

**Mechanics and Prospects of Groundnut
Value Chain in Mullaitivu District,
Sri Lanka**

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Sri Lanka Journal of
Economic Research
Volume 8(1) December 2020
SLJER 08.01.04: pp. 79-100
Sri Lanka Forum of
University Economists

DOI: <http://doi.org/10.4038/sljer.v8i1.125>



Abstract

Understanding the dynamics of food value chains is pivotal to enhance its efficiencies. Groundnut was opted as the reference crop. The study was administered as value chain analysis. Gross Margin (GM) and Index of Marketing Efficiency (MEI) were determined. Mullaitivu district was selected as the research site with a sample of 56. Farmers recorded the highest GM (40.34%) and their interest in further profit in means of investment and expansion was less. Three channels were identified. The highest MEI (0.94) was recorded for 'Channel 3'. 'Channel 2' indicates the lowest figure for the MEI (0.23). The key value addition spot in the whole value chain is the Colombo-based wholesalers.

Keywords: *Channel Mechanism, Groundnut, Market Efficiency, Performances, Value Chain Analysis*

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INTRODUCTION

Increasing world demand for food creates an intensified stress within the agriculture sectors all around the world. With novel technology and globalization, food value chains are becoming more and more complex. This leads to a global web of food value chains and emergence of ample opportunities for primary producers to expand and diversify their ventures (Attaie & Fourcadet, 2003). Furthermore, the agri-food supply chain stands out from the general supply chain (e.g. furniture *etc.*), due to its unique association with certain attributes such as food safety, quality standards, freshness of the food *etc.* making the food supply chain more complicated (La Scalia et al., 2016). However, studying and analysis of food value chains is important to create stronger agribusinesses which cater diversified consumer segments. Value chain analysis has been employed to examine and evaluate entire industries and industry clusters, as well as specific systems within firms (Zamora, 2016). Value addition is identified in each node in the value chain to mitigate inefficiencies and to add more value to the customer. This has been the central objective of any value chain.

Moving onto the big picture, notwithstanding the consideration that agriculture has been a primary economic sector in Sri Lanka for centuries; the ground reality is not in favour. “Has Sri Lanka achieved its full potential for agriculture yet?” is a question that remains without a precise answer for decades. The Central Bank of Sri Lanka (2019) states agriculture was accountable for 7% sectorial contribution to Gross Domestic Production (GDP) within the year 2018 and stands in the third position. It is an utterly aware fact that the mismatch that happens between supply and demand for food crops results in pronounced imports from foreign countries. This so-called “state-of-affairs” comes to light, due to several loopholes, including the matter of not having a sound pricing mechanism within the value chain. Hence, in essence of the fact that food crop production is consolidated on the farmer, it is essential to suggest and implement a sustainable marketing approach that is in direction of the benefit of farmers. For a fact, wrongful readings of price signals, *i.e.* less access to market information, also discourage the farmers in further cultivation. Incompetence prevailing in pricing mechanisms adversely exert influence on smallholder farmers. Moreover, the youth force in the country moves away from farming due to high risk and low profitability. One the other hand, the younger generation is reluctant to work in the sector as they are always searching for better opportunities outside the farming sector. Further, farmers themselves dislike their children to be engaged in farming. Poverty in rural areas also contributed to increased migration from the agricultural sector. “Farm gate Price”, or known as “Producers’ Price”, is the decisive, yet ignored factor that drives the whole economics aspect regarding the agriculture sector. It is also a macroeconomic matter that induces for adoption of technology or great investments. Also, the excessive gap between farm gate price and retail price cause no benefit to either farmer or end-consumer (Sandika, 2012).

In the past, several actions had been implemented to stabilize the “farm gate prices” for certain in the context of Sri Lanka, e.g. “Minimum Support Price' ' (MSP) mechanism for paddy. The aim of the MSP is to shield the farmer against unforeseeable price fluctuations. Whatsoever, those particular tactics made only a short-term impact. The rationale behind the failure of MSP is short of an accepted scientific basis. The government more or less disburses LKR100 billion per annum to operate the paddy MSP scheme which is insufferable for the developing economy such as Sri Lanka (Central Bank of Sri Lanka, 2015). The collapse of MSP schemes is also common to the South Asian region (Patel, 2018 & Tobias et al., 2013). The elementary purpose of the paper is to examine mechanism and prospects of groundnut value chain, with special reference to the case of Mullaitivu district. Over and above this paper brings forth a qualitative outcome to address the issue identifying relevant gaps and points for improvement within the value chain. It ultimately highlights the degree of “Farm gate Price” as an influence over the farmer community as well as an economic incentive.

REVIEW OF LITERATURE

A value chain is a segment of a financial framework where upstream operators are connected to downstream accomplices by specialized, monetary, regional, institutional and social connections (Food and Agricultural Organization, 2013). The concept of “value chain” was introduced by Porter in 1985. It’s simply a network which includes different activities, people, entities, information, and resources. Studying of value chain explores structure and the relationship among all key stakeholders within a system (Danskin, et al., 2005). It sheds light to revenue, cost, value addition and profit structures. Further, it discloses strengths, weaknesses, opportunities and threats within and outside the system (Chiu, et al., 2012). Critical analysis of the value chain discloses efficiencies and inefficiencies within each nodes or link. As the product moves from one player in the chain to another, it is assumed to gain value (Zamora, 2016). Hence, analysis of the value chain for goods and services is vital for the sustainable growth and expansion. Value chain examination is the way toward breaking a chain into its constituent parts so as to more readily comprehend its structure and working. The examination comprises of distinguishing chain entertainers at each stage and perceiving their capacities and connections; deciding the chain administration, or initiative, to encourage chain development and fortifying; and recognizing value including exercises in the chain and doling out expenses and increased the value of every one of those exercises (Masamha et al., 2018). The progressions of products, data and accounts through the different phases of the chain are assessed so as to recognize issues or distinguish chances to improve the commitment of explicit entertainers and the general execution of the chain (United Nations Industrial Development Organisation, 2009). Value chain examination uncovers the dynamic progression of monetary, authoritative and coercive exercises including

entertainers inside various parts. It shows the power relations among actors (La Scalia et al., 2016). By uncovering qualities and shortcomings, value chain examination encourages actors to build up a common vision of how the chain ought to perform and to distinguish community-oriented connections which will permit them to continue improving chain execution.

The value chain is an idea which can be just depicted as the whole scope of exercises required bringing an item from the underlying info flexibly stage, through different periods of creation, to its last market goal. The creation stages involve a blend of physical change and the cooperation of different makers and administrations, and the chain incorporates the item's removal after use. Rather than the conventional elite spotlight on creation, the idea focuses on the significance of significant value options at each stage, along these lines regarding creation as only one of a few values including parts of the chain sector (United Nations Industrial Development Organisation, 2009). In actuality, value chain ties are in general more unpredictable; to include various interlinked exercises and businesses with numerous kinds of firms working in various locales of one nation or in various nations around the world (Zamora, 2016). For example, agro-food value chains envelop exercises that happen at the homestead just as in rustic settlements and urban zones. They require input supplies (seeds, fertilizer, chemicals, and so forth), farming hardware, water system gear and assembling offices, and proceed with taking care of, capacity, preparing and bundling. Different components, for example, power age, coordination, and so forth, which structure the chain contexts, are additionally significant elements influencing the exhibition of significant value chains (Masamha et al., 2018). One approach to group value chain is as far as who drives the chain: purchaser driven chains versus producer driven chains. Purchaser driven chains are normal in labour-concentrated, shopper products ventures where enormous retailers, merchandisers and exchanging organizations assume a focal job in setting up creation arranges as a rule in creating (trading) nations; while producer driven chains are normal for capital-escalated and innovation situated businesses overwhelmed by huge transnational companies which assume a key job in dealing with the creation systems (Food and Agricultural Organization, 2013). Dissimilar to producer driven chains, where benefits originate from scale, volume and innovative advances, purchaser driven chains return benefits from blends of high-esteem research, plan, advertising and monetary administrations. By controlling these components, retailers, architects and advertisers can go about as key agents that connect abroad plants and merchants with item specialties in their primary purchaser markets. Profitability is most noteworthy in the solidified pieces of worldwide value chains that have high section hindrances for new firms (La Scalia et al., 2016).

Overview of Groundnut in Sri Lanka

“Groundnut” (*Arachis hypogaea* L.) as known as “Peanut”, is one of the popular legumes and oil crops in Sri Lanka with high containment of edible oil, protein, fats, energy,

minerals and vitamins. Groundnut is commonly used in the confectionery and oil production industry in Sri Lanka. Groundnut is also used in the animal feed industry as a good energy and fat source. In addition, ground nut aids to fix nitrogen in soil through absorbing atmospheric nitrogen thus, enhances soil fertility. Therefore, it provides a number of benefits for small scale farmers in Sri Lanka. Mullaitivu district is accountable for the second highest annual groundnut production as a district. As a fact, the groundnut production in Mullaitivu recorded 4,226,000 kg, making 16% of the national production in 2019 (Department of Census and Statistics, 2020). Mullaitivu District was able to cater an average of more than 3,000mt to the national production with a contribution of 13% during the last five years (Table 1).

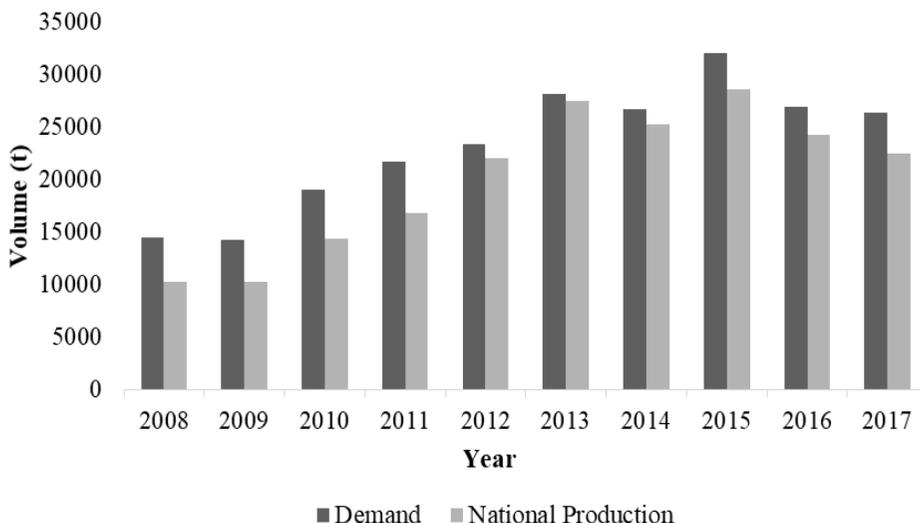
Table 1: Districts-wise Five-Year Average Contribution (2015-2019) for Groundnut Production

District	Average Production (MT)	Contribution (%)
Monergala	4978	19
Mullaitivu	3319	13
Vavuniya	3305	13
Kurunegala	3302	13
Puttalam	1985	8
Ampara	1378	5
Trincomalee	1245	5
Polonnaruwa	1237	5

Source: Department of Census and Statistics, 2020

This particular crop selection was performed on the basis of the almost unbiased nature of the marketing framework of groundnut in Sri Lankan context due to less value addition in the production process. Unlike groundnut, the marketing mechanisms of certain crops, such as paddy and maize are distorted with oligopolistic conditions at the moment. Another reason for the selection was that the effect of subsidiary food crops is somewhat neglected in recent literature regarding price issues (Gupta, 2013 and Karugia, 2011). Sri Lanka has imported an average of 3,745,000 kg of groundnut from 2016 to 2018. Interestingly Sri Lanka was able to export an average of 103 kg of groundnut from 2016 to 2018 (Filed Crop Research and Development Institute, 2019).

Figure 1: National Annual Production versus the National Annual Demand of



Source: Department of Census and Statistics, 2020

Groundnut

Looking into the past, groundnut cultivation in Sri Lanka has always indicated lower production than required (Figure 1). A number of programs were established with the aim of enhancing the production capacity of the groundnut to meet the national requirement. “Supplementary Food Crop Program”, implemented by the Ministry of Agriculture, set its objectives to gain self-sufficiency in supplementary crops by 2016 (Ministry of Agriculture, 2020). Also, the Ministry of Agriculture sets a 200 acre “peanut cultivation zone” in Mullativu in 2018 along with “Let us Grow, Let’s Build the Country” program (Colombo Page, 2018a). Introduction of “Sri Lanka Jumbo” Variety & imposing of trade restrictions on groundnut imports are among other measures taken to achieve the target. However, all operations on the run were unable to produce a satisfactory outcome so far.

METHODOLOGY

Theoretical Framework

Value chain consists of five primary activities: inbound logistics, process, outbound logistics, marketing and sales. It also has supporting activities or secondary activities such as infrastructure, procurement, human resource and information and communication. In spite of the presence of a number of approaches for a value chain analysis, the procedure suggested by Attai & Fourcadet (2003), was utilised for the due to credibility gained from the countless researchers. The procedure contents of discrete four steps; (1) Value Chain Mapping, (2) Data Collection, (3) Data Screening, and (4) Data Validation.

Further, the study also referred to the UNIDO approach to map the value chain of the sector. The UNIDO approach does not limit only to production aspects, but also looking at the business and policy environment (UNIDO, 2009).

Sample Selection

The study primarily focuses on groundnut farmers. The sample of farmers was set via the name lists received from the farmer organizations in the area that registered in the Ministry of Agriculture which served as the sample frame. The sample was chosen purposely reckoning the convenience of reach and language barriers (Bhattacharjee, 2012). Information richness is one of the major concerns in value chain studies (Zamora, 2016) which can be assured by selecting the most suitable stakeholders within the sector; thus purposive sampling would be appropriate. The heterogeneity among different actors in the study area was found minimum (based on secondary data available in the Ministry and field level observations) and thus a representative sample would be realistic with a small sample sizes which respectively satisfied the cost and time functions of the study. Moreover, Masamha et al., (2018) have stated if the system is not much heterogeneous and diversified, value chain analysis could be carried out only by selecting a minimum number of samples to capture key insights. Consequently, the study sample is composed of various supply chain actors (farmers: n = 32, rural collectors: n = 5, urban collectors: n = 3, Colombo-based wholesalers: n = 1, secondary processors: n = 1, consumers: n = 10, and researchers/specialists: n = 4) making out the total sample size 56. Value chain actors other than farmers in the groundnut sector is very much confined to a limited number. However, the contribution of the end consumers is limited for the study as the main concern is farmers. Also, cultivation reports, farmer databases and other secondary documents received from the Ministry of Agriculture assure the representativeness of the sample.

Data Collection

Both forms of primary data and secondary data were gathered for the study. The primary data collection was conducted as a series of face to face key-informant-interviews (KII) with supply chain participants during September, 2019. The interviews of utmost significance were recorded. A few researchers and specialists on supply chain analysis were interviewed prior to determining the study subject and the site (Mullaitivu district). Consequently, the remainders of participants, prominently farmers, were also interviewed to gather primary data. Observational techniques were employed to study the processes aligned with the groundnut supply chain. Secondary data were primarily equipped for the background study. The required secondary data were collected from the Ministry of Agriculture, Hector Kobbekaduwa Agrarian Research and Training Institute (HARTI), and Department of Census and Statistics. Further, available literature was beneficial to study the matter (Zamora, 2016; Attaie & Fourcadet 2003; Porter, 1985).

Data Analysis

The major portion of the study is recognized to prevail in qualitative nature. Accordingly, analysis of qualitative data was carried out with the identification of ‘Critical’ and ‘Non-critical’ issues existing with regard to study matter (Attaie & Fourcadet, 2003). Next, particular quantitative calculations were also performed to gain descriptive statistics of the farmers and for quantitative aspects of the value chain; Gross Margin Analysis (GM) and Index Market Efficiency (ME).

Gross Margin Analysis (GM)

The calculation of the Gross Margin determines the financial returns realised by the respective supply chain actor.

$$GM = TR_i - TVC_i$$

Where,

GM = Gross margin of the respective supply chain actor (LKR/kg)

TR = Total revenue of the respective supply chain actor (LKR/kg)

TVC = Total variable cost of the respective supply chain actor (LKR/kg)

i = 1-nth supply chain actor

Index of Market Efficiency (ME)

The Shepherd's formula for Index of Market Efficiency (ME) compares the economic efficiencies of marketing channels that exist within the same supply chain.

$$ME = \frac{V}{I} - 1$$

Where,

ME = Index of marketing efficiency

V = Value of goods sold or consumer price

I = Total marketing cost per unit

According to Shepherd’s formula, higher this ratio, higher would be the efficiency and vice versa of a particular marketing channel. The supremacy of Shepherd’s formula over conventional method is it eliminates the problem of measuring the value added. However, it does not take into the account that net margins gained by intermediaries. (Hassler and Shepherd, 1955).

RESULTS AND DISCUSSION

Figure 2 illustrates the simplest configuration of the groundnut value chain relevant to the case of the Mullaitivu district. It is remarkable that the groundnut value chain of Mullaitivu district does not indicate complicated characteristics compared with the situation of other agricultural commodities. This particular value chain fundamentally consists of distinctive three marketing channels. 'Channel 1' resembles a traditional marketing channel, from its inception at input supplier level, 'Channel 1' flows along various actor stages; farmer, rural collector, urban trader, Colombo based wholesalers, secondary processors, retailers and consumers (domestic or foreign). Even in the traditional chain, farmers directly deal with urban traders bypassing the rural collectors very rarely (dashed arrow linkage). It also revealed the emergence of an 'alternative market channel' (Channel 2), illustrated as an ash-coloured arrow, which is the outcome of vertical integration that exists between farmers and Colombo-based wholesalers via forward contracts. It flows bypassing the stages of rural collector and urban traders. This incident proves Norton (2014)'s argument of dual nature supply chains in developing countries; (1) Traditional and informal supply chain, and (2) modern and organised supply chain. Additionally, a minor channel (Channel 3') branches off at the stage of urban traders which caters for the need of animal food i.e. as a mean to sell of inferior quality products.

Stakeholder Profile

Farmers

In the words of Kaplinsky (2000), the entry point for an agricultural supply chain is recognised as the farmer. Their role is noteworthy as producers and initiators. On the contrary, farmers have no strong position in value chain governance. It is also specified that the majority are smallholder farmers who engage in cultivation with an average of three acre of land holdings. Looking into the socio-economic portfolio of the farmers (Table 2), males (73%) are dominated, while a minority of females engages in supportive tasks. Concerning age, the majority is taken by older persons (age 30 – 40 and over 55 years) as a percentage of 36%. In contrast, none of the farmers belonged to the youngest age group (under 30 years). This indicates the fact "the youth is moving away from agriculture" due to several rationales as mentioned earlier.

All the farmers in the sample were married while 55% of farmer households consisted of less than four members. The number of dependents per household varies highly with range one to five. The majority of farmers are educated up to the ordinary level showing a percentage of 82%. It is noticeable that all respondents engage in cultivation with their own lands. The majority falls into the income level of LKR15,000 – LKR30,000 (78%). Further, 54% of respondents enjoy the benefit of having an additional (secondary) income source.

Table 2: Socio-Economic Portfolio of Farmers

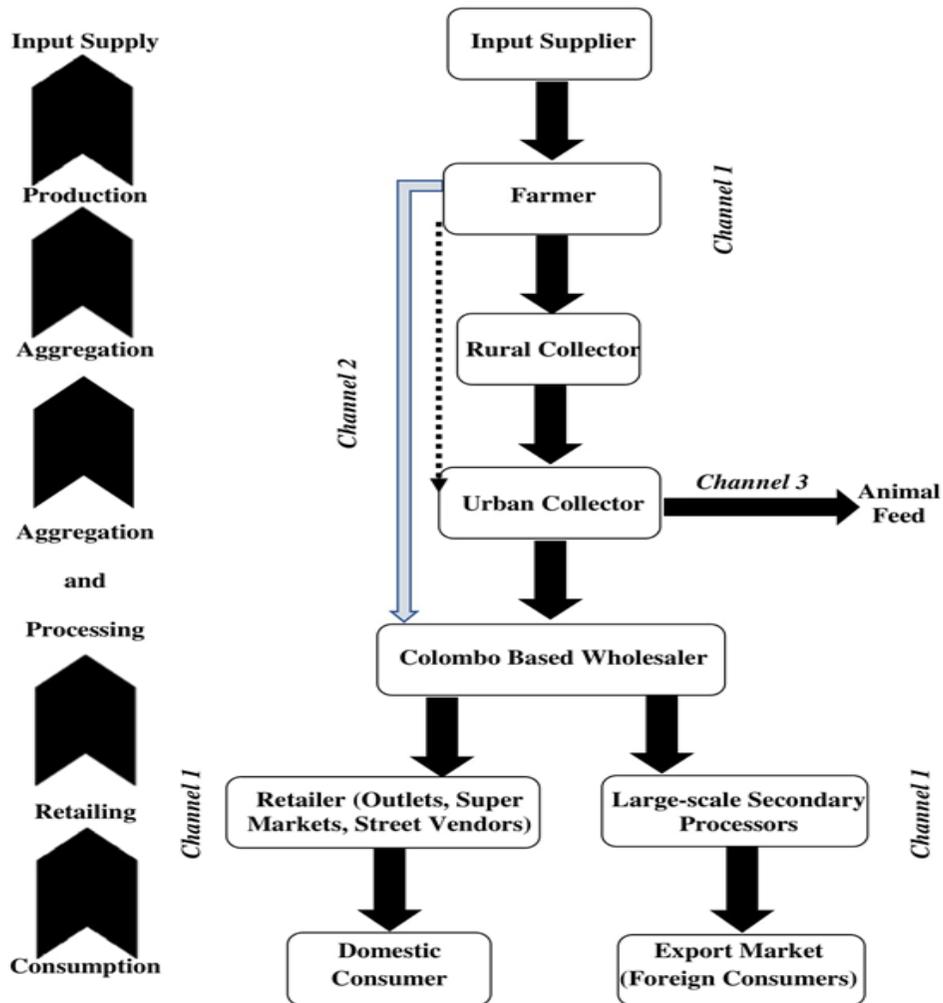
Parameter	Category	Percentage (%)
Gender	Male	73
	Female	27
Age (years)	Below 30	0
	30 - 40	36
	40 - 50	27
	Above 55	36
Marital Status	Unmarried	0
	Married	100
Household size (number)	Below 4	55
	4 - 6	45
	Above 6	0
Educational level	Primary education	82
	Secondary education	18
	Tertiary education	0
Monthly Income (LKR)	Below 15,000	0
	15,000 – 30,000	78
	Above 30,000	8
Additional Income	Yes	54
	No	46
Land ownership	Owned land	100
	Rented land	0
Experience (years)	Below 15	18
	15 – 30	45
	Above 30	27

Source : Author Constructed

During the offseason for groundnut, farmers survive in aid of additional incomes especially in non-agricultural activities. Additional income sources exist in many forms including cultivation of other crops (crop rotation), livestock management and machinery renting out. Groundnut cultivation was the main livelihood of 97% respondents. Only one respondent out of the total farmer sample cultivates groundnut supplementary while his engagement in a government job. In experience-wise, the majority (55%) belongs to the 15 – 30-year category.

Horizontal linkages between farmers have been satisfactorily developed in recent years. The strengthening of farmer organisations and the involvement of government and non-governmental organisations (NGOs) are reasons behind the situation. Also, this circumstance lifts the bargaining position of farmers higher (Figure 2).

Figure 2: Groundnut Value Chain in Mullaitivu District



Source: Author Constructed

Rural collectors

The role of rural collectors is the simplest. Rural collectors are basically accountable for primary logistics (products, funds, information) between farmers and urban collectors. One rural collector basically deals with 80 – 100 farmers per season. There is no significance in horizontal or vertical integrations at the stage of the rural collector.

Urban traders

The contribution of urban traders for the groundnut value chain is manifold. Unlike rural collectors, the product is transformed at the hand of urban traders. Deshelling, grading, storage, and transport are the primary functions performed by urban traders. Hence, those urban traders could be also considered as primary processors. Additionally, broken or low-quality products are sent off as animal feed for a lower price (LKR 150 – 200 per kg) resulting in the generation of a supplementary marketing channel ('Channel 3').

It is found that 10 urban collectors are involved in the process regarding the Mullativu district. Sometimes, farmers directly deal with urban traders bypassing collectors. Rural collectors and urban traders collectively make up the midstream of the value chain. When it comes to chain governance, urban traders stand in the second tier. It is noted that, similar to collectors, horizontal or vertical integration is not much significant. In contrast, urban traders rarely engage with formal trade agreements with other parties. Anyhow, sometimes the urban traders play the role of a wholesaler as well. However, this is very much trivial.

Colombo Based Wholesalers

Only 14 participants are reportedly involved at this particular level. In contrast to urban traders, functions are carried out at a larger scale. Remarkably, Colombo based wholesalers are the faction that owns the direct access to the global market. This particular faction of actors deals with direct consumers via retail outlets and with several industries. Hence, it can be concluded that the governing party of the value chain is Colombo-based wholesalers. Also, horizontal or vertical integration is not significant.

Secondary Processors

Secondary processors are branched off from wholesalers. At this point, value addition (utilized and processed in the confectionary industry) occurs significantly, but in limited quantities. For instance, certain local chocolate manufacturers (e.g. *Kandos*) are engaged in the groundnut value chain presently. The main concern of secondary processors is to reach global consumers rather than serving local consumers.

Retailers

At retailing level, groundnuts are issued to the consumers as snacks or confectioneries. Retail outlets, supermarkets, and street vendors act as retail participants in the groundnut supply chain.

Marketing Channel Efficiency

With reference to Table 3, Gross Market Margin (GM) illustrates percentages. GM reveals the extent of profitability gained by a particular actor at each respective node of

the value chain. According to the results shown in Table 3, farmers are the faction that records the highest figure (40.34%) surpassing the retailers (12.5% and 25%).

Table 3: GM Calculations for Actors of the Value Chain

Stage	GOV	TVC	GM	Percentage
Farmer	220.00	131.25	88.75	40.34
Rural Collector	250.00	20.00	10.00	4.00
Urban Trader	350.00	100.00	50.00	14.29
Colombo Based Wholesaler	380.00	15.00	15.00	3.95
	450.00*	90.00*	20.00*	4.44*
Retailers	800.00	300.00	100.00	12.50
	1000.00*	400.00*	250.00*	25.00*

Note: * – Values for roasted/ fried groundnut, GOV – Gross Output Value (LKR/kg), TVC – Total Variable Cost (LKR/kg), GM – Gross Margin (LKR/kg)

Source: Author Constructed

The results of the Shepherd’s formula calculations (Table 4) compare the efficiency of existing marketing channels in the groundnut value chain, where ‘Channel 2’ indicates the lowest figure for the Index of Marketing Efficiency (ME). ‘Channel 2’ is formed supplementary to the traditional supply chain (‘Channel 1’) as a result of vertical integration. Vertical integration can increase the efficiency in the overall process since it enhances competitiveness, process control and supply chain coordination (Zamora, 2016). Hence, the removal of the unessential mid-stream is significant. ‘Channel 3’ shows the highest ME figure. However, considering the consumer point of view, the highest ME exists in the ‘Channel 1’.

Table 4: ME Calculations for Market Channels

Particulars	Channel		
	1	2	3
Consumer Price (LKR/kg)	800.00	800.00	350.00
Marketing Cost (LKR/kg)	566.25	650.00	180.00
MEI	0.41	0.23	0.94

Note: Channel 1 – Traditional Value Chain (excluding the effect from roasted/fried groundnut and other value-added products)

Source: Author Constructed

Constraints and Opportunities

The prevailing issues in the groundnut value chain fall into two primary categories; (1) General issues and (2) Actor specific issues. The severity of the issue is also notable in the classifications. The influence on price transmission from the identified issues is different from dependence on surrounding factors. The best possible recommendations to remove the issue or minimize its effect are also discussed (Table 6).

General Issues

General issues make their impact on the whole value chain rather than focusing on specific marketing channels. Hence, general issues are linked with the macro-economic determinants.

Moving out of the youth from agriculture

It appears that the youngest age category shows the lowest participation in the value chain, especially for farmers (refer Table 2). Several reasons lead to the issue such as low profitability, development of the service sector and less social acceptance for an agricultural worker. Despite the fact, some researchers argue that larger workforce agriculture is unfit especially for a developing economy, the prevailing situation is adverse in the long run (Tocco et al., 2012). However, deficit is also a problem as the agriculture sector is mostly labour intensive in Sri Lanka. Older farmers are not interested in the adoption of technology or investments. Hence, it is envisaged the productivity of the current unskilled-labour force is unsatisfactory.

Under cultivation of 'Sri Lankan Jumbo' Variety

'Sri Lanka Jumbo' was introduced by the Department of Agriculture (DoA) in 2015. The purpose of DoA regarding the introduction of 'Sri Lanka Jumbo' was to cut down the imports of Chinese groundnut varieties, which possess the distinctive larger size of the kernel (ColomboPage, 2018b). Jumbo groundnut varieties are essential in certain snack industries due to its kernel size. However, the awareness level and interest of farmers for the cultivation of 'Sri Lanka Jumbo' was obviously low, due to poor following up, lack of planting materials and poor extension. Also, older farmers are unlikely to adopt new varieties or technologies. The problem is severe in the long term as Sri Lanka approximately spends LKR700 million per year for overall groundnut imports (Madies, 2020). Conduction of proper orientations for farmers, establishing forward contracts between farmers and larger scale snack manufacturers and ensuring the existence of well-functioning market information are among key measures to answer issues occurring.

The Potential of Vertical Integration

Due to the vertical integration tools (e.g. forward contracts), the unnecessary mid-segment of supply chain actors is cut down (Berg *et al.*, 2014). The circumstance provides

the opportunity for clear cut price transmissions and market communication. As Table 4 points out the marketing efficiency of the channels involved with the involvement of vertical integration is higher. On the contrary, only a minor amount of supply chain actors participates in vertical integration conditions and enjoy its benefits. For instance, the forward contracts between farmers and Colombo-based wholesalers, with the intervention of the Ministry of Agriculture, provide a stable producer price for farmers for a certain time period disregarding the possible price fluctuations. On the other hand, farmers ensure a continuous supply in return. Low level of education and less market access of farmers curtail the chance of forming vertical integrations. However, the condition can be turned well with the intervention of government or non-government institutes regarding the matter.

Low attention from research and development (R & D) programmes

It is obvious that many R & D programs focus only on major crops. The effect of the minor, as well as potential crops such as groundnut, are ignored. As a matter of fact, R & D programmes uncover new knowledge that can be utilised to ensure better future prospects.

Actor Specific Issues

Farmers

According to Table 5, the main cost occurring activity is ‘harvesting’. Being a labour intensive task, family labour cannot merely compensate for the necessity of the harvesting season. Utilization of machinery for harvesting operations is a viable solution for the matter, but not practiced in Sri Lanka.

Table 5: Breakdown of Production Cost

Cost Component	Cost (LKR/kg)
Land Preparation	4.17
Seeds	7.50
Fertiliser	20.00
Gypsum	9.17
Pest/ Disease Control	11.67
Weeding and Earthing Up	6.67
Irrigation	13.75
Harvesting	27.08
Threshing and Processing	12.50
Total Cost	131.25

Source: Author Constructed

With consideration of the value addition, only a few farmers are involved. Many farmers are inattentive about value addition due to the knowledge gap and shortage of equipment. As a fundamental value-added activity threshing, grading, and deshelling are performed at the farm. A satisfactory extension service needs to bridge the void of knowledge. On point of the mechanisation, it is interlinked with each and every farm operation. Many farmers are unable to afford purchasing the necessary equipment. Despite the initial investment for machinery is higher, it leads to long term profitability while ensuring the quality standards. Cooperative usage of machinery is a measure to overcome the issue. In certain cases, the government or NGOs take part in providing machinery to farmers.

It is obvious that formal credit and insurance facilities have not sufficiently reached farmers. In the case of Mullaitivu, only a few financial institutes cater to the need. On the other hand, the low education level of farmers hinders the necessity. But short term credit borrowing from input suppliers (as commodities) or from traders (as cash) does exist. Another consideration is the farmers' access to market information. This particular circumstance can be commonly seen in every agricultural market. Isolation of farmers, low interest in technology and infrastructure issues cause the problematic situation. Recently formed farmer organizations cater to the need of market information to a certain degree. This issue can be answered by looking into the examples of developed countries i.e. utilisation of mobile apps, SMS alerts, internet, and digital media potentially ensure the market information structure. It appears that the benefaction farmer organisations satisfactorily answer a number of issues that are faced by the farmers. Due to the horizontal integration, resources (including funds, machinery, information and input materials etc.) are shared while lifting the bargaining position of the farmer to a higher level.

Collectors

In particular, collectors struggle at the maintenance of profit margins due to the competition of fellow collectors and high transaction costs such as for transport and storage. Quality assurance is a challenge for collectors. But no severe incidents of quality deterioration are reported regarding collectors.

It appears some farmers do cheat at the sale of goods in weighing and repaying loans. This results in weakening the relationship with farmers and collectors. In addition, the existence of the collectors is threatened by the forward contracts formed between farmers and other parties. Even there is no clear suggestion to overcome the issues of the collectors considering the scientifically proven fact that the mid-segment of the value chain is unnecessary.

Urban traders

It appears that the situation of urban trader is similar to the collectors. However, the impact of the same issues is huge in the case of urban traders. Relatively, urban traders

struggle in quality assurance in higher capacity. Urban collectors own the opportunity to set their profit margin higher with supply addition beyond deshelling. It is possible for urban traders to move effortlessly into processed food (e.g. snacks, oil and butter, *etc.*). However, it is constrained with the low level of supply from the farmers.

Colombo-based wholesalers

As the governors of the supply chain, Colombo-based wholesalers face comparatively fewer issues. But, they have to deal with higher transaction costs as well as quality assurance at the maximum point. Their value addition capacity especially grading and packing is acknowledged as the largest considering the whole value chain. Anyhow, the low supply quantity blocks further opportunity for value addition, similarly to traders. Due to the forward contract mechanism, Colombo-based wholesalers received the opportunity to deal with farmers directly.

According to the opinion of some wholesalers, the situation is not as beneficial as expected. The situation is caused by cheating farmers and high transaction costs making no significance in the profit margin gained. Hence, the government is needed for preventing farmers from cheating at business with necessary legal measures.

Retailers

In comparison with other supply chain actors, the issues that retailers face are negligible. Basically, the profit margin for retailers is low. It can be assumed that this particular issue gets resolved simultaneously with the resolution of issues faced by other actors.

Table 6: Classification of issues: “Critical” or “Non-critical”

Issue	Impact	Severity
General Issues		
Moving out of the youth from agriculture	Long term	Critical
Under cultivation of ‘Sri Lankan Jumbo’ Variety	Long term	Critical
Low attention from research and development (R & D) programmes	Long term	Critical
Actor Specific Issues		
Shortage of labour in harvesting season		Non-critical
Less value addition	Long term	Medium
Less Access to formal credit	Long term	Critical
Low level of mechanisation	Short term	Non-critical
Low level of farmers’ education/awareness	Long term	Critical
Less access to market information	Short term	Critical
Quality deterioration	Short term	Critical
Cheating on scales	Long term	Critical

Source : Author Constructed

CONCLUSION

In a nutshell, the study overviews the case of groundnut value chain in Mullaitivu district, to answer the issue of how “price” influences the supply chain with the long term goal of enhancing the overall production. It ultimately targets to overcome the common mismatch caused by inadequate production of domestically producible agriculture and food products over their aggregated demand. As this particular value chain falls into the buyer-driven supply chain category, the demand is constant and in high amounts. Hence, the impact of retail prices matters least i.e. price sensitivity for production is less. On the contrary, theoretical manifestations suggest “farm gate price” put a direct influence in continuation and enhancing the local production. Despite the expectations, the results conclude that the influence of “farm gate price” has several limitations. It is observed that the majority of farmers in Mullaitivu district are older, less educated and facing infrastructure issues. Thus, it makes the farmers in less interest for heavy expansion or technological adoptions. Another issue behind the situation is poor extension service of agricultural services. Also, the highest figure for the gross market margin (40%) is recorded by the farmers. In other words, the farmers are a faction which enjoys most of the financial benefits from the process over the costs. Then the result is no expansion in cultivation due to socio-economic satisfaction. Comparatively, the intermediaries involved in the process indicate lower gross market margins, which makes them economically inviable in the long term; rural collector (4%), urban trader (14%) and Colombo-based wholesaler (4%).

In comparison between value actor profiles, it appears that Colombo-based gained the dominance of the value chain in contrast to their lower value for gross market margin. The key value addition spot in the whole value chain is the Colombo-based wholesalers.

It is also inferred that the emergence of an alternative channel (‘channel 2’), as a result of the vertical integration between farmers and Colombo-based wholesalers, has made a considerable impact on the whole value chain. Theoretically, it results in the lowest value for ME (0.23) among other recognized marketing channels. Since farmers received a stable price (LKR220 currently), as per the set forward contract, it ensures the continuous supply of groundnut. Due to the removal of unwanted intermediaries reduces numerous costs occurring points. Also, it is a plus point to expand the producer profit margin along the value chain. However, the satisfaction of wholesalers regarding the forward contract mechanism is neutral. Basically, price fluctuation, quality issues, and dishonesty of farmers (e.g. cheating on scales, no payments for loans etc.) lessen the rewards for the wholesalers.

On a special note, the study also looks into how the farmers get blended into ‘Industrialised Agriculture’ concept with regard to the prevailing situation (Boehlje and Doering, 2000). In the case of Mullaitivu, it is obvious that the majority of the farmers

are engaged with farmer organisations i.e. a horizontal linkage. The farmers get numerous benefits, including a high bargaining position, as the collective output generated over the contribution of single farmer units.

Hence, there is a good potential to enhance the groundnut cultivation in the Mullaitivu district. Provision of adequate storage facilities and establishment of commercialized milling facilities would cater for value addition in the sector. Deterioration of grain quality due to aflatoxin has to be considered in the storage and the processing stages. Also, spoilage of produce during storage, processing and after processing should be minimised in order to increase the efficiency in the overall process. Further, adoption of groundnut seeders is also required as highlighted by the farmers. In addition, there are many value addition opportunities such as groundnut oil cake, crude oil, refined oil, ground nut cream and animal feed currently not practiced in Sri Lanka. Therefore, expanding this sector may yield benefits for all stakeholders within and outside the sector.

As the key limitations of the study, the low literacy level of farmers and the language barrier constrain the opportunity of an efficient primary data collection. Another issue identified is the shortage of previous literature with respect to the Sri Lankan context.

ACKNOWLEDGEMENTS

Authors wish to express their wholehearted gratitude to the Agriculture Sector Modernization Project (ASMP) undertaken by the Ministry of Agriculture, Sri Lanka in collaboration with the World Bank for financial assistance and consultative aid rendered. Authors are also in gratitude to all participants who dedicated their time and effort for the successful completion of the research.

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