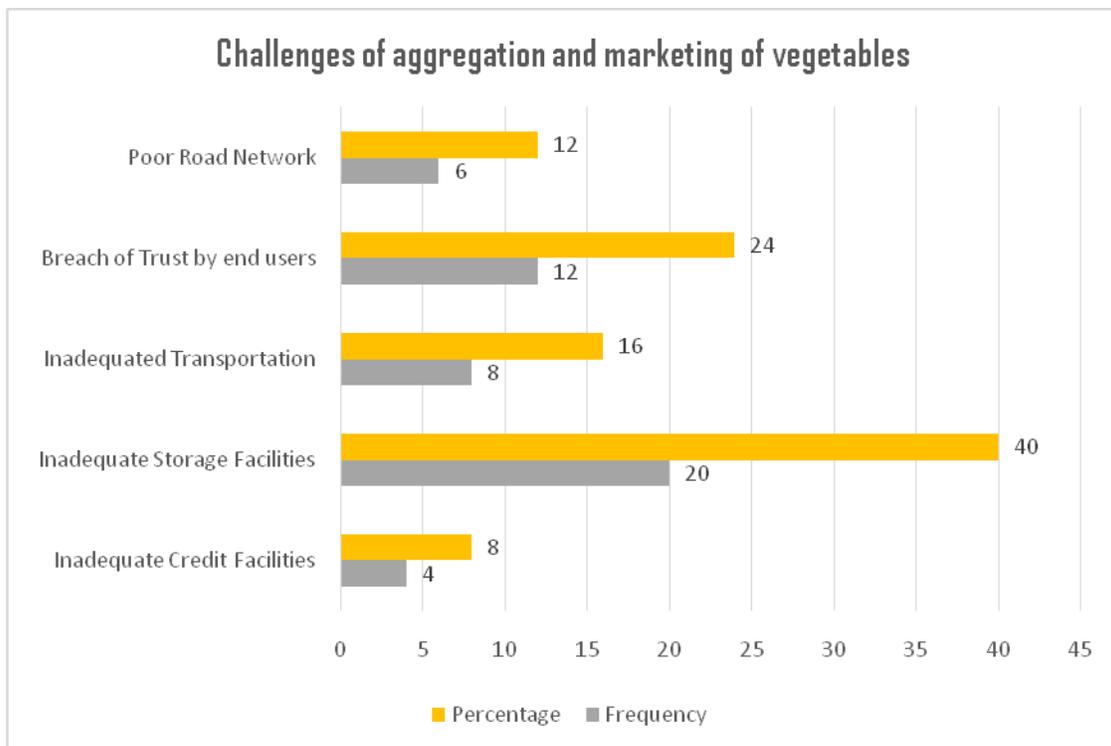
**Fig.2** Mode of transporting vegetables



**Fig.3** Modes of storage of vegetables



**Fig.4** Challenges of aggregation and marketing of vegetables



It is further highlighted that there were potential buyers (end users) of vegetables in the region with the capacity of buying vegetables in large quantities. These end users are credit worthy as their locations can serve as collateral if they choose to buy on credit.

The vegetable business in the Upper East Region of Ghana promise high prospects in future, with the capacity of adequate supply across all regions of the country, in particular and the export market, in general. Notwithstanding, actors in the value chain have to grapple with the constraints of finance and storage facilities.

## References

- Abbot, J.C. 1984. FAO marketing Guide Number 1. Marketing problems and Improvements.
- Antwi, M., Seahlodi, P. 2011. Marketing Constraints Facing Emerging Small-Scale Pig Farmers in Gauteng Province, South Africa. *J. Human Ecol.*, 36(1): 37-42
- Balarane, A. and Oladele, O.I. 2012. Awareness and use of agricultural market information among small scale farmers in Ngaka Modiri Molema District of North West Province. *Life Sci. J.*, 9(3): 57 - 62
- Danso, G., Fialor, S.C., Drechsel, P. 2002b. Perceptions of organic agriculture by urban vegetable farmers and consumers in Ghana. *Urban Agricultural Magazine*, 6: 23-24.
- Kwarteng, J.A. and Towler, M.J. 1994. West African Agriculture: A Textbook for School and College. London: Macmillan.
- Matsane, S.H., Oyekale, A.S. 2014. Factors affecting marketing of vegetables among small-scale farmers in Mahikeng local municipality, North West Province, South Africa. *Mediterranean J. Social Sci.*, Vol. 5(20), Pp 390-397.
- MOFA. 2014. Statistics, Research and Information Directorate (SRID) *Ministry of food and Agriculture*, 67p
- Senyolo, G.M., Chaminuka, P, Makhura, M.N and Belete, A. 2009. Patterns of access and utilization of output markets by emerging farmers in South Africa: Factor analysis approach. *African J. Agri. Res.*, 4(3): 208-214.
- Tita, D.F. 2008/9. A transaction cost analysis of factors affecting market arrangements in the agroforestry tree product value chain in Cameroon. Internet file retrieved on 31st March 2013 from: <http://www.worldagroforestry.org/downloads/publications/PDFs/B16462.PDF>

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