International Journal of Agricultural Research

ISSN 1816-4897

Academic Journals Inc.

www.academicjournals.com

International Journal of Agricultural Research 9 (2): 99-109, 2014
ISSN 1816-4897 / DOI: 10.3923/ijar.2014.99.109

Market Efficiency on Vegetable Commodities in Developing Country: Case Study from Dambulla Wholesale Market in Sri Lanka

[1]M.B. Ranathilaka and [2]Kuntoro Boga Andri
[1]University of Peradeniya, Sri Lanka
[2]Indonesian Agency for Agricultural Research and Development, Indonesia

Corresponding Author: Kuntoro Boga Andri, Indonesian Agency for Agricultural Research and Development, Indonesia

ABSTRACT

In many developing countries, the government implemented vegetable marketing policies aiming both efficiency as well as effective distribution yet that some of the program had been ineffective or have failed. Therefore, this study analyzes vegetable market efficiency using Dabulla wholesale market in Sri Lanka as a case study. The questions are posed here that the main factors of recent vegetable market price increase trend. Was the vegetable market price hike trend policy driven or market driven? What are the short term, medium term and long term economic consequence of vegetable market price hikes? The study showed that the bargaining power of merchants and the farmers may significantly determine the MM (Net marketing margin). Another important factor is cartel behavior of middlemen within the farm-gate and wholesale markets as well as wholesale and retail markets. Therefore, policy makers have to consider the ways to reduce unnecessary middleman involvement to develop an effective marketing system which provides higher benefit to farmers and consumers. Another factor is infrastructural facilities such as roads and access to the market easier, especially, communication that provide pricing and other information. In addition, storage and processing also have an important role to play within the context of counter seasonal strategies. Marketing cost mainly depends on those factors specially post harvest losses. In this context, it is an urgent need to introduce suitable and practical techniques to reduce post harvest losses which control marketing cost and improve marketing efficiency.

Key words: Market efficiency, marketing cost, developing country, vegetable commodities, Sri Lanka

INTRODUCTION

In 2011, Sri Lankan agriculture sector contributed 11.2% of the GDP (Gross Domestic Product), down from 19.9% in 2000. Agriculture accounts for about 33% of the country's labor force (CBSL, 2011). Within total agricultural sector considering the contribution to GDP, vegetable production sector is the second largest sub-sector after paddy production sector in Sri Lanka. Nearly 733,400 metric tons of various kinds of vegetables have been produced every year dividing into two groups as up-country and low-country vegetables considering their production regions. Even though upcountry vegetables have been produced throughout the year, low-country vegetables are highly seasonal (HARTI, 2005).

The successive governments in Sri Lanka have made various interventions in the market during post-1977 period that open economic policies have been introduced. Therefore, market interventions in the agricultural sector, especially, the vegetable sub-sector has been insignificant

during this period. Sri Lankans have consumption (known for eating a lot) vegetable compared to fish and meat for their daily meal to get necessary nutrition. Out of total food expenditure per person, 7.6% is used for vegetables while 17.3% is used for rice (HIES, 2010).

At present, vegetable production has been increased due to many government programs such as "lets us cultivate and uplift the nation" and establishment of one million domestic economic units under the Dive Neguma program (CBSL, 2008; DA, 2011). Except for less than 1% exports, rest of vegetables are supplied to local markets. Marketing of vegetable is totally different from other agricultural products such as cereals due to the higher perishable nature, seasonality and bulkiness etc. (Verma *et al*., 2002). Further, it should be immediately disposed and needs special care up to the ultimate consumer. Therefore, the effective market system is most important in vegetable to reduce middleman's power and various losses from farm-gate to consumer. However, it is well known that vegetable market activities control of the private sector with insufficient government intervention in Sri Lanka (Vidanapathirana, 2008; Ranathilaka and Herath, 2011). Particular characters can also be identified in Sri Lankan vegetable production sector in general. These can be listed as high dependency on weather, small scale production, the perishable ability of the products, extensive use of family labor and more concentrated in remote areas where infrastructural facilities such as transport, electricity, communication and irrigated water are lacking. These factors also cause of severe price fluctuations, higher level post harvest losses, high cost of transaction activities and assist to keep market power under middlemen. However, Bambang (2007) noted that generally the price fluctuation of vegetables is higher than other agricultural products such as cereals.

The recent vegetable market price hike trend and government market policy interventions have been made numerous questions to the society in Sri Lanka. Policy makers have failed to find the suitable solutions to control higher price in the vegetable market. However, past research results reveal that efficient marketing system would control price hick trend in the agricultural sub-sector (Mahaliyanaarachchi, 2004; De Silva, 2008). Such system would provide vegetable requirement for the whole nation and keeps prices stable throughout the year without unexpected fluctuations. Further, it may assist farmers for better living at a considerable level.

Since, 1977, the government of Sri Lanka has adopted several agricultural policy implementations to achieve the target of self-sufficiency and reduce market rigidities to favor farmers and consumers (Ranathilaka, 2008). It has been expected that produce essential food for the nation, maintain caloric intake, reduce the import bill for food, control price fluctuation and improve farmers' living conditions. The government has implemented several policies, however, undermine the progress toward its goals (WBG, 2003). The private sector has been given more opportunity to invest in agricultural activities, in agricultural based industries and supplementary services but they have invested only in few areas which earn more profit. Therefore, marketing activities have been developed but simultaneously research and technology were not developed as expected. It shows by existing situation of higher marketing margin and higher post harvest losses in every sub sector of agricultural commodities.

In this context, the recent government implemented vegetable marketing policies aiming both efficiency as well as effective distribution yet that the program had been ineffective or have failed. The merchants in every channel of vegetable market show monopolist's characteristics of the market function under the open economic system. Many research works have been identified several reasons behind the ineffective market and higher market margin due to market rigidities,

post harvest losses, unnecessary numbers of middlemen, lack of market information, transport costs, weather etc. (Bowbrick, 1976; Gunawardana and Chandrasiri, 1980; Mahaliyanaarachchi, 2004; De Silva, 2008).

This market power of middlemen very badly causes to reduce farmers' participation in vegetable production activities. Therefore, a considerable proportion of commodities have been imported to fulfill the vacuum of demand and supply even though there are enough potential to produce them within the country (CBSL, 2009). However, still large proportion of food requirement of the nation is being produced in the country. This implies that there are very crucial and the opposite relationship between self-sufficiency and the trade balance. The Sri Lanka government has spent US$2, 870 million annually to export consumer commodities including vegetables (CBSL, 2010). If this amount was diverted to productive economic activities as a developing country it could positively effect on future economic development of the country.

It is reported that the household budget 42% is used for food and drinks (household size is 4 persons) in 2009/10 (HIES, 2010). The expenditure for food and drinks as a percent age of total income per household shows the continuous reducing trend but absolute monetary value is increasing simultaneously with increasing trend of per capita income of the country. This scenario implies that the demand for food and drinks absolutely increasing and it directly causes to market prices of food items including vegetables. Due to vegetable and food items price hike, inflation ratio increases 3.8-9.8% from 2012 January to 2013 January (DCS, 2013). This situation directly causes to living cost of people specially who gets permanent income per month. Therefore, the trade unions have been demanding the authorities to increase wages. It directly causes inflation and increases the prices of food and service as a cycle. Further, this trend might cause to poor people who under poverty line due to real per capita deterioration. On the production side, increase production cost of non-agricultural sectors makes harmful effect to reduce the competitiveness of their products.

The government and some researchers are claiming that the increase in the prices of key agricultural commodities was higher transport and input cost due to international fuel price hike and low supply of agricultural commodities due to seasonal variation and bad weather conditions. As mentioned earlier, some empirical research works have identified more reasons behind price hikes such as market rigidities, post harvest losses, unnecessary numbers of middlemen, lack of correct market information and so no.

Therefore, this study analyzes vegetable market efficiency using Dabulla wholesale market and related areas. The questions are posed here that the main factors of recent vegetable market price increase trend. Was the vegetable market price hike trend policy driven or market driven? What are the short term, medium term and long term economic consequence of vegetable market price hikes?

MATERIALS AND METHODS

Data sources: This study was mainly done by using primary and secondary data. Primary data were collected from Dabulla wholesale market and related vegetable growers. The secondary data was collected from the sources such as Hector Kobbekaduwa Research and Training Institute's (HRTI) reports, Central Bank of Sri Lanka (CBSL) reports and other allied departments published reports. In the data collection process, it was collected farm-gate price, retails price and transaction cost from farm-gate to ultimate consumers. Further, farmer's personal data were collected to elaborate the findings. In the first step, nine varieties of vegetable basket were selected including up-country vegetables (Carrot, Bean, Leeks, Cabbage) and low-country vegetables (Long-bean,

Gourd, Capsicum, Kno-Khol, Ladies fingers). At the second step, the Farm-gate Price (FP) of above mentioned vegetables had been calculated after deduction of wholesaler commission from the wholesale price duration from July 2010 to April 2011. The third step was the calculation of marketing cost (MKC) from farm gate to ultimate consumers. This cost was divided into three parts as transaction cost by the farmer, the transaction cost of market agent from wholesale to retail market and the cost of post harvest losses. At the farm gate level, transport, packing and other costs were collected. Under the market agents cost, there were few categories including transport cost, market place rent, payments for labor and other expenditures. The cost of post harvest losses was calculated keeping weight 30% kg^{-1} for each category of vegetables. This hypothetical value base on recent research outcomes and market agent's experiences. In the fourth step, it was calculated Marketing Margin (MM) subtracting above two items (FP and MKC) from the Retail Price (RP) of each variety of vegetables.

Analyzing model: In this study it was employed the Marketing Efficiency Index (MEI) which was used by Acharya (1998) in the Indian agricultural market and by Samarakoon (2008) to study marketing methods of small and medium scale vegetable growers in Sri Lanka. The marketing efficiency index as follows:

$$MEI = \frac{FP}{MKC + MM}$$

Where:
MEI = Market efficiency index
FP = Price received by the farmers
MM = Net marketing margin
MKC = Total marketing cost

It is considered that when MEI value is more than one as efficient and less than one as an inefficient marketing condition.

RESULTS AND DISCUSSION

The retail price of the vegetables has drastically increased during the last few decades. As Fig. 1 shows that on the average nominal retail price of selected vegetables has gone up by more than 300% during the period from 1985-2007. When considering farm-gate and wholesale prices, Fig. 1 illustrates clearly that these prices have increased very slowly compare with nominal retail prices. This price rising up the tendency of vegetables has been confirmed by the empirical data from July 2010 to April 2011. The prices of selected vegetables have increased in the 10 month period more than 10% consider with following year same period showing ineffectiveness of government price control policy effort.

One of the most important key points is share of marketing margin out of the retail price that has been earned by middlemen at the market. MM is a variance with the nature of each vegetable. Table 1 shows that except cabbage, MMs are smaller for up-country vegetables as Rs. 4.55, 20 and 13.05, respectively for beans, carrot and leeks. The reasons behind this small MM could be higher turnover, lower ability of a perishable nature and higher demand due to change of food habits of the people. Specially, these vegetables have been highly used in fast food, restaurants and tourist

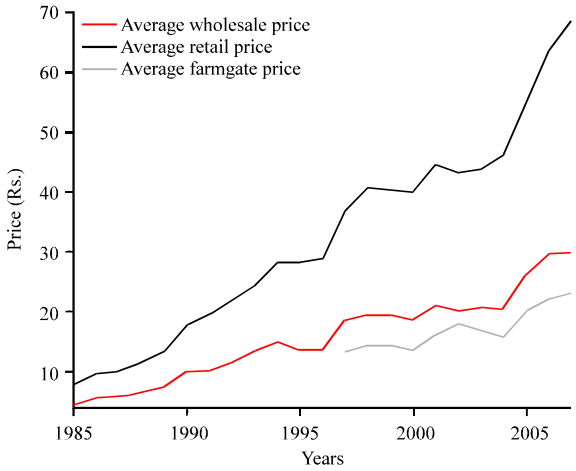

Fig. 1: Average price trends of selected vegetables from 1985-2007 (Ranathilaka and Hearth, 2011)

Table 1: Average values of selected vegetables (from July 2010 to April 2011)

Variety of vegetables	FP (Rs.)	RP (Rs.)	MKC (Rs.)	MM (Rs.)	MEI
Upcountry vegetables					
Bean	95.56	155.74	55.63	4.55	1.65
Cabbage	86.76	139.55	50.76	66.54	0.66
Carrot	68.93	130.72	48.13	20.09	1.64
Leeks	43.14	107.78	41.24	13.05	1.19
Low-country vegetables					
Long-bean	53.57	121.96	45.50	68.39	0.78
Gourd	49.22	116.71	43.93	23.57	0.71
Capsicum	118.95	225.44	68.89	37.60	1.16
Know-khol	39.19	128.42	47.43	41.79	0.43
Ladies-fingers	35.82	108.85	41.56	31.47	0.48

FP: Farm gate price, RP: Retail price, MKC: Marketing cost, MM: Net marketing margin, MEI: Market efficiency index. Field survey from July 2010 to April 2011

hotels in their daily menu. Further, up-country vegetables have been produced in hill areas in the country throughout the year under favorable weather condition. Therefore, the total disposal amount of these vegetables to the market are most probably consistent. Even though, cabbage has been used in daily menu at the above places, its MM is very high. The reasons could be identified as higher perishable nature and at resent years, cabbage has been grown in the intermediate zone in Sri Lanka. Therefore, it can be seen higher supply situation compare with other up-country vegetables were selected. MMs are very large in low-country vegetables when consider with up-country vegetables. Except capsicum, other vegetables do not use in fast food, restaurants and tourist hotels with their daily menu. In general long-bean, gourd, no-Khol, lady fingers have been used with traditional Sri Lankan dishes and homemade foods. Further, perishable nature is very high for these vegetables due to the existing handling method compared with the vegetables such as bean, leeks and carrot. Specially, due to the perishable nature of these vegetables, farmers' bargaining power is poor and they are forced to sell quickly their products under any price at the prevailing market system.

It is very clear that market efficiency index is high when MM is low (Table 1, Fig. 2, 3). According to the formulation of MEI, MM and marketing cost (MKC) both negative effects to reduce

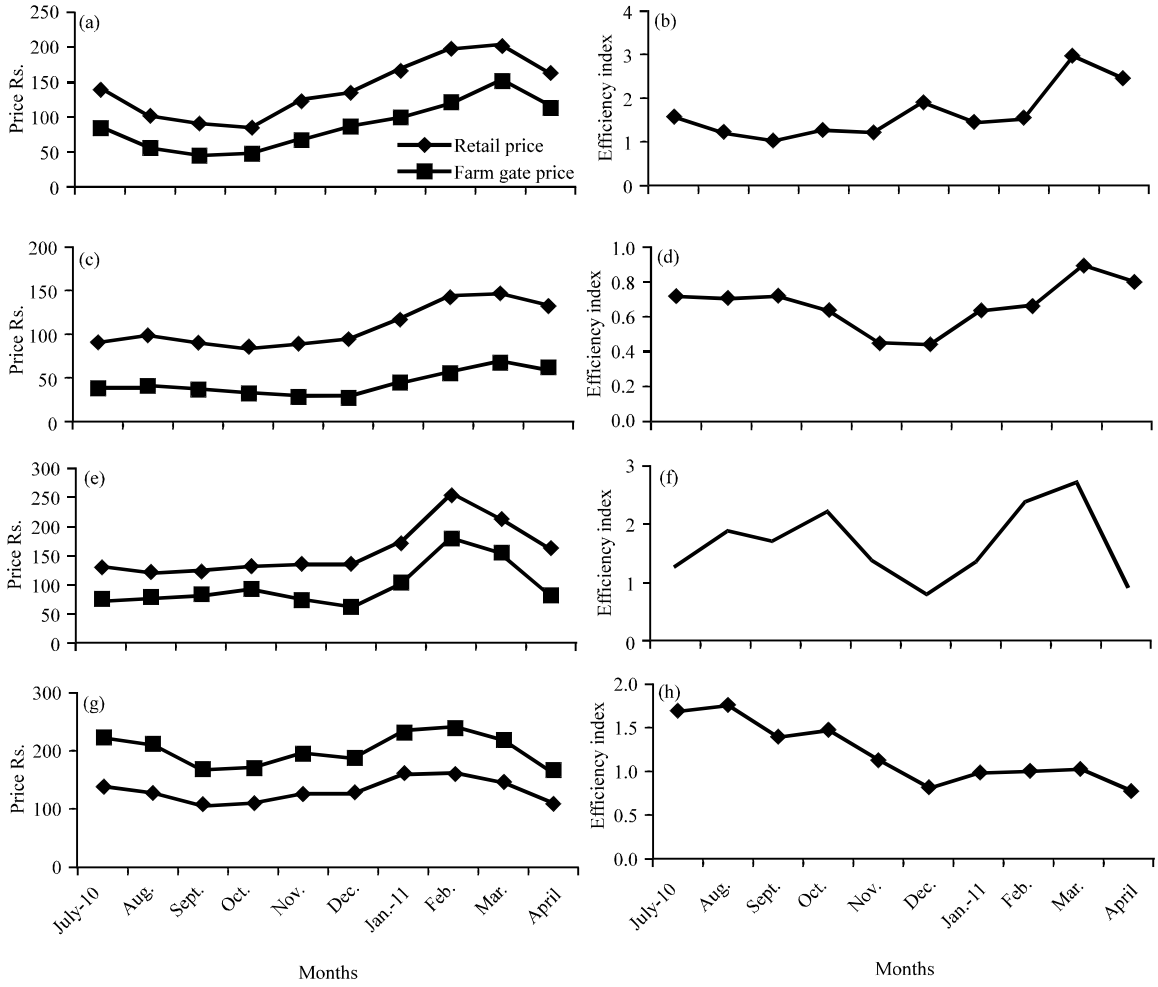

Fig. 2(a-h): Fluctuation of upcountry vegetable prices and market efficiency. Field survey from July 2010 to April 2011 (a) Monthly average price for carrot, (b) Monthly efficiency index for carrot, (c) Monthly average price for cabbage, (d) Monthly effieciency index for cabbege, (e) Monthly average price for bean, (f) Monthly efficiency index for beans, (g) Monthly average price for leeks and (h) Efficiency index for leeks

the value of market efficiency. MKC mainly depends on essential activities such as transport, packing, handling, labor charges so on and post harvest losses. Those costs can be minimized by adopting and developing the necessary technology for each activity. According to the results except two varieties of vegetables (bean and capsicum shown in Table 1) MKC is an almost similar range (Rs. 41-50). It implies that MKC does not differ with variety of vegetables. Most probably, it may affect by the hypothetical value of post harvest losses were given (30% for each vegetable). When refer the results it is clear that MM becomes a crucial factor which disturbs effective marketing function. The result depicted in Table 1, Fig. 1 and 2 shows that MEI is high for up-country vegetables (carrot, bean and leeks) and simultaneously MMs are also comparatively low those vegetables. MEI of Cabbage shows very low value consisting higher MM due to the reasons that mentioned earlier.

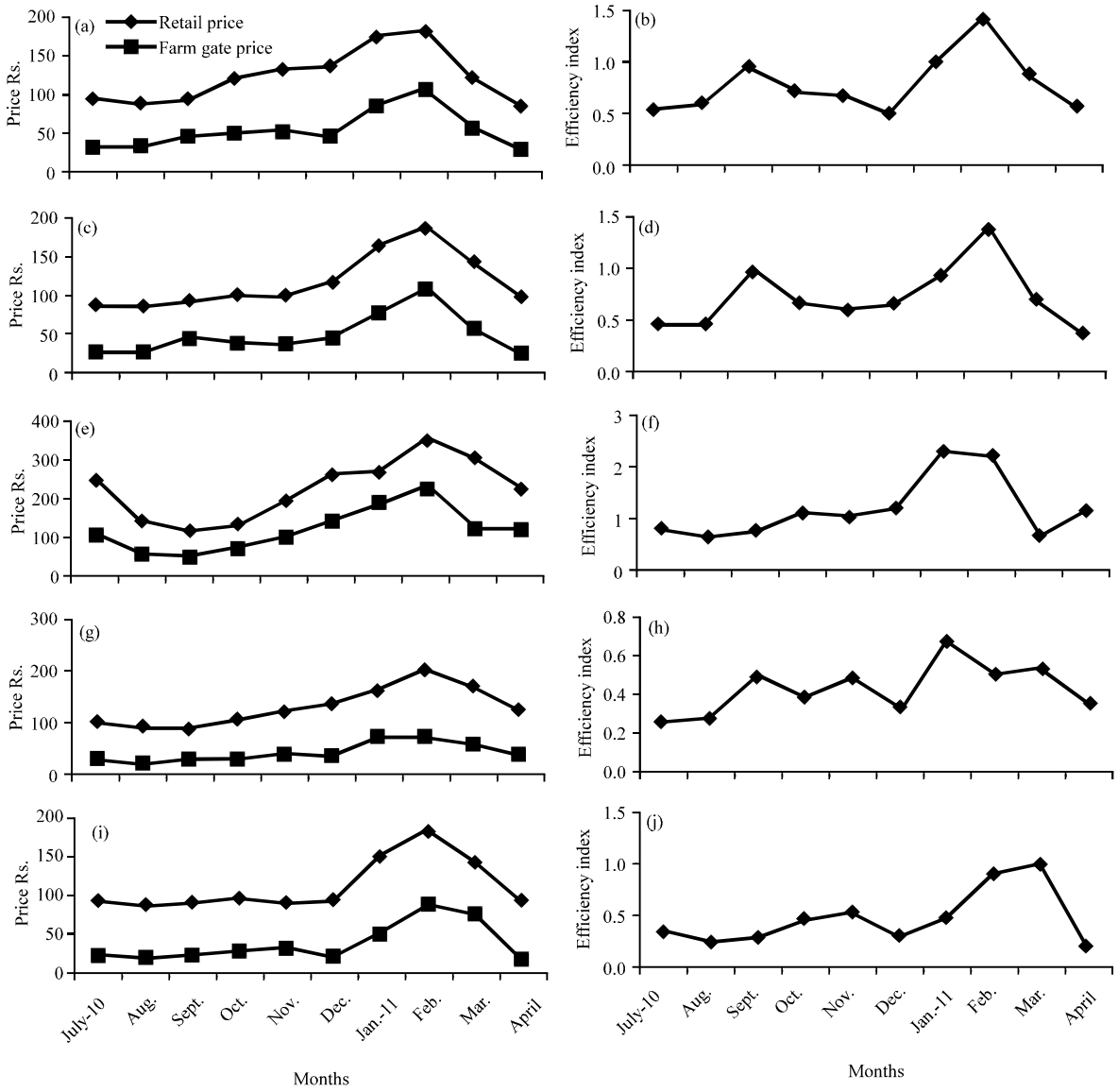

Fig. 3(a-j): Fluctuation of low-country vegetable prices and market efficiency. Field survey from July 2010 to April 2011 (a) Monthly average price for long-bean, (b) Monthly efficiency index for long-bean, (c) Monthly average price for gourd, (d) Monthly efficiency index for gourd, (e) Monthly average price for capsicum, (f) Monthly efficiency index for capsicum, (g) Monthly average price for Kno-khol, (h) Monthly efficiency index for Kno-khol, (i) Monthly average price for ladies fingers and (j) Monthly efficiency index for ladies fingers

When considering low-country vegetables except capsicum, all other vegetable's MEI value is considerably low. MEI of kno-khol and ladies-fingers were worse than any other vegetables which considered in this study as shown by Fig. 3h and j (less than 0.5). According to market sources, the post harvest losses of these booths are high due to quick perishable and ripe nature. Therefore, traders keep large market margins for such kinds of vegetables to avoid from losses. Further, results

show that parallel with MEI, MMs were high among low-country vegetables compared with up-country vegetables. These results conclude that higher MM always negatively affects to an efficient marketing system or numbers of marketing agents from farm gate to ultimate consumer have been the most important factor to determine effective marketing system. Further, results imply that the market margin control policy efforts have been taken by government are not effective.

In this context, the important question is that whether farmers have bargaining power at every stage in the agricultural market in Sri Lanka? Bargaining power of merchants and farmers may significantly determine the MM. Bogahawatte (1986) and Gunawardena (1992) identified that prevailing market price in the urban market did not reach to farmers due to poor bargaining power of them. Another important factor is cartel behavior of middlemen within the farm-gate and wholesale markets as well as wholesale and retail markets. Ranathilaka and Herath (2011) have shown the middleman involvement in vegetable market is very high which leads to inefficient market. Therefore, policy makers have to consider the ways to reduce unnecessary middleman involvement to develop an effective marketing system which provides higher benefit to farmers and consumers.

Another important factor is infrastructural facilities. Infrastructure development provides two types of benefits to the farmers. If infrastructure development is carried out on a labor basis, it is employment creating and it also provides indirect benefits such as roads that make delivery of inputs and access to the market easier, especially, communication that provide pricing and other information (D'Silve and Bysouth, 1994). In this regards government has implemented various programs and built up many marketing facilities in following three decades such as wholesale markets, roads and information systems and so on. For example, numbers of wholesale markets were emerged in main agricultural producing areas. However, this result of agricultural marketing behavior evidence that there is no any positive effect of these markets to farmers as well as consumers. In addition, storage and processing also have an important role to play within the context of counter seasonal strategies. The processing of fruits and vegetables could help to avoid a fall in the producer-price during a harvesting season (Ratnasiri, 1994). As well known, processing of agricultural commodities is very primitive stage in Sri Lanka. Therefore, without proper processing, cleaning, sorting, packing and handling system in agricultural sector between 30-40% of product destroys as post harvest losses (HARTI, 2005). Research results very clearly prove that MKC (Marketing cost) mainly depends on those factors specially post harvest losses. In this context, it is an urgent need to introduce suitable and practical techniques to reduce post harvest losses which control MKC and improve marketing efficiency.

CONCLUSION

Study results show that the retail price of the vegetables has drastically increased during the last few decades. Mainly this occurs due to higher marketing margin. However, the share of the middlemen or marketing margin that the difference between farm-gate price and retail price, has been increased getting influence with the nature of each vegetable.

Study results very clearly prove that MKC mainly depends on post harvest losses. In this context, it is an urgent need to introduce suitable and practical techniques to reduce post harvest losses which control MKC and improve marketing efficiency. Even though marketing cost represents a very large proportion from total cost it can be minimized by adopting and developing the necessary technology for each activity.

SOME POLICY RECOMMENDATIONS

The government should fulfill short term, medium term and long term policy responses to narrow MM and MKC and improve marketing efficiency in the vegetable market. In short term policies, government intervention is most important for upstream and downstream operations (William, 2002) but according to theoretical literature (Ellis, 1992) and many empirical research work (Hayami and Ruttan, 1991; Bates, 1981) it is considered as an adverse decision, because it interrupts the free market mechanism generating deadweight efficiency losses on behalf of efficiency of social welfare under the free market mechanism. However, efficient and strong government market regulation and personal mechanism which control the middlemen activities of law and order under the market regulation, would be necessary.

In medium term policies, it should be considered to reduce the pressure of middlemen. Many research on agricultural market concluded that there has been considerable anticompetitive activities in a perishable agricultural commodity market in Sri Lanka (Gunawardena, 1992; Jayawardena, 1997). This environment continues due to weak situations of farmer community such as the small marketable volumes, the perishability of the products, non-availability of production and marketing credit, non-availability of transport, lack of information, low bargaining power due to lack of farmer organization, lack of adequate storage, etc. Therefore, agricultural commodity market has been manipulated by middlemen and large-scale traders. To prevent this situation the most convenient way is to implement infrastructure development activities by using government as well as private capital (William, 2002). Development of infrastructure leads to improve competitiveness and reduce the number of middlemen or their profit margin in the market. Dayaratna-Banda *et al.* (2008) has suggested that the private sector should be promoted by government assistance to develop the marketing infrastructure of the private marketing system encouraging widespread wholesale and retail markets and trading facilities. Further, they argued that the low cost will improve marketing efficiency and reduce the number of middlemen than government policy imposes to correct market signals.

As an alternative to break up an unnecessary number of the middlemen, small farmers may be transformed into group-marketing. Compared to small-scale individual marketing group or cooperative approach the scare factors of skilled management and capital is spreading over large output. It also reduces the risk and market disparities. However, according to past experience existing cooperative system has not worked to provide sufficient benefit to the farmer community as expected (Ranathilaka and Yoshiharu, 2007). Therefore, this movement should be reorganized and reintroduced more efficiently and farmer beneficiary activities to provide expected service to member farmers.

In this regard, it is important to refer to the Japanese system for agricultural infrastructure development and marketing. Under the Japanese Agriculture cooperative (JA), it has been developed infrastructure for perishable agricultural products under the central government and local government assistance. Degree of sorting, cleaning, packing, transporting and storing are done by JA for its members. Further, JA are working hard to uplift farmers bargain power through the group marketing and avoid unnecessary middlemen from the process. This system provides benefits not only to farmer community but also to consumers because it provides low price, quality and fresh agricultural commodities to consumers regularly.

In the long run it should develop research and development (R and D) in perishable agricultural commodity sector. At present Colombo Municipal disposes 11 metric tons of perishing fruits and vegetables per day (IPHT, 2002). R and D with regards to reducing post harvest losses

are most important because it will increase and create a marketable surplus and save a significant amount of food for the nation. Further, R and D is important to reduce losses, in maintaining the quality of products and nutritional components of perishable agricultural commodities. It will lead not only to increase farmer's income from the existing harvest but also to maintain health of the entire population of the country. Therefore, suitable handling techniques, proper packaging, transportation, adequate storage facilities and processing activities should be introduced. Specially, value added activities are most important for perishable agricultural commodities because it will lead to reduce post harvest losses (William, 2002). Further, this process improves employment opportunities and develops consumption habits of the consumers.

REFERENCES

Acharya, S.S., 1998. Vegetable Production Marketing and Price Policy in India. Mital Publications, New Delhi.

Bambang, I., 2007. Price fluctuation, price transmission and marketing margin of vegetables and fruits. Agric. Policy Anal., 15: 485-489.

Bates, R.H., 1981. Markets and States in Tropical Africa: The Political Basis of Agricultural Policies. 2nd Edn., University of California Press, USA., ISBN-13: 9780520931961, Pages: 195.

Bogahawatte, C., 1986. Marketing of vegetable in the Nuwara-Eliya district of Sri Lanka: Some empirical Findings. Sri Lanka J. Agric. Sci., 25: 1-13.

Bowbrick, P., 1976. Market margin investigations and price control of fruit and vegetables. Irish J. Agric. Econ. Rural Soc., 6: 9-20.

CBSL, 2008. Central bank annual report 2008. Central Bank of Sri Lanka, Colombo, Sri Lanka.

CBSL, 2009. Central bank annual report 2009. Central Bank of Sri Lanka, Colombo, Sri Lanka.

CBSL, 2010. Central bank annual report 2010. Central Bank of Sri Lanka, Colombo, Sri Lanka.

CBSL, 2011. Central bank annual report 2011. Central Bank of Sri Lanka, Colombo, Sri Lanka.

D'Silve, E. and K. Bysouth, 1994. Poverty Alleviation through Agricultural Project. World Bank, Washington, DC., USA.

DA, 2011. Agricultural statistics. Government of Sri Lanka, Colombo, Sri Lanka.

DCS, 2013. Food price and inflation statistics. Department of Census and Statistics, Government of Sri Lanka, Colombo, Sri Lanka.

Dayaratna-Banda, O.G., J.M.A. Jayawickrama and M.B. Ranathilaka, 2008. Sense and nonsense of rice price control in Sri Lanka. Peradeniya J. Econ., 2: 60-87.

De Silva, H., 2008. Implementation of an e-trading system for Sri Lankan farmers. Proceedings of the 23rd National IT Conference, September 23-26, 2008, Colombo, Sri Lanka.

Ellis, F., 1992. Agricultural Policies in Developing Countries. Cambridge University Press, Cambridge, UK.

Gunawardana, P.J. and A. Chandrasiri, 1980. Factors Influencing Vegetable Prices: A Study of the Vegetable Economy in Sri Lanka. ARTI, Colombo, Pages: 181.

Gunawardena, I.M., 1992. A Case Study of a Successful Agricultural Development Project. ESCAP, New York, pp: 28146-28157.

HARTI, 2005. A study on marketing on selected fruits in Sri Lanka. Hector Kobbekaduwa Agrarian Research and Training Institute, Wijerama Mawatha, Colombo, Sri Lanka.

HIES, 2010. Household income and expenditure survey final report. Department of Census and Statistics, Sri Lanka.

Hayami, Y. and V.W. Ruttan, 1991. Agricultural Development and International Perspective. The Johns Hopkins University Press, London, pp: 383-388.

IPHT, 2002. Institute of post harvesting technology annual report. Research and Development Center, Colombo, Sri Lanka.

Jayawardena, S.S.B.D.G., 1997. Status of the fruit and vegetables sector. Economic Review 1997, People's Bank, Sri Lanka.

Mahaliyanaarachchi, R.P., 2004. Assessing information and communication needs of vegetable growers in Sri Lanka. Sabaragamuwa Univ. J., 4: 34-44.

Ranathilaka, M.B. and H.M.W.A. Herath, 2011. Agriculture Marketing under the Market Economy Regime. In: Economic and Social Development under a Market Economy Regime in Sri Lanka. Kelegama, S. and D. Gunewardena (Eds.). Vol. 2, Vijitha Yapa Publications, Colombo, pp: 252-267.

Ranathilaka, M.B. and S. Yoshiharu, 2007. Alternative farmer organization on rural agricultural development in Sri Lanka: A Comparative Study of Multipurpose Cooperatives and Farmer's Cooperatives in Kurunegala District. Rev. Agric. Econ., 58: 103-115.

Ranathilaka, M.B., 2008. Subsistence agriculture sector: Government policy. Performance and future challenges in Sri Lanka economy: Liberalization and development, 2008. Publication of Sri Lanka Pathfinder Foundation, Colombo.

Ratnasiri, S.H.P.G., 1994. Challenges and issues relating to the marketing of the non-plantation agricultural products in Sri Lanka. Staff Stud. Central Bank Sri Lanka, 24: 77-111.

Samarakoon, S.M.A.K., 2008. Empirical study of vegetable marketing channels in small and medium size farmers in Sri Lanka. M.Sc. Thesis, Faculty of Management and Economics, Tomas, Bata University in Zlin, Czech Republic

Verma, A., S. Kumar and P.M. Singh, 2002. Marketing and Export of Fresh Vegetables. Agricultural Marketing, India, pp: 18-21.

Vidanapathirana, R.P., 2008. Marketing margins of the domestic vegetable trade in Sri Lanka. Sri Lanka J. Agrarian Stud., 12: 36-60.

WBG, 2003. Sri Lanka: Promoting Agricultural Rural Non-Farm Sector Growth, Vol. I and II, World Bank, Washington, DC., USA..

William, L., 2002. Change in agricultural markets in transition economies. Agricultural Economic Report No. 806, Washington, DC., USA.