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STATUS OF THE MAJOR DOMESTIC VALUE CHAINS FOR FRESH VEGETABLES IN SRI LANKA

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ABSTRACT

The area planted of vegetables in Sri Lanka is 82,000 ha in year 2007 which has given a total production of 453,000 metric tons. Almost the whole production apart from the 30- 40 % wastage due to post harvest losses is used to meet the local demand while only approximately 1% is exported. Yet the Per capita consumption of vegetables lies far below the recommended level. The recommended daily intake of vegetables is at least 200g, but an average Sri Lankan consumes only about 94g per day proving the fact that vegetable sub-sector in Sri Lanka is not well developed compared to the food grain (cereal) sub-sector, although there is huge potential for Sri Lanka to achieve a significant economic growth through expansion and sustainable development of the vegetable sub-sector. The major existing domestic vegetable value chains in Sri Lanka were studied in relation to linkages among the value chain actors and the prevalent value chain governance structure. A comprehensive survey was conducted with a total of 120 value chain actors of five different levels i.e. production, assembling, wholesale trade, retailing and consumption. Structured questionnaires were used to gather data from the respondents at each level and the surveys were supplemented by discussions with important stakeholders. Vertical flow of information along the value chains was found to be weak as revealed by the study. Levels of retailing and assembling were identified as the critical points where the flow of information along the value chains for fresh vegetables is disrupted. An Arm`s length type of governance structure was predominantly prevailing at all levels of the value chain in both countries although a quasi hierarchical type of governance structure could also be noticed in some levels to a certain degree.

KEY WORDS: Value chain, linkages, governance structure and competitiveness

INTRODUCTION

Economic growth with poverty reduction can be achieved by developing the industries employing large numbers of the poor in such a way those industries are made more competitive and the broad distribution of benefits at all levels of the industries are ensured (Kula *et al.*, 2006). The vegetable sub- sector of Sri Lanka which provides livelihood to a large proportion of the country's poor has much potential to contribute to increase the level of national income, export revenue, generate new employment opportunities, increase farm income and enhance the nutrition and health of the people (Ceylon Chamber of Commerce, 2011). Thus it is apparent that development of the vegetable sub-sector by lifting the efficiency of domestic

fresh vegetable value chains will not only bring about significant economic growth leading to sustained alleviation of poverty, but will also enhance food security by widening the access to a balanced diet with proteins, vitamins and fibers from fresh vegetables to complement a predominantly carbohydrates diet throughout the year by the public.

Agriculture has been a very significant sector of the Sri Lanka's economy. The current share of the agriculture to country's overall GDP is 12%. Agricultural labour force of the country accounts for more than 40% of the total labour force. The agriculture sector provides most of the country's food requirement and other raw material for agriculture based industries. Sri Lankan agriculture is dominated by Smallholders as in any other South Asian country.

Vegetable cultivation in Sri Lanka is generally a small holding operation where the majority of the holdings are less than 0.5 ha in extent. The Entire local demand for the vegetables is met through local production while only a negligible share of vegetables are imported to meet the special demands of niche markets. (Dissanayaka and Ravichandran, 2005). According to FAO (2009), the area harvested of vegetables was 82,000 ha in year 2007 which has given a total production of 453,000 mt. Almost the whole production is used to meet the local demand while only approximately 1% is exported (FAO, 2004; Central Bank of Sri Lanka, 2003).

The recommended daily intake of vegetables is at least 200g according to the Medical Research Institute (MRI) recommendations, but an average Sri Lankan consumes only about 94g per day, which is far below the recommended level (Ceylon Chamber of Commerce, 2011). This finding shows the highly felt need and the potential to expand the production of vegetables to meet the domestic demand. According to Dissanayaka and Ravichandran (2005), the post harvest losses of vegetables in Sri Lanka ranges from 30-40%. This has greatly hindered the overall growth of the vegetable industry in Sri Lanka adding considerable losses not only to the farmers, but also to other actors of the vegetable value chain who share the risk created primarily by the highly perishable nature of vegetables.

The domestic value chain for fresh vegetables in Sri Lanka involves many actors. According to Dissanayaka and Ravichandran (2005), the primary stakeholders are the Grower, collectors, transporters, wholesalers/commission agents and consumers. Poor availability and access to agricultural marketing information and quality extension services and poor or missing vertical and horizontal linkages in the value chain can be critical factors that hinder the well performance of the vegetable value chains in Sri Lanka. Information accumulated within the higher levels of the value chain has to be communicated along the value chain especially to the bottom level represented

by growers (Jost *et al.*, 2004). However information asymmetries can be widely identified along the domestic value chains for fresh vegetables in Sri Lanka due to poor linkages among the stakeholders, although many actors in the value chain are important sources of information. This has driven the market functions towards a greater inefficiency. The desired competitiveness cannot be achieved as individual firms if the buyers and suppliers functioning at different nodes of the value chain do not achieve the necessary competitiveness (Halder, 2002), so it is apparent that any industry can only be successful on local/international market if the actors functioning in different nodes of the value chain are able to achieve the same stage of competitiveness which is best facilitated through strong vertical and horizontal linkages and an effective system of information sharing along the value chain.

This study analyzed the major existing domestic vegetable value chains in Sri Lanka in relation to linkages among the value chain actors and the prevalent value chain governance structure aiming at power relations and strength of vertical linkages in the value chains and their impacts on the value chain performance.

METHODOLOGY

The primary stakeholders representing various levels of the major domestic value chains for fresh vegetables in Sri Lanka were considered as the population of this research. This include small holder vegetable growers at the production level, collectors and/or other middlemen at the level of assembling, wholesalers and commission agents at the level of wholesale trade, the retailers at the level of retailing and the final consumers representing the consumption level.

The samples of respondents of the value chain were selected from two representative production districts that maintain the highest level of vegetable production and assembling in the low country (Anuradhapura) and up country (Nuwara-eliya). Study areas were selected through judgmental sampling, considering the annual production of vegetables, the diversity and availability of marketing systems and geographic and demographic factors. Respondents at each value chain level were selected randomly to increase the accuracy of the data obtained.. Two additional sample sets of consumers were drawn from the two other districts that have the highest population and highest rate of consumption in each geographic unit (Low country; Colombo, up country; Kandy). The samples for the level of wholesale trade were selected from four large wholesale markets in four districts of the country. The two largest wholesale markets in each of the above two production districts (Thambuththegama DEC in Anuradhapura and Kappetipola DEC in Nuwara-eliya) and the largest wholesale market in the district marked for the highest population in the country ((Manning wholesale market in Colombo) and the

largest wholesale market of Sri Lanka (Dambulla DEC) were selected to allocate samples for the level of wholesale trade in the value chain for fresh vegetables with the intention of increasing the representativeness of the sample.

The "survey" research design was selected to gather both quantitative and qualitative data. Primary data were collected through a cross-sectional questionnaire survey with a total of 120 respondents representing different levels of the domestic fresh vegetable value chains in Sri Lanka (Table 1), informal interviews, key informant discussions and the researchers' own observations were made to supplement the survey data. Five different sets of structured questionnaires were developed for each of the five levels of the value chain.

Table 1. Distribution of survey respondents

Level	*Area/Market*	*Sample size*
Production	Anuradhapura	15
	Nuwara-eliya	15
Assembling	Anuradhapura	5
	Nuwara-eliya	5
Wholesale trade	Thambuthegama Dedicated Economic Centre	5
	Kappetipola Dedicated Economic Centre	5
	Dambulla Dedicated Economic Centre	5
	Manning wholesale market	5
Retailing	Anuradhapura	5
	Nuwara-eliya	5
	Mathale	5
	Colombo	5
Consumption	Anuradhapura	10
	Nuwara-eliya	10
	Kandy	10
	Colombo	10

RESULTS AND DISCUSSION

According to Dassanayaka and Ravichandran (2005); Mahaliyanarachchi, R.P. (2005), the marketing channel of vegetables in Sri Lanka has faced a significant change with the establishment of regional

wholesale markets. Twenty five years ago, vegetables from all over the country were mainly supplied to Manning Market (Colombo wholesale market) from where they were distributed throughout the country, but this system has been largely changed by the regional wholesale markets. Nowadays the vegetables are directly supplied to the regional wholesale markets spread all over the country from where the vegetables are directly supplied to consuming areas.

There are two types of linkages exist among the primary stakeholders of the major domestic value chains for fresh vegetables in Sri Lanka. They are the vertical and horizontal linkages which facilitate the flow of products (fresh vegetables) and other intangible assets such as information, knowledge and power relations vertically along the value chain as well as among the actors at the same level. Vertical linkages are meant to be the linkages between actors at different levels of the value chain that are critical for moving a product or service to the end market. Figure 1 shows the flow of products along the domestic value chain for fresh vegetables in Sri Lanka. The arrows with a mosaic design shows the major supply chain that combines the major types of actors predominantly responsible in bringing vegetables from the farmer's field to the hand of the final consumer.

Value chain governance refers to the power based relationships among the value chain actors. The value chain governance is influential in making value chains competitive as it can increase the efficiency through the effective generation, transfer and diffusion of knowledge and information that provides incentives to value chain upgrading. Linkages and governance are interrelated as governance can occur between two firms which are linked as a result of product and /or information flow between the two firms where one firm tries exerting control over the other firm.

Type of Interaction

It is obvious that the strength of vertical linkages are high if the actors at different levels of the value chain meet each other directly in market transactions rather than through intermediaries who could be merely paid employees of the firm. The possibility of exchange of information related to production and marketing aspects is higher if the actors at different levels meet each other directly at least in buying and/or selling of vegetables which is the most basic function that every primary stakeholder of the value chain perform in common. Above 80 percent of the sample respondents at every level stated that they meet their buyers and/or sellers directly (Table 2). According to the information received through key informant interviews, the reason for the absence of some of the wholesale traders in business activities was that they were engaging in other businesses to which they spend more time.

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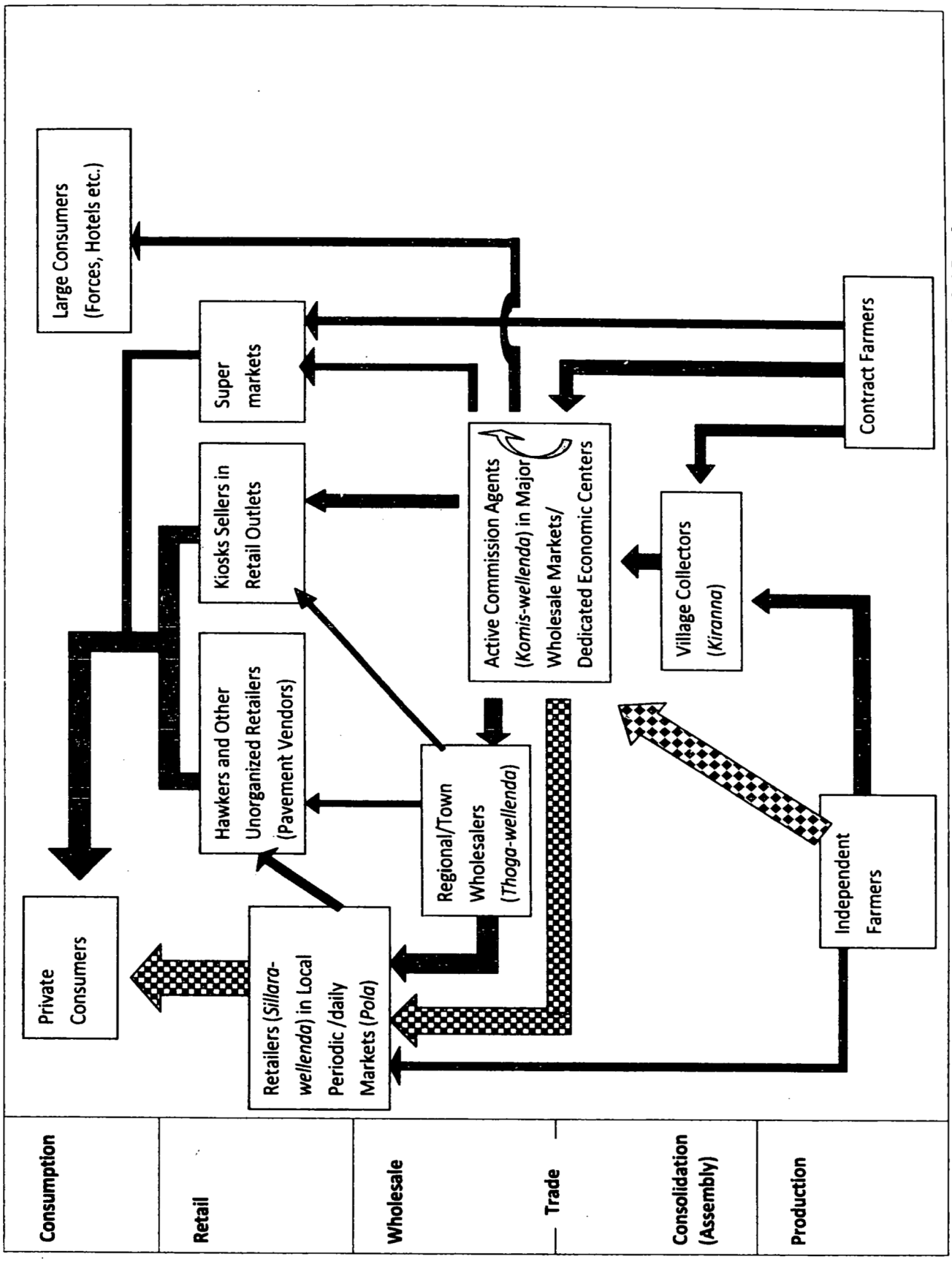

Figure 1. Flow of products along the domestic value chain for fresh vegetables in Sri Lanka

Table 2. Type of interaction with the buyers and sellers

Value chain actor	*Buyers (%)*		*Sellers (%)*	
	Directly	*Through an intermediary*	*Directly*	*Through an intermediary*
Retailers	100	0	100	0
Wholesale Traders	95	5	90	10
Collectors	100	0	80	20
Farmers	100	0	-	-

As shown in table 2, the respondents at every level except the retailers maintained more direct contacts with the buyers than with the sellers. This may reveal the relative importance given to buyers by the value chain actors at the marketing levels from whom the value chain actors receive visible gains compared to the suppliers in the value chain who basically provide them with means to earn profits which is not much visible in the short run.

Sharing of Information

Although many value chain actors meet the other value chain actors in the immediate value chain levels directly, the level of sharing information was not satisfactory according to the respondents' perception. The status of sharing information among the value chain actors is shown in Figure 2. According to the responses (Figure 2), more than 50% of the respondents at each value chain level stated that they do not or hardly exchange information related to marketing aspects. This reveals that many value chain actors at both production and marketing levels do not receive information necessary to perform well. Except the wholesalers, less than 40 % of the respondents of both retailers and collectors claimed to exchange information frequently or sometimes. Thus the level of retailing and assembling of vegetables may be the most critical points where the flow of information along the value chains for fresh vegetables are disrupted. However, since many vegetable growers bring their harvest directly to the terminal wholesale markets bypassing collectors, the flow of information may not be greatly blocked at the level of collectors whose participation is very low in the current domestic value chain for fresh vegetables in Sri Lanka.

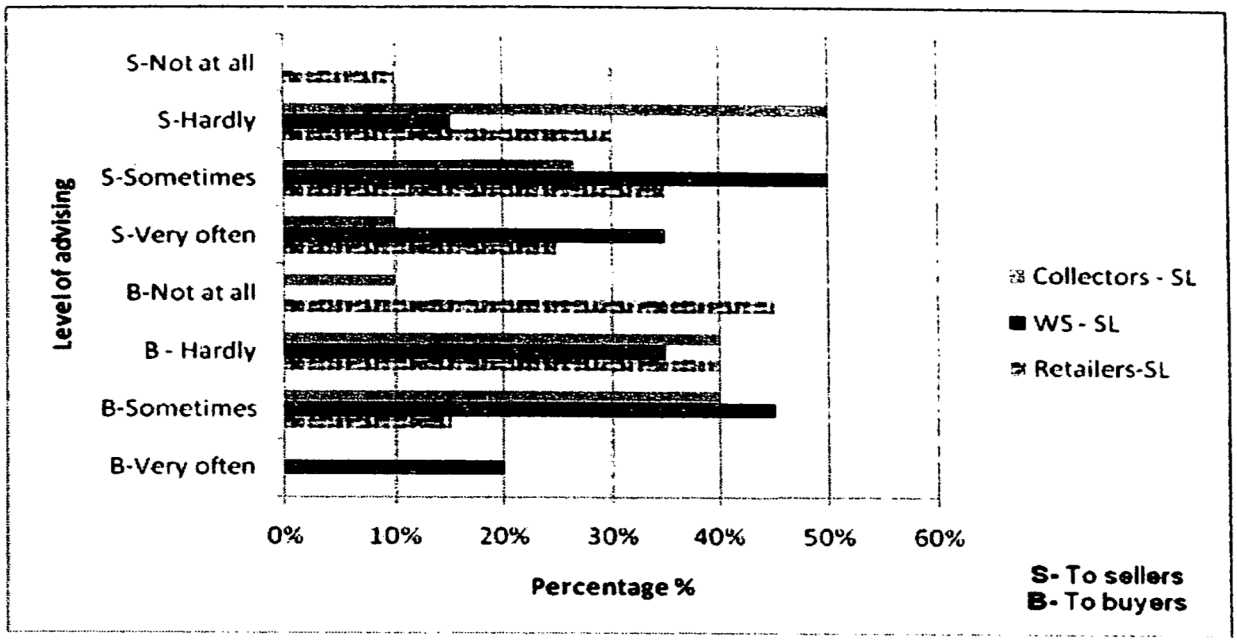

Figure 2. Level of sharing information with the immediate value chain actors

Formality of the relationships

Almost all the respondents at each of the five levels of the value chain, except the respondents at the level of consumption stated that they merely have verbal agreement with their respective buyers and sellers. Except 5 % of the wholesale traders responded, who stated that they were legally bound to supply vegetables to some big buyers, all the other respondents at every value chain level did not have any formal contract which could make them legally affiliated to certain buyers or sellers who could exert formal control on them (Table 3). Many terminal wholesale traders stated that they have their own contract (informal) farmers as well as majority of other collectors, terminal wholesale traders and retailers responded indicating that they have fixed buyers and/or sellers , none of these catagories seems to use formal methods to keep their suppliers and buyers bound to them, but rather faith and incentive based methods to make their suppliers and buyers loyal to them.

Table 3. Nature of the relationship with buyers and sellers – formality

Value chain actor	*Buyers (%)*		*Sellers (%)*	
	Verbal agreement	*Formal contract*	*Verbal agreement*	*Formal contract*
Retailers	100	0	100	0
Wholesale Traders	95	5	100	0
Collectors	100	0	100	0
Farmers	100	0	-	-

Distribution of Power

Most of the survey respondents at every level stated that they share equal rights with their buyers and /or sellers in determining price and setting other standards related to market transactions (Table 4). About 35% of the respondents at the level of retailers stated that they do not share equal rights with their sellers as the sellers dictate the terms (Table 4). However the Majority (over 85%) of the actors at each level of the respective value chains for fresh vegetables share equal rights with the sellers whereas maintaining an equal right relationship by the same actors is not that high with buyers except the sample retailers who had a different view as mentioned earlier.

Thus it is made clear that terminal wholesale traders who are the predominant suppliers to the retailers exert some control over them especially in setting the prices. This can be due to the higher level of education and experience of the wholesale traders at the terminal wholesale markets compared to other actors operating in other functional value chain levels.

Table 4. Nature of the relationship with buyers and sellers – distribution of power

Value chain actor	*Buyers (%)*		*Sellers (%)*	
	Share equal rights	*Buyer dictates the terms*	*Share equal rights*	*Seller dictates the terms*
Retailers	95.0	5.0	65	35
Wholesale Traders	70.0	30.0	85	15
Collectors	90.0	10.0	100	0
Farmers	56.7	43.3	-	-

Degree of Integration

As shown in Table 5, majority of the value chain actors at all the value chain functional levels stated that they are not bound to sellers or buyers, but can find their sellers and/or buyers on their own. This again indicates the existence of a governance structure where the farmer or the supplier just supplies the vegetables according to their will whereas the buyer purchases that supplied vegetables according to his/her will. As interpreted by Humphrey and Schmitz (2002), this type of governance structure is anarm's length market relation that exists in many value chains. Humphrey and Schmitz (2002) further stated that, in value chains where this type of governance structure operates, the process and product upgrading tend to be slower, but the road to functional upgrading is more open. Thus, this loose governance structure prevailing in the major domestic value chains for fresh vegetables in Sri Lanka seems to be a major reason that has hindered the competitiveness at every value chain level while opening a path that could pave the way to functional upgrading under developmental interventions. However in some

value chain levels as revealed by the study, the existence of a governance structure similar to the quasi-hierarchical type of governance structure that facilitate fast process and product upgrading could be noticed. The respondents from the terminal wholesale markets who appeared to exert some control over their buyers and sellers in setting marketing terms including price seems to have created a governance structure ranging from arm`s length market relation to quasi-hierarchical type where the degree of exercising power varies depending on the situation.

Table 5. Nature of the relationship with buyers and sellers - degree of integration

Value chain actor	*Buyers (%)*		*Sellers (%)*	
	Bound to the buyer	*Not bound to the buyer*	*Bound to the seller*	*Not bound to the seller*
Retailers	0.0	100.0	0	100
Wholesale Traders	10.0	90.0	0	100
Collectors	30.0	70.0	10	90
Farmers	16.7	83.3	-	-

CONCLUSION

The strength of vertical linkages among the value chain actors of the domestic value chain for fresh vegetables in Sri Lanka is weak, although the horizontal linkages among the actors at the same level were much stronger. This study reveals that vertical flow of information along the value chain is poor as more than 50 percent of the sample respondents claimed that they do not or hardly share information related to production and marketing of vegetables with their buyers or sellers although many of them maintained direct contacts with the buyers or sellers who could also be considered as their immediate value chain actors. Almost all the value chain actors of all the five value chain levels maintained informal verbal agreements with their buyers or sellers except five percent of the wholesale traders who claimed to maintain formal agreements with their buyers. A vast Majority of the sample respondents in all value chain levels stated that they were not bound to their buyers or sellers under conditions proving the fact that an Arm`s length type of governance structure was predominantly prevailing at all levels of the value chain although a quasi- hierarchical type of governance structure could also be noticed in some levels to a certain degree. Especially the wholesale traders at terminal wholesale markets had exerted some control over their sellers through informal agreements as well using the advantages they had over other value chain actors (buyers and sellers) in level of education, availability of infrastructure and information.

In order to facilitate marketing decisions, regulate the competitive market processes, and lubricate the marketing machinery of vegetable industry in Sri Lanka, it is essential to strengthen the linkages along the value chains

for fresh vegetables in such a way that the value chain actors can efficiently exchange information necessary for them to act competitively in the market. Strengthening the preferred sources of information by the value chain actors at different value chain levels could be very effective in disseminating information necessary to make better production and marketing decisions. In this regard, improving the quality and timeliness of information received from the preferred sources such as input suppliers and fellow actors in the chain could contribute to value chain upgrading instead of focusing only on the formal public information disseminating mechanisms (e.g. national agricultural extension services). However, the government intervention at supervisory capacity may be required to ensure that receivers of information would not be misled or exploited by such sources. Advanced studies on vegetable value chains and value chain development work at domestic level should be as a strategy to achieve sustained alleviation of poverty and to ensure food security.

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