

Constraints and Opportunities in Vegetables Value Chain in peri-urban Areas of Ethiopia

Almaz Giziew¹

Abstract

Vegetable production and marketing is one of the major sources of livelihood for a large number of producers, transporters, middlemen and traders. Hence, understanding the major constraints and opportunities for production and marketing is important to improve vegetable production and marketing. To this end, the aim of this study was to identify major constraints, opportunities of production and marketing of vegetables. Multi stage sampling procedure was followed to select sample households for the study. A number of respondents at all stages of the value chain were interviewed. A total of 75 producer respondents (57 males and 18 females) drawn from Akaki-Kality sub-city, 25 retailers and one broker, two assemblers, two transporters and 15 wholesalers were interviewed using structured and semi-structured questionnaires. This study identified production constraints such as low production and productivity, flood, frost, insects and pests, limited extension support for production, quality of water, poor product handling which were among the major problems. This study also identified marketing constraints namely, imperfect pricing system, absence of law enforcement on standards, inability to have fixed market place, limited marketing extension support, lack of storage, lack of coordination among producers, lack of improvement for other actors in the channel and poor vertical linkages of producers with other value chain actors. The current government structure needs to be strengthened and channels created that directly link producers with vegetable shops, supermarkets, retailers and wholesalers in well structured institutional arrangements.

Introduction

The greatest attribute of urban horticulture is its potential as a resource for improving the income and nutrition of low income populations, alleviating urban poverty and malnutrition. Similarly, the value chain approach contributes to reducing poverty if development programs are employed strategically and concentrate on targeting the disadvantaged groups. Urban horticulture in Ethiopia is gradually becoming a very important economic activity that affects the lives of many poor inhabitants. Those engaged in it have already realized food, nutrition, and commercial

¹ Institute of Development Studies, Center for Environment and Development, Addis Ababa University, Ethiopia

benefits (Zenebe, 2010). Similarly, for many families, cultivation of horticulture crops provides the much-needed source of food to contribute to a balanced diet and income.

Under the present economic circumstances in Ethiopia, it can also be considered, having tremendous potential for employment generation. However, at present, urban horticulture provides a significant proportion of informal employment especially for women and youth (ibid).

In this context, it goes without saying that, irrigated crops such as vegetables provide the needed green environment throughout the year, thereby providing quality air for breathing and cleaning up the polluted air. Moreover, urban agricultural activities are being recognized as an important source of food, nutrition and income for the urban poor. Through collaboration with local and international NGOs, the Ethiopian government is trying to ensure food security and livelihood for the most vulnerable population in such resource poor settings.

Until 1994, there was no stated policy regarding urban agriculture in Ethiopia. At present, however, the government of Ethiopia is playing a key role in the development of urban agriculture. The municipal governments are gaining interest in urban farming. As part of their poverty-reduction programs, they encourage urban dwellers, especially the poor and formally unemployed, to go in for fast-return agriculture such as vegetable production (FDRE, 2002).

In spite of its importance, expanding production of vegetables is often hindered by different factors such as lack of market access, market information, pests, inappropriate management, input supply, credit and extension services. Moreover, both labor and gender are important factors affecting land management and outcomes from vegetable production. Bezabih (2008) identified the major horticulture production constraints in eastern Ethiopia. These are related to production and product management, lack of improved potato varieties and relying on uncertified seed, high fertilizer and food prices, high irrigation cost. Institutional factors in terms of provision of inputs and extension services and poor infrastructure are also limiting. Moreover, he also explains the major constraints of marketing include lack of markets to absorb the production, low price for the products, large number of middlemen in the marketing system, lack of marketing institutions safeguarding farmers' interest and rights over their marketable produce (e.g. cooperatives), lack of coordination among producers to increase their bargaining power, poor product handling and packaging, imperfect pricing system, lack of transparency in the market information system mainly in the export market (Bezabih, 2008). In the study area, information

relating to constraints that hamper vegetable marketing and production are found to be insufficient and are not well understood. Therefore, this research was initiated to bridge the above-mentioned information gaps by focusing on the vegetable value chain.

Objective

The specific objective of this study is to analyze the constraints and opportunities of vegetable production and marketing in the study area.

Research Methodology

Sampling Procedure

Multi-stage sampling procedure was employed. The sampling covered producers, retailers other relevant intermediary actors and consumers.

Producers' Survey

At the first stage, Akaki Kaliti sub-city was selected purposively due to extensive coverage and production of vegetables. In the second stage, producers stratified into association and individual. At the third stage of the sampling procedure, comprehensive fresh lists of producers were prepared from the study sub city to identify both potato and leafy vegetable growers in collaboration with administrators, key informants and development agents (DAs) of the respective Sub-City; these served as the sampling frame. Finally, respondents from the selected sub-city were identified using probability proportional to size random sampling technique, to get a total sample size of 75 households (Table 1). The determination of sample size was resolved by means of Slovin's sampling formula with 90 per cent confidence level.

$$n = \frac{N}{1 + N(e)^2}$$

n = sample size for the research use

N = total number of household heads (HHs) producing potato and leafy vegetables

e = margin of errors at 10%

Table 1. Number of Respondents in the selected Sub City

Name of the sub-city		Total number of Respondents	No of Respondents Selected	Percentage of respondents in Sample
Akaki				
Number of vegetable growers household heads	Association	11	3	4%
	Individual	290	72	96%
Total number of respondents		301	75	100%

Traders' Survey

A Rapid Market Appraisal (RMA) was conducted in order to get the overall picture of vegetable marketing in the study area. It was estimated that 15 wholesalers can visit Akaki-Kality sub-city at peak production period out of which nine wholesalers were randomly selected for detailed analysis of wholesalers' market participation.

Retailers' Survey

The estimated number of retailers in Akaki-Kality sub-city was 185 on the market day, Saturday, out of which 25 retailers were randomly selected.

Brokers, Assemblers and Transporters

To represent these actors, one broker in the respective location, two assemblers in the respective production area, and two transporters for vegetables in the select area were included as sample respondents. Hence, a total of five respondents were included in the study. In addition, key informants representing: local leaders in the producing sub city, development agents for crop production in the elected sub-city, sub-city urban agricultural office, and other relevant stakeholders were identified purposively in the exploratory research stage.

Focused Group Discussions (FGDs) were conducted with the above mentioned different sample categories separately. Hence, the primary data for this study were from multiple types of respondents involving producers, intermediaries and key informant participants of FGDs.

Data Types, Source and Methods of Data Collection

Data Types and Source

The research used both primary and secondary data of qualitative and quantitative nature. Primary data were collected from multiple types of respondents involving producers, intermediaries, and key informant participants and FGDs on different issues, such as, value chain actors, household characteristics, production and market constraints and opportunities.

Secondary data were gathered from different documents, reports, papers of relevant stakeholders which were qualitative and quantitative in nature.

Methods of Data Collection

Based on the research questions of the study, mixed methods such as surveys, focus group discussions, observations, informal discussion with other community members and key informant interviews in the value chains were used to collect the primary data. Primary quantitative data collected was through a survey conducted among the above mentioned categories of respondents using structured and semi-structured interview. Firstly, the interview schedule was tested at the farm level on 10 randomly selected farm households. In the light of pre-testing, essential amendments were made on aspects such as ordering and wording of questions and coverage of the interview schedule. Furthermore, the pre-test enabled to know whether respondents had clearly understood the interview schedule. As a result, some questions were deleted but those found important were incorporated in the final version of the interview schedule. Enumerators were recruited based on their experiences, language and familiarity with the existing social settings. Training was organized for enumerators on the content and interview techniques. Finally, the survey was conducted under close supervision of the researcher.

The qualitative data was generated through Key Informant interviews, FGDs; transect walks and observations, informal interviews with different actors. Key Informants were interviewed using check lists, and FGD guides were used to conduct Focused Group Discussions. FGDs were conducted in the relevant location with producers and retailers, with 6-12 participants in each group.

Methods of Data Analysis

The quantitative data was analyzed using descriptive statistics such as frequencies, percentages and rankings.

Results and Discussions

Production and Marketing Constraints and Opportunities

The steady growth in the production and marketing of vegetable was not without problems. Understanding problems and opportunities with priorities was very important for both research and development initiatives. Based on the field survey supported with group discussion and key informant interview inquired from experts, producers, traders and transporters, the following constraints were identified in order of severity. For the sake of clear understanding constraints are divided into production, marketing and institutional constraints.

Production constraints

There are influential factors that hamper the production of vegetable products in the study area. As stated in Table 2, the first production problem in the study area was flood, followed by frost, insects and pests, limited extension support for production, quality of water, and poor product handling, respectively.

In general, sample respondents have selected flood, frost, insect & pest, limited extension support for production, quality of water, poor product handling as production problems by giving 1, 2, 3, 4, 5 and 6 ranks, respectively (Table 2).

Flood: Majority of the producers in the study area produce only two times a year. They were unable to produce the third production season due to flooding from Akaki River. Particularly the third cycle starts in Mid-April when there is spring rain as well as when the floods begin. Due to flooding they missed the third production cycle. During FGDs and key informant interviews, participants emphasized that they spent the whole September collecting Plastics (*Festals*) which came with the flood.

Frost: Moisture stress was indicated as one of the major constraints of agriculture in the peripheries of the city. The study area is found in the peripheries of Addis Ababa city administration; hence, it is exposed to frost. As a result, producers might lose all of their produce.

Poor Product Handling: Absence of appropriate post-harvest handling practices, especially for leafy vegetables, resulted in poor quality, easily damaged goods reaching the market and consequently, low prices.

Pest and Disease: Problems of pests and diseases were common like root rot in the case of leafy vegetables.

Quality of Water: during FGDs, producers who used water from Akaki River, said that "the quality of water is very poor and, anyone can easily identify it. The river is

highly polluted by wastes coming from households (garbage and toilets), different factories and industries.” As a result, producers acquired new infections /diseases, which had not been seen before. This pollution affects producers’ and consumers’ own health as well as the safety of the food produced.

Limited Extension Support for Production: Even though there are a sufficient number of Development Agents (DAs) deployed in each urban *woreda*¹ which is found in the sub-city, the DAs lacked the competence on pre-and post harvest handling practices. Hence, producers applied high seed rate, watered the field at harvest period, and did not store the product in a recommended warehouse. During field visits, the researcher observed that some producers watered their fields during the daytime and others also used high seed rate, which is above the recommended level.

Table 2. Response on Production Constraints of Vegetables

Production Constraints of Vegetables	Total score	Rank
Flood	130	1 st
Frost	167	2 nd
Insect & pest	205	3 rd
Limited extension support for production	242	4 th
Quality of water	284	5 th
Poor product handling	302	6 th

Source: Own survey data (2012)

Marketing Constraints

This study also identifies the bottlenecks of marketing functions in the study area. The analysis of results of all possible sources would lead to the following major constraints listed in order of severity. As presented in Table 3, respondents ranked the following constraints from 1-8: imperfect pricing system, absence of law enforcement on standards, inability to have fixed market place, limited marketing extension support, lack of storage, lack of coordination among producers, lack of improvement for other actors in the channel and poor vertical linkages of producers with other value chain actors.

Imperfect Pricing System: Frequent low price at peak supply periods; it is not based on the real supply and demand interaction, but the information collusion and gang up between main actors of the chain system. The intermediaries, who possess absolute

¹ In Addis Ababa city administration, Woreda is the smallest administrative unit below Sub-city.

power, use it to decide on the price of vegetable products. Wholesalers mostly benefited from this poor marketing system and were given a chance to control and regulate the chain. Farmers (producers) benefited the least from the market chain. They usually got nothing from a price increase. The benefits appear to be absorbed by brokers and traders along the value chain. This result reaffirms previous findings of Ametemariam (2009).

Absence of Law Enforcement on Standards: Brokers hinder fair sales. The prevalence of market cheating by wholesalers and brokers, like wrong weighing, is common. There were no identified and applied quality standards that resulted in an absence of discriminatory pricing accounting for quality and grades. There is no norm/law guiding the buyers and the sellers in defining quality and grading that determines price, hence, price is set arbitrarily. In the study area, there is no institution to enforce a norm.

Lack of Coordination among Producers: Producers were not coordinated to increase their bargaining power. There is no marketing institution to safeguard producers' interests and rights over their marketable products.

Table 3. Respondents' Response on Marketing Constraints of Vegetables

Marketing Constraints of Vegetables	Total score	Rank
Imperfect pricing system	148	1 st
Absence of law enforcement on standards	180	2 nd
Unable to have fixed market place	203	3 rd
Limited marketing extension support	278	4 th
Lack of storage	284	5 th
Lack of coordination among producers	326	6 th
Lack of improvement for other actors in the chain	364	7 th
Poor vertical linkage of producers with other value chain actors	373	8 th

Source: Own survey data (2012)

Lack of Improvement for other actors in the Chain: Limited attention was given to other parts of the channel, like lack of attention for retailers in improving warehouses that had a very important role in improving the shelf life of the products.

Poor Vertical Linkages of Producers with other Value Chain Actors: Other actors involved in the value chain include processors, supermarkets and input suppliers.

Lack of Coordination among Traders: There is a lack of unity among traders to increase their capacity to search for potential markets and control the activities of the middlemen.

Institutional Barriers

The current government structure also poses a barrier to participation in the value chain of vegetables. As Urban Agriculture is under the Trade and Industry sector, their major focus is on trade and industry, and they gave little attention to the agriculture sector. Development agents both in the urban and pre-urban areas are also expected to perform their daily activities without any transport facilities. In the study area some of the vegetable farms are far away from their offices and it takes 30 minutes to 1 hour to walk.

Opportunities

In spite of the constraints identified above, respondents identified various opportunities for increasing vegetable production in the study area.

In the study area, the contribution of vegetable production towards food security and healthy nutrition is probably the most important asset of a given community. Apart from nutrition and health, vegetable production is a source of cash income to the growers. At the moment, vegetable production provides a significant proportion of informal employment especially for women and youth. Similarly, in the study area 24 per cent of the producers were females.

The existence of a good policy framework in agricultural development manifested by deploying development agents at each *Woreda* in the Sub-City, and infrastructure development could facilitate vegetable production and marketing. The increasing use of mobile telephones is another infrastructural advantage to improve the system.

The government policy and development strategy (in Growth and Transformation Plan of the Country) identified intensive production and commercialization of agriculture as its development path. Attempts to implement this plan provide opportunities for increased vegetable production in the area. In the long run, investment in the country opens up the possibility of investment ventures in vegetable and fruit processing such as potato chips and juices. This will create a reliable market for the producers, stabilize the price and motivate producers to expand their supplies.

Farmers are increasingly becoming aware of production technologies and improved inputs. If the supply of these inputs is facilitated at reasonable prices, and farmers' knowledge on sustainable use of the technologies is improved, there is a potential to increase yield. In this regard, producers training and adequate extension system play a crucial role. In relation to this, the Sub-City Urban Agriculture Office provided training for producers once a week.

Conclusion

Constraints hindering the development of vegetables are found in all the stages of the chain. As a result, production and market related problems are becoming complex over space and time, generally in Ethiopia and particularly in the study area.

Apart from this, pest and disease occurrences should be managed, before they result in a destructive impact on production.

The study also found that, quality of water is one of the major production constraints and the producers spent the whole month of September collecting plastic containers left by the floodwaters. Therefore, it needs immediate solution. For dry waste there should be land fill and for wet waste there should be rules and regulations that govern industries and factories, on how to discharge their wastes. Industries and factories should be allowed to discharge their wastes if and only if the wastes are examined.

Training on pre and post harvest handling has to be given to producers and development agents, so as to cease field watering during the daytime and during harvesting period.

Recommendations

Based on the results of this study, the following recommendations are given so as to be considered in the future intervention strategies aimed at the promotion of vegetable value chain in the study area.

Group organizations like producer cooperatives and trader cooperatives are assumed to play a significant role in improving the bargaining power of the producers as well as creating employment opportunities. During key informant interview, it was found that producers' cooperative needed to be strengthened.

The practice of brokers in the study area can be called abusive. Correcting these problems need not only be the act of a single institution, but also the act of every concerned body like, police, trade and industry, Addis Ababa city administration and the producers themselves.

The survey result indicated that, the overall vegetable marketing system was found to be traditional, underdeveloped, fragmented and inefficient. Thus, government action is required to certify and scrutinize competing vegetable product traders, to ensure achievement of minimum standard weighing units and quality standards in order to facilitate the vegetable production and marketing process. Price differentiation by quality should be the rule of the game so that, marketing can

properly function. In addition, producers and traders should work together to increase the efficiency of the market and to be benefited in the value chain.

According to the findings of this study, producers' deviation from recommended seed rates was found partly due to poor extension service and lack of proper information on the relevance of the recommended rates. Therefore, revisiting of the previous research recommendations is highly important. To this end, promotion of participatory research that helps to address site specific conditions, producers' preferences and priorities should be given due attention. Similarly, extension service provision needs to be strengthened so as to improve producers' access to information and extension advice.

The current government structure is a barrier for many to participate in the value chain of vegetables. The government should revise its structure and Urban Agriculture should be under the Ministry of Agriculture. Development agents in the urban and peri-urban areas are forced to perform their daily duties without transport facilities. To address this, the government should provide transportation allowance or motorbikes.

The result of this study found that, the governance mechanisms in the production system are nearly non-existent. As a result, the government structure should be strengthened and channels created that directly link producers with vegetable shops, supermarkets, retailers and wholesalers in well structured institutional arrangements.

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