



## **VEGETABLE PRODUCTION AND MARKETING AMONG SMALL SCALE FARMERS; A CASE STUDY OF FARMERS ALONG THE WHITE VOLTA, BINDURI DISTRICT, UPPER EAST REGION, GHANA**

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### **ABSTRACT**

Agriculture is considered an important sector for poverty reduction, food security and economic development. Majority of people in the rural areas depend on agriculture for their livelihood. Economists have identified the production and marketing of vegetables as a means of livelihood and economic growth. A study was undertaken in Binduri District of the Upper East Region of Ghana with the goal of identifying and analyzing the factors that affect the marketing of vegetables among vegetable farmers along the White Volta. Purposive sampling method was used to select only vegetable farmers in the various communities along the White Volta. A simple random sampling method was used to draw a sample size of 10 respondents from each community making a total of 100 respondents. The study revealed that lack of good storage facilities and preservation mechanisms resulted in poor produce prices although markets existed for the vegetable farmers. It was also revealed that, the vegetable farmers faced challenges such as competition, inadequate advertisements and inadequate intermediaries in marketing their vegetables. The study concluded that, competition, inadequate advertisements and inadequate intermediaries were the challenges farmers faced in the marketing of their produce, hence, they were unable to meet their market targets most of the times. The study identified availability of marketing intermediaries, regular markets and word-of-mouth communication as factors that promoted the marketing of farmers' vegetable produce. Formation of vegetable farmer groups to access training regarding preservation and storage and marketing as well as securing buyers beyond farmers' geographical locations are interventions that could improve their lot.

**Key Words:** Agriculture, farmers, livelihood, marketing, poverty, storage, vegetables

## 1. INTRODUCTION

The world today is dependent on agriculture for poverty reduction, food security and economic growth. According to [3] agriculture is the backbone of Africa's economy. [11] has also stated that 86 percent of rural people depend on agriculture as a livelihood and provide jobs for about 1.3 billion smallholder farmers. In the mid-eighties through to today, the Indian government has identified the production of vegetables as a means of making agriculture more profitable through the use of small land size, optimum utilization of natural resources and creating skilled employment for rural masses [9]. In South Africa, the agricultural sector comprises the well-developed commercial farming [2], operated by few individuals, mostly whites [10], and more subsistence-based production in the deep rural areas [2] operated by black farmers [10]. The subsistence sector involves small-scale production which is highly labour intensive with low farm capital investment and little division of labour [2]. Also, majority of small-scale farmers lack access to adequate marketing facilities, which when exist, are grossly underdeveloped and inefficient [1]. Among commercial farmers, there is high capital investment, high levels of divisions of labour and patronage of both local and international markets [2]. Agricultural development will not occur without engaging small-scale farmers who account for the overwhelming majority of actors in this sector and engaging in profitable agriculture means generating maximum returns from the resources expended and formal markets [5].

Marketing is a business activity associated with the flow of goods and services from producers to consumers [2]. Marketing plays a critical role in meeting the overall goals of economic development [6], food security, poverty alleviation and sustainable agriculture, especially among smallholder farmers in developing countries [13]. Marketing constraints or challenges arise due to many factors such as limited knowledge and use of market information, lack of access to high-value reliable markets, high transactional costs, distance from the markets, poor quality of products, lack of storage facilities, low educational levels of small-scale farmers, poor agricultural extension services, lack of financial support[2], inadequate property rights [8] inadequate and inaccessible market infrastructure, lack of adequate access to finance, socio-economic factors of the farmer, for example; training, farming experience, age, level of education and household size, lack of access to decent roads, price risk and uncertainty, electricity, poor communication [10], information regarding prices, inadequate local markets, lack of bargaining power, excess of intermediaries [13].

These marketing constraints constitute the greatest barrier for small-scale farmers when it comes to access high value markets [4], and these factors restrain farmers from making decisions to participate in the market [12]. Access to markets is an essential requirement for the poor in rural areas. It may also be easy to access markets, but retaining one's position in the market is more difficult, and participation of small-scale farmers in high-value markets is unsatisfactory [4]; The perishable nature of vegetables necessitate effective marketing channels [13]. Therefore, overcoming marketing constraints is critical for small-scale farmers to access lucrative markets [4]. Shifting the focus from production-oriented programmes to more market-oriented interventions will place a renewed attention on institutions of collective action, such as farmer

groups, as an efficient mechanism for enhancing market performance [5]. The main objective of the study was to identify and analyze factors affecting marketing of vegetables among small-scale farmers along the White Volta in the Binduri District of Upper East Region of Ghana. The specific objectives of the study were to identify and analyze the demographic characteristics of the small-scale vegetable farmers in the study area; the existence of markets for the marketing of the vegetables; the challenges facing the marketing of vegetables in the area; and the factors that promote the marketing of vegetables in the study area.

## **2. Methodology**

### **2.2 Study area**

The study was conducted in the Binduri District of the Upper East Region of Ghana, located approximately between latitudes  $11^{\circ} 11'$  and  $10^{\circ} 40'$  N and longitudes  $0^{\circ} 18'$  W and  $0^{\circ} 6'$  E in the North-Eastern corner of the Upper East Region. It shares boundaries with Burkina Faso to the North, Garu-Tempane District to the South, Bawku Municipality to the East and Bawku West District to the West. The district covers a total land area of 391.91 square kilometers [7]. With a total population of 61,576, the district has a population density of 157.1 persons per square kilometers [7]. The district is mainly drained by the White Volta River. A few streams, dams and dug-outs can also be found in low surface land areas. Vegetable production is mostly done along the White Volta [7]. According to the Ghana Statistical Service October, 2014, as high as 93.9 percent of households in the district are engaged in agriculture. Most households in the district (99.3 %) are rural, involved in crop farming.

A multistage sample method was employed for the current study. A simple random sampling technique was used to select 10 communities from the sixteen (16) communities along the White Volta who are engaged in vegetable production as a source of livelihood, making a sample size of 10 respondents from each community and a total of 100 respondents. A purposive sampling method was used to select only vegetable farmers in the various communities. Primary data was obtained by using a well-structured questionnaire as a data collection tool. The questions were designed to elicit data on the demographic characteristics, marketing challenges and factors that promote marketing of vegetables.

#### **2.2.3 Data analysis**

The data from the completed questionnaire was analyzed using statistical package for social scientist (SPSS) version 21, STATA and Excel. Descriptive statistics (frequencies and percentages) were employed in order to determine the factors and constrains among small scale vegetable farmers.

### 3. Results and discussions

#### 3.2 Demographic characteristics of respondents

**Table 1: Demographic characteristics**

	Number of responses	Percentage (%)
Age groups of respondents		
20 – 30	34	34.00
31 – 40	22	22.00
41 – 50	23	23.00
51 – 60	14	14.00
60+	7	7.00
Sex of respondents		
<i>Male</i>	79	79.00
<i>Female</i>	21	21.00
Marital status		
<i>Married</i>	76	76.00
<i>Single</i>	20	20.00
<i>Divorced</i>	4	4.00
Level of Education		
<i>Basic</i>	34	34.00
<i>Secondary</i>	9	9.00
<i>Tertiary</i>	2	2.00
<i>No formal education</i>	55	55.00

**Source:** Field survey data, (2017)

Table 1 contains data on the demographic characteristics of respondents. From the table, majority of the respondents 34 (34%) were within the age range of 20 – 30 years while minority of them 7 (7%) were aged 60 years and above. This gives indication that those who are mostly

engaged in vegetables cultivation in the district are the active working age group or the youth. Again, results from the study show that majority of the respondents 79 (79%) were males, an indication that more males were involved in vegetable farming in the district. Another demographic factor that was studied was marital status. The results again shows that majority of the respondents 76 (76%) were married while the rest were either single (20%) or divorced (4%). This gives an idea that, most of the vegetables farmers were married hence could receive support in the form of labour from their spouse and children where possible regarding farming activities. According to [2], the subsistence sector involves small-scale production which is highly labour intensive with low farm capital investment and little division of labour. From the current study, more than half 55 (55%) of the respondents had no formal education. This may pose a challenge to applying modern technology in vegetables farming in order to increase yields since most of them may not be able to read and write. This is on account that, they may not be able to undergo any literacy farming related training effectively and may not also be able to read and apply any instructions on manuals related to vegetables farming. This could consequently affect yield and threaten food security.

### 3.3 Vegetables types and number of employees

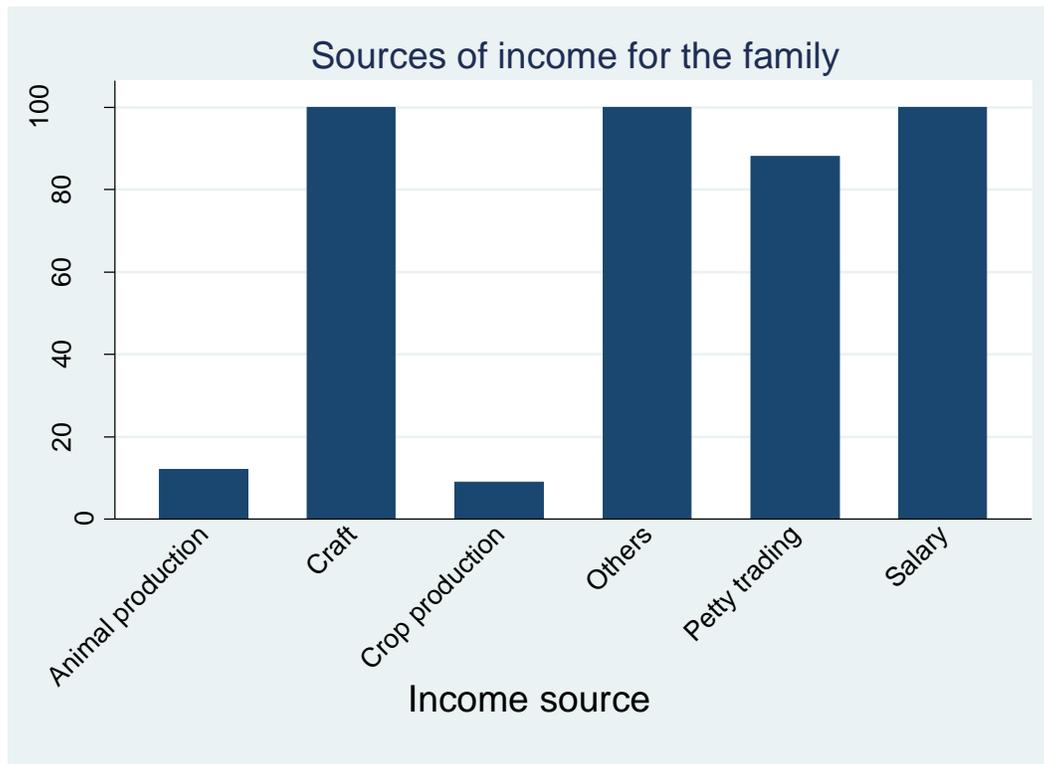
*Table 2: Vegetables types and number of employees*

	Number of responses	Percentage (%)
Number of vegetable types		
One	15	15.00
Two	27	27.00
Three	37	37.00
Four	21	21.00
Labour employed		
Yes	68	68.00
No	32	32.00
Number of employees		
1 - 5	68	68.00
6 – 10	25	25.00
>10	7	7.00

**Source:** Field survey data, (2017)

Table 2 shows the distribution of vegetable types and number of employees. The results show that majority of the respondents 37 (37%) cultivated three types of vegetables whereas a small 15(15%) of the respondents cultivated only one type of vegetable. Moreover, data on labour employed shows that about two-thirds 68 (68%) of the respondents employed labour on their farms while 32(32%) of the respondents did not engage any labour on their vegetables farms. A follow-up question on number of employees employed on farmers' vegetable farms had the following results; Sixty- eight, 68 (68%) of respondents employed between 1 and 5 people while a small 7 (7%) respondents employed more than 10 people on their vegetable farms.

### 3.4 Sources of income for farmers' family



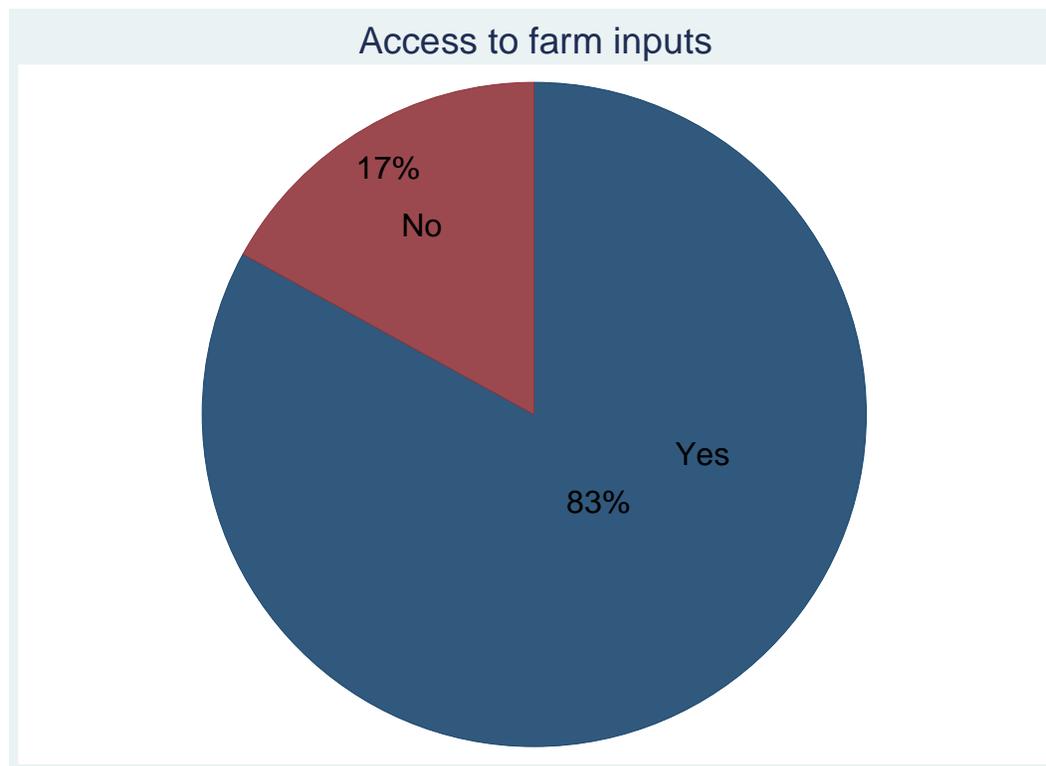
**Source:** Field survey data, (2017)

**Figure 1: Sources of income for the family**

The study went further to determine other sources of income for the vegetable farmer's family, apart from the income obtained from the vegetable farming. The result shows that, all the farmers, 100 (100%) of the respondents indicated craft, salary and others as sources of income for the family. Again, eighty-four percent, 84 (84%) of the respondents indicated petty trading as another source of incomes to the family. On the other hand, it can be seen from figure 1 that

only ten, 10 (10%) of the respondents indicated crop production as a source of income for the family. It can therefore be concluded that most of the vegetables farmers in this community did not engage in large scale commercial vegetables cultivation but rather engaged in other income generating activities. This is contrary to the case in South Africa, where the agricultural sector comprises well-developed commercial farming [2]

### 3.5 Access to farm inputs



**Source:** Field survey data, (2017)

#### Figure 2: Access to farm inputs

The study also wanted to determine whether the vegetables farmers had access to farm inputs. According to the results, more than three-quarter, 83% of respondents had access to farm inputs whereas 17% did not.

### 3.6 Sources of farm inputs

Table 3: Sources of farm inputs

	Number of responses	Percentage (%)
<b>Sources of farm inputs</b>		
<b>Input dealers</b>	74	74.00
<b>NGOs</b>	12	12.00
<b>MOFA</b>	6	6.00
<b>Others</b>	8	8.00

**Source:** Field survey data, (2017)

Results from the current study indicated that, majority, 74(74%) of the respondents got their farm inputs from input dealers while the rest got from either NGOs, MOFA or other sources. Farmers acquired their farm inputs by cash or crop payments. This is on account that, the input dealers either sold their inputs to the farmers for cash during the farming seasons or they sold the inputs to the farmers and received payments later after harvesting in the form of crops.

### 3.7 Ready market and dealers

Table 4: Ready market and buyers of vegetables

	Number of responses	Percentage (%)
Do you have ready market for vegetables?		
Yes	60	60
No	40	40
Buyers of vegetables		
Hotels/Restaurants	7	7.00
Chop bars	9	9.00

Market queens	49	49.00
Direct sales in the market	35	35.00

**Source:** Field survey data, (2017)

The results of the current research regarding ready market for farmers' produce shows that, more than half, 60 (60%) of the respondents answered yes, whereas 40 (40%) of the respondents said they did not. Close to fifty percent, 49(49%) of the respondents mentioned market queens as their buyers, where as a small 35 (35%) of the respondents indicated direct sales in the market. This is an indication that most of the vegetables farmers either sold their vegetables to market queens or they did direct sales in the market. Even though the results indicates that 60% of the respondents had ready market for their vegetables, the 40% who did not is still on the high side and therefore marketing can be a bigger challenge to the vegetable farmers in this community. The situation in Binduri is similar to what was reported by [4], that marketing constraints constitute the greatest barrier for small-scale farmers when it comes to access to high value markets, and these factors restrain farmers from making decisions to participate in the market [12]. It can be concluded that, access to markets is an essential requirement for the poor in rural areas.

### 3.8 Level of satisfaction of prices

*Table 5: Level of satisfaction of prices*

	Number of responses	Percentage (%)
<b>Are you satisfied with the prices?</b>		
<b>Yes</b>	34	34.00
<b>No</b>	66	66.00
<b>Reason for unsatisfactory prices</b>		
<b>Inadequate storage space</b>	16	16.00
<b>Inability to preserve for future sale</b>	55	55.00
<b>Competition with other producers</b>	14	14.00
<b>Inability to transport produce to market</b>	15	15.00

**Source:** Field survey data, (2017)

Results of the current study indicated that, over half, 66(66%) of the respondents were not satisfied with the prices of their vegetable produce. More than half, 55 (55%) of the respondents attributed inability to preserve their vegetables for future sale as the number one reason. Most of the vegetables cultivated in the Binduri area are perishable hence preservation is important in order to keep them in good shape and quality for future market if there is no existing demand. In most cases, these producers do not have techniques and knowledge to preserve these vegetables and thereby end up selling the vegetables at very cheap prices to prevent the vegetables from post-harvest losses, especially on their farms or market stores.

### 3.9 Transportation of vegetables

**Table 6: Available transportation for vegetables**

	Number of responses	Percentage (%)
Ability to transport produce to the market		
<i>Yes</i>	99	99.00
<i>No</i>	1	1.00
Means of transport to the market		
<i>Donkey cart</i>	18	18.18
<i>Motor king</i>	72	72.73
<i>Kia truck</i>	6	6.06
<i>Others</i>	3	3.03

**Source:** Field survey data, (2017)

The study shows that, almost all, 99(99%), of the vegetable respondents, did have the ability to transport their produce to the market while a small 1(1%) of the respondents did not. With regards to the means of transport to the market, 72(72.73%) of respondents indicated tricycle popularly called ‘motor king’ as the means of transport for their vegetable produce to the market. This makes ‘motor king’ the commonest means of transport used by the farmers in Binduri in conveying their vegetables to the market for sale. Considering the size of a motor king which is smaller compared to Hyundai Kia truck, it means that the farmers are not able to convey large quantity of their produce at a time to the market hence they ended up spending a lot of time and

money transporting their vegetables in bits thereby building up extra cost for themselves and putting them at a disadvantage to compete favorably with other vegetable producers.

### 3.10 Storage of vegetables

**Table 7: Storage of vegetables**

	Number of responses	Percentage (%)
Available storage space for harvested produce	Yes	52
	No	48
Storage places for vegetable farmers	Warehouse	3
	Farm house	49

**Source:** Field survey data, (2017)

The current study further wanted to examine how the vegetable farmers normally stored their produce. The results as shown in from Table 7 indicate that more than half, 52(52%) of the respondents had available storage space for their harvested produce while almost half, 48(48%) of the respondents did not. Further, 3(5.77%) of the respondents mentioned warehouse as their storage space while more than half, 49 (94.23%) of the respondents indicated farm house as storage places for their vegetables. This means that storage space for harvested produce for vegetable farmers in Binduri is a constraint since it affected their ability to market their produce at the right place and time. This outcome supports the views of [2], who reported that marketing constraints arise due to many factors such as limited knowledge and use of market information, lack of access to high-value reliable markets, high transactional costs, distance from the markets, poor quality of products, lack of storage facilities, low educational levels of small-scale farmers, poor agricultural extension services and lack of financial support.

### 3.11 Credit facilities and record keeping

Table 8: Credit facilities and record keeping

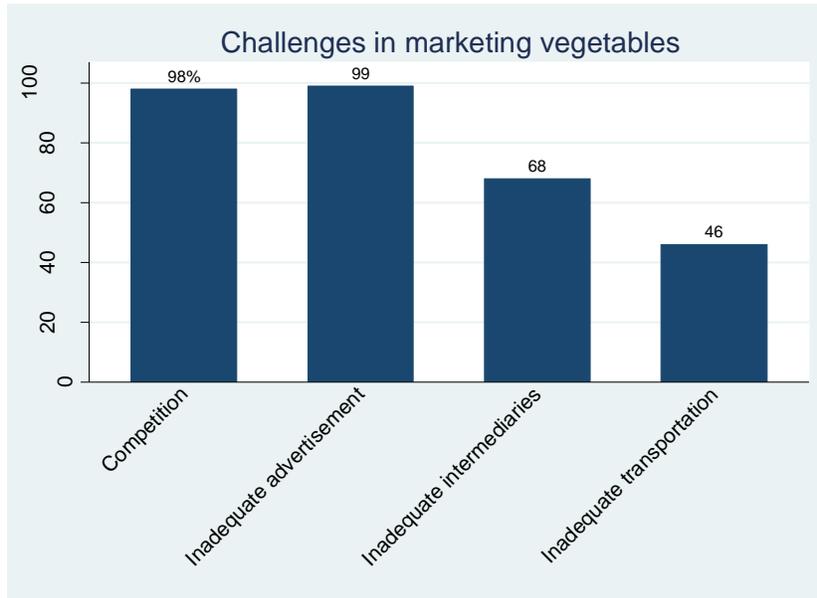
	NUMBER OF RESPONSES	PERCENTAGE (%)
<b>ACCESS TO CREDIT FACILITIES</b>		
<b>YES</b>	3	3.19
<b>NO</b>	91	96.81
<b>SOURCE OF CREDIT: VILLAGE SAVINGS AND LOANS</b>	100	100.0
<b>MODE OF REPAYMENT: PAYMENT WITH PRODUCE</b>	100	100.0
<b>DO YOU KEEP FARM RECORDS</b>		
<b>YES</b>	12	12.00
<b>NO</b>	88	88.00
<b>ACCESS TO EXTENSION SERVICES</b>		
<b>YES</b>	53	53.00
<b>NO</b>	47	47.00

**Source:** Field survey data, (2017)

Results from the current study in Table 8 regarding whether the vegetable farmers had access to credit facilities or otherwise shows that, only a small 3(3.19%) of the respondents answered yes to access to credit facilities as against 91(96.81 %) of the respondents. This means that majority of the respondents did not have access to credit which is a serious challenge so far as the management of their farms and marketing of their produce were concern. This is also related to the views of [10] when they indicated that inadequate and inaccessible market infrastructure, lack of adequate access to finance and socio-economic factors of the farmer are challenges that can hinder the marketing of produce of farmers. Regarding source of credit to vegetable farmers, all the farmers, 100(100%) indicated village savings and loans as the source of credit. Respondents indicated payment with produce as the mode of repayment for the credit or loan facility contracted. Keeping of farm records is an important activity for all farmers. From the current study, only 12(12%) of the respondents kept proper farm records whiles 88(88%) of the

respondents did not. The high illiteracy level of the vegetable farmers as shown in Table 1 may be the reason most of the vegetable farmers did not keep farm records. The results of the study shows that, over fifty percent, 53(53%) of the respondents did have access to extension services whereas 47(47%) of the respondents did not.

### 3.11 Challenges in the marketing of vegetables

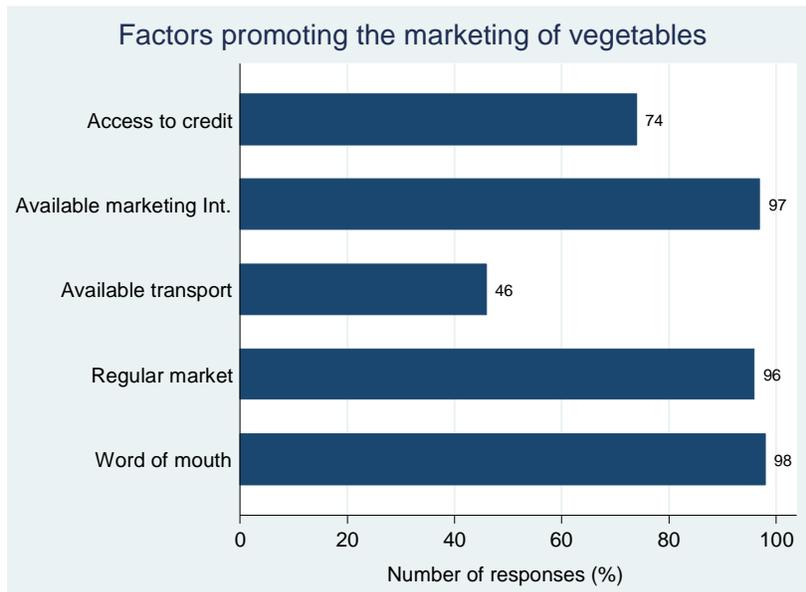


**Source:** Field survey data, (2017)

**Figure 3: Challenges in Marketing Vegetables**

Again, the study wanted to know the challenges involved in the marketing of vegetables. The results in figure 3 shows that, close to all the farmers, 98% of the respondents indicated competition as one of the challenges in the marketing of vegetables. Ninety-nine (99%) of the respondents mentioned inadequate advertisement as one of the challenges facing the marketing of vegetables whereas 68% of the respondents also indicated inadequate intermediaries as a challenge and lastly 46% of the respondents indicated inadequate transportation as a challenge. The responses show that majority of the respondents indicated competition, inadequate advertisement and inadequate intermediaries as the challenges facing the marketing of vegetables. In order to succeed, it is important to ensure that, the challenges facing the marketing of vegetables are well managed if not totally eliminated. This idea of overcoming the marketing challenges is in support of the view of [4], who mentioned that, overcoming marketing constraints is critical for small-scale farmers to access lucrative markets.

### 3.12 Factors that contribute to the promotion of the marketing of vegetables



**Source:** Field survey data, (2017)

**Figure 4: Factors promoting the marketing of vegetables**

According to the current study, as shown in figure 4, majority, over seventy (70) of the respondents indicated word-of-mouth, regular market, access to credit and available marketing intermediaries as the major factors promoting the marketing of vegetables. On the other hand, a minority number, forty-six (46) of the respondents indicated available transport as a factor promoting the marketing of vegetables.

#### 4. Conclusion

Based on the results of the study, it can be concluded that, majority of the vegetables farmers were married, thus, spouses served as a source of support in the vegetable farm business. The vegetables farmers had ready market for their produce consisting of market queens and direct sales in the market. Even though these markets existed, the vegetables farmers were not able to get good prices for their produce due to lack of storage facilities and preservation mechanisms for their produce. Majority of the farmers were able to transport their produce to the market by the use of 'motor kings' and donkey carts. These means of transportation commonly used by these farmers did not offer them the opportunity to carry their vegetables to distant places in search of other buyers due to their inability to travel long distances. Competition, inadequate advertisements and inadequate intermediaries were the challenges farmers faced in the marketing of farmers' vegetable produce. Hence the farmers were unable to meet their market targets in most cases. It can further be concluded that, factors that promote the marketing of farmers'

vegetables included; availability of marketing intermediaries, regular markets and word of mouth communication.

It is recommended that, the vegetable farmers search for other buyers apart from the market queens and direct sales in the market which are currently their major buyers in order to increase the demand for their vegetable produce and to reduce postharvest losses.

Basic marketing as well as postharvest training should be given to the vegetable farmers on how to effectively preserve and market their produce beginning from production through to the point of sale.

The vegetables farmers should pull their resources together in order to jointly build some storage facilities for the storage of their produce in order to facilitate the marketing of their vegetables.

They should market beyond their own geographical locations as a means of attracting new markets and marketing intermediaries in order to compete effectively.

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