WORKING PAPER

AN EVALUATION OF SELECTED DEDICATED ECONOMIC CENTERS: COMPARATIVE ANALYSIS IN NOROCHCHOLEI AND NUWARA ELIYA

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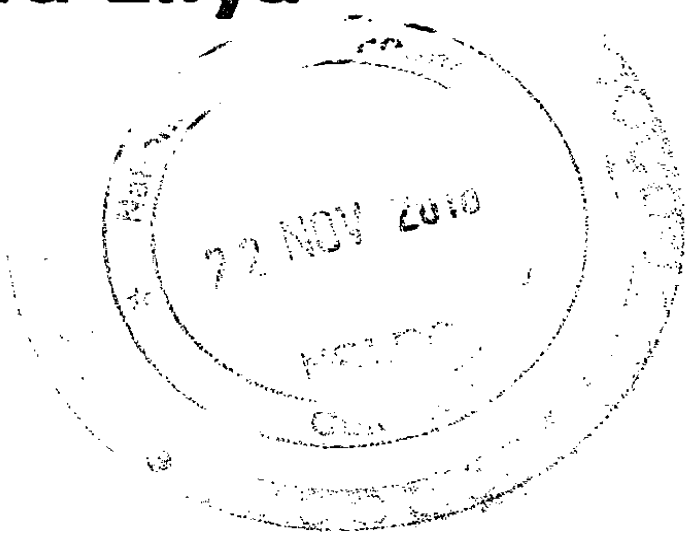

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FOREWORD

Establishment of economic centers was initiated in 1998 as a marketing development strategy to provide better marketing facilities for the producers in the rural areas. Providing opportunity for producers to obtain reasonable marketing margins, reduction of post-harvest losses and transport costs, minimizing the involvement of the middleman, providing competitive business environment for wholesale traders and creating opportunity to distribute area specific agricultural products to all parts of the island were among the major objectives of establishing Dedicated Economic Centers. There are about twelve such centers in the country, however along with diverse area specific scenario achievement of these objectives is at questionable. Therefore this study has attempted primarily to find out to which extent these objective has been met and what the major opportunities and constraints faced in achieving these objectives are, with special reference to two economic centers situated in Norochcholei and Nuwara Eliya areas.

The study has identified that the Norochcholai economic center is performing better compared to Nuwara Eliya in achieving the expected objectives. The commission system which is operating in the Norochcholai DEC had been successful in increasing the producer margin which could not be found in Nuwara Eliya DEC. The location and the infrastructure facilities were found to be satisfactory in both DEC centers. An improved market information system can be utilized to improve the functioning of the DEC centers.

As mentioned above the study has very valuable findings and also recommendations that can be applied to develop the DCEs. The study was conducted by Duminda Priyadarshana, the Head, Marketing, Food Policy and Agribusiness Division and Uthpala Jayasinghe, Research Officer of the institute. I appreciate their hard work.

Haputhanthri Dharmasena
Director

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EXECUTIVE SUMMARY

Marketing operations of vegetables play a crucial role due to seasonality of produce in deciding the profit of the farmers on one hand and level of availability to the consumer on the other. If the causes and remedies are identified, such information will be useful in solving problems in the existing centers as well as in planning and operation of economic centers in the near future too. Thus, the purpose of this study was to assess the status of the performance and problems of present DECs and to recommend suitable measures towards improving marketing system in the country. The study was based on primary data collected by a field survey carried out covering Norochcholai and Nuwara Eliya DECs. The expectation from DEC system is to provide opportunity to farmers to obtain higher prices by providing the opportunity to sell their produce directly to the traders without the involvement of intermediaries. However, the above objectives concerning the Nuwara Eliya DEC are not achieved, while Norochcholai DEC are satisfied.

The study found that, both collecting centers were well located with adequate space and equipped with essential facilities. It was found that 81 percent of the farmers reported that they received higher prices as a result of the commission system in the Norochcholai DEC. However, majority of the farmers in the Nuwara Eliya DEC were unhappy because of nonfunctional commission system and lack of market information. Market integration and efficiency can be improved through a good market information system and it may lead to increased efficiency of the market dynamism. The recommendation of this study is the need to establish a market information system for farmers to know the prices of food commodities in the DEC all the time.

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LIST OF ABBREVIATIONS AND ACRONYMS

DC	-	Direct Cost
DEC	-	Dedicated Economic Center
FC	-	Financial Cost
ME	-	Marketing Efficiency
MI	-	Market Integration
MM	-	Market Margin
MRP	-	Market Retail Price
NDEC	-	Norochcholai Dedicated Economic Center
NE	-	Nuwaraeliya
PGP	-	Producer Gross Profit
PNP	-	Producer Net Profit
TC	-	Transaction Cost
TMM	-	Total Marketing Margin
TMC	-	Total Marketing Cost
TTC	-	Total Transaction cost
WGP	-	Wholesaler Gross Profit
WNP	-	Wholesaler Net Profit

CHAPTER ONE

Introduction

1. Background of the Study

Agriculture plays an important role in the economy of Sri Lanka, as it is the main or secondary employment and a source of income of a vast majority of the people in the country. According to statistics, 32.7% of the population of the country depends on agriculture as their main source of income (Central Bank of Sri Lanka, 2011). This percentage is higher in the rural sector as over 70% of the people of the country are belonging in to the rural sector.

Agricultural productivity continues to be lower than the industry and service sectors, growing at just over 1 percent annually over the last decade and half resulting a decline in real incomes of the farmers. As a result of this, widespread agricultural poverty in rural and estate areas could be observed. In this context, the World Bank (2008) claims that growth of agriculture is on average at least twice as effective in reducing poverty as growth outside agriculture. It is said that agricultural growth reduces poverty directly by raising farmer incomes and indirectly by generating employment and reducing food prices. Poverty reduction is served best if agricultural growth is centered on small farmers, who are made sustainable through institutional and technological innovations and empowered through producer organizations.

As the Food and Agriculture Organization emphasizes the principal challenge meeting a head of governments and the international development community is to ensure that the small holder farmers benefit from commercialization in agriculture by participating in the market (Pingali et al, 2005). However, increased transaction costs prevent the entry of small farmers to the market. Therefore reducing transaction costs would increase the farmer participation in competitive markets, which will meet the broader poverty reduction objectives.

In the rural sector, majority of the agricultural operators are smallholders. Low income, poverty and malnutrition are the overwhelming problems in this sector. Likewise low productivity and high cost of production, low prices fetched by the farmers in an unfavorable marketing environment are some of the major causes for the above problems. The past regimes, have taken different actions to solve marketing problems since 1970s. One example is the establishment of the Marketing Department with the aim of facilitating the marketing of farmers' produce by ensuring them a fair price for a longer period. With the introduction of open economic policies in 1977, free marketing was allowed and the farmers were encouraged to sell their produce at competitive prices. But the end result was farmers receiving a low price due to limited number of traders, operation of

middlemen and high competition due to urged to sell their harvested product. On the other hand, consumers also had to pay a higher price for the farmers' produce that they purchased. This situation can be partly attributed to the poor infrastructure facilities such as roads and marketing centers.

Agricultural marketing is a large and important discipline in agricultural economics. Marketing of vegetables is particularly important as up to 90%-98% of the output of most of the vegetables is sold, except for root and tuber crops for which a significant portion is saved for seeds (Singh and Sikka, 1992). Marketing operation of vegetables has a crucial role, due to seasonality of produce in determining the profit of the farmers on one hand and the level of availability to the consumer on the other. High market margins are great problems in this scenario. Marketing cost includes assembly, transportation, processing and distribution of farm food to consumer. To reduce marketing margins various methods are used all over the world such as direct marketing system and contract farming.

1.1 Dedicated Economic Center (DEC) Establishment Programme

Since mid-1990s, the government policy in developing rural marketing shifted from direct to indirect intervention. In this regard, the government policy was to give high priority to the establishing of economic centers. The first dedicated economic center was established in 1999 at Dambulla by replacing the vegetable market located in the center of the town. Later, a few more economic centers were established mainly in producing areas such as Keppetipola, Manampitiya, Embilipitiya, Meegoda and Thambutthegama. Up to now, 14 DECs have been established all over the country, namely Dambulla, Ratmalana, Meegoda, Veyangoda, Walisara, Kandehandiya, Kurunduwatta, Narahenpita, Embilipitiya, Nuwara Eliya, Keppetipola, Piliyandala, Boossa and Weerawila. Due to certain issues Boossa and Weerewila DEC are not functioning presently. Wariyapola is the most recent DEC in the country. Meanwhile, the government is planning to establish a few more DECs in the near future such as in Kilinochchi, Omanthai and Bandarawela. The DECs are functioning under the Ministry of Co-operatives and Internal Trade. Under this DEC system, it is expected to provide opportunities for farmers to obtain higher prices by facilitating them to sell their produce directly to the trader/ traders without the involvement of intermediaries. The specific objectives of setting up of economic centers are as follows,

- Ensuring reasonable prices for agriculture producers for their crops by providing targeted market.

- Providing opportunity for small scale producers to minimize their transport costs and wastage during transportation.

- Providing opportunities for wholesale traders to purchase fresh fruits and vegetables, directly from producers.

- Encouraging the business community by providing competitive marketing environment for wholesale traders.

- Creating opportunity to distribute area specific agricultural products among people in all parts of the island.

- Providing facilities for consumers to purchase food items at cheaper prices.

Apart from above specific objectives there are special objectives to be achieved from different DECs depending on the geological placement of the each DEC.

1.2 Research Problem

Although the concerted Dedicated Economic Centers are equipped with infrastructure facilities such as storage, electricity, parking and sanitary, the criticism is that producers do not receive benefits from these centers and in reality the traders are the major beneficiaries. It has been observed that, there is no competitive trading environment within the DECs as expected, because the traders rather than the producers determine the price. Prior to the establishment of these centers, traders visited the farm gate for purchasing. In this process the farmers had a certain power in fixing the price. It should be stated that on an occasion, a Member of the Parliament reported to the Parliament that farmers/ producers were not benefited from the Nuwara Eliya DEC. However, these problems have not been explored yet in detail. Such an exercise is necessary as the government is setting up more and more DECs without an appropriate assessment of the existing centers. If causes of the problems and solutions are identified, such information will be useful in solving problems in the existing centers as well as in planning and operation of economic centers in near future too. Therefore, the purpose of this study is to assess the status of the performance and problems of selected two DECs and recommend suitable measures to overcome and improve the issues identified.

1.3 Objectives of the Study

The overall objective of this study is to identify the present market status of DECs and the problems encountered and to recommend solutions for identified problems in a national point of view.

1.3.1 The Specific Objectives are to:

- Identify different types of suppliers and traders of DECs as well as buyers arriving at the DECs.
- Study marketing activities such as grading, packing, transport, storage, pricing etc and the market management system.
- Identify problems faced by farmers, traders and buyers.
- Suggest recommendations to solve the identified problems.

1.4 Method of Study

The study largely depends on primary data and to achieve this, a field survey was carried out covering Norochcholai DECs and Nuwara Eliya DECs. The data collection for the study includes several methods. A series of sub surveys such as trader surveys, supplier survey, buyer survey, price survey and farmer surveys were conducted to obtain relevant information from each party. Similarly, key informant interviews were held with key personnel such as members of the DEC management boards and key officials in the respective areas such as the Divisional Secretaries as well as the officers of the traders association, Truck Drivers' Association and the Nattamis' Association to obtain information in relation to the operation of the DECs, problems pertaining to them and the suitability of the locations for trading, etc. In addition to primary and secondary data, market fees and the profiles of the traders were collected from the market management office and the Ministry of Rural Development. The referenced sub surveys and the type of information collected through each survey are mentioned in the ensuing paragraphs.

1.4.1 Trader's Survey

At the outset, the total number of outlets was categorized according to commodity groups such as low country and up country vegetables. Information on trading activities and their problems were gathered from each group. The traders were selected randomly. The size of the sample depended on the number of traders in each group. In Norochcholai DEC, out of 44 traders 30 (75%) were selected on random basis. Out of 75 traders, 36 (48%) traders were selected on random basis in Nuwara Eliya DECs.

1.4.2 Supplier Surveys

All the incoming trucks with produce for sale in market were counted at arrival at the entry points. In Nuwara Eliya DEC, the incoming vehicles were counted from 6.00

a.m to 2.00 p.m of the day, during the concerned weak at all entry points. In Norochcholai DEC, the incoming vehicles were counted from 9.00 a.m to 6.00 p.m. Information on the type of supplier, origin of supply, type of produce by quantity, product delivery patterns and associated problems were collected from each and every supplier. The survey was conducted over a week. Information on types of producers was used to ascertain different types of vegetables, arrived at the centers.

1.4.3 Buyer Survey

All the outgoing trucks with goods were surveyed during the same period where the supply survey was undertaken. Information on destination, type of goods, type of traders, quantity purchased by each trader, associated problems, and arrival and departure time of the vehicles was collected. Types of traders were categorized into different groups such as wholesalers, "*Pola*" retailers, roadside retailers and institutional buyers linked to hotels, Armed Forces and hospitals. Information was also utilized to ascertain route links with the DECs.

1.4.4 Price Survey

Prices were collected every hour for seven days for different varieties of vegetables to ascertain the price variation within a day. Similarly the prices were collected from other wholesale markets close to the DECs and major vegetable markets in Colombo, Dambulla and Kandy. This information was used to compare prices in the DECs and other wholesale markets.

1.4.5 Farmers' Survey

One hundred fifty farmers were selected randomly from surrounding areas of Nuwara Eliya and Norochcholai (150 from each producing area) and were interviewed to collect information on the impact of DECs on production and marketing of adjacent areas on them. The production data was collected especially on changes in crop diversification, crop intensification and changes in cropping systems. As regard to marketing, possible problems that are pertaining to cleaning, grading and packing of farm produces due to better understanding of the needs and preferences of the buyers and increasing bargaining power in pricing due to direct access to the market were collected.

A question guide was prepared for the main target groups of farmers, buyers, suppliers, and traders in each market. Two schedules were prepared to collect information on arrival and departure of Lorries. Descriptive statistics such as range, average and percentage were calculated and tabular analysis was applied to ascertain the relationship between two variables concerned such as vehicle arrivals and time period of the day and supply locations and the quantity supplied.

1.5 Structure of the Report

The report consists of five chapters. The first chapter provides the background, status the objectives and the research methods of the study. Chapter 2 elaborates the background information on production and marketing of the vegetable sector in Sri Lanka in order to have a proper understanding of the sector before analyzing the concept of the Dedicated Economic Centers. Norochcholai and Nuwara Eliya Dedicated Economic Centers were discussed in Chapter three, organization of the market, major participant of the market and supply as well as demand sources are discussed in the third chapters. Socio- economic factors, problems encountered by the farmers, traders and the economic centers are described in chapter four. Findings and recommendations are presented in the final chapter.

CHAPTER TWO

Historical Background of Production and Marketing of Vegetable Sector in Sri Lanka

2.1 Introduction

The vegetable sub-sector is the second most important sub-sector after the rice in Sri Lanka. Vegetables are produced on a year-round basis and a large number of farmers are engaged in vegetable production. Overall vegetable production increased by 10 percent in 2007 compared to 2006 and by 24 percent compared to 2000. Both low country and up country vegetables reported production increases. A major share of the vegetable produced is consumed locally with exports amounting to less than 1 percent of the domestic production. Post-harvest losses in some vegetables are the result of pre-harvest diseases and infection. Losses during transportation and storage are aggravated when vegetables are exposed to pest and disease attacks at the pre-harvest stage. Post-harvest losses significantly reduce the availability of produce in the market, and widen the price gap between the producer and the consumer.

Vegetable marketing in Sri Lanka is primarily in the hands of the private sector. Marketing of vegetables is particularly important as up to 90-98% of the output of most vegetables is sold, except for root and tuber crops for which a significant portion is saved for seed (Singh and Sikka, 1992). The marketing of vegetables, unlike in the case of cereals, is more complex because of the special characteristics like the highly perishable nature, seasonality, bulkiness and needs for special care and immediate disposal. In the case of perishable commodities for a producer, the real problem begins when he attempts to dispose of the same i.e. marketing the produce (Verma *et al*, 2002). The marketing operations have a crucial role, in deciding the profit of the farmer on one hand and level of availability to consumers on the other. High marketing costs or market margins are a great problem in this scenario.

The vegetable production in Sri Lanka is more sensitive to weather factors. The country's temperature variation throughout the year is low with the mean ranging between 21.1^0C and 31.7^0C. The rainfall pattern in Sri Lanka is bimodal with two periods of monsoonal precipitation resulting in two distinct cultivation seasons. The major vegetable cultivation season, called *Maha*, is in October-February. The precipitation during this season comes from the Northeast monsoon of October-December. The harvesting period of crops cultivated in *Maha* is the end of January, a usually dry period. The second crop season is called *Yala* that extends from May to July. The rains in this season come from the South-west monsoon during mid-April to June. The remaining months of the year are dry, and almost no cultivation occurs

during this period. Within the two main rainy seasons, rainfall distribution across the country is determined by topography. The whole island benefits from the Northeast monsoon. The Southwest monsoon is intercepted by the central mountains resulting in >2500 mm of rain per year (for wet zone) in the highlands and South-west part of the island. This is the "wet" zone of the country covering 1.53 million ha. The "intermediate" zone covering 4.17 million ha receives between 1750-2500 mm of rainfall per year, and is hotter than the "wet" zone. The dry zone receives only <1750 mm/yr of rain, with the highest temperatures ranging between 28 and 30°C. The soils of Sri Lanka have been surveyed and mapped. Nine soil orders are found in the country. Based on the soil, elevation, and rainfall data, 24 agro ecological regions have been identified. As the combination of soil, rainfall, elevation, and irrigation facilities varies across the regions; it is possible to grow a wide range of vegetables in the country. In some areas, such as Kalpitiya, Jaffna and Nuwara Eliya, vegetables are grown thought out the year based on their special climatic condition.

Vegetable industry in Sri Lanka is characterized by high dependency on weather, small scale production, perishability of the product, high use of family labour and is more concentrated in remote areas where transport, electricity, communication and water facility are lacking (Rupasena et al, 1999).

2.2 Vegetable Classification

Vegetables grown in Sri Lanka are classified in two ways based on the type and the origin. Based on the type it has four major categories; leafy vegetables, fruit vegetables, roots and tubers and seeds. Based on the origin, it is classified into two groups. The more traditional and indigenous types are grouped as tropical types, or, as they are popularly known, "low-country" vegetables since they are commonly cultivated in lowland and midlands. Those introduced from other countries are called exotic vegetables, or temperate vegetables, or, popularly known as "up-country" vegetables. They are usually cultivated in the cooler climates of the up-country areas. Most vegetables are grown equally in both *Maha* and *Yala,* except for some up-country vegetables such as OFC, mainly grown in the *Yala* season, and tropical vegetables, such as chili, which are mainly grown in the *Maha.*

2.3 Vegetable Production Systems

Based on regional variation, vegetables are cultivated under various farming systems throughout the year in the country. Broadly they can be grouped as low-country system, Up-country System, Mid-country System, Home gardens, Rice-based Vegetable Systems and Peri-urban System.

Vegetable production in the lowland is characterized by large areas and poor technology adoption. The application of fertilizer and use of improved cultivars are less popular. The exception, however, is the northern-most part of the country

where vegetable cultivation is relatively advanced. Bulk of the lowland vegetable production comes during the *Maha* season with little or no supplementary irrigation. Rain fed cultivation is popular in the dry and intermediate zones on well-drained soils.

In the cool highlands where land is scarce and the climate is favorable throughout the year, mono cropping, multiple cropping, and relay cropping are practiced in vegetable production. The cropping intensity and the level of technology adoption are high, often with overuse of inputs. Vegetable growers are competent and marketing of inputs and the produce is well organized. Highland vegetable cultivation is commercialized especially in Badulla, Nuwara Eliya and Kandy districts.

The midlands have varying altitude, temperature, and rainfall, and the nature of vegetable production varies accordingly. In higher altitude and wet areas, more intensive production, somewhat similar to the highland systems, can be observed, especially in home gardens. In the drier parts of the midlands, extensive cultivation of vegetables is carried out in a fashion more similar to the lowland system. The crops cultivated are a mixture of up-country and low-country vegetables.

Most home gardens, in both rural and urban areas, have at least a few popular vegetables, especially in areas where both monsoons prevail. Definite statistics on production and consumption from such units are not available. Home gardens also have permanent vegetable trees, such as jackfruit and breadfruit in the wet and intermediate zones and drumstick in the dry zone. Ash plantain and *kathurumurunga* are also common in wet and intermediate zone home gardens.

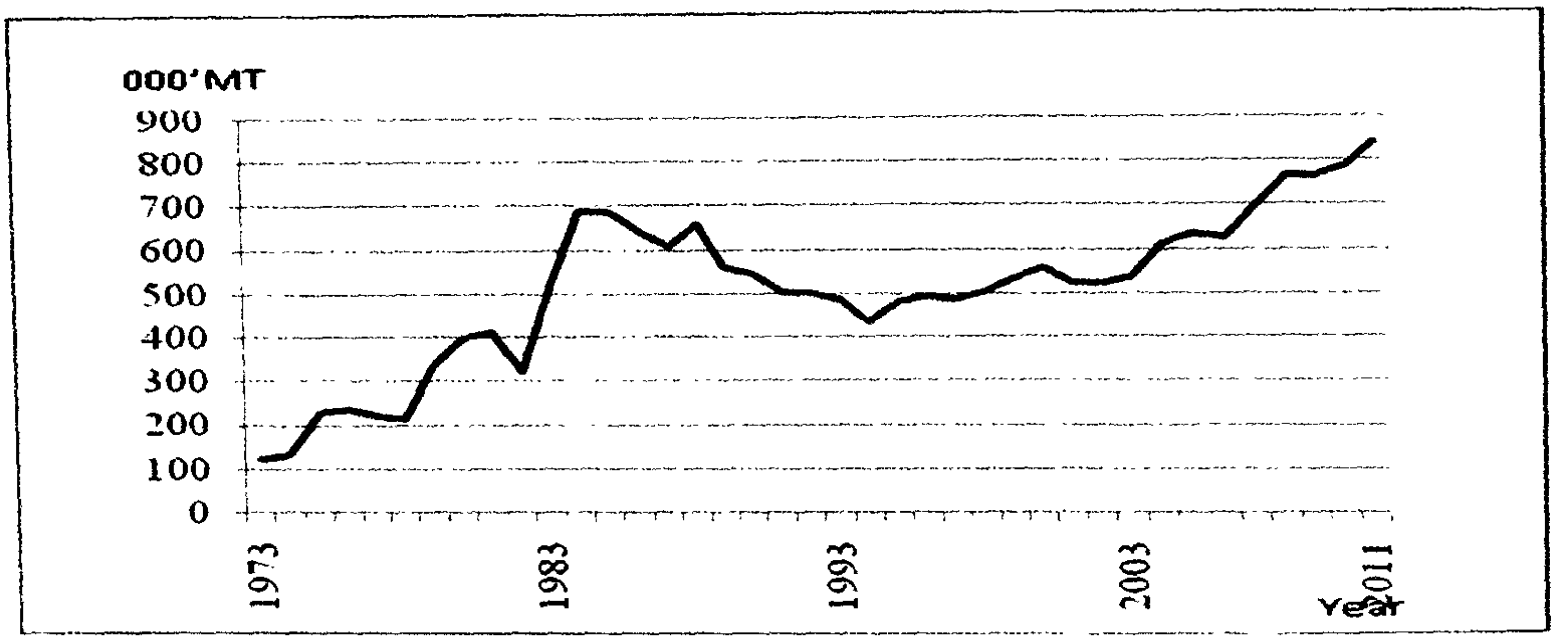
In the dry zone, vegetables are grown during the *Yala* season in paddy fields only if supplementary irrigation is available. The popular crops are chili, capsicum, tomato, and onion. In the mid- and up- country regions during the *Yala* season, terraced paddy fields located around 1,500 m are cultivated with potato, beans, tomato, and cabbage. Vegetables cannot be cultivated in paddy fields during the *Maha* season due to stagnant water.

The peri-urban production system is a specialized form of market gardening near major cities (especially Colombo) which consists of usually very intensive cultivation of leafy vegetables to supply the needs of the urban and semi-urban populations. As green leaves are an important component of the Sri Lankan rice and curry based diet, there is a ready demand for these vegetables. The most popular leafy vegetables are *gotukola,* amaranth, spinach, *mukunuwenna*, and *kankung*.

2.4 Trends in Vegetable Production

The Figure 2.1 illustrates the trend in vegetable production during the period of 1973-2012. The appendix one shows the parameter estimation in linear, quadratic

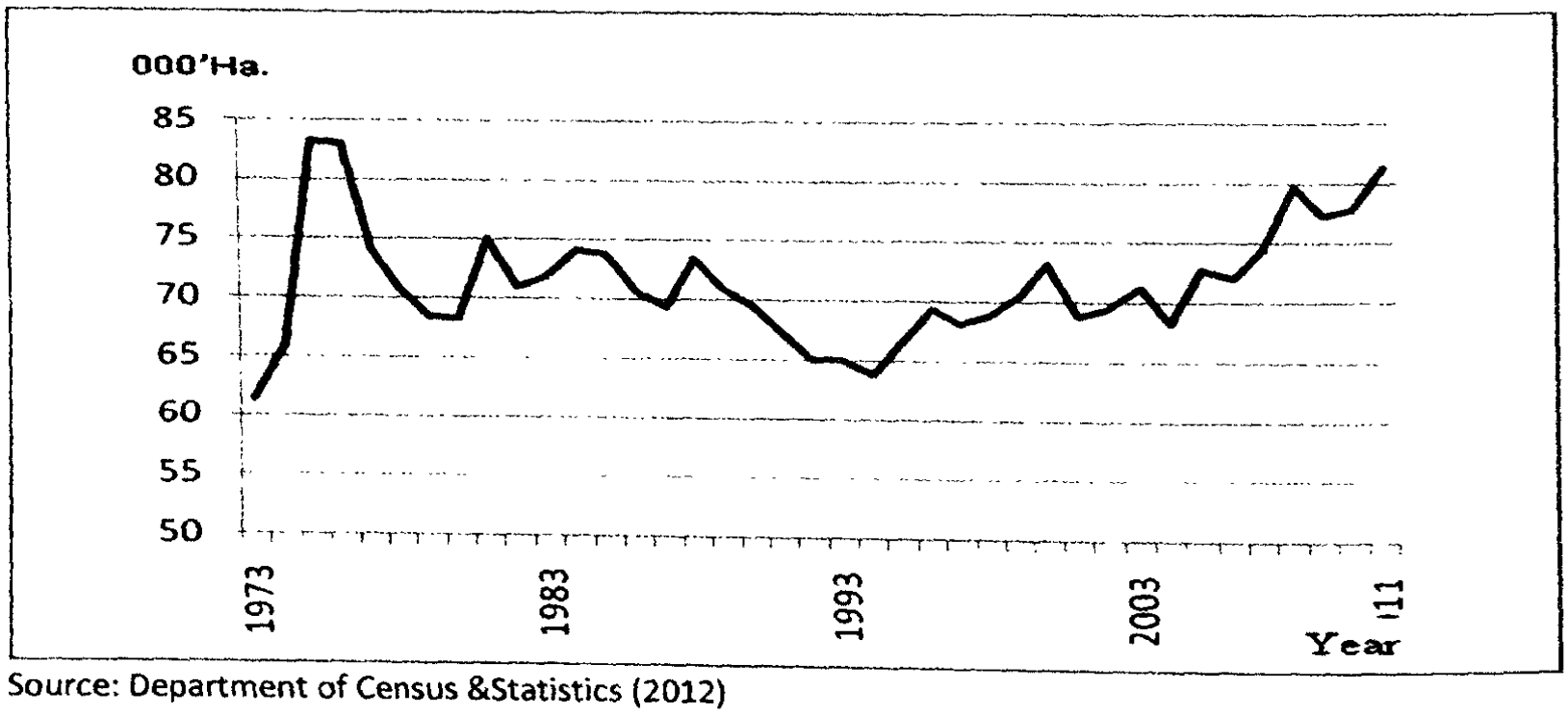
and growth forms for vegetable production during the same period as shown in Figure 2.1. The parameter estimate in linear equation shows 12,296.62(1,592.59) annual positive coefficient with 264,238.92(36,542.61) constant values. It indicates that the vegetable production recorded an increasing trend during the period considered in the study.



Source: Department of Census &Statistics (2012)

Figure 2.1: Productions of Vegetables (1973-2012)

The appendix 02 shows the linear, quadratic and growth estimations of cultivated extent of vegetable during the period of 1973-2012. The cultivated extent in vegetable shows positive coefficient in linear form but not at significant level. The quadratic form shows negative slope until 1990s and after that it has recorded an upward trend.



Source: Department of Census &Statistics (2012)

Figure 2.2: Cultivated Extent of Vegetables (1973-2012)

According to the Annual report of Central Bank of Sri Lanka (2012), total vegetable production in 2012 increased by 4.4 per cent to 999,268 metric tons compared to 2011. The share of total vegetable production from the Eastern Province improved into 7.3 per cent in 2012 from 4.3 per cent in 2011 while that of the North- Western Province increased in to 10 per cent in 2012 from 8.4 per cent recorded in the previous year. Vegetable supplies appear to be expanding in some provinces, which is likely to have a favorable impact on prices in the future. The fertilizer support programme contributed significantly towards increasing vegetable production during the year.

2.5 Vegetable Marketing

In this section, existing vegetable marketing system in Sri Lanka is discussed based on organization, operation and performance framework. The organization of the marketing system refers to the way of market is organized and explains whether it is competitive or not. Existing situation of marketing functions are discussed under the section of operation and the performance is the end result of the organization and operation of marketing system. Vegetable production in Sri Lanka mainly used for domestic consumption and exports and importing takes place at a negligible level. Hence, the domestic marketing system of vegetable in Sri Lanka is discussed in detail in the following section under the organization operation and performance framework.

2.5.1 Key Features of the Marketing Systems for Vegetables in Sri Lanka

- Markets are stagnant and less dynamic
- Long supply chains with little integration of the partners
- High post-harvest losses (10%-20%)
- High price volatility
- High market uncertainties with respect to quantity, quality and time at both producer and consumer end
- Bulk breaking, cleaning and grading by the retailers
- Large number of supply chain partners, operating independently
- National pricing mechanism is based on Colombo wholesale market price
- Commission agents dominating the wholesale market transactions

(Source: Abeysekera *et al*, 2007)

2.5.2 Change of the Vegetable Marketing System

This section provides an overview of the historical transformation and existing situation of the marketing system organization for fresh vegetables. Prior to the introduction of economic liberation policies in 1980s, the fresh fruit and vegetable marketing system in Sri Lanka was dominated by state sector intervention including the operation of commodity marketing boards, purchasing mechanism and other

forms of intervention. This period was typically characterized by (i) high level of production and price risk faced by producers (ii) the presence of multi – layers and long marketing chains, (iii) poor product quality at the retail and with little or no choice and (iv) high price uncertainly for the consumers (Abeysekara, 2007).

According to Rupasena *et al,* (1999), until mid-1980s the commission system was the dominant marketing channel especially in the districts of Kandy, Nuwara Eliya and Badulla. During that period, a well-organized assembly system of vegetables could be found with the assistance of Lorries from the upcountry transport unions, large farmers and selected low country periodical markets (fairs). The basic features of market organization for the fresh vegetable sub sector and its related infrastructure reflect the distinct upcountry and low country production and marketing patterns during that period as well as today. Menegay *et al,*(1997) and Rupasena *et al,* (1999) highlighted that the assembly arrangements of upcountry vegetable producing areas were organized assigning the responsibility on the transport union to send its lorries on specified, scheduled routes along interior mountain roads to collect vegetables from local farmers. Then, these vegetable were transported to a common assembling place and loaded to Lorries and transported over night to the specific markets for delivering to the consignees. The vegetable production and marketing of upcountry area was highly commercialized because the demand from urban consumers was high for the vegetable produced in those areas. There was a strong link between commission agents in terminal markets and vegetable distribution network of collectors, agents as well as farmers providing substantial loans for their agricultural equipment, input as well as consumption requirements. It ensured steady supply of those vegetables.

On the other hand, the less commercial, lower valued, seasonal and more dispersed nature of low country vegetable production and marketing condition lent itself to periodic assembly. Resident and itinerant traders collected vegetable in various collection points along roads through production areas and at rural producer periodical markets (*polas*).

Menegay *et al,* (1997), in their project proposal referring to vegetable marketing system in Sri Lanka highlighted that internal sales and distribution of vegetable from terminal markets to retail outlets was also well organized. When Lorries arrived from producing areas unloading was arranged systematically using laborers. After each consignee sold vegetable at the prevailing market prices, he paid the freight fee, covered labors handling charges, deducted any other cost he incurred plus his 10% commission and arranged the balance to be paid to the farmer or other supplies. The distribution arrangements from terminal market especially Colombo market was organized with the contracted Lorries arriving from one of the retail markets serviced by the terminal markets. This is a good example for the more centralized marketing system of vegetable during the period prior to the economic iberalization in 1977.

This distribution system reportedly expanded in the South beyond Galle, in the North beyond Negombo and East to the towns at the foothills of the central highlands. It was effective in rapidly distributing a wide variety of vegetables to urban and sub-urban consumers. In fact, there was relatively little option for sourcing large quantities of upcountry vegetables those days. Given the fixed number of retail stalls in centrally located public markets and public supermarkets, retailers generally prospered with minimum amounts of increased competition at one time. Since low country vegetables were readily available, even in home gardens, their arrangements were comparatively less (Menegay *et al.* 1997)

Menegay *et al*, (1997), Rupasena *et al*, (1999) and Disanayake and Ravichandran (2003) found that during 1980s, the commission based centralized system of vegetable distribution changed and new marketing channels emerged both in the major upcountry producing areas and in the terminal markets. Beginning of the 1980s, itinerant traders from deficit areas began to visit producing areas and some collectors and buying agents in the upcountry production areas started doing business with them. Later, closely situated wholesale shops were established and became recognized as wholesale market centers, especially in Nuwara Eliya and Bandarawela. This change could be considered as a step forward in vegetable marketing system because these resident wholesale traders distributed vegetables on their own account and received orders of buyers from distant deficit areas. These outside traders transported purchased vegetable to their markets such as Galle and Matara. In this system ownership of the vegetable stock changed and traders were more concerned on safe transportation than on the centralized commission system. Another important change took place during this period was development of Dambualla area as a terminal market. A group of traders from the Kandy area was reported observing the profit of the large commission agents. Since, they were unable to enter this market, Traders Island wide moved to Dambulla area. This market place, located at strategic cross roads to the north and Kandy, steadily grew into a vibrant wholesale transshipment market center.

During 1990s assembly arrangement and distribution of vegetable changed for up country and low country vegetables. One change was the emerging decentralized hierarchy with assembly traders, located in wholesale market centers or trans-shipment markets, which collect and distribute a very large share of upcountry vegetables with the latter set of traders also handling a substantial amount of low country vegetables. The second is the declining centralized hierarchy based in the Colombo and Kandy terminal markets as supplied by selected upcountry farmers, collectors, wholesalers and trade unions who assemble and deliver upcountry vegetables plus another set of assemblers in *polas* or production areas delivering low country vegetables directly to these terminal markets on a commission basis. The third is the large unorganized itinerant traders with Lorries arriving from low country consumer fair (*polas*) and public markets to procure upcountry vegetables directly from farmers and collectors in more interior areas and low country vegetables from

producer fair (*polas*) in production areas dispersed around the country (Menegay *et al.* 1997; Rupasena *et al.*1999; Disanayake and Ravichandran, 2003).

In the recent decade (2000s), vegetable marketing system in Sri Lanka rapidly changed and new paths emerged. These changes were supported by a number of factors including increasing per capita income, expanding urbanization, shifting food preference and consumption patterns and improved communication facilities. Vegetable marketing has become a more profitable business and new supply chain partners have emerged including out growers, private sector extension workers, transport operators with refrigerated trucks and modern packing systems, warehouse operators and integrators at the intermediary level, supermarkets, retail shops and exporters (Abeysekara, 2007). It has been a transition away from the traditional, more centralized vegetable marketing system as orchestrated by commission agents in the Colombo and Kandy terminal markets towards a more decentralized, vigorous marketing network including large assembly market centres, transshipment market centres or economic centres, supermarket chains and consumer / producer fair.

2.6 Analysis of Marketing Systems of Vegetable

2.6.1 Marketing Channel and Participants

This section explains different types of market participants and their role in vegetable marketing system in Sri Lanka. With the changing pattern of vegetable marketing system, the role of market participants has also changed and new intermediaries' haven entered the system. These market participants can be categorized basically into three based on the roles played by them.

1. Distribution level : Retailers, Commission agents, Demands side wholesalers, Collectors, Brokers and Transporters
2. Producing level : Farmers
3. Input Supply Level : Input suppliers

2.6.1.1 Resident Collectors/Assembly Agents

Assembly agents collect vegetables from farmers at farmgates, roadsides and their collecting centers and sell stocks to the demand side wholesalers and to the markets in Dambulla, Kandy and Colombo.

Resident collectors are located in vegetable producing areas and some of them are input suppliers, boutique keepers and farmers. When a group of these traders gather at a common place, an assembly market is formed. In the up country areas itinerant traders or resident traders meet vegetable collectors at crossroads or at other common meeting places. The role of the resident collector is collecting vegetables

from the farmers at farmgate, roadsides and their collecting centers and selling stocks to the demand side wholesalers and markets in Dambulla, Kandy and Colombo or supermarket supply chains.

2.6.1.2 Trucker-buyers/Demand Side Wholesalers

Traders who come in Lorries purchase the produce through the assembly agents/resident collectors or direct from the producers. They could be either retailers or wholesalers.

Wholesaler is a person involved in selling large quantities of commodities. The collector or the transporter brings the vegetables to the wholesale market. From this point the distribution of commodities takes place. The vegetables brought in are bought by retailers, or people who take them to different wholesale markets. The wholesaler will only provide a place to the seller and the buyer to discuss the prices. The wholesaler will earn a commission out of the sales.

2.6.1.3 Demand Side Wholesalers

Traders established in the towns and economic centers located in the consuming areas belong to this category. Most of them visit producing areas to buy vegetables. These traders mostly purchase vegetables from resident collectors and DECs on credit basis and sell them to town retailers and traders at fair on credit basis. These traders are called 'trucker buyers' because most of them visit producing areas by trucks (a lorry with an open body).

2.6.1.4 Commission Agents and Commission Systems

These are wholesale traders at major wholesale markets who sell vegetables for the farmers or assembly agents on a commission basis. They usually retain a 10% as their sales commission.

Distributing vegetables through commission system is considered as the oldest system primarily based in Colombo and Kandy wholesale markets. The importance of commission system has declined with the establishment of regional wholesale markets. In this system, regional collectors in producing areas collected vegetables from farmers and sent to Colombo commission agents who are at the main point of distributing vegetable in Colombo City and Suburban areas (Disanayake and Ravichandran, 2003). The commission system is criticized over some factors and nature of the business activities. The commission agents tend to quote a price to the farmers, which is lower than the price at which the vegetables were actually sold at the wholesale market. Thus, the commission agents are known to be exploiting the farmers. This situation is especially observed in the Colombo Wholesale Market (Rupasena *et al*, 1999; Perera *et al*, 2004).

These types of traders sell vegetables on behalf of the suppliers such as farmers and collectors. The principal buyer is the retailer and transactions are made mostly on spot cash (Rupasena, 1999). The traders in Colombo and Kandy retain 10% of the selling price as commission, while the traders in DECs in producing areas charge commission on stage basis. The Table 2.1 indicates the commission values in NDECs in producing areas.

Table 2.1: Commission System in NDECs

Selling Price (Rs/kg)	Commission Value (Rs/kg)
< 10.00	0.50
10-29	1.00
30-59	2.00
60 – 99	3.00
100<	5.00

Source: HARTI Field survey – 2012

2.6.1.5 Retailers

Retail traders are those who sell vegetables at stalls, general grocery shops and at the roadside. Retailers who are engaged in vegetable marketing system in Sri Lanka can be categorized into four. They are,

i. Retailers in Public market or public supermarkets
ii. Retailers in fair (*pola*)
iii. Boutique shop or roadside retailers
iv. Pavement vendors and street hawkers

In recent decade retailing system of vegetables has changed and establishment of retail stores specializing in fresh vegetables is another new feature in the fresh produce marketing system in Sri Lanka.

2.6.1.6 Transporters

This can be anybody; the grower, collector, wholesaler, retailer or another person who hires vehicles for such transportation and earns an income out of it. The transporter takes vegetables to the wholesale market or the retail market. For this purpose, he uses lorries, trucks, tractors, bicycles, buses and vans, etc. Especially in commission basis system transporters play an important role in vegetable marketing. They transport vegetable from the point of production to the commission market or wholesale markets and link two parties providing a service, rather than just transporting.

2.6.1.7 Growers

Most of the time, the grower harvests the produce at the farm by himself. He sometimes sells his produce to the collector who visits his farm or he transports the produce to the collector's place. Farmer sometimes takes his harvest straight to the wholesale market or to the retail shops. He might even sell his produce to the consumer directly at the farm or in small stalls placed near the farm, his house or at roadside. He sometimes takes his produce to small fairs in the village and in towns where the consumers buy the produce. In these cases the farmer acts as the collector, transporter and the retailer.

2.6.1.8 New Partners in the Emerging Fresh Vegetable Supply Chains

New supply chain partners have emerged in recent past including out growers, private sector extension workers, transport operators with refrigerated trucks and modern packaging systems, warehouse operators and integrators at intermediary level, supermarkets, retail shops and exporters.

2.6.1.9 Village Level Assemblers

The establishment of a formal out grower system and collecting centers at the village level is a new phenomenon in Sri Lanka's agricultural marketing system. The system reflects a well-coordinated effort by private entrepreneurs to improve their supply chains and to ensure quality products and continuity of supply. Out growers are organized at village level as informal producer associations. Evidence indicates that most of these groups are strong and cohesive with a high degree of accountability. Some of these associations have developed close linkages with the village level microfinance institutions to use short-term production credit facilities. Generally, a collector agent or facilitator is stationed in the village to coordinate supply, thereby providing the supermarkets with a cost-effective and financially sustainable strategy that enables the retailer to adopt a demand responsive extension system. The system is effectively used to disseminate extension related information between the supermarket and the producer to ensure product quality and to manage and plan supply levels.

2.6.1.10 Transporters with Refrigerated Trucks and Non-Conventional Packaging

Poor transportation and packaging is a major cause for the high wastage reported in Sri Lanka's fresh vegetable marketing system. As a consequence, most supermarkets have developed an alternative practice of using refrigerated trucks and plastic crates for packing. The new system has reduced wastage to around five percent (Abeysekara *et al*, 2007).

2.6.1.11 Large-scale Retail Stores Specializing in Fresh Fruit and Vegetables

The establishment of retail stores specializing in fresh fruit and vegetables is another new feature in the fresh produce marketing system in Sri Lanka. These retail outlets generally handle larger volumes than the ordinary retail shops. They are usually managed by a single entrepreneur as small stalls, averaging about 500 square feet and employing about five to ten employees per stall (Abeysekara *et al*, 2007).

2.7 Marketing Channels of Vegetables

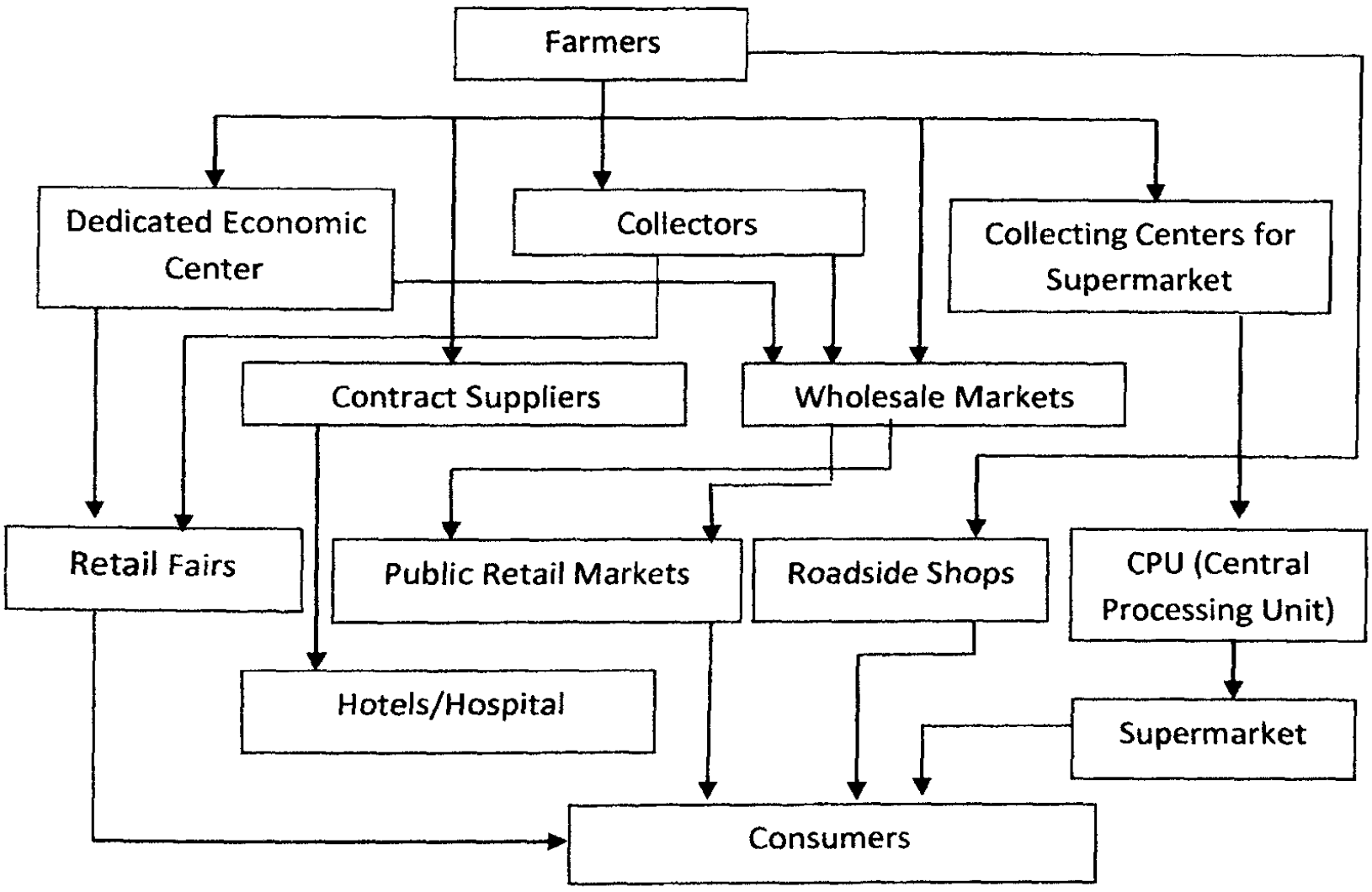
A marketing channel is a set of practices or activities necessary to transfer the ownership of goods, and to move goods, from the point of production to the point of consumption and, as such, which consists of all the institutions and all the marketing activities in the marketing process. Marketing channel is a product movement route through several intermediaries. It indicates how products move from the producer to the end consumer.

As explained in the previous section, changes are observed during recent period for the marketing channel of vegetables. Thirty years ago, vegetables from all over the country were mainly supplied to the Colombo wholesale market (Colombo Manning market) and they were distributed throughout the country from this wholesale market. Therefore, the Colombo wholesale market played an important role in vegetable marketing. However, this situation has changed with the development of regional wholesale markets. At present, the importance of regional wholesale markets is growing in vegetable marketing and a considerable portion of vegetables is brought to regional wholesale markets and from where the vegetables are directly supplied to consumer areas.

Marketing channel is a chain of middlemen involved in the process of selling of different vegetables at different stages. The figure 2.3 shows different types of marketing channels indicating that how vegetables move from the producer to the end consumer. The bulk of the marketing is carried out by the commission agents and large traders of the private sector. The chain of intermediaries begins with the village level collecting agents and the most usual marketing channel is the farmer-assembler-wholesaler-retailer-consumer systems. However, the flow follows different channels depending on the distance of the market to the producing area involving more intermediaries.

In a country like Sri Lanka where food production is in the hands of small producers, a large number of intermediaries are involved in food supply and distribution activities. Over 90% of food supply and distribution is handled by the private sector. Temperate vegetables, which are mainly grown in the hill areas, are sent directly by framers to commission agents in the Manning Market Colombo through organized transporters. Meanwhile, collectors purchase tropical vegetables from farmers at

weekly fairs (*polas*) and send them to the same market. Wholesaling facilitates the economic function of buying and selling by allowing the forces of supply and demand to converge and establish a single price for a commodity. The people involved in wholesaling can act as merchants, buying and selling produce or brokers dealing in orders rather than goods, or commission agents acting for the producers or export/import agents' only dealing in foreign trade.



Source: Marketing Food policy and Agribusiness Division

Figure 2.3: Existing Vegetable Marketing Channels

The Figure 2.3 shows the existing vegetable marketing channels in Sri Lanka indicating that how vegetables move from producer to end consumer. However, each marketing channel is not the same all the time and it does not mean all channels are available for all farmers everywhere. The marketing channels are very few in the areas where road conditions are poor and the production is limited (Rupasena *et al*, 1999). Vidanapathirana *et al*, (2011) found that majority of the vegetables moving through traditional supply chains pass via the Dedicated Economic Centers and the Colombo Manning Market. The supply chain of intermediaries begins with the village level collecting agents and the most usual marketing channel is the farmer- assembler- wholesaler- retailer- consumer system. Normally farmers sell their vegetables to vegetable collectors or send them to commission agents at the wholesale markets through transporting agents.
According to above system four major channels can be identified as;

1. Commission system
2. Vegetable marketing through Economic Centres
3. Regional periodical markets *(pola)* system
4. Supermarket system

In certain studies (Perera *et al,* 2004; Abeysekara *et al*, 2007; Vidanapathirana *et al*, 2011) vegetable marketing channels in Sri Lanka are broadly divided into two categories as traditional and modern. They have considered supermarket supply chain as the modern marketing channel. Traditional marketing channels for vegetables differ substantially from the supermarket supply chains. The traditional distribution system for fresh vegetables in Sri Lanka is mainly through "wet-markets" that still control more than 90 percent of the vegetable sales. There are large numbers of participants involved in the conventional marketing channels for vegetables and they perform various activities such as assembling, sorting, packing, transporting and selling.

2.7.1 Vegetable Marketing through Economic Centres

At the beginning of 2000s, the government policy aimed at developing the infrastructure of wholesale market centers and established Dedicated Economic Centres (DEC) in producing areas as well as in consuming areas. The primary objective of establishing of DECs was to reduce transaction cost by limiting intermediaries. The first DEC was established in 1999 at Dambulla replacing the then vegetable market located in the center of the town.

New DECs were subsequently established in producing and consuming areas. As a result, new marketing channels emerged linking DECs with other DECs. Now the Dambulla DEC is considered the largest terminal wholesale market for distributing vegetable all over the island. As a result of establishing DECs in major consuming areas such as Meegoda, Welisara, Weyangoda, Narahenpita and Ratmalana, retailing system has also changed. Retailers in urban areas visit DECs rather than purchasing vegetables from the Colombo Manning Market. The marketing channel of DECs consists of farmer, retailers, collectors, commission agents at DECs and wholesalers and retailers. The supply side of DECs in producing areas is represented by farmer or regional level collectors. According to Vidanapathirana *et al,* (2011), most of the farmers in main producing areas bring their vegetables directly to the DECs.

2.7.2 Regional Periodical Markets (*pola*) System

Regional periodical markets, known as *pola*, are also an important marketing channel moving vegetable from producer to consumer. This system is functioning well especially with low-country vegetables. Embilipitiya, Sooriyawewa, Pannagamuwa, Barawakumbuka, Wadigala and Ambalantota are famous wholesale level periodical markets for low country vegetables. Traders from deficit areas visit these wholesale

markets to purchase vegetables. The supply side of these regional level periodical markets consists of regional level collectors and direct sales by farmers. Consumer fair is also an important point in distributing vegetables from producer to end consumers. Regional fair circles can be identified all over the island distributing vegetables from farmers to end consumer. The Figure 2.3 indicates the fair circle operating in Puttalam area. Fair system is considered the more convenient way to buy vegetables for the people in low and middle income categories in village level as well as in urban areas. The quality of the vegetable and prices are relatively low with the comparison of public markets, public supermarkets, special retail stalls and supermarkets (Menegay *et al*, 1997; Rupasena *et al*, 1999; Disanayake and Ravichandran, 2003).

2.7.3 Supermarket System

Distributing vegetables through supermarkets is an emerging trend during the recent past. Most of the supermarkets in Sri Lanka use a combination of different procurement schemes. According to Perera *et al*, (2004) and Vidanapathirana *et al*, (2011), the leading supermarkets (with a large number of outlets) have vegetable collecting centers at major producing areas to procure their vegetable requirements. In addition, they procure vegetables from independent procurement agencies. Collecting centers procure vegetables directly from farmers or farmer associations, while independent procurement agencies procure directly from farmers or collectors. Other supermarket chains use preferred supplier system in procurement of their vegetables. The vegetable requirement of the supermarkets is conveyed to those preferred suppliers and they have to collect vegetables from farmers. The supplier is usually responsible for screening his/her own product before delivering it to distribution centers or outlets.

Further, Perera *et al*, (2004) and Vidanapathirana *et al*, (2011) have compared supermarket marketing channel of vegetables with the conventional marketing channels. Supermarkets deal directly with farmers or with specialized suppliers. Traditional channels are unable to supply the quality vegetables required by the supermarkets. The supermarkets in Sri Lanka have paved the way for the emergence of vertical relationships between supermarkets and farmers, and have influenced the value chain in vegetables. In contrast to the traditional value chain, the modern value chain that has been emerging in the Sri Lanka food sector contains fewer participants, involves a high degree of coordination, and ensures a high level of integration among different activities.

Supermarket supply chains distinguish themselves from traditional market channels through specialized logistic facilities and a focus on value-added activities. They have collecting centers and distribution centers. Besides acting as a centre of collection, the produce is washed, graded, sorted and packaged. More than in traditional markets, producers and suppliers must cope with high standardization of both

product specifications and modes of transportation. However, information, costs and risks are often lower as supermarkets generally communicate about quality grades and standards with which suppliers must comply.

In traditional vegetable supply chains, quality signals are not being passed down to the farmers. Farmers are paid by the weight and they are not given a premium price for quality. Thus, their main focus is to increase the weight. This has in turn led to some farmers engaging in certain malpractices such as stuffing stones and inferior quality vegetables when packing vegetables, in sacks (Hettige and Senanayake, 1992; Rupasena *et al,* 1999; Perera *et al,* 2004). The supermarket does not adhere to quality standards stipulated by formal certificates. They use quality parameters which are mostly related to the physical attributes of the produce such as size, colour, texture and absence of pest and disease attacks.

To maintain the quality of vegetables, supermarkets normally use plastic crates and freezer trucks to transport the vegetables. Further, in the supermarket supply chains there are only one or two intermediaries present between the producer and the consumer. In conventional marketing channels, transporting agents packed vegetables tightly in the polysac bags or in net bags and they overload those sacks into transporting vehicles resulting in high wastage of vegetables (Hettige and Senanayake, 1992; Rupaseana *et al,* 2001). In addition, due to lack of quality consciousness and accountability in the traditional supply chain, post-harvest losses were very high (30 percent – 40 percent). Finally the costs of such losses have to be borne by the consumer. However, major supermarket channels are able to reduce post-harvest losses up to 3 percent – 5 percent level (Vidanapathirana *et al*, 2011).

As the quality consciousness is prevalent throughout the supermarket vegetable supply chains, farmers pay more attention to quality of their produce as the vegetables which are not up to the standards required by the supermarkets are rejected at the collecting centers. Conventional farmers do not consider the quality of their produce a lot, when compared to supermarket-channel farmers. There is a higher degree of transparency in the transaction at the farmer level with respect to the supermarket vegetable supply chain compared to traditional vegetable supply chain as farmers bring vegetables to collecting centers by themselves and grading, sorting, cleaning etc. are done in the presence of farmers at the collecting Centre (Perera *et al,*2006).

CHAPTER THREE

Marketing Activities and Management System of Dedicated Economic Centres

3.1 Introduction

Marketing activities could be divided into three groups, i.e. exchange functions, distribution functions and facilitative functions. These activities which are related to Norochcholai and Nuwara Eliya DEC are described below.

3.2 Exchange Functions

Exchange functions include buying and selling activities. Suppliers, buyers and DEC traders are involved in buying and selling activities. Although two parties are usually involved in exchange functions, here three parties are present. Usual practice is that commission traders sell produce on behalf of the suppliers. At Norochcholai DEC, the suppliers and buyers do the transaction through a commission trader, who charges a commission for the service. The commission is cents 50/kg, if the vegetables are priced below Rs.29.50/kg, it is Rs.1.00/kg. If vegetables are priced between Rs.29.50/kg to Rs.50.00/kg, Rs.3.00/kg, if they are priced between Rs.50.00/kg to Rs.100.00/kg and Rs.5.00/kg for vegetables priced more than Rs.100.00/kg. It is cents 25 for each coconut sold below Rs.5.00/nut and cents 50 if the selling price is above Rs.5.00/nut. The commission is cents 25/bundle of leafy vegetables and it is Rs.5.00 for 100 betel leaves or 100 areca nut.

During the transaction, At Norochcholai DEC traders offer the prices according to market demand, supply and quality. If the supplier and the buyer agree on the price, the transaction would occur. Otherwise, buyer and the seller bargain the price according to quality, supply and demand and fix the price. If an agreement regarding price is not reached, the transaction will not take place. Checking the quality is a difficult task in the DEC. Many farmers do not allow the buyers to check the quality of the vegetables. A buyer may open a pack to check the quality. According to buyers, farmers employ various methods of adulteration. For example, farmers may place all the low quality vegetables in the center of the bags that could not be detected easily by the buyer. This kind of practice is commonly found in the market. So, most of the buyers are not satisfied with the quality of vegetables, and a considerable loss in the quantity of vegetables is also evident. The details of the wastage are given in Table 2.8. The highest wastage is observed for the Welimada cabbage. It is called "Papadamgova" in the market due to its highly perishable nature. Wastage of many types of vegetables is about 10 percent and this amount is low compared to vegetables passing through the Manning Market in Colombo where it is estimated as 15-20 percent for many vegetables.

Table 3.1: Wastage of Vegetables per Bag

Items	Weight of Bag (kg)	Wastage (kg)
Beans	55	4-5
Carrot	55	3-5
Ladies finger	30-35	4-5
Long beans	35-40	3-5
Cabbage- Welimada/Kalpitiya	50	8-10
Cabbage- N'Eliya	50	3-5
Capsicum	50	3-5
Capsicum	40	3-5
Brinjal	50	3-5
Leeks	30	3-4
Knokhol	40	3-5

Source: HARTI field survey 2012

Spot cash payment is made for the transactions in most cases. But sometimes, vegetables are sold on credit basis. In this case, the buyers should settle the dues in a very short time period. Credit sales are mostly facilitated by commission traders.

3.2.1 Price Formation

The major factor affecting the process of price formation in the center is arrival of produce or market supply. Prices, in particular, would fluctuate on the basis of change in the supply of a concerned day, compared to previous day. The number of buyers and their purchasing patterns are another factor influencing the process of price formation in the center. The buyers usually go around the center to examine high and low supply items and they make early purchase of scarce items. The other factor is farmers' behavioral pattern. Sometimes, the farmers anticipate an early return, thus it results in lower price level in the center. Buyer's behavior also affects the process of price formation. A significant portion of traders does not make purchases immediately after their arrival. They wait till late night expecting a dip prices. Since the market remains open throughout the night, buyers wait in the market for hours till prices decline. Nearly 50 percent of the buyers wait in the market for 5-6 hours. Unlike most of the other vegetable wholesale markets in the

country, consent of sellers such as farmers and collectors is a must to determine the prices. The transaction would not take place if suppliers reject the offered selling price for their items. However, most of the NDEC traders keep a track of the Colombo wholesale market in the formation of their prices.

Quality and market preference of the produce are another factor. Generally, good quality stocks fetch higher prices than others. The remaining stocks fetch lower prices than the new stocks. Therefore, traders transport the unsold vegetables outside the market and bring them back as a fresh stock. Furthermore, according to market preference, the prices differ. For example, long winged beans and brinjal with stripes are mostly preferable and they fetch higher prices than the other varieties. The vegetables from Nuwara Eliya such as beetroot, cabbage and carrot fetch higher prices than the same items arriving from other areas, due to better quality, colour, shape, higher keeping quality and taste. Price formation in the NDEC is a result of a complex process of the above mentioned factors.

Moreover, change of prices of vegetables in a day was reported. Usually, the prices are at peak till 11.00a.m. and decline afterwards. Buyers' purchasing pattern is attributed to this. They usually wait till the farmers are exhausted to bargain for low prices. Wholesalers often purchase the produce early in order to obtain quality produce while *pola* retailers are the last buyers.

Compared to the prices of Colombo wholesale market, it was observed that the prices of many of the commodities were lower in NDEC than in Colombo. As seen in Table 3.2, the prices of low country and up country vegetables were much lower compared to prices of Colombo market. Many buyers from areas such as Kegalle, Warakapola and Nittambuwa visit the NDEC to buy low country vegetables, called *Wannibadu* due to low prices.

Table 3.2: Price Comparison between Norochcholai, Nuwara Eliya and Colombo Market 20-27 June 2012

Commodities	Markets			Change Compared to Colombo Nuwara Eliya Market (Rs/Kg)	Change Compared to Colombo Norochcholai Market (Rs/Kg)
	Colombo	Nuwara Eliya	Noroch cholai		
Potato					
N'eliya	120.00	110.00	-	10.00	-
Welimada	110.00	95.00	-	15.00	-
Imported	85.00	100.00		15.00	-
Onion					
Red Onion					
Vedalan	100.00	85.00	82.00	15.00	18.00
Imported	90.00	-	-		
Vegetables					
Green bean	120.00	90.00		30.00	30.00
Carrot	140.00	110.00		30.00	
Leeks	100.00	82.00		18.00	
Beetroot	120.00	80.00	65.00	40.00	35.00
Knokhol	90.00	72.00		18.00	
Raddish	80.00	55.00	45.00	25.00	10.00
Cabbage	100.00	74.00	65.00	26.00	35.00
Tomato	140.00	110.00	100.00	30.00	-
Ladies fingers	80.00		65.00		15.00
Brinjal	90.00		75.00		15.00
Capsicum	160.00	145.00	120.00	15.00	40.00
Cucumber	45.00		35.00		10.00
Bittergourd	110.00		95.00		15.00
Drumstick	150.00		120.00		30.00
Luffa	100.00		80.00		20.00
Long beans	90.00		75.00		15.00
Ash plantain	80.00		65.00		15.00
Green chilies	220.00		180.00		40.00

Source: HARTI field survey 2012

3.3 Other Factors Related to Exchange Functions

Many accepted norms and practices are being followed during the buying and selling activities. Suppliers park their vehicles in front of the stalls and do not unload until the remaining stocks are sold. If suppliers unload the vegetables at the stalls, this may result in low demand and low price, because, buyers will consider that unloaded vegetables could be the remaining stocks in both markets.

3.3.1 Distribution Functions

Transportation, handling, storage and processing of the produce are included in this section. As regard to the DEC, processing is not practiced. Even storage is limited to a few commodities such as onion, potato and sugar.

3.3.2 Transport

Improvement of transport facilities leads to efficient distribution of produce and it operates to move the produce from one place to another. The vehicles with open body called "ELF" are widely used for vegetable transport. It was found from the survey that 60 percent of incoming and outgoing Lorries belong to this category in the DEC. As regard to the NDEC, two types of transportation are involved: arrival vehicles from producing areas to the market and departure vehicles transporting goods to the demand areas. This refers to the inflow and outflow of the product. Table 3.3 shows the details of arrival vehicles and departure vehicles with the quantities during the survey period. More than two thirds of the total suppliers use Lorries (ELF and other types of Lorries). In addition to tractors (four wheel and two wheel), buses, vans, their stocks are carried in push bicycle and motorcycle.

As a result of developing the road network, vegetables can be transported within 5-6 hours from producing areas to consuming areas. The traditional vegetable marketing channels still use the conventional transport system with overloading vegetables. According to Rupasena (1999), a lorry with the capacity of 5 tons contains 10-12 tons of vegetables transported to the Colombo commission market. The emerging trend of transporting vegetable from producing areas to consuming areas is the use of cooler trucks with plastic crates. It is now used only by the supermarket supply chain in Sri Lanka.

Table 3.3: Types of Arrival and Departure Vehicles, 20-27 June 2012

Type of Vehicle	Arrivals		Departure	
	No.	%	No.	%
Lorry	600	17.8	661	23.5
Lorry (half/ELF) (open body)	2043	60.6	1674	59.4
Tractor (four wheel)	24	0.7	4	0.1
Tractor (Two wheel)	119	3.5	13	0.5
Three wheeler	200	5.9	231	8.2
Motor Bicycle	88	2.6	57	2.0
Push Bicycle	58	1.7	17	0.6
Bullock Cart	3	-	-	-
Cart	8	0.2	17	0.6
Bus/ Van	181	5.4	99	3.5
Car	5	0.2	4	0.1
Carrying on head	45	1.4	40	1.5
Total	3374	100	2817	100

Source: HARTI field survey 2012

According to the survey, the pattern of the vehicle arrivals varies with time. The highest number of vehicles reached the market between 10.00a.m.-12.00a.m., registering 44 percent of the total arrivals, while the lowest number of vehicle arrival was between of 11.p.m.-12.p.m. The pattern of vehicle arrival also reflected in the amount of supply. The highest stock arrival to the market from 10a.m.-11a.m. represented 289,325 kg during the concerned period. This amount reflected 23 percent of the total stocks arrived.

Farmers hire vehicles to transport vegetables to the market. If a group of farmers hire a vehicle, transport cost is shared among them according to their quantities. Otherwise there are fixed transport costs for each item from producing areas to DEC. Most of the resident traders in the Nuwara Eliya market have Lorries. Hence, they send Lorries to collect vegetables, mostly on the request of the farmers. Vegetable collectors go around the producing areas mostly either is their own vehicles or in hired ones and transport them to the Nuwara Eliya DEC. However, most of the farmers pay a higher charge to transport vegetables from the production field to the main road. This was mainly observed in producing areas with poor road conditions. In such cases, the farmers have to pay a higher amount to transport from producing areas to the main road than from the main road to the Nuwara Eliya wholesale market.

According to the data the total number of vehicles which left from Nuwara Eliya DEC during the concerned week was 2, 817. Out of this 59 percent was ELF (half Lorries). Buyers mainly used the Lorries to transport their purchased goods from the Nuwara Eliya DEC. Moreover, it was evident that more than two thirds of the buyers use the

ELF and other Lorries. Three wheelers accounted for 8 percent. The share of push bicycles and tractors are negligible.

The buyers also transported vegetables from the market either in their own vehicle or in a hired vehicle. Most of the wholesale traders bring their own vehicle. The hiring pattern of vehicles by buyers is the same as that of suppliers. Single traders hire a lorry and transport the vegetables from the market to their areas. The other pattern is that a group of buyers hire a vehicle and transport vegetables from the market. Some of the buyers hire the vehicle in the Nuwara Eliya vegetable wholesale market. Lorries are parked for hire in the Nuwara Eliya DEC premises. There is an association of transporters operating in this center. But, there is no restriction for use of vehicles of non-members of this association. The Lorries heading to Colombo to load wheat flour stop at Nuwara Eliya DEC to load vegetables to be carried to Colombo.

Most of the vehicles of suppliers return from the market empty. Likewise, most of the Lorries of the buyers come to the market empty. A few Lorries from up country areas carry cow dung to their respective area from the surrounding areas of Nuwara Eliya. Similarly, a few Lorries, especially from Madawachchiya after unloading of vegetables, load organic fertilizer (cow dung) in Nuwara Eliya town due to the prevailing high cost of organic fertilizer(cow dung) in Nuwara Eliya.

3.3.3 Handling

There are two major categories of I handling. One is *nattamies* who are attached to the stalls. The DEC traders employ them mainly to involve in uploading of vegetable from the Lorries that are brought by the suppliers, such as farmers and collectors. These *nattamies* are paid by the DEC wholesalers on daily basis. Occasionally they load vegetables from stalls to buyers' Lorries. Their daily payment is Rs.1000/- with meals or Rs.1200/- without meals.

The other category of *nattamies* is operating independently. These *nattamies* load vegetables purchased by buyers from shop to buyers' Lorries. They are responsible for collecting buyers' stock from the stall and loading to buyers' Lorries and do not take responsibility of the loss of such bags. Anyone who is willing to operate as *nattamies* may find it difficult to operate freely at their will. Once should become a member of Independent *Nattamies* Association in the Nuwara Eliya wholesale market in order to operate as *nattami.* They charge Rs.10.00/bag for loading into vehicles closed to the stalls wise the fee is Rs.20.00/bag.

3.3.4 Cleaning

Removing of soils, damaged items and unnecessary leaves and washing of vegetables are the basic functions of cleaning of vegetables before selling. According

to Gunawardhana and Chandrasiri(1980), producers are not much concerned about the cleaning of vegetables and it is at the retail level that vegetables are cleaned to a great extent. Rupasena (1999) indicated that the demand side wholesalers seek clean vegetables than commission system. Vidhanapathirana and Priyadarshana (2011) highlighted that the farmers linking with supermarket marketing channel are much concerned in cleaning of vegetable when compared to the traditional vegetable marketing system of Sri Lanka. As a result, farmers linked to supermarket channels benefit with higher prices than by linking with the traditional marketing channels.

3.3.5 Grading / Sorting

Grading of vegetables can be defined as sorting out of the produce into lots on the basis of common quality characteristics. Producers should be able to obtain higher prices for better grading than by the average producers. According to Gunawardana (1980), Rupasena (1999) and Vidhanapathirana and Priyadarshana (2011), traditional vegetable marketing system offers little incentives for producers to grade and sort vegetable. Producers are offered flat rates for the produce and therefore are not concerned about grading. Perera (2004), Vidanapathirana and Priyadarshana (2011) indicated that the producers who link with the supermarket supply chain are more concerned on grading and sorting of vegetables and they are paid a higher price than that of the producers linking with traditional marketing system. The commission agents in Colombo market grade vegetables according to the appearance, cleanliness and size before selling to retailers. Market segmentation at retail level is also clearly visible depending on the differences in the above qualities. For example, vegetables at Wellawatta public market can be considered as grade one with regard to quality. Vegetables at Totalanga, Kadawata and Kiribatgoda can be categorized as average quality and the vegetables sold by pavement vendors as low quality.

3.3.6 Packing Material

The traditional market channel of vegetables in Sri Lanka uses netted poly sack as packing material while the supermarket supply chain uses plastic creates or advanced packing materials. The Government has taken many steps to regulate packing materials by enforcing law, but it failed due to weaknesses in the existing marketing system such as low quality infrastructure facilities at terminal markets. Especially infrastructure facilities in the Colombo Central Market are not up to the standard to operate such a system.

3.3.7 Weighing

Rupasena *et al*, (1999) highlighted that many of the farmers in up country areas do not weigh vegetables before selling. Now the situation has charged and it is observed that most of the farmers weigh vegetable before selling. Especially at the

DECs and supermarket collecting centers weighing takes place in the presence of the farmers.

3.3.8 Storage

Storing of vegetables does not take place at Nuwara Eliya DEC due to higher perishable nature of vegetables and non-availability of storage facilities. During the day carry-over stocks are stored in the stalls. The traders dealing with onion, potato, dried chilies, and grain have storing facilities outside the market. According to those traders, refrigerating and storage facilities, which are not available at present, should be provided within both DEC's.

3.4 Facilitative Functions

The facilitative functions are activities which support undertaking of exchange and distribution functions. Among them packing/ standardization, marketing, credit, financing and marketing intelligence are important.

3.4.1 Packing and Standardization

Traditional packing methods are widely used with certain vegetables such as leeks, knokhol, radish and snake gourd. Most of the vegetable are packed in poly sacks with ventilation holes. As much as 21 percent of the suppliers reported that, they used poly sacks. About 7 percent of the suppliers used plastic craters in both markets. Plantains and ash plantains are traded without packing resulting in quantity and quality losses. However, it is clear that the most popular method was using poly sacks, which cost Rs.10.00 each. The buyers have to pay this amount to suppliers for each packed bag if the bag is not returned. Tomato is placed in a wooden box and the usual practice is returning the box.

3.4.2 Marketing and Credit

Two types of credit are prevalent in the market. One is DEC trader providing credit to the farmer in the form of money, fertilizer, chemicals and seeds for cultivation. Consequently, the particular farmer must sell the product to particular traders at DEC. However, according to the survey, a few of the farmers have obtained credit from the traders at DEC. The second type of credit is traders at DEC providing credit to buyers. A few numbers of buyers purchase the produces on full or part credit basis from traders at DEC and credit should be settled within a shorter period. According to the traders at NDEC, a small part of trading takes place on credit basis.

3.4.3 Financing

According to bank officials, suppliers, especially collectors are mostly using the bank facilities. These collectors from distant areas such as Marassana and Hanguranketa deposit the money in this branch after sales as being afraid of carrying money with them during the late night. They withdraw the money from the branches in their respective areas the following day. However, the farmers and buyers hardly used bank facilities because many farmers and small traders are not used to banking. The buyers bring money with them for purchases. Furthermore, the bank does not earn profits.

3.4.4 Market Intelligence

Many buyers and collectors and a few farmers inquire about the prices from the Nuwara Eliya market over the phone. The NDEC traders also obtain the prices in other markets, especially Colombo over the phone. Certain farmers come across the prices at DEC on TV and Radio. Many farmers gather the prices through fellow farmers. With regard to market arrivals, the suppliers as well as the buyers go round the market to ascertain the supply position. Market participants' knowledge on handling, packing, grading and transporting is poor and hence product damage is high.

CHAPTER FOUR

Supply and Demand Sources of Economic Centers

4.1 Establishment and Structure of the DECs

4.1.1 Nuwara Eliya DEC

Nuwara Eliya DEC has commenced on 08th April 2006 in the Nuwara Eliya town at the expense of 136.5 million. The DEC consists of two floors with a total of 222 shops. The Table 4.1 shows the distribution of the shops and method of purchase.

Table 4.1: Description of the Shops of Nuwara Eliya DEC

Floor	Size of the shop (ft^2)	Number of shops	Status of the shop		Monthly rental	Nonrefundable deposit	
			Open	Closed			
1	300	35	35	0	8,100	1,200,000
	150	50	49	01	4,050	600,000
Sub Total		**85**	**84**	**01**		
2	800	01	01	0	15,600	2,800,000
	600	02	02	0	11,700	1,750,000
	200	02	02	0	3,900	700,000
	120	06	06	0	2,340	420,000
	100	38	37	01	1,950	350,000
	30	01	01	0	585	105,000
	Canteen	01	01	0	10,530	2,800,000
Sub total		**50**	**51**	**01**		
Total		**135**	**135**	**02**		

Source: Field Survey HARTI (2012)

The ground floor consists of 85 wholesale shops where 84 shops are leased/rented. Out of 84 shops, vegetable and fruit wholesaling is happening in 60 shops. Other shops have been used as seed potato storages. The first floor consisted of 51 shops along with a canteen. However, these shops have been leased to other businessmen. Further SANASA bank, the office of Post-Harvest Technology Institute and a outlet of the Fisheries Corporation could be found in the DEC.

4.1.2 Norochcholai DEC

Norochcholai DEC was established in 25 November 2001 under the Kalpitiya Pradeshiya Sabha about 1 Km away from the Norochcholai town towards the Puttalam. All the administration and management practices related to the DEC are being governed under the Kalpitiya Pradeshiya Sabha. As the table 4.2 shows that the DEC consists of a total of 69 shops. The shops are mainly categorized into five major categories as A, B, C, D and N1.

Table 4.2: Description on the Shops of Norochcholai DEC

Category	Number of Shops	Status of the Shop	Type of Shops		
		No of Open Shops	No of Closed Shops	No of Shops	Type of the Shop
A	21	21	0	19	Wholesale shops
				1	Book shop
				1	Canteen
B	18	18	0	16	Wholesale shops
				2	Canteens
C	18	8	10	6	Wholesale shops
				1	Bookshop
D	4	0	4		
N1	8	3	5	2	Wholesale shops
				1	Canteen
Total no of shops	**69**	**50**	**19**	**43**	**Wholesale shops**
				4	**Canteens**
				2	**Bookshop**

Source: Field Survey HARTI (2012)

As the Table 4.2 explains, out of 69 shops only 50 shops are open whereas 19 shops are closed. This implies that only 72% out of the total number of shops are open. The total number of open shops consists of 43 of wholesale shops, 4 canteens and 2 book shops. Referring to the shop categories, A and B shop categories were functioning, however, it was observed that the C and D shop categories were not functioning properly. Since based on the placement of shops A and B shops situated on one side of the DEC facing each other while the C and D shop categories are situated in the opposite side of the DEC. It is observed that the business activities are confined mainly to one part of the DEC. Other than this there were one agrochemical and fertilizer selling shop for the DEC. However, banking and storage facilities cannot be observed in the Norochcholai DEC.

The monthly rental for shops varies with the shop category. For A, B, C, D shop

categories the total monthly rental is Rs.2,480 which consists of Rs.2000 for the Pradeshiya Sabha, and Rs.200 as stamp fees, Rs.40 as NBT and Rs.240 as VAT. For N 1 shop category the monthly rental is Rs.1,240 which is comprises with Rs.1,000 for the Pradeshiya Sabha, Rs.100 for stamp fees, Rs.20 as NBT and Rs.120 as VAT.

Ticketing at the entrance for vehicles entering has been leased to outsiders. They charge Rs.50.00 per lorry and Rs.20.00 per three wheeler.

4.2 Supply Sources of the DEC

Two major suppliers could be identified as farmers and carriers who supply produce to the economic center.

4.3 Socio-economic Profile of the Farmers

Hundred farmers from the surrounding areas of the Nuwara Eliya and Norochcholai DEC were interviewed. The selected areas and the percentage of farmers have shown in Table 4.3. The number of farmers from different areas varies with the farmer population in the respective area.

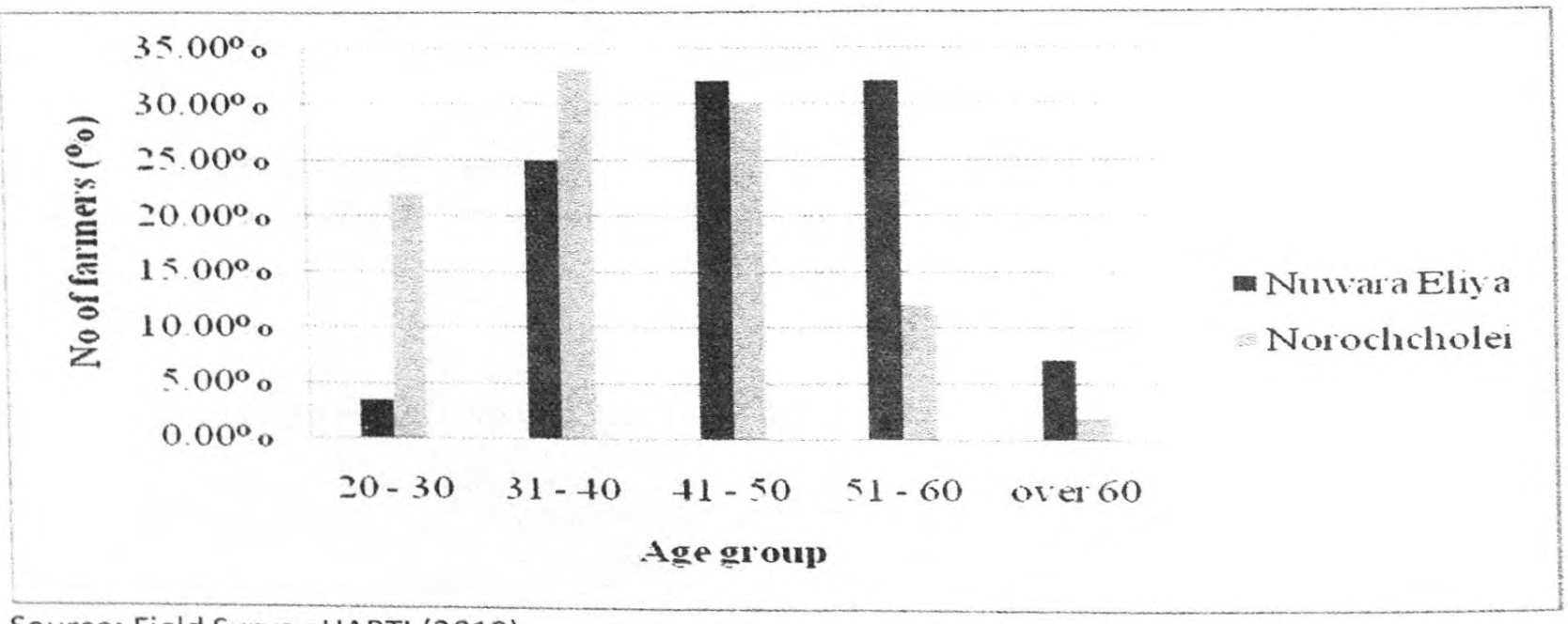
Table 4.3: Dedicated Economic Centres and the Distribution of Sample Farmers

Production Areas of Nuwara Eliya	% of Farmers	Production Areas of Norochcholai	% of Farmers
RuwanEliya	14.29	Mampuri	21.21
Shanthipura	16.67	Ilanthiadi	17.17
Pathumgama	10.71	Palakuda	15.15
Kandapola	11.90	Thalawila	14.14
Pattipola	11.90	Narakkalliya	5.05
Katumana	8.33	Kajuwatta	3.03
Meepilimana	3.57	New Kolani	3.03
Jayalanka	14.29	Welakanni	3.03
Galpalama	2.38	Eththalei	4.04
Summer hill	5.95	Chattacholei	2.02
		Paniadi	2.02
		Others	7.5
Total	**100**	**Total**	**100**

Source: Field Survey HARTI (2012)

4.3.1 Age Distribution of Famers

As shown in the Figure 4.1 considering Nuwara Eliya majority of farmers belong to the age group of 41-60 yrs whereas the majority of the farmers in Norochcholai belong to 31-40 years. This implies that majority of the farmers are generally young in Norochcholai area compared to Nuwara Eliya. Further it is observed that the percentage of farmers belonging to the age group of 20- 30 years is significantly higher in Norochcholai area compared to Nuwara Eliya. This implies that there is a high tendency among young generation to move towards agriculture in Norochcholai. Further in both areas farmers above 60 years are fewer. Therefore when developing strategies for farmers as a supply source it is important to identify the age group of farmers in respective areas since the ability to absorb knowledge and technology, availability of different resources, abilities and interests changes with the age of the farmer.

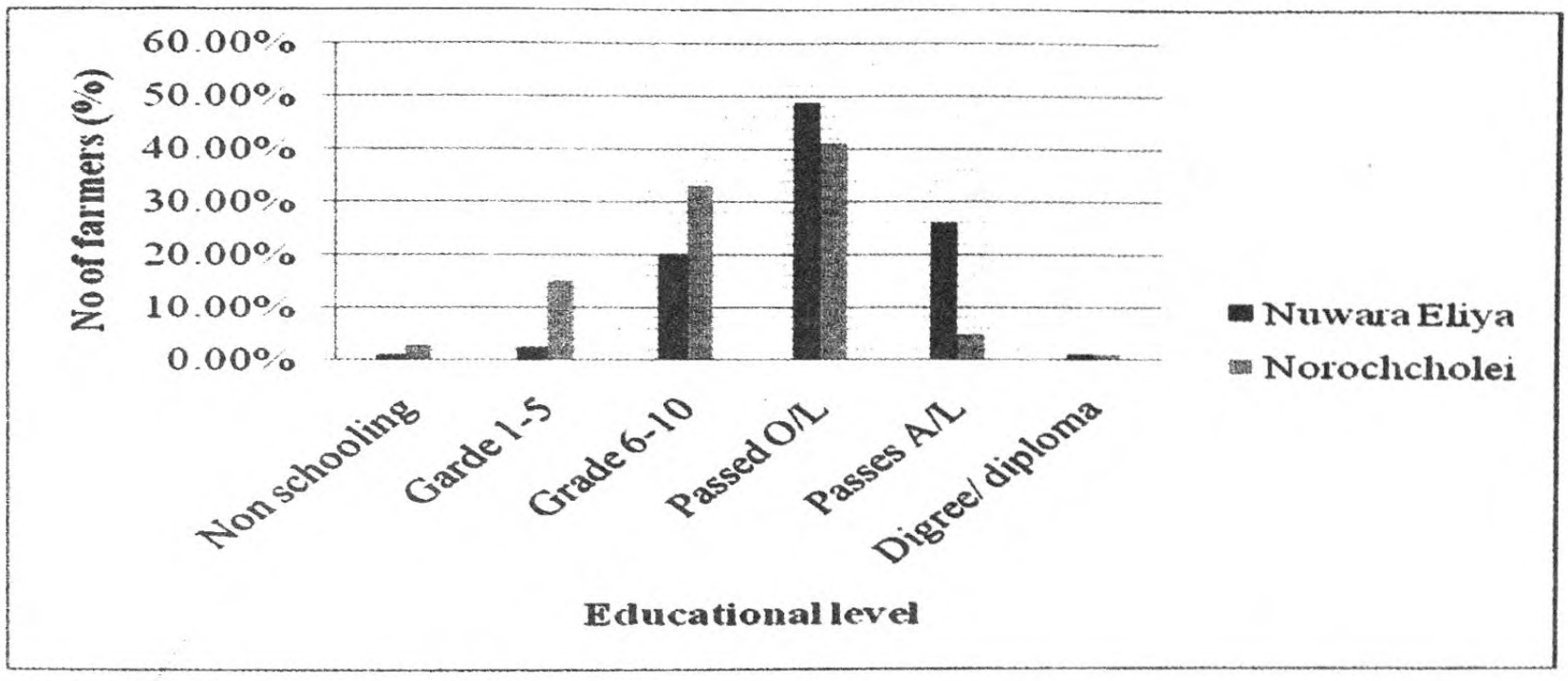


Source: Field Survey HARTI (2012)

Figure 4.1: Age Distribution of Farmers

4.3.2 Educational Levels of the Farmers

The Table 4.2 shows the educational level of the farmers in Nuwara Eliya and Norochcholai areas. It shows the majority of farmers belong to the group of "passed O/L" both in Nuwara Eliya and Norochchcolai areas. However 26% of the farmers in Nuwara Eliya have sat the A/L examination as well, whereas in Norochcholai the number of farmers who have completed A/L is significantly lower. In Norochcholai number of farmers who have attended Grade 6-10 is 33%. The percentage of farmers who have studied up to higher education is significantly lower for both Nuwara Eliya and Norochcholai. Therefore it implies that for majority of the farmers in Norochcholai the education level is too compared to Nuwara Eliya area. Thus in Nuwara Eliya area there is a tendency among the educated youth to move towards agriculture.



Source: Field Survey HARTI (2012)

Figure 4.2: Educational Levels of Farmers

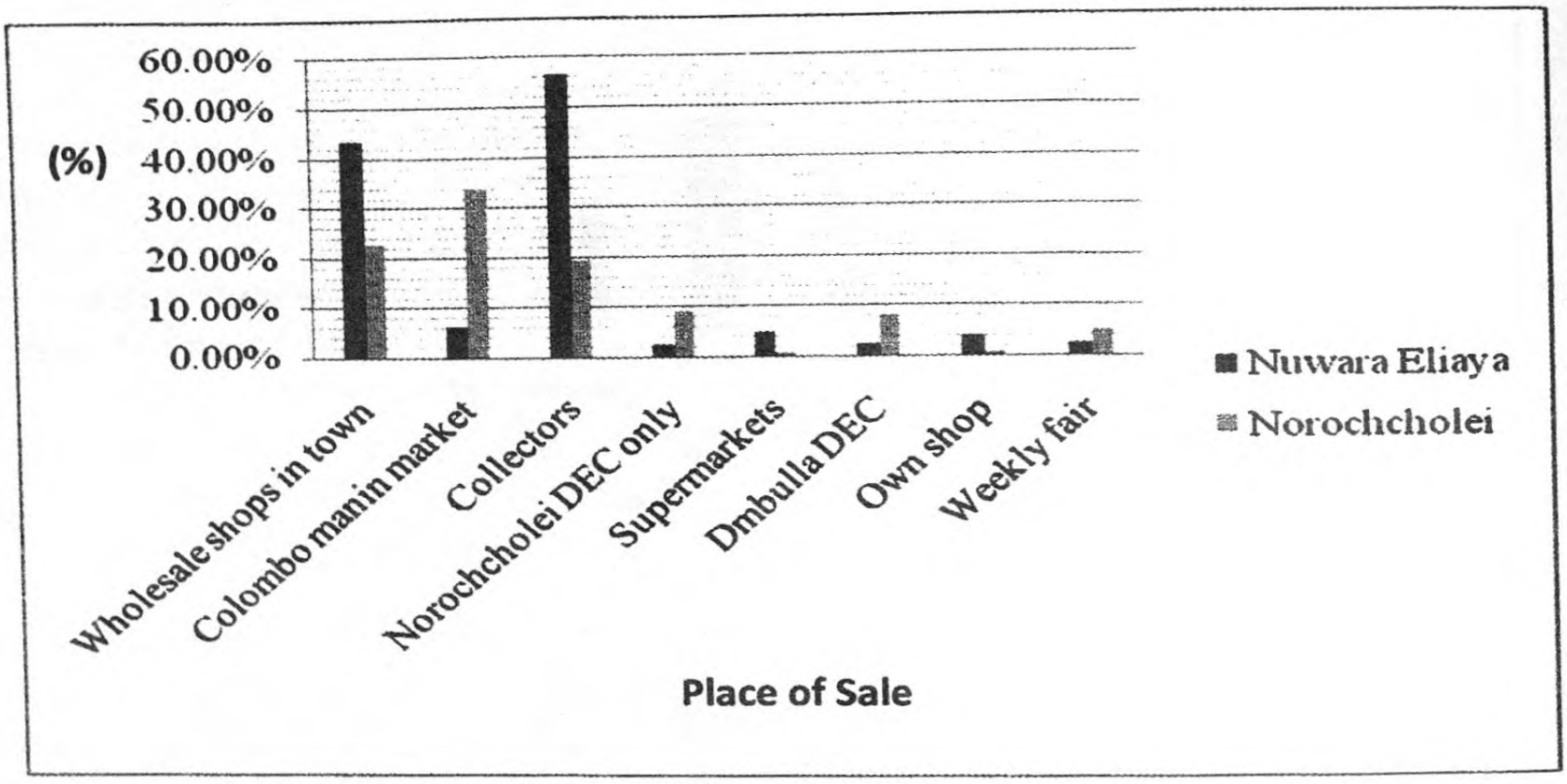
4.3.3 Type of Produce

To the data shows the type of farming activity the farmers are engaged in farming. The majority of famers are vegetable farmers for both Nuwara Eliya and Norochcholai. In Nuwara Eliya a less number of farmers (less than 5%) cultivate fruits and flowers along with vegetables.

However, in Norochcholai about 20% of the farmers cultivate both fruits and vegetables. The fruits mainly included guava and pomegranate. However, less than 5% were engaged in cultivating Other Field Crops (OFCs) such as red onion and green chilies, tobacco and flowers. This implies that during the period of visit the mostly cultivated crop variety is vegetables. This is subject to change with the season and the previous season's market price.

4.3.4 Place of Sale before Establishing DEC

The Figure 4.3 shows the place where the farmers have sold their produce before establishing the DEC. The majority of famers have sent their produce to Colombo Manning market which represents more than 30% of farmers of the total sample. More than 20% of the farmers have sold their produce to wholesale shop owners in the Norochcholai town. Majority of the wholesale shop owners have bought wholesale shops form the DEC. Nearly 20% of the farmers have sold their produce to collectors. Therefore the establishment of DEC has provided the farmers with the opportunity to sell their produce by themselves at the DEC. Majority of farmers in Nuwara Eliya area has sold their produces to collectors (more than 50%) while more than 40% has sold to whole sale market in Nuwara Eliya town.



Source: Field Survey HARTI (2012)

Figure 4.3: Place of Selling Before Establishing DEC

4.3.5 Place of Selling after Establishing DEC

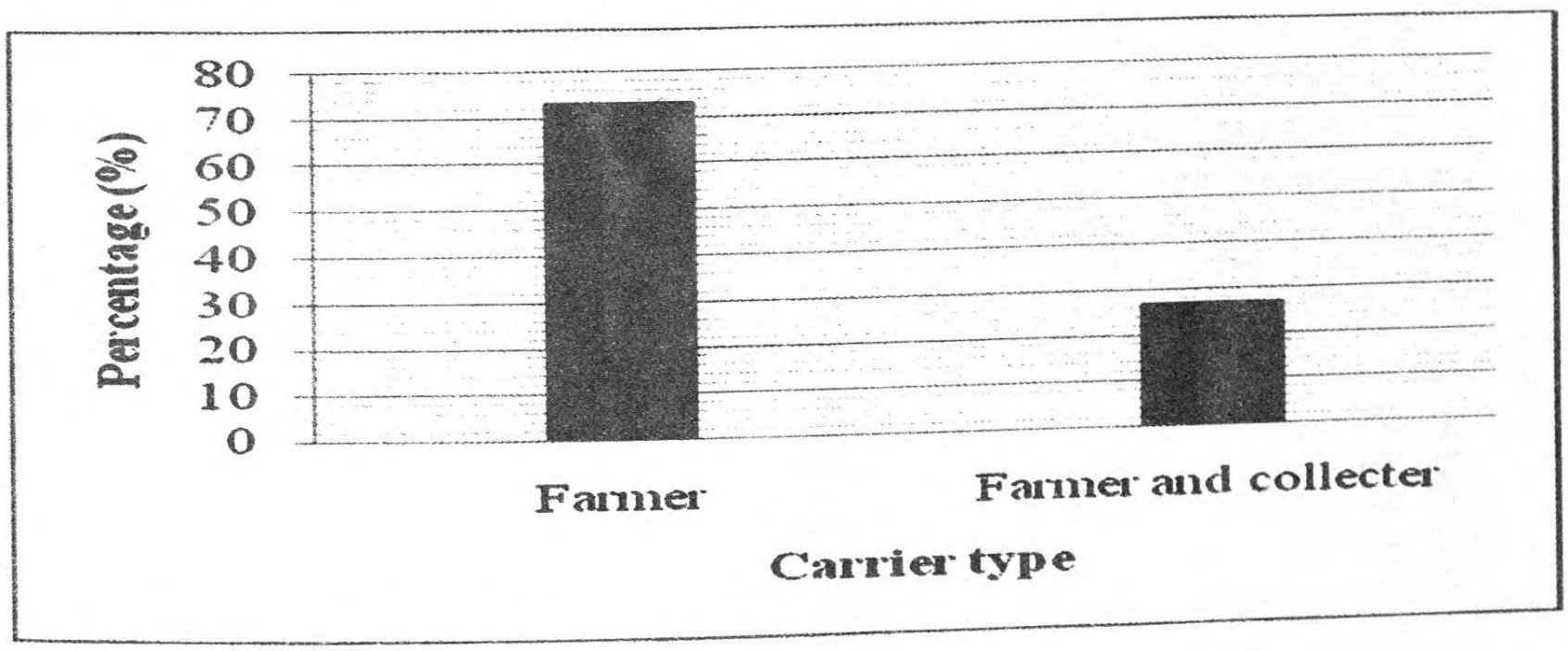
According to the place of selling after establishment of respective DECs, It is noted with regard to Nuwara Eliya Farmers, even after establishing DECs their produce is sold to other collectors. (51%) specially who are coming from Bandarawela area. Around 23% sold their produce to both other traders and DEC while only 13% is selling their produce to DEC only. Therefore it is noticeable that selling to DEC directly is not identified by Nuwara Eliya farmers as the best method of selling. As revealed in the farmer interviews there are several reasons for the above. One is that since other traders come to the field and do the harvesting, post-harvest handling and transportation by themselves, it is profitable and easier for them to follow the same procedure. Secondly, they stated that even that they take the produce to the DEC with all the harvesting, postharvest handling and transportation charges, since the farmer does not have the power to negotiate they have to consent to the price the traders set. However none of the farmers take their produce directly to DEC even if they sell it to DEC. The normal procedure has been, the traders of the DEC sending their supporters to collect the farmer produce from the field. The farmers were satisfied with this procedure and they did not have a proper understanding on the advantage of avoiding a middlemen and selling the produce by themselves. Further based on farmer information, only change happened after establishment of the DEC was changing of the place of the shops since the earlier wholesale shop owners in the Nuwara Eliya town have bought the wholesale shops in the DEC. Therefore nothing has changed with regard to marketing channel with regards to Norochcholai DEC.

On the contrary in Norochcholai, after establishment of DEC, majority of farmers started selling their produce to DEC. Their main concerns were proximity to the DEC and convenience of transporting since the DEC is situated closer to the production areas. In contrast to Nuwara Eliya, some farmers have bought a shop after establishing the DEC thus they could get rid of the middlemen. Therefore it is observed that after establishment of DEC considerable changes have happened to the marketing channel.

4.4 Socio-economic Profile of the Carriers

4.4.1 Types of Carrier

The Figure 4.4 represents the type of carrier taking the produce to the market. 73% of the sample carriers were farmers whereas the rest are farmers carrying other farmers' produce along with their produce. This indicates that the objective of avoiding the interference of the middle man has been achieved by establishing Norochcholai DEC.

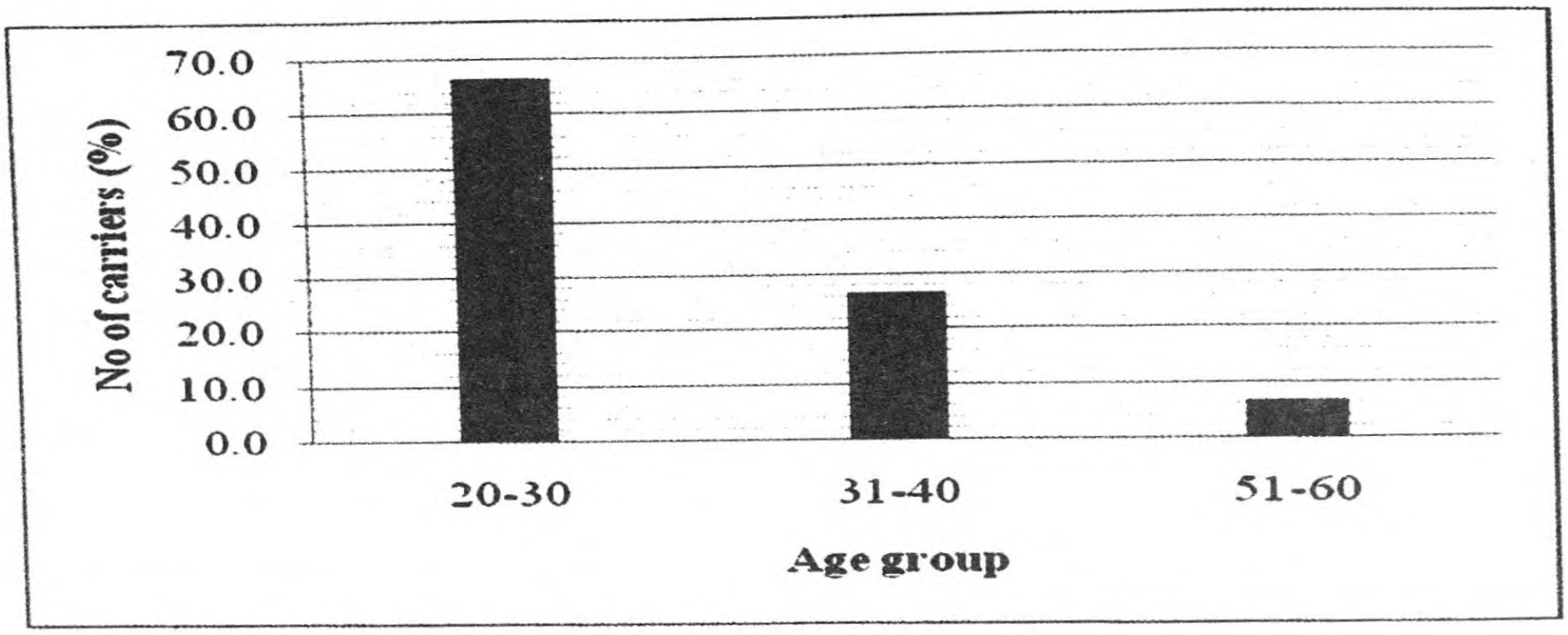


Source: HARTI Field Survey (2012)

Figure 4.4: Types of Carrier

4.4.2 Age Distribution of Carriers

The age distribution of the carriers is shown in the Figure 4.5. The chart shows that majority of the carriers belong to the age group of 20-30 years (More than 60% for the sample). The carriers of above 50 years are fairly low in number (less than 10%). This implies that the majority of the carriers are young.

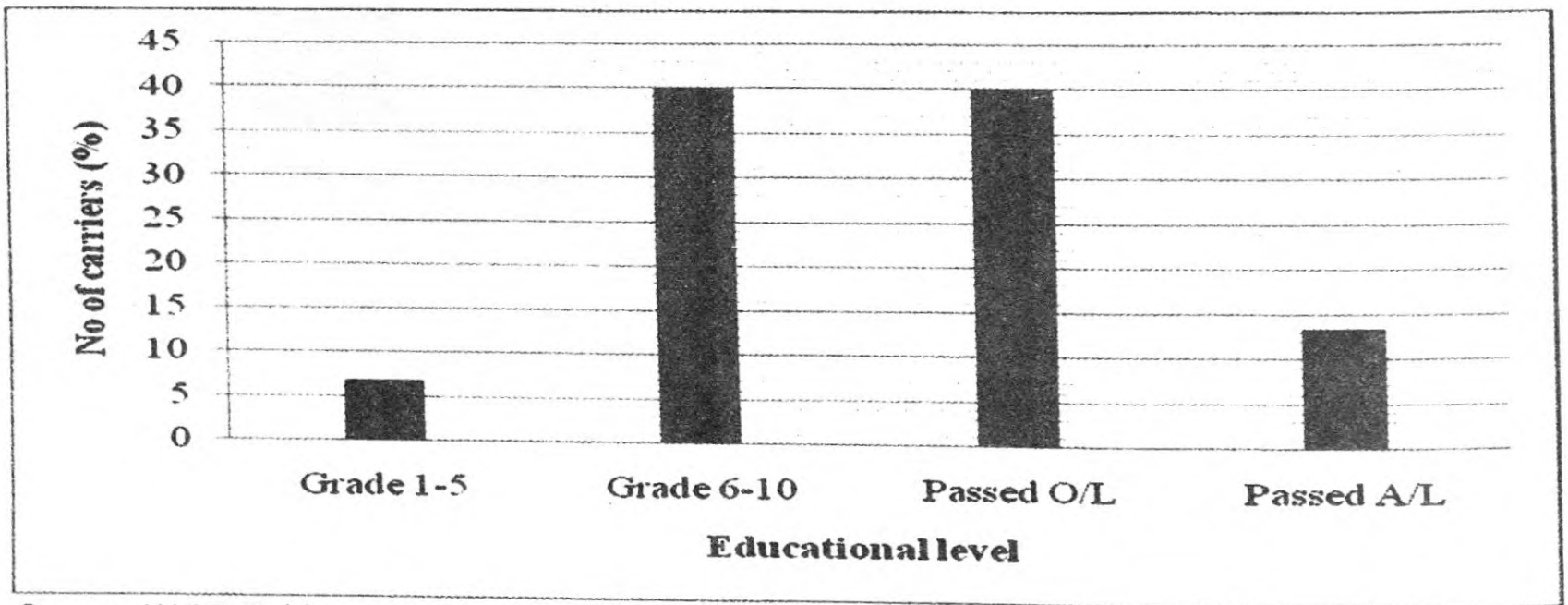


Source: HARTI Field Survey (2012)

Figure 4.5: Age Distribution of Carriers

4.4.3 Educational Level of Carriers

Considering the educational level of the carriers as shown in the Figure 4.6, majority of famers have studied up to 10th grade or passed O/L. Compared with figure 3.6 the majority of carriers belongs to the age group of 20 to 30 years. This implies there is a tendency among the young generation in the area that have not successful in their education, to move towards this occupation.



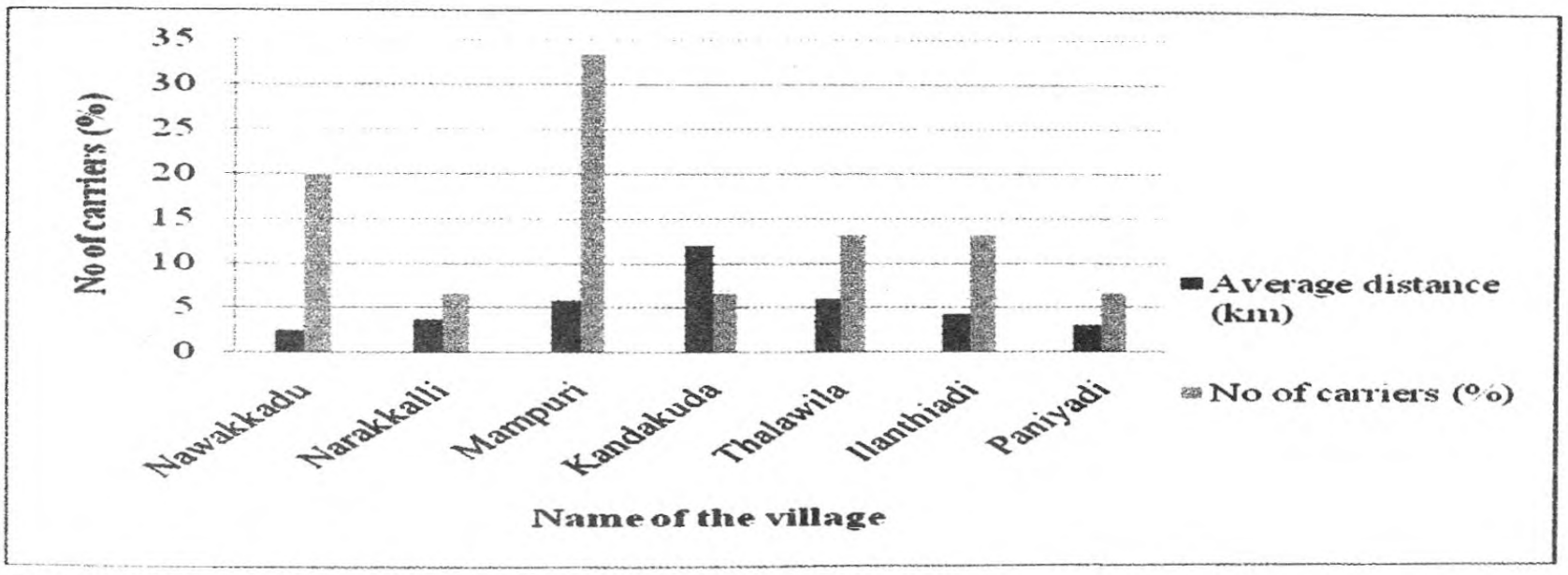
Source: HARTI Field Survey (2012)

Figure 4.6: Educational Levels of Carriers

However, since all the carriers are farmers there is a trend among under educated youth in the area to move towards agriculture since it is a potential carrier opportunity in the area. This was revealed in a discussion done on farmer's educational level under the section 3.3.2.Educational level of farmers.

4.4.4 Area and Distance

The above figure shows the distribution of the area of the produce carried. Majority of the transporters have come from Mampuri which is situated within about 6 km distance. The second highest was recorded for Mawakkadu which is situated within about 2.5 km distance.



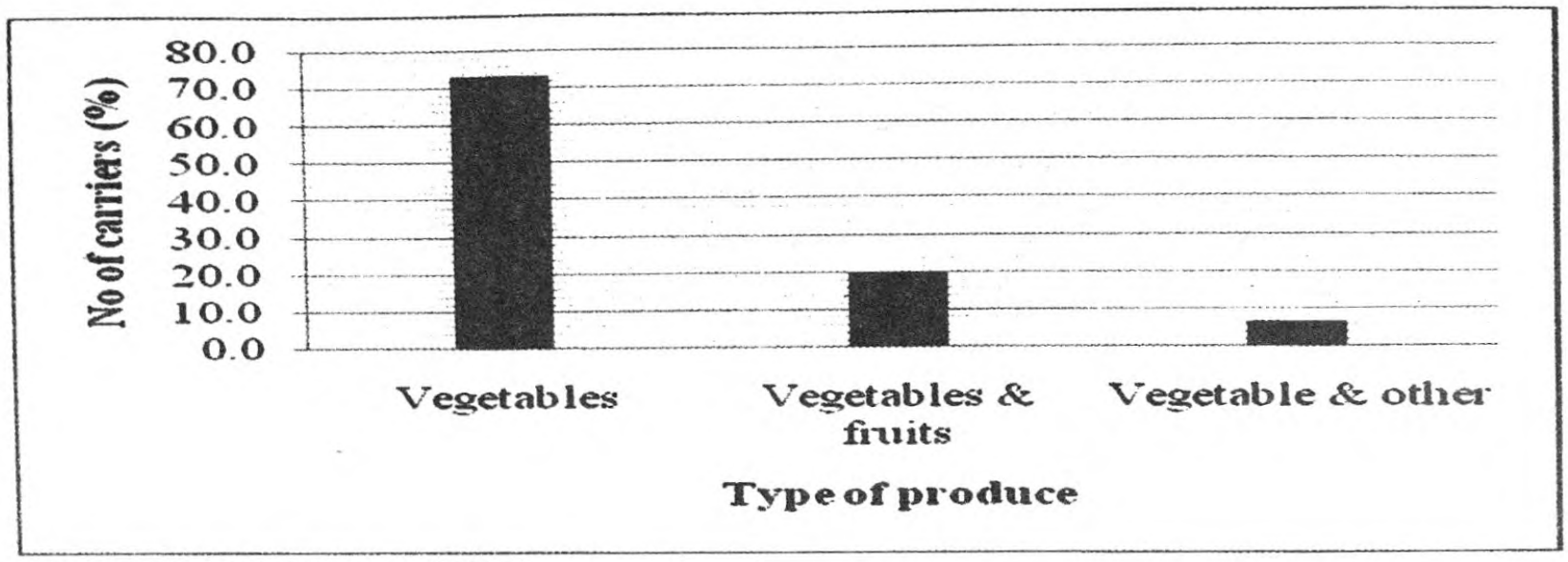
Source: HARTI Field Survey (2012)

Figure 4.7: Areas and the Distance of Produce Carried

The lowest number of carriers has come from Kandakuda which is situated within about 12 Km distance. However it is observed that all the carriers who brought their produce to Norochcholai DEC resides within 10- 12 Km from the DEC. Thus this implies that the place of establishing DEC is suitable since it is near and acts as a center for production areas.

4.4.5 Types of Produce

The Figure 4.8 shows the types of produce carried by the carriers. The majority carries vegetables, however others carry fruits and OFCs along with vegetables. This is in line with the dominant crop type in the area, which are vegetables.

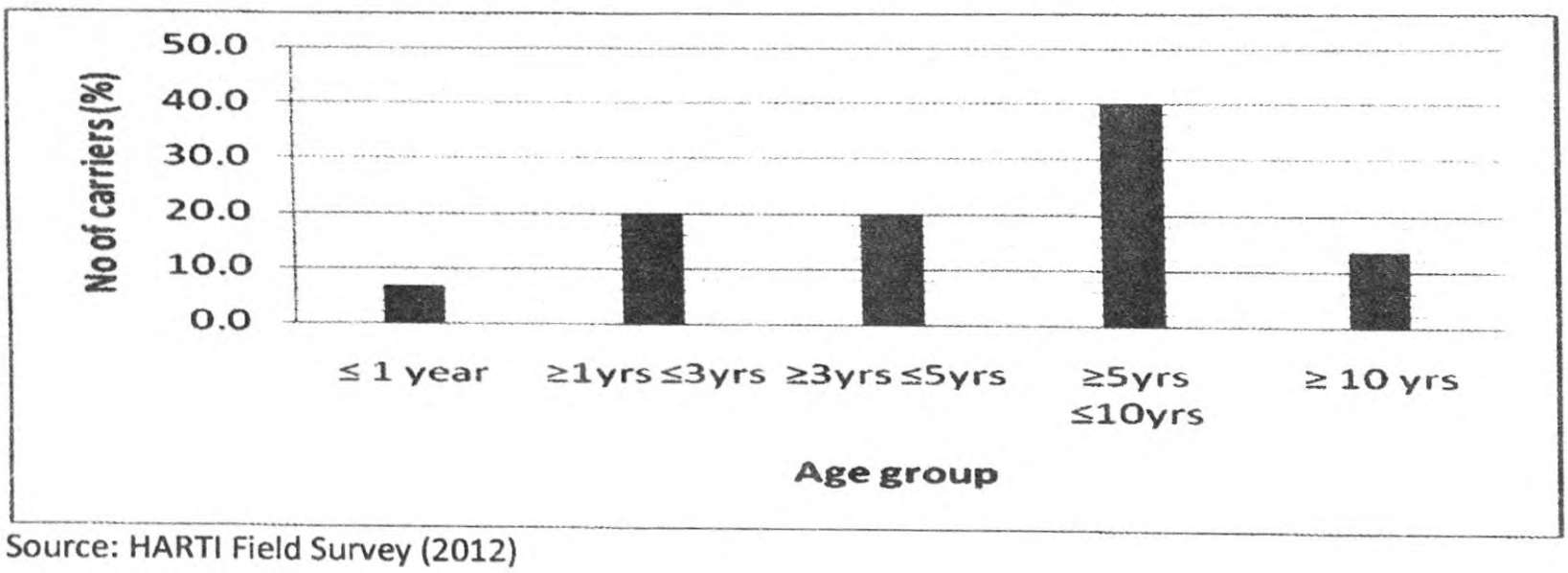


Source: HARTI Field Survey (2012)

Figure 4.8: Type of Produce

4.4.6 Duration of Transport

The Figure 4.9 shows the duration of carriers who have been engaged in carrying farm produce to DEC. The majority of the carriers have been carrying their produce for about 5 to 10 years. However more than 50 % of the carriers have been carrying their produce to DEC for over 5 years. This implies the farmers have continued to carry their produce to DEC after they have started the transaction.



Source: HARTI Field Survey (2012)

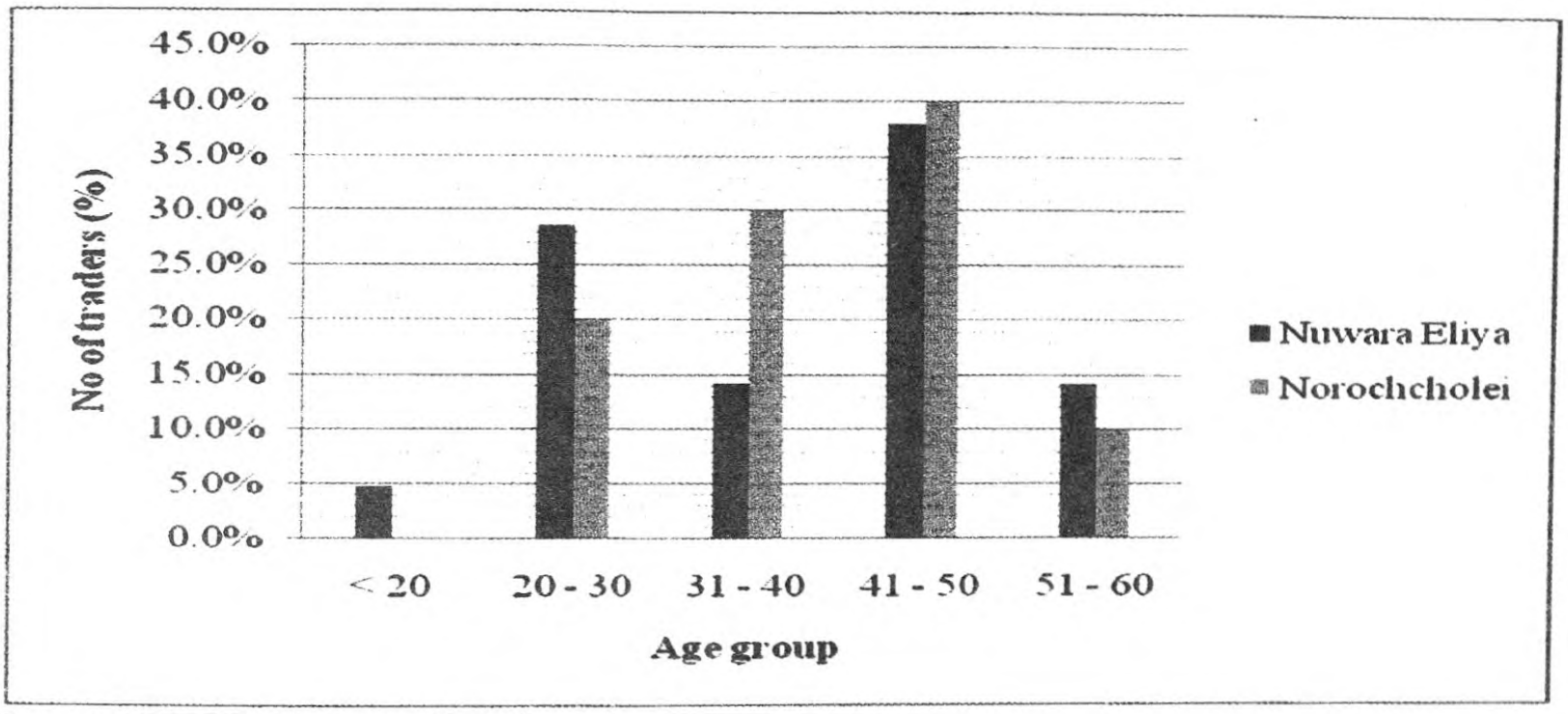
Figure 4.9: Duration

4.5 Socio-economic Profile of the Traders

4.5.1 Age Distribution of Traders

The Figure 4.10 shows the age distribution of traders. As shown in the chart the highest numbers of traders are between 41-10 years in both Norochcholai and Nuwara Eliya DECs (More than 37%). However, in Nuwara Eliya 29% of traders were

within the age group of 20-30 years which is the second highest. Also there were traders less than 20 years as well.



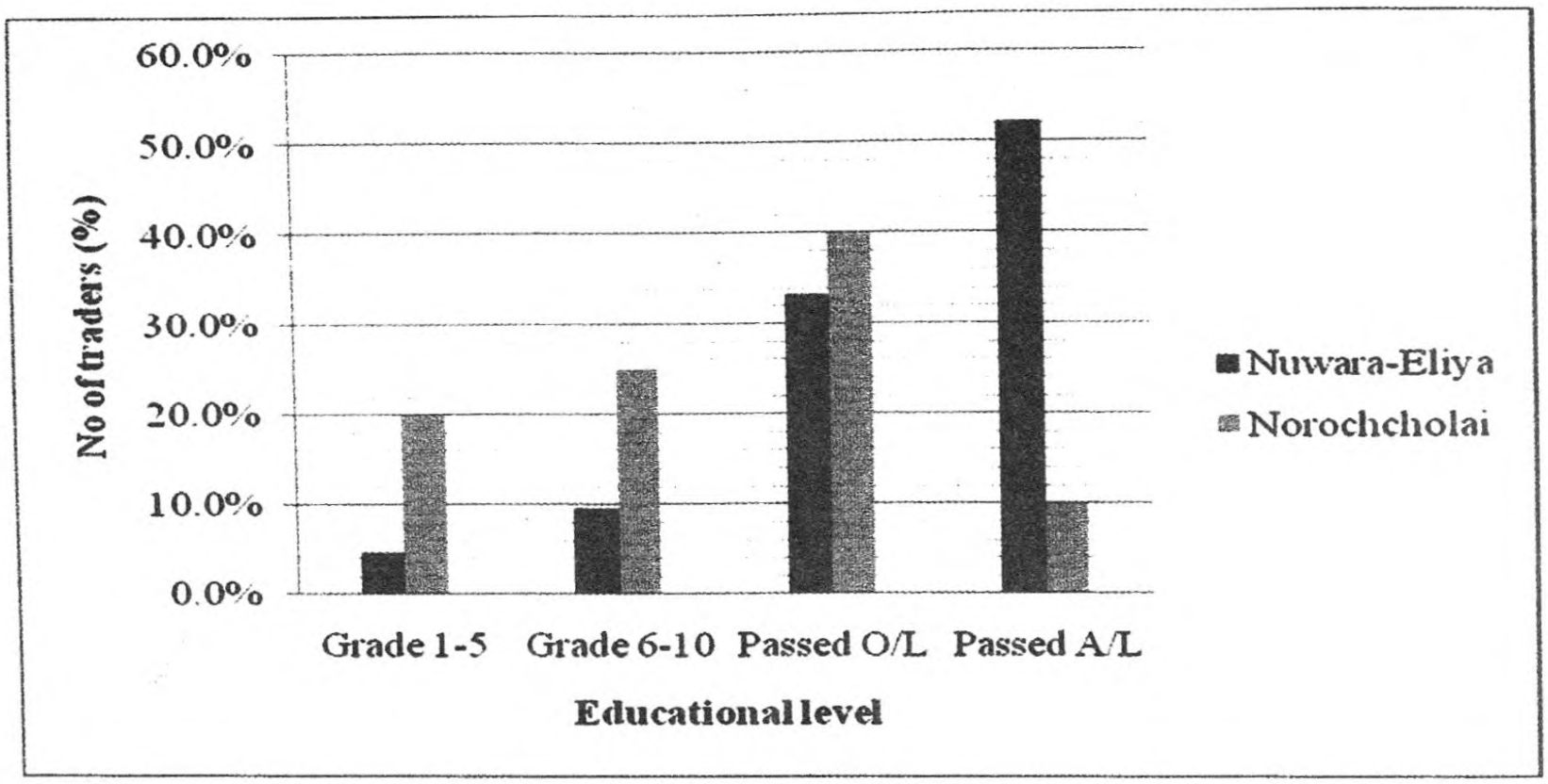
Source: HARTI Field Survey (2012)

Figure 4.10: Age Distribution of Traders

Referring to Norochcholai, 30% of traders were in the group of 31-40 which is the second highest. However, none of the traders were below 20 years in Norochcholai DEC. This implies majority of the traders in the Nuwara Eliya DEC were young whereas Norochcholai it was towards the middle age.

4.5.2 Educational Level of Traders

The Table 4.11 shows the educational levels of the traders. Referring to Nuwara Eliya, majority of the traders have completed A/L exam while 33% of them have completed O/L exam. Only 10 % of traders have studied up to grade 6- 10 while only 5% have studied up to grade 1-5. This implies that majority of the Nuwara Eliya traders have completed their secondary and college education.



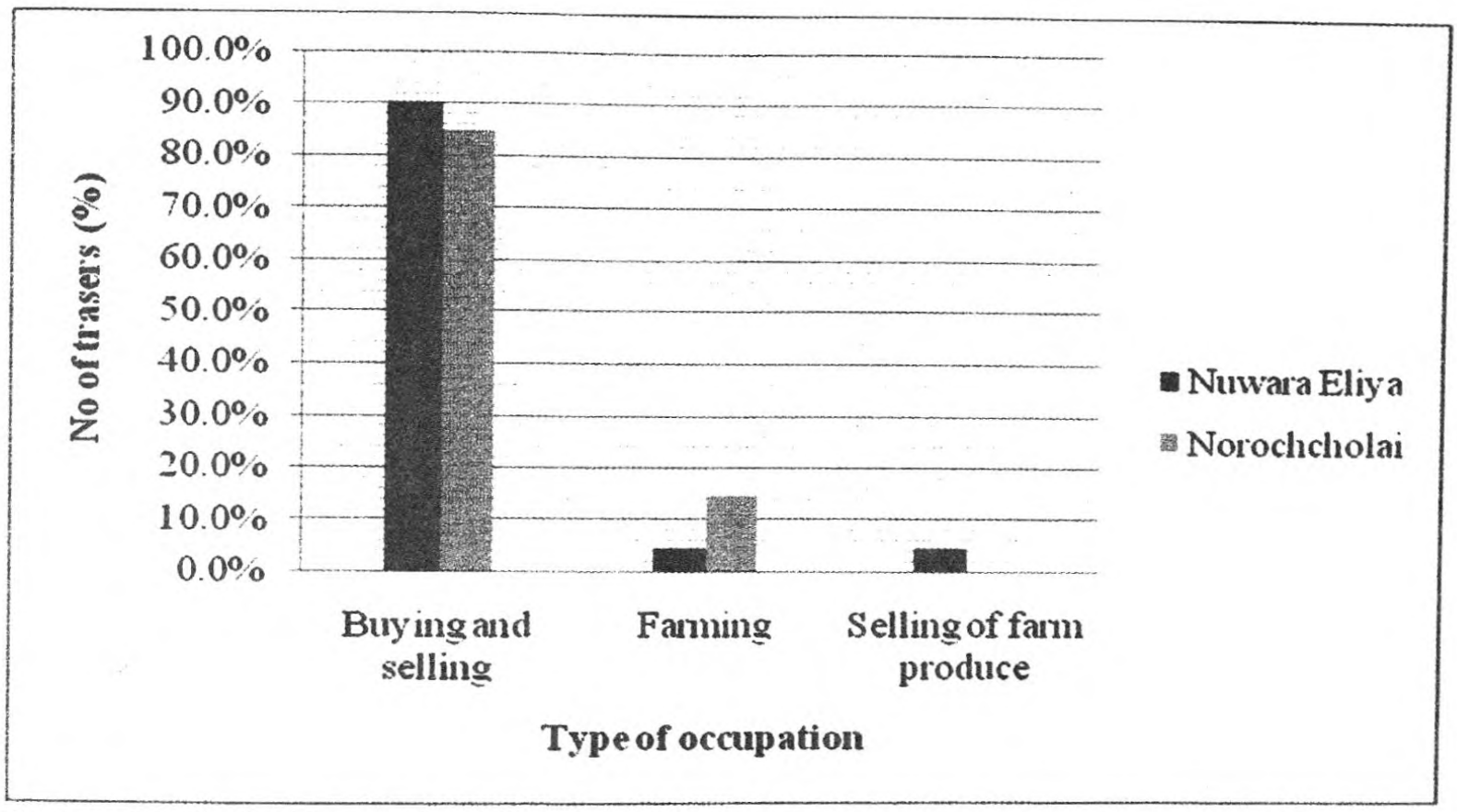
Source: HARTI Field Survey (2012)

Figure 4.11: Educational Levels of Traders

In contrast to Nuwara Eliya majority of the traders in Norochcholai DEC have completed O/L whereas only 10 % have completed their A/L exam. Around 25 % of them have studied up to grade 5-10 and 20% of them have studied only up to grade 1-5. This implies that the majority of traders have completed their secondary education. None of the traders from Nuwara Eliya and Norochcholai reported to have completed their tertiary education. This implies that there is a lesser tendency among people who have completed their tertiary education to move towards this occupation.

4.5.3 Main Activity of Traders

The Figure 4.12 shows the main activity for traders. As the chart shows for majority of traders in both Nuwara Eliya and Norochcholai, the main income activity is buying and selling which is wholesale business.



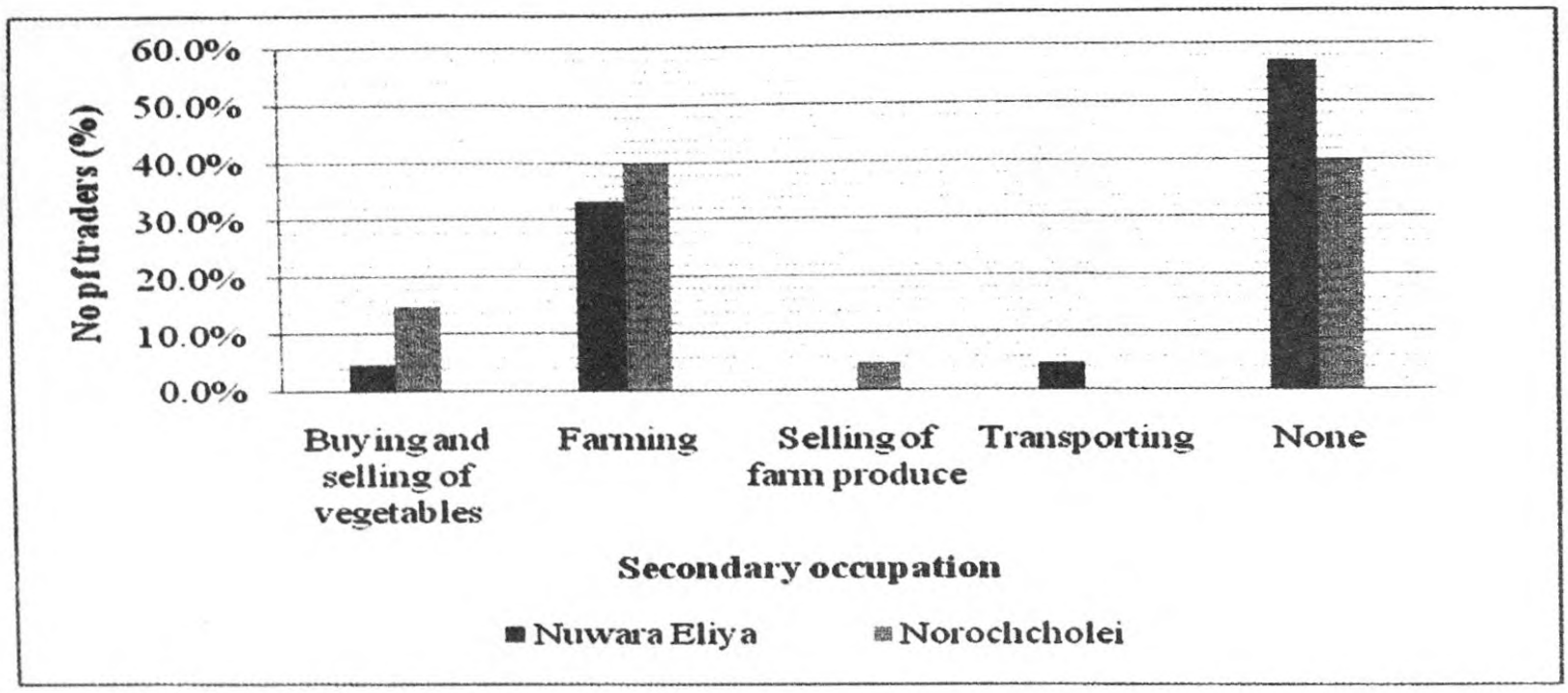
Source: HARTI Field Survey (2012)

Figure 4.12: Main Activities of Traders

Referring to traders in Nuwara Eliya DEC, around 5% of the traders are engaged in farming, whereas 15% of the traders in Norochcholai DEC are engaged in farming as their main source of income. This implies 5% of traders in Nuwara Eliya and 15% traders in Norochcholai engage in wholesale business as their supplementary source of income. About 5% of the traders sell their own produce as their main source of income.

4.5.4 Secondary Occupation of Traders

The Figure 4.13 shows the secondary occupation of the traders. Referring to Nuwara Eliya, majority of traders do not have a secondary occupation (56%) whereas 33% of the traders are engaged in farming as their secondary source of income. This implies that 33% of the traders are farmers other than shop owners. Around 5% consider buying and selling (wholesale business) as their secondary source of income and 5% are engaged in transportation as their secondary source of income. Considering Norochcholai DEC 40% of traders did not have any other income generating activity whereas another 40% is engaged in farming. Considering main source of income under 4.5.3 in Norochcholai area more than 50% of the shop owners are farmers. Therefore it implies that establishment of DECs has provided an opportunity to farmers to expand their business up to marketing. About 10% of the traders do whole sale business as their secondary source of income while 5% of the traders consider selling of farm produce as their secondary source of income.

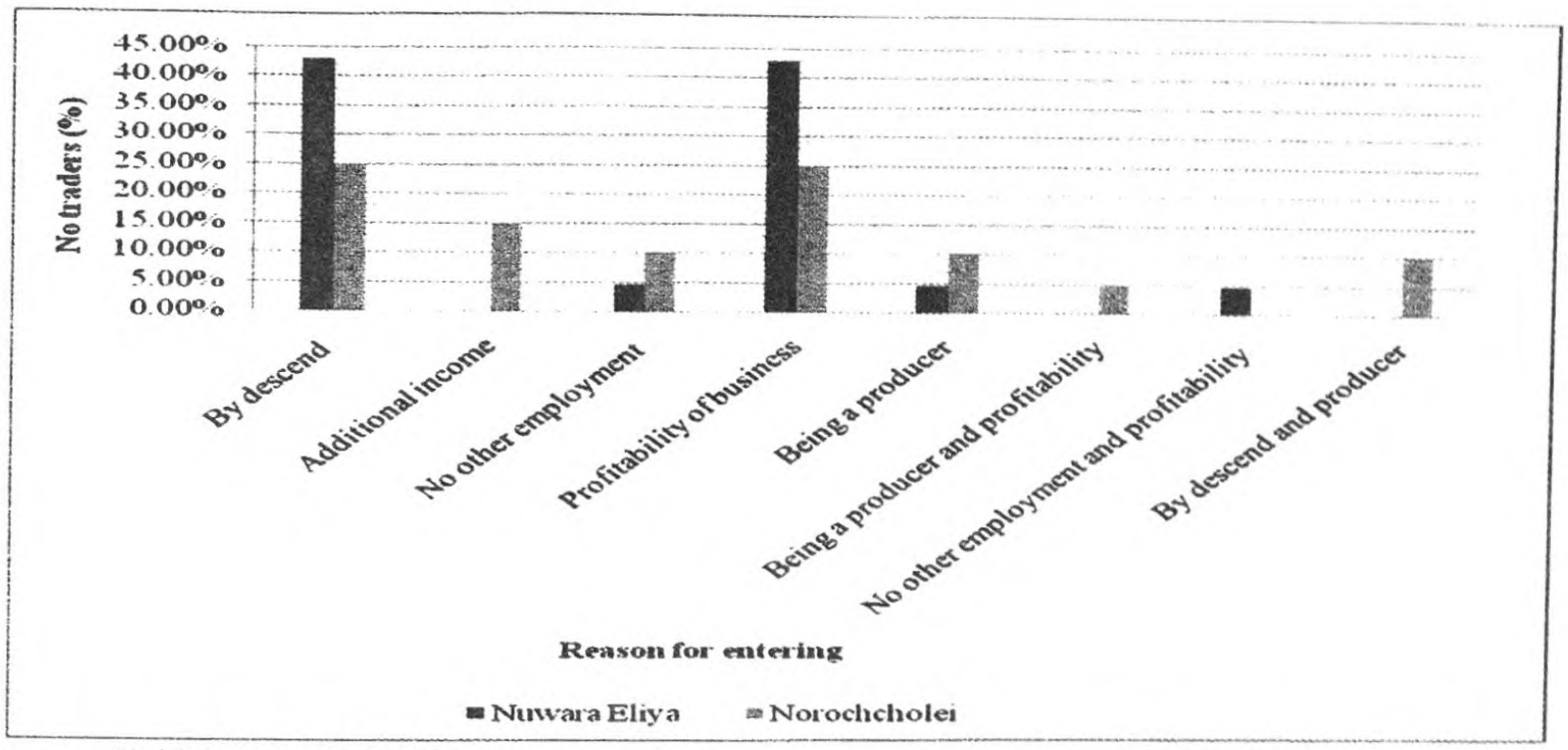


Source: HARTI Field Survey (2012)

Figure 4.13: Secondary Occupations of Traders

4.5.5 Reasons for Entering into the Business

The Figure 4.14 shows the reasons for entering into the business. Referring to traders in the Nuwara Eliya DEC 43% of traders has identified profitability of the business as the reason to enter into business and another 43% has entered into the business since they have inherited it from their parents. Therefore it is observable that most of the shop owners in the market are wholesale traders by tradition in Nuwara Eliya DEC. About 4% of the traders have entered into the business since had no choice while another 4% of the traders have entered into the business since they do not have any other business and wholesale business is a profitable venture. This implies that establishment of the DECs has helped in job creation which is a remedy for unemployment. Another 4% of the traders have entered into the business since they are producers and owning a wholesale shop has helped them in selling their produce. Thus they can avoid the interference of the middle man and shorten the value chain.



Source: Field Survey HARTI (2012)

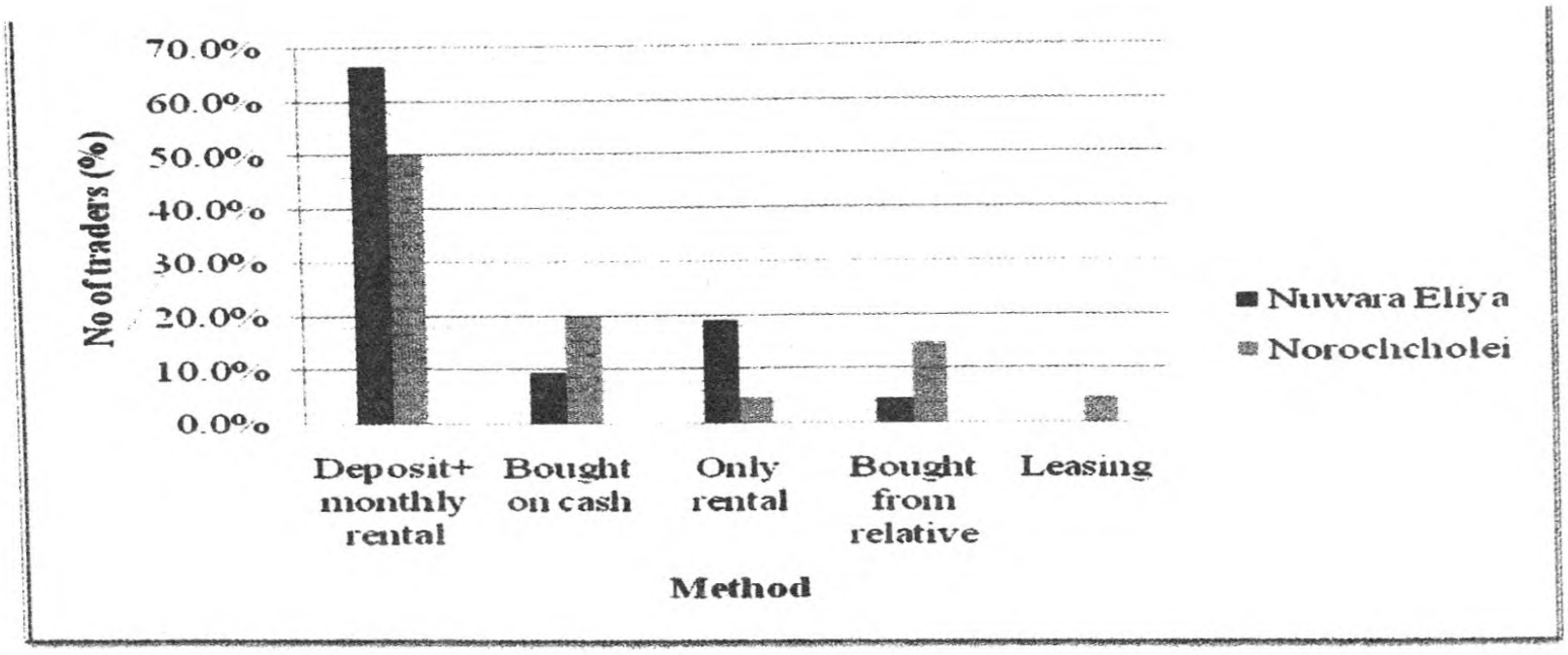
Figure 4.14: Reasons for Entering into the Business

Referring to Norochcholai DEC 25% of the traders has entered into the business since it is a profitable venture. Another 25% of the traders have entered into the business since their parents have been engaging in the business. Therefore this again implies that most of the shop owners in the market are wholesale traders by descent in Norochcholai DEC as well. Around 15% of the traders are engaged in this as an additional source of income. Nearly 10% of the traders have entered the business since they did not have other occupation and another 5% have entered into the business since this is a profitable venture and they had no other business opportunity. This again proves that establishment of DECs has helped in creating job opportunities. Further, 10% of the traders have entered into the business since they are producers while another 10 % of the traders have entered into the business since they are producers and they have inherited the business from parents. Another 5% of the traders have entered into the business since wholesale business is a profitable venture and since they are producers. Therefore in contrast to Nuwara Eliya DEC, it is observed that farmers engagement in trading is high in Norochcholai DEC.

4.5.6 Method of Shop Obtaining

The Figure 4.15 shows the traders shop obtaining method. Considering both Nuwara Eliya and Norchcholai DECs majority of traders have obtained the wholesale shop by paying a deposit and a monthly rental. Referring to Nuwara Eliya 20% of the traders are paying only a monthly rental. This situation occurs when the shop owner has rented out the shop to another party. Around 9% of the shop owners have brought the shops on cash. In this situation the ownership of the shop rests with the trader. However they have to pay the monthly charges to the Board of Governors. Nearly 5% of the traders have bought the shops from relatives.

Referring to Norochcholai DEC 20% of the traders has bought the shop on cash and the ownership is with them whereas 15% of the traders have bought the shops from relatives. In Norochcholai DEC dominancy of Muslim population was observed, where there is a tendency to keep the business within the relatives. Another, 5% of the traders is paying only the monthly rental while another 5% have taken the shops on lease.



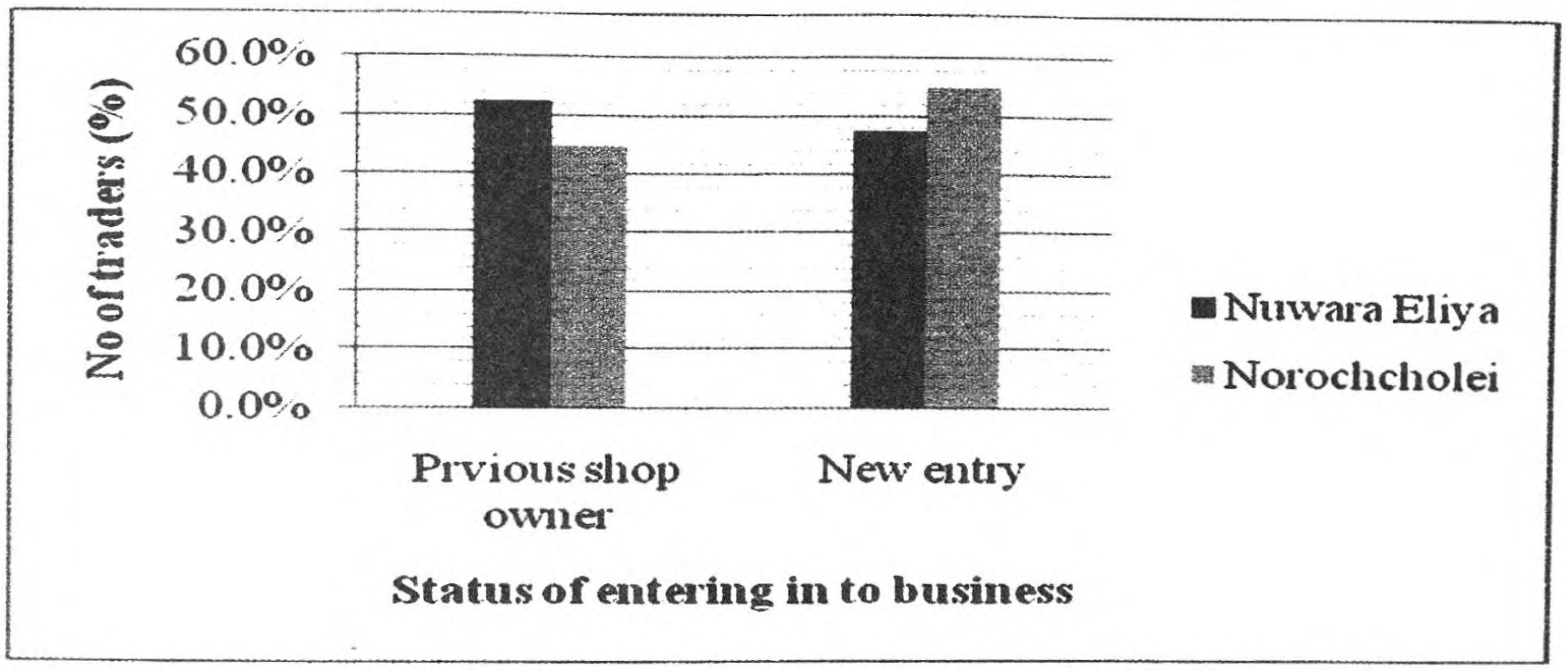
Source: Field Survey ,HARTI (2012)

Figure: 4.15 Method of Shop Obtaining

4.5.7 Job Experience

The Figure 4.16 shows the status of traders before and after construction of the DEC. When considering Nuwara Eliya DEC 52% of the traders are previous shop owners who are in the wholesale business before the establishment of the DEC. The older shops were mainly situated in the "paranakadaweediya". With the establishment of the DEC they have bought shops from that place. Therefore with the establishment of DEC they were provided a proper place to carry out the business. However, this again establishes the common complaint of the farmer that with the establishment of DEC only the place has changed and not the selling and marketing mechanism. However, there are 47% of new entries in the business. This implies that establishment of the DEC has increased the job opportunities, competitiveness and selling options to farmers.

Referring to Norochcholai 55% of the traders are new entries in the market. This again proves that establishment of the DEC has increased the job opportunities, competitiveness among traders and selling options to farmers which give more opportunity to obtain a better price for their produce.

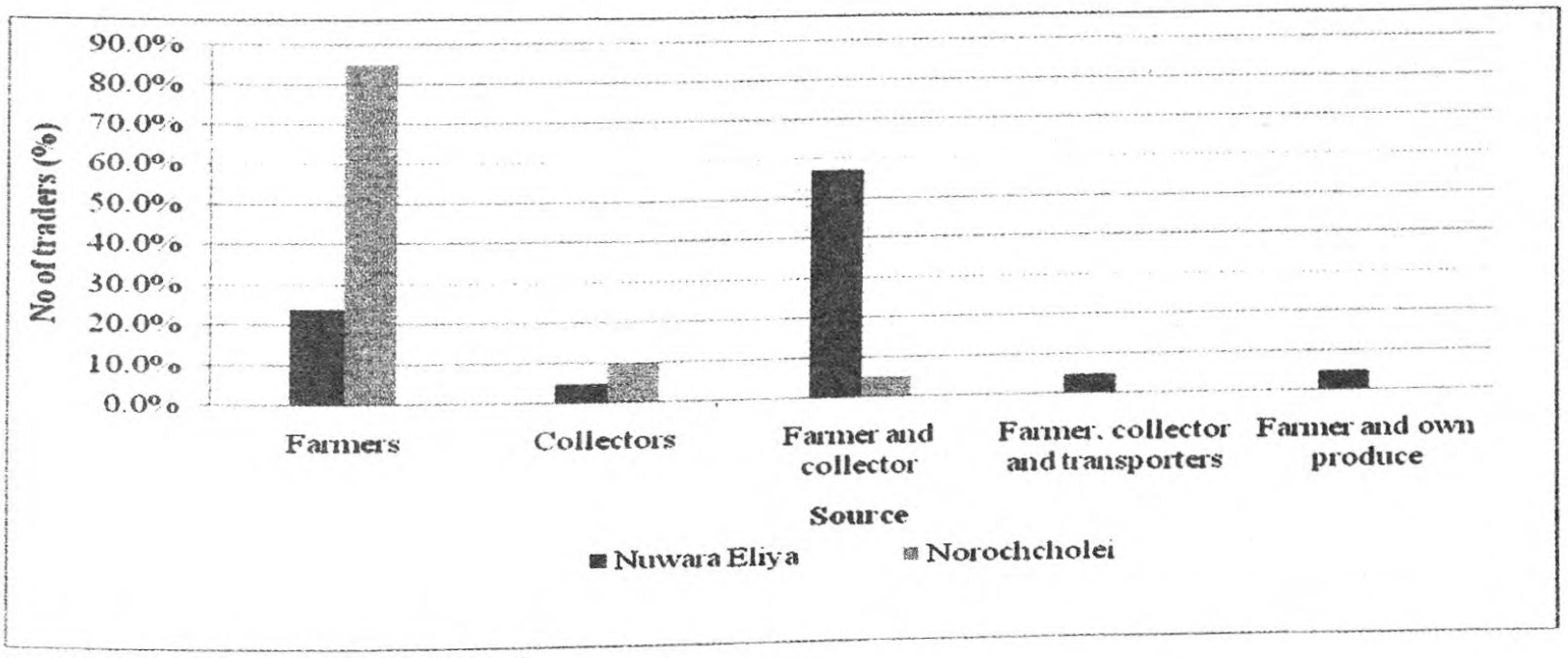


Source: Field Survey HARTI (2012)

Figure 4.16: Entries in Business

4.5.8 Supply Sources to DECs

The Figure 4.17 shows the major supply sources to the Nuwara Eliya and Norochcholai DECs. In Nuwara Eliya DEC the major supply sources are both farmer and collectors who are 57% of the total respondents. In addition, 22% of the farmers directly supply their produce to the DEC while 5% of the supply is solely done by collectors. Another 5% of the supply is done by farmer collectors and transporters while another 55 of the supply is done by traders and farmers. Therefore, in Nuwara Eliya DEC it is observed that the middleman's interference is still there in the marketing channel to a considerable level.



Source: Field Survey HARTI (2012)

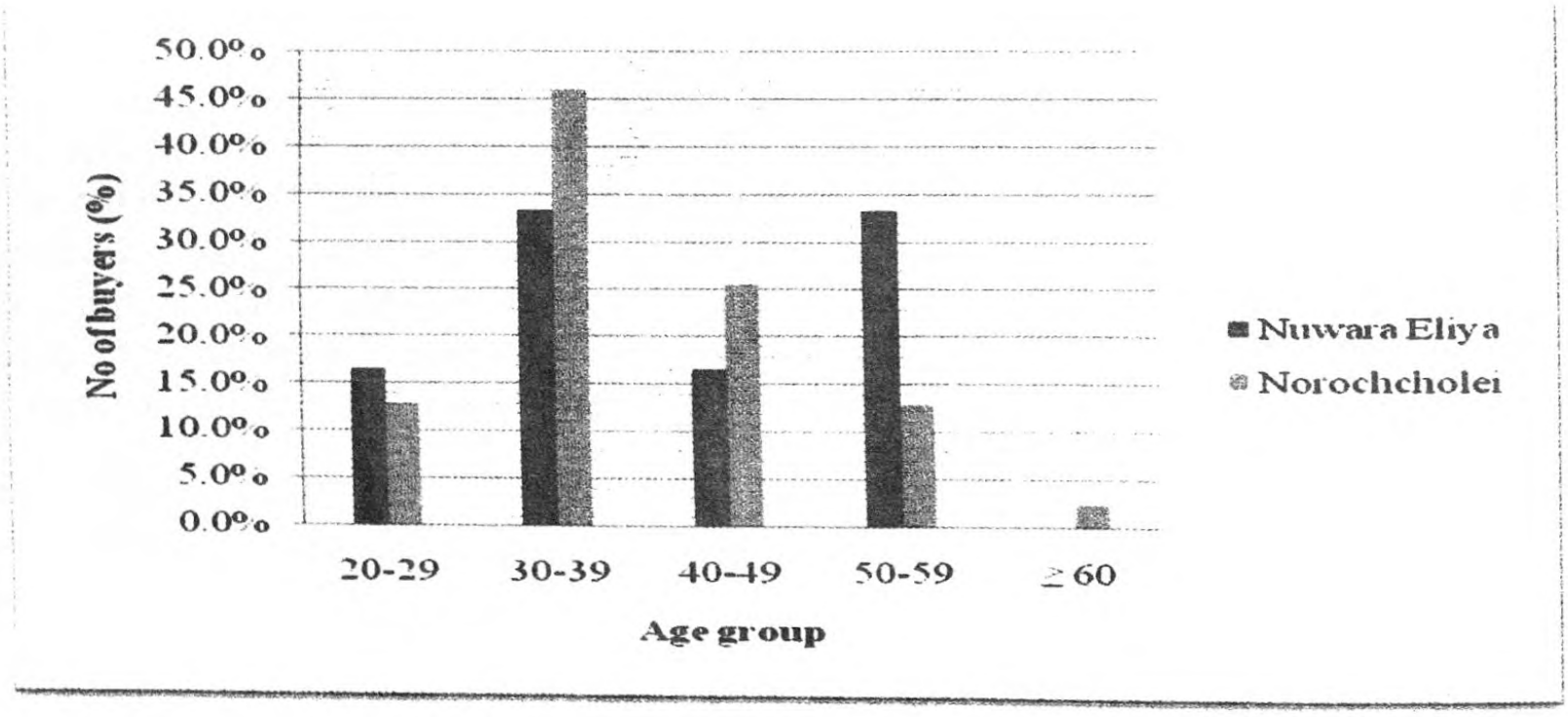
Figure: 4.17 Supply Sources to DECs

Considering Norochcholai DEC 85% of the supply is done by farmers. Only 10% of the supply is done by the collectors while 5% of the supply is done by both farmer and collector. Therefore it is observed that with the establishment of the DEC the middleman's interference has reduced in to a considerable level which is one of the major targets of establishing the DEC.

4.6 Socio-economic Profile of the Buyers

4.6.1 Age Distribution of the Buyers

The Figure 4.18 shows the age distribution of buyers. Referring to Nuwara Eliya DEC, majority of the buyers are in the age group of 30-39 years and 50-59 years which each denotes 33% of the total number of buyers. Around 16.5 % of the buyers were the age groups of 20-29 years and 40-49 years. However none of the buyers was in the age group of over 60 years. This implies that majority of the buyers of Nuwara Eliya DEC were young to middle age.



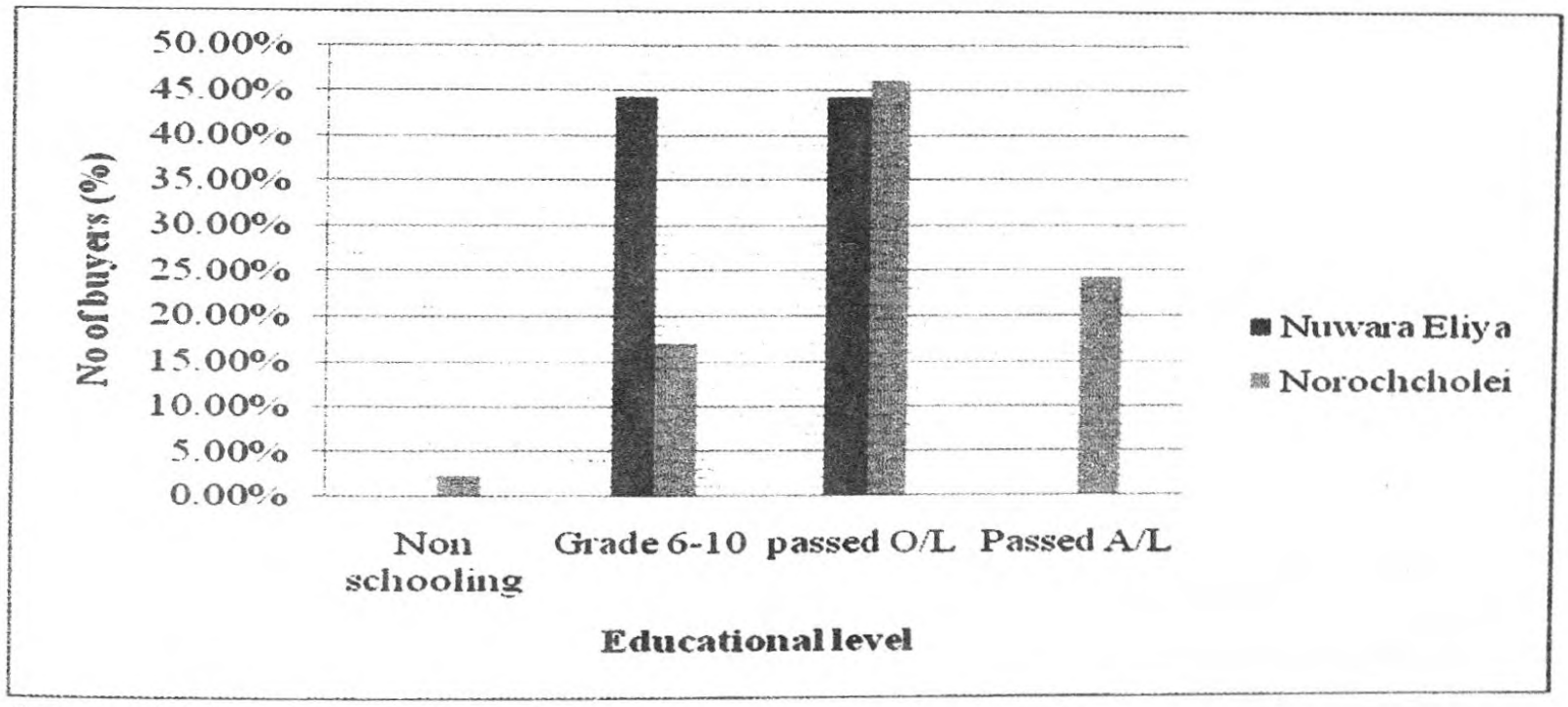
Source: Field Survey HARTI (2012)

Figure 4.18: Age Distribution of the Buyers

Considering the Norochcholai DEC, majority (46%) of the buyers were in the age group of 30-39 years. In addition, 13% of the buyers were in the age group of 20-29 years which denotes that majority of the buyers in Norochcholai were young. There were 2.5% of the buyers in the age group of above 60 years.

4.6.2 Education Level of the Buyers

The Figure 4.19 shows the educational level of the buyers. Referring to buyers of the Nuwara Eliya DEC, 45 % of the buyers were in the group of grade 6-10 whereas another 45% have completed O/L. Therefore it is observed that the highest educational level for buyers is secondary education. Considering Norochcholai DEC, majority of traders have completed O/L exam while 24% of the buyers have completed A/L exam. This implies that compared to Nuwara Eliya DEC, the level of education of the buyers is higher for Norochcholai.



Source: Field Survey HARTI (2012)

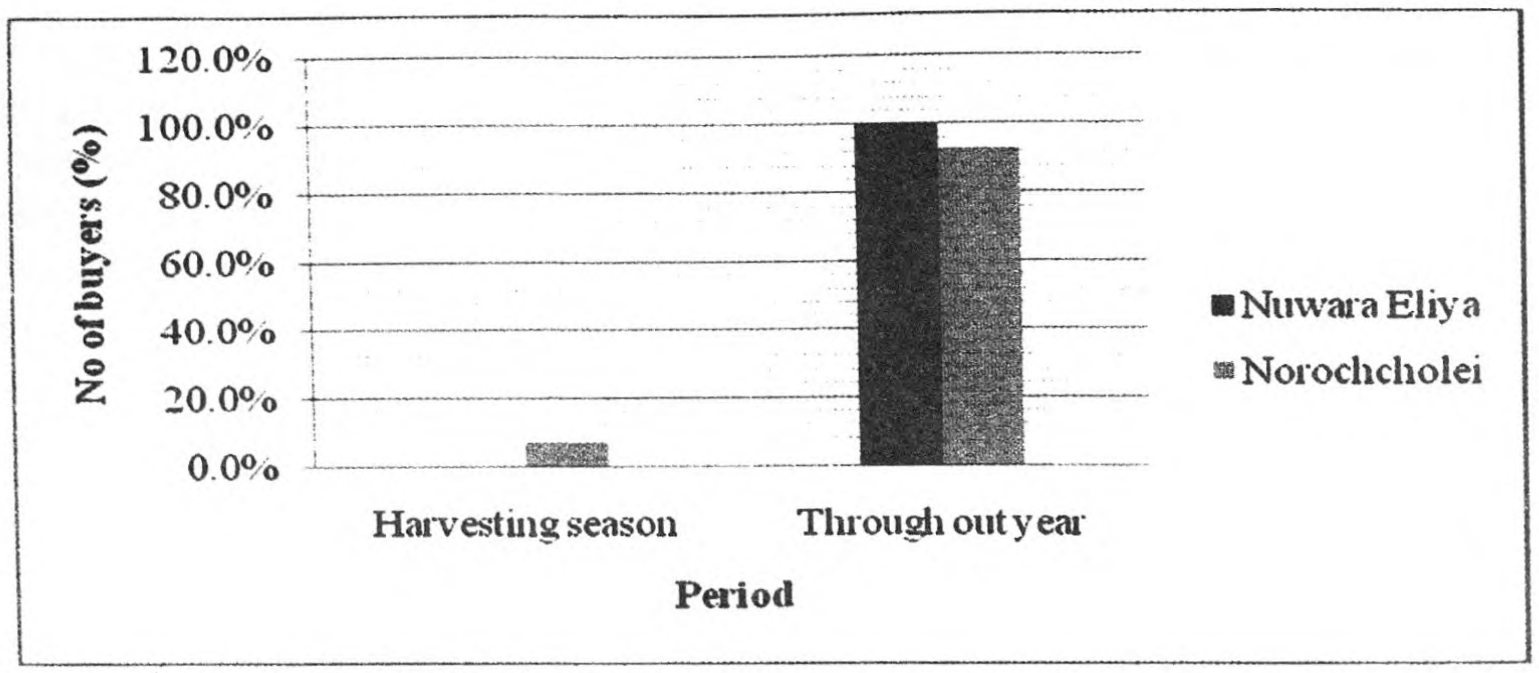
Figure 4.19: Educational Levels of Buyers

4.6.3 Type of Produce

As the data shows all the buyers in the Nuwara Eliya DEC purchase vegetables whereas in Norochcholai DEC majority (69%) of the buyers purchase vegetables from the DEC. Other than this in Norochcholai DEC fruits and other produce such as other field crops and tobacco is bought by the buyers. The type of produce might vary with the season and previous season market prices.

4.6.4 Period of Buying Products

The Figure 4.20 shows the period that the buyers visit the DECs to purchase the vegetables. As shown in the chart all the buyers in the Nuwara Eliya DEC visit the DEC throughout the year whereas majority of the buyers in the Norochcholai DEC visit the DEC throughout the year. However, based on the place they sold their produce, the number of visits per week will differ. For example, it could be once, twice or three times per week. It varies according to the venue of sale as the weekly fair or retail shops.



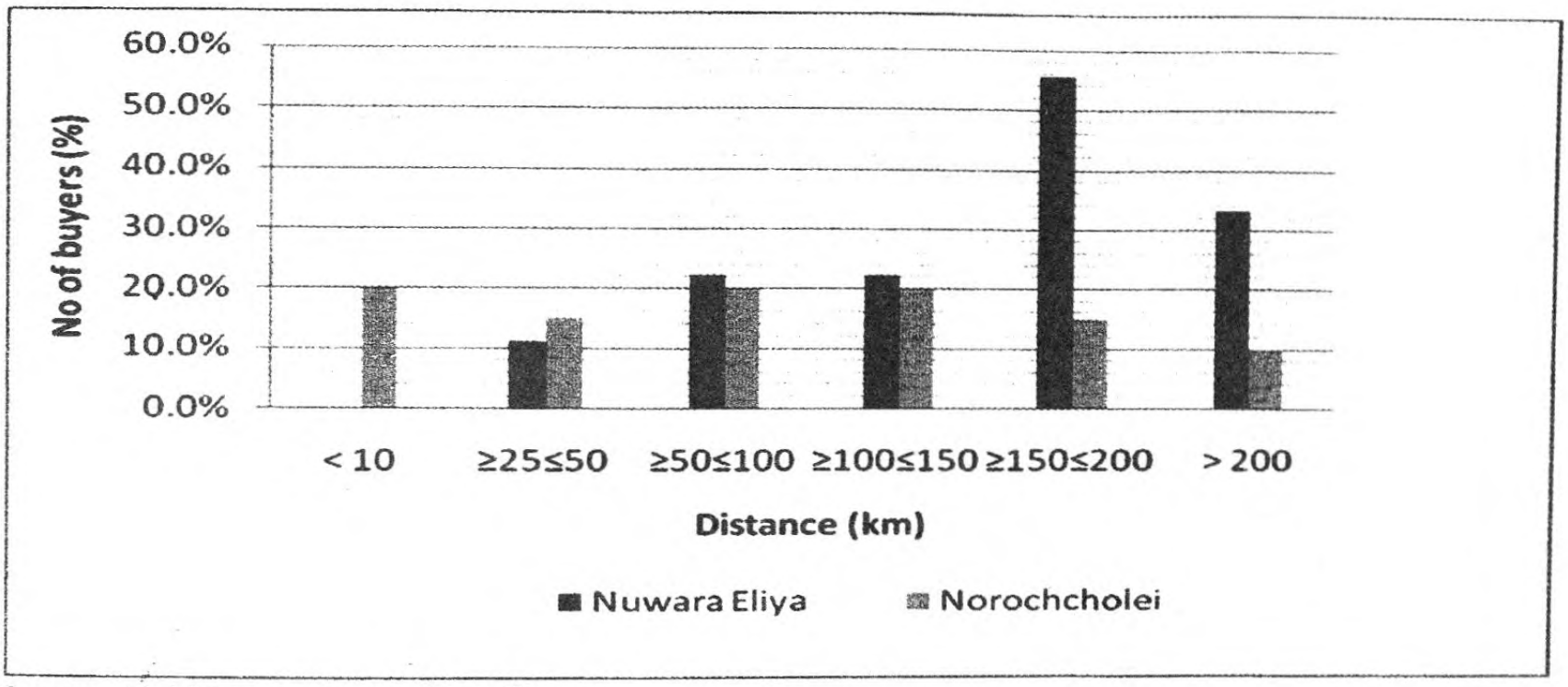
Source: Field Survey HARTI (2012)

Figure 4.20: Type of Produce

4.6.5 Distance

The Figure 4.21 shows the distance the buyers travel to buy the produce. In the case of Nuwara Eliya it is observed that the buyers are traveling 25 km to more than 200 km. Further, 55% of the buyers travel between 150 km-200 km whereas 33% of the buyers travel beyond 200 km. Since Nuwara Eliya area is the main producer of upcountry vegetables, people from other areas of the country visit there to buy the produce.

In the Norochcholai DEC mainly the buyers are from close by areas, less than 10 km, 50- 100 km and 100-150 km. Norochcholai is mainly producing low country vegetables along with some of the upcountry vegetables. Since upcountry vegetables are produced in the upcountry and there is Dambulla DEC for low country vegetables, vegetables can be easily sent to northern and eastern areas of the country. Hence the products from Norochcholai area mainly reach relatively shorter distances.

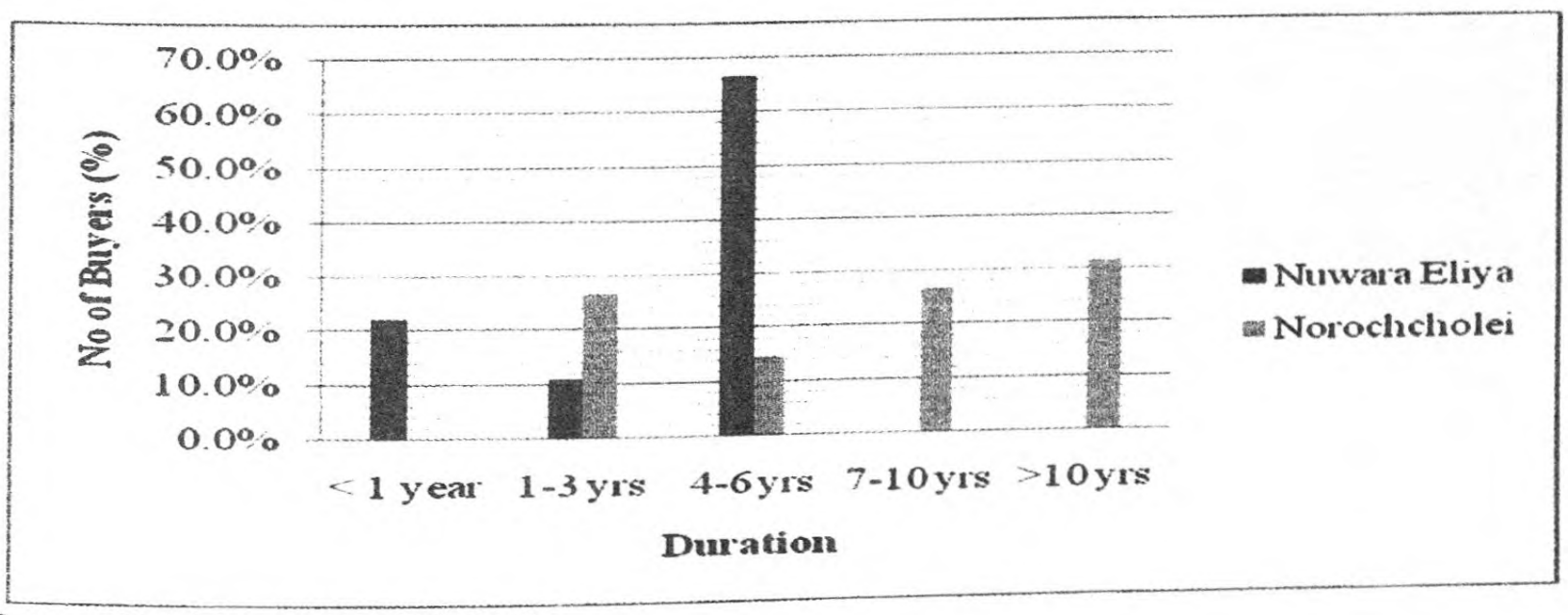


Source: Field Survey HARTI (2012)

Figure 4.21: Distance

4.6.6 Duration of Transaction

The Figure 4.22 shows the duration the buyers have been transacting at the DECs. Referring to Nuwara Eliya majority of the buyers has started transactions with the DEC about 4-6 years ago (67%). This implies that buyers have started transactions with DEC with the establishment of DEC in 2006.



Source: Field Survey HARTI (2012)

Figure 4.22: Duration of Transaction

Referring to Norochcholai DEC is relatively higher percentage of buyers have started transactions with DEC before10 years. However, a gradual increase in the number of buyers can be observed afterwards. This implies that the number of buyers have increased throughout the period for Norochcholai DEC.

4.6.7 Place of Selling

Majority of the buyers in Nuwara Eliya sell their produce to retailers who are about 55% of the buyers. Around 33% of the buyers sell their produce to other wholesalers in their respective areas. About 11% of the buyers use their purchases for export purposes. Therefore it is observed that since majority of buyers sell their purchases to retailers and wholesalers they act as intermediaries between wholesalers in the DEC and the consumer.

With reference to Norochcholai DEC, majority of the buyers sell their produce to wholesalers whereas 20% of them are selling the produce to retailers. However, 17% of the buyers sell their purchases in their own shops. Therefore, it is observed that the establishment of Norochcholai DEC has helped in shortening the vegetable marketing channel to a certain extent though the buyers still act as intermediaries. Other than this, these buyers sell their purchases to Dambulla DEC for export purposes to Meegoda DEC and all of the above.

CHAPTER FIVE

Findings, Conclusions and Recommendations

5.1 Introduction

Identification of the level and nature of marketing margin and transaction cost of vegetables are very important to Sri Lanka. Marketing operations of vegetables play a crucial role, due to seasonality of produce in deciding the profit of the farmer on one hand and level of availability to consumer on the other. Transaction costs and high market margins were huge problems in this scenario. An efficient marketing system minimizes costs and maximizes benefits to all sections of society. Producers, consumers and traders are concerned about the size of the marketing margins, changes in marketing margins and the incidence of changes in margins.

5.2 Findings and Conclusions

The expectation of DEC system is to provide an opportunity for farmers to obtain higher prices by providing the opportunity to sell their produce directly to the traders without the involvement of intermediaries. The above objectives are not achieved in terms of the Nuwara Eliya DEC, while for Norochcholai DEC it is satisfactory.

When considering about the beneficiaries among two Dedicated Economic Centers, in Nuwara Eliya major beneficiaries were traders rather than farmers, but in Norochcholai most of them were farmers. In Nuwara Eliya it observed that, there was no competitive trading environment within the DECs as expected, as the traders determine the price rather than the producers. But in Norochcolai it observed that, farmers have a competitive trading environment within the DECs as expected, with a limited transaction period and a trading environment.

Marketing channels were not changed in Nuwara Eliya district, but in Norochcholai it was dynamic, that means it changes continuously. Only stores complex were situated in Nuwara Eliya and those places were not visited by producers. But in Norochcholai market centers were available and these centers were visited by producers. In Nuwara Eliya commission system were not available, but in Norochcholai commission system were available. Other findings follow as:

- Both in Norochcholai and Nuwara Eliya, majority of the shop owners have obtained the shops by making an initial deposit and paying a monthly rental
- In Norochcholai and Nuwara Eliya respectively 55% and 48% of the traders had been previous wholesale shop owners.

- The retailer's gross margin in the vegetable trade varies from 33 per cent to over 70 per cent and the producer's share is below 50 per cent for all the vegetables except for beans in 2007 in Nuwara Eliya DEC.

- Retailer's margin is high during the peak supply period and low during the lean supply period in Nuwara Eliya DEC

- Market margins of vegetables vary according to the time of the year, depending upon the prices of vegetables. When prices are high, the market margins are low and vice versa. This suggests that retailers help reduce the extent of seasonality in vegetable prices.

- Retailer's margin is high for vegetables with low prices. It exceeds the producer's share as well. Margin is low for expensive types of vegetables. According to the retailers, they fix a low price for expensive vegetables due to consumer consciousness.

- The highest margin is added at the retail level because of the small quantities of vegetables sold by each individual retailer and due to high physical losses at this level. There are often a large number of vegetable retailers in the market in contrast to the quantity demanded. Hence, individual trader's turnover is limited in both areas.

- Due to increasing unemployment, many youth have entered retail trading because of easy market entry conditions. Vegetable trading is a highly specialized activity and handles only a few varieties. Small-scale business and highly specialized trading compels traders to set high mark-ups for their buying prices in both areas.

5.3 Recommendations

- HARTI and some other institutions are conducting marketing information to obtain market prices for many purposes. Making awareness and pathway to get market information such as prices in order to increase the efficiency

- Introducing plastic crates as a user friendly approach in order to reduce the post-harvest loss and to minimize the transport losses

- Building a rain shelter for both Nuwara Eliya and Norochcholai DECs to protect the products from being exposed to adverse weather conditions

- Constructing collecting centres in Nuwara Eliya within 5 Km.

- This Economic Center should be a "Marketing centre" and not Dedicated Economic centers

The high percentage of margin to farmer-consumer price difference is indicative of large inefficiencies and relatively poor marketing efficiency. Hence, there is great need to improve the marketing of vegetables. Direct participation of farmers should be increased. Market infrastructure should be improved through storage facilities, cold storages, loading and weighing facilities etc. Improvement in the road network, and cold-chain facilities are also of substantial importance. Market integration and efficiency can also be improved by making up-to-date market information available to all participants through various means like mobile phones, including a good market information system.

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