Critical Analysis of the Cashew Export Value Chain in Sri Lanka

MASTER OF BUSINESS ADMINISTRATION

IN

MANAGEMENT TECHNOLOGY

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Sri Lanka

February 2018

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The Dissertation was submitted to the Department of Management of Technology of the University of Moratuwa in partial fulfilment of the requirement for the Degree of Master of Business Administration in Management of Technology

Department of Transport and Logistics Management

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Sri Lanka

February 2018

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The candidate has carried out research for the MBA in Supply Chain Management in the Department of Transport and Logistics Management of University of Moratuwa under my supervision.

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ACKNOWLEDGEMENT

It would not be an easy to complete this research without individual support from many of professionals and organizations. Therefore first I thank all of them. The special thanks with honor go to Prof. Amal. S. Kumarage for creating such program for Sri Lankan students. Then I have to gratitude to my supervisors Mr. Jagdesh Mirchandani and Dr. Y.M.M Bandara for their useful guidance and advices. Then I should remember all the lectures of MBA in supply chain management (1st Batch) and academic staff in University of Moratuwa. Also, my heartfelt thanks to my mother, father, wife and friends who encouraged and supported in many ways to success this project and the MBA program.

TABLE OF CONTENT

LIST OF FIGURES

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LIST OF TABLES

EXECUTIVE SUMMARY

The Sri Lanka economy composition consists of three main economic sectors of Services, Industrial and Agricultural. Despite the agricultural contribution is comparatively less to the Gross Domestic Production (GDP) worldwide appreciation is very high due to the natural quality of Sri Lankan agrarian products.

Records show that cashew cultivation was introduced to Sri Lanka in the sixteenth century from Brazil. Currently, cashew farming plays an important role in the agrarian sector in the Sri Lankan economy mainly generating high price value of finished products.

The problem

Overseas competitors in the industry have taken the advantages because of the very low production cost comparing to Sri Lanka producers. As an example, Tanzania retail cashew price per 1kg is about Rs.800.00 while it costs Rs.2600.00 to Rs.5300.00 in Sri Lanka. Basically, we are not competitive with others and reason is low productivity. Other industries output is high at low cost. We have failed to compete with others because of the high price even though we are producing quality products. Based on the cashew corporation reports' Sri Lankan cashew yield is being dropped down continuously and no one has addressed it well.

Item Description	Ghana (M)	Mozambique(M)	Tanzania(M)
Farmers' Gate Price	80.6	384.4	104.62
Price at V.Collectors/Collectors/Traders		443.3	
Warehouse Auction (Transport ,Grading) Price			111.04
Export Market price(Raw)			
First Level processing Center Price	1054	627.75	483.44
Second Level Processing center Price	1550	2325	769.46
Retail Price	2635	3875	833.95
Price is converted to Rupees assuming one US Dollar as Rs.155.00			

Country	Total Land (ha)	Cashew Production Per Year MT	Output(MT) Per -ha
Gahna	150,000	35,736	4.2
Tanzania	300,000	75,000	4
Mozambique	275000	72,263	3.81
Sri Lanka	20300	6,890	2.95

Considering above situation, following research objectives have been identified by the researcher.

a. Develop a comprehensive value-chain map of the industry that identifies the role of all stakeholders and their impact on the industry.
b. Analyze the value chain to determine performance gaps affecting competitiveness and recommend appropriate interventions.
c. Provide a framework for the further detailed analysis of the cashew value chain beyond the scope of this assignment.

The scope of the research has been limited by the challenges of conducting a complete value chain analysis and study within the allocated time. Therefore, this study primarily focused on the following areas as ‘in scope’

- Cashew industry functions, actors and support service providers.
- Three main districts of cultivation zones
- Value chain mapping
- Current challenges faced by the actors
- Productivity
- Identify the automation in the supply chain
- Identification of industry labour issues
- Identification of environmental issues under sustainability related to cashew cultivation

This research was limited by a small number of samples, qualitative approach, privacy issues and research areas. These limitations are critically affected the research and final outcome of the research.

The approach

The researcher has referred many available academic and non-academic publications both locally and internationally to gain the understanding and the available knowledge in the research area. Literature review consists of value chain definition, world cashew industry, Sri Lanka position of world cashew production, cashew value chain in Tanzania, global value chain actors and their functions, service providers, information on Sri Lanka cashew value chain industry, current constraints in cashew production and available sources of mapping related to cashew industry in Sri Lanka.

The value chain mapping will help to reach following objectives.

- To see the basic picture of the value chain to lead the full Value chain analysis.
- To identify the prevention and apply the best solutions in each level of the value chain.
- To identify the weak position and locations in the value chain.

The value chain mapping process should be visualized to understand the relationship between actors to show the interdependency between different parties in the value chain. The value chain mapping process comprised with following steps.

- ✓ Mapping the core process
- ✓ Understanding main actors
- ✓ Product flow, knowledge and create flow information
- ✓ Product volume
- ✓ Geographical areas
- ✓ The value in the different stages
- ✓ The relationship between the actors of the value chain
- ✓ Services feed into the value chain

Key Findings

Actors:

- There are many actors in the industry who are called farmers, village collectors, collector, traders, processors, exporters, vendors etc. As a result, the product moving chains are increased.
- Sri Lanka Cashew Corporation is the main actor in the industry who is cultivating and processing cashew as well as provide extension services to the cashew farmers. Unfortunately, those services are not getting rural and remote areas' farmers. This is critically affected to their productivity.
- The Actors and their activities as well as how value is adding in different stage shown as below. The below table has been further discussed in Section5.

Value Addition	350-450	375-475	2800-3500	400-500	425-525	2800-4700	2800-4700	2800-5300	2800-4700	2800-5300
Activities & Actor	Farmer	Village Collector	Street Vendor	Collector	Trader	Processor	S.L.C.C	Vendors	Agents	Distributors
Cultivating										
Harvesting										
Drying										
Segregating										
Storage										
Shelling(Cutting)										
Moisturizing										
Peeling										
Grading										
Roasting										
Salting / Flavoring										
Packing										
Distribution										

Cultivation:

- Most of the farmers are cultivating cashew as a crop in small scale without standard.
- Farmers are not getting efficient and accurate market price information from Sri Lanka Cashew Corporation forcing them to dump their product at lower price.
- Farmers are having many problems. As a matter of fact, the yield has been reducing continuously. Also, there are many lands to be cultivated but farmers are not focusing on that as those lands are owned to the government.
- The harvest has been declined significantly during last three years (ies 2014, 2015& 2016) due to natural factors such as rain, drought, and wild animal activities which are seriously negatively affected.

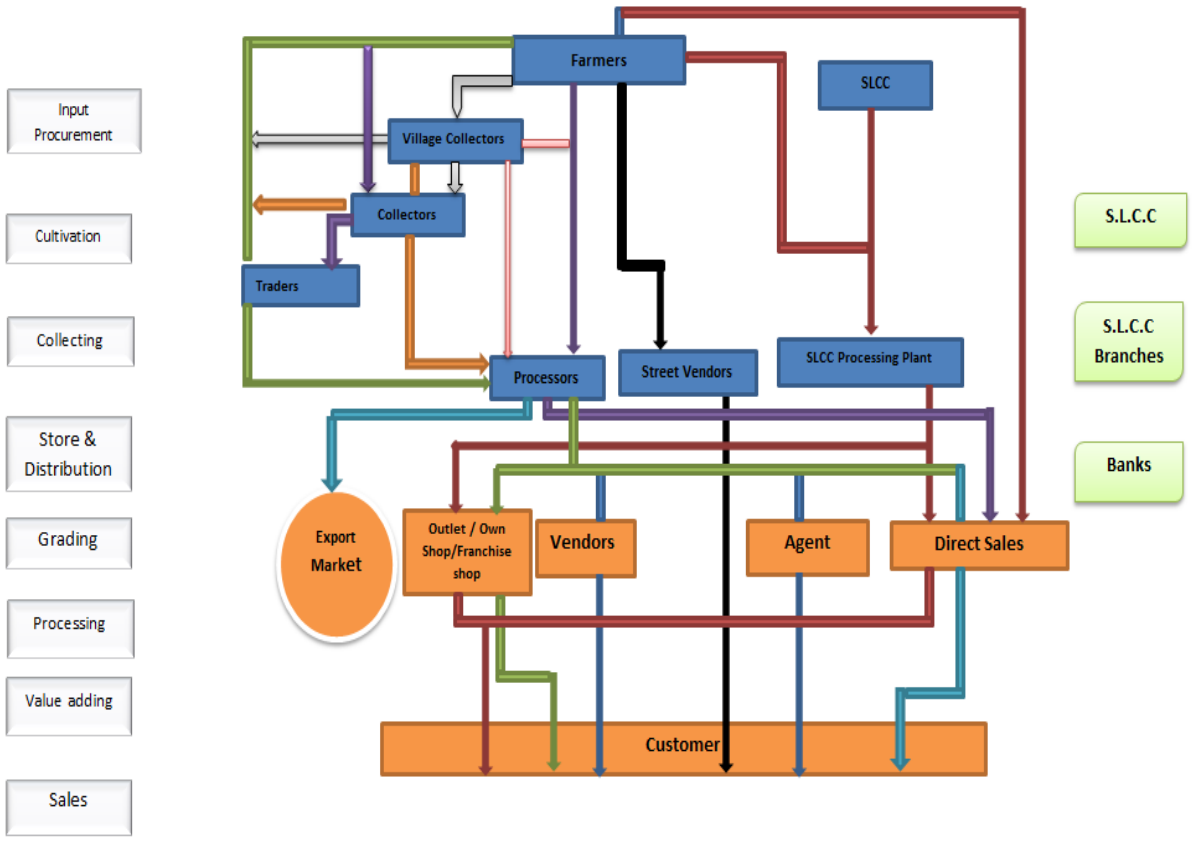
- People are not interested in the industry. As a matter of fact, labours are leaving the industry and cost of labour is going up.
- Most of the activities in the industry operated by manually which cause to low productivity and higher wastage.

Processing:

- Most of the processors are converting raw cashew to finished goods and sell to the local market.
- Only large-scale processors are exporting cashew in small scale but, they are unable to success due to competition as well as they are keeping only a small margin.
- However, there are some companies who are producing different value-added products for the niche market in locally and internationally which help to get more profit.

The Sri Lanka Cashew Value Chain Map:

- It highlights the raw cashew (blue) and the processed cashew (orange) flows
- There are 12 value chains in the raw processing flow and 9 value chains in the finished product processing flow.
- In this case, unnecessary wastage, transport, competition can be seen even though the supply quantity is less. Then the actors in the industry trying to sell the product at low cost due to price are indicated by the market. As a matter of fact, the profit is dividing among many actors and profit margin getting less.



A more detailed discussion and a SWOT Analysis on the Cashew Industry Value Chain is included in Section 5.

Conclusions & Recommendations

The researcher has drawn up following conclusions of the research. Sri Lanka cashew industry can be developed in strategic way if there is proper evaluation and guidance. However still we are not in such level as there are many gaps in the industry .The government body also in the industry in business perspective rather than a service provider. Most of the stakeholders are attending to the industry as it is an additional income for them .Other than they don't have interest to develop their capacity. The systematic value chain process is required to understand the capabilities of each actor and avoid unnecessary involvement wastages.

The research concludes with following recommendations.

1. Establish a cashew auction system

To avoid unnecessary intermediate parties and much wastage in the process the researcher proposes a new module which can see some common features of Tanzania cashew industry

process. However, the researcher has presented it complying Sri Lankan cashew industry behavior and its requirements. Accordingly, all the cultivators are directly delivering the raw cashew to the warehouse without any intermediate party and sell to the processor by an auction. However, in the warehouse, there will be a separate process which helps to segregate the cashew sizes and sell through an auction. Cashew Corporation or government inventions need to control the regulations and rules. Accordingly, the warehouse and auction will be operated by an independent organization under the supervision of the Cashew Corporation and government. This module is similar to centralization module in Supply Chain Management.

2. Improve cashew extension services and address land issues

Government support is really required to educate farmers and facilitate to them for better plantation and better harvest, especially the government should supply technical knowledge and solution for the environmental issues as well as training, and also they have to sort out the land issues and should release them for the cultivation. This is discussed descriptively in chapter four.

3. Introduce new technology

The automated processing method should be applied to enhance the productivity and reduce the manual involvement, which reduces the cost of production. Cashew planting in standard method, putting a net under the trees, Cashew drying machine instead of sunshine drying method, cutting machine ,peeling machine should be introduced to increase the productivity.

4. Increase value addition

In addition to that researcher has recommended encouraging the processors to produce value-added products to create more revenue. The processors must focus on the production of value adding production such as cashew fruit juice targeting hotel and restaurant sector, cashew powder, cashew soup mix, adding chocolate or milk to cashew, adding Kithul trickle, coconut or honey to cashew nuts etc. as we are unable to compete with the international market by exporting processed cashew without adding value.

5. Financial Aid

Two banks of Tanzania provide loan facilities to farmers through the warehouse auction system. As per their system, any cashew farmer can be obtained a loan from the bank and the same amount will be reduced after selling relevant actors' stock in the warehouse.

6. Remove the old trees from the plantations.

Farmers of Tanzania are removing the old trees at the right time. That is a reason for higher output. Therefore Sri Lankan farmers also applied the same system by removing old trees and replacing new plants.

7. Global market linkage

Tanzania has a good global market linkage through warehouse auction system. Therefore they have good customer network. The researcher recommend to online buying and selling system for cashew industry.

8. Local and International quality standard

In fact, Tanzania has good customer base and market as they have quality certificates for their products in local wise and international wise. Therefore obtaining quality certificates will help to build the customers' satisfaction and their trust.

9. Raw cashew export chain

Some of the Mozambique exporters are selling raw cashews directly to the international market as they have huge volume and their processing cost is higher. That is a strategy of them. Therefore researcher point out to implement the same strategy as an alternative option. The researcher does not guarantee on this as it might be affected to the quality of the Sri Lankan cashew industry.

10. Farmers Association

In Mozambique, Farmers association has good relationship with farmers and farmers are getting good support from them as those association managed by the farmers. Therefore they have good understanding about farmers' problem and address them properly.

11. Target market

In Ghana, they mainly focus the hotels and restaurants as they could obtain good price from higher income level customers. Therefore, researcher recommends targeting the hotels and restaurant in Sri Lanka as we have many hotels and many clients for them. Accordingly researcher assumes that we could create good market from them.

Keywords: Literature review, Research meth**o**dology, Research finding, Conclusion and recommendation, Cashew, Value-chain, Supply chain, Harvest, Value addition, Wastage, Productivity, Technology

LIST OF ACRONYMS

SLCC: Sri Lanka Cashew Corporation

EDB : Export development board

CNSL: Cashew Nut shell liquid (oroil)

EU : European Union

FAO : Food and Agriculture Organization of the United Nations

MT : Metricton

1. INTRODUCTION

1.1. Sri Lanka Cashew Industry

In general, an economy of a country consists of four sectors which include primary, secondary, tertiary and quaternary. Among developing countries, primary sector contribution to the countries' GDP is relatively high.

The Sri Lankan economy is made up of the Agricultural, Industrial and Services sectors. Despite the fact that the contribution of the agricultural division is less, the recognition for the Ceylon products is high because of the quality of the products. Especially Sri Lanka is very famous for the agricultural products such as tea, rubber, spices, and tropical fruits.

When we consider about the cashew, it was introduced from Brazil in the 16th century and developed continuously. Now it's very important agricultural product in Sri Lanka as it is a high-value product comparing to other agricultural products. In addition, there is a potential for growth in local and international markets because of the quality of the product.

In Sri Lanka total extent is around 30,000 HA. The cultivation of the plants are basically spread Kurunagala, Baticalo, Anuradapura, Mannar, Hambantota, and Puttalam which are considered as dry zones in the island.

Table 1.1: Total extent under cashew cultivation by provinces and districts

Province	District	2010		2011	
		Total Extent (Ha.)	**Bering Extent (Ha.)**	**Total Extent (Ha.)**	**Bering Extent (Ha.)**
North-Western	Puttalam	7966	5975	8170	6127
	Kurunagala	5468	4101	6179	4634
Central	Mathale	720	540	1022	766
	Kandy	103	77	140	105
North Central	Anuradapura	1969	1477	3204	2403
	Polonnaruwa	324	243	440	330
Uva	Monaragala	917	688	1098	824
	Badulla	805	604	1071	803
Southern	Hambanthota	1074	805	1107	830
Sabaragamuwa	Rathnapura	365	274	416	312
Eastern	Ampara	585	439	1014	760
	Baticaloa	672	504	1086	814
	Trincomalee	117	88	404	303
Western	Gampaha	906	679	907	680
Northen	Kilinochchi	431	323	431	323
	Mannar	119	89	170	128
	Vavuniya	167	125	209	158
Total		**22708**	**17031**	**27068**	**20300**

As per the above table, we can understand that Puttalam, Kurunagala & Anuradapura districts use 13,164 hectares out of 20,300 bearing extent. it is about 65% out of total lands(Sri Lanka Cashew Corporation, 2017).

In addition to that, the annual raw cashew production is about 12,000 metric tons and the details as below.

Table 1.2: Raw cashew and kernal production in Sri Lanka (the Year 2000-2011)

Year	Raw cashew production (Mt.)	Kernal production (Mt.)
2000	4678	935
2001	6192	1239
2002	7258	1451
2003	8319	1663
2004	8660	1732
2005	9036	1807
2006	9721	1944
2007	11635	2331
2008	5000	1000
2009	12000	2400
2010	8000	1600
2011	6000	1200

Source: Sri Lanka Cashew Corporation (2017)

Farmers harvest raw cashew from plants and remove the fruit and drying under sunshine. The raw cashew cannot be consumed without removing the actual shell. Once removing the outer shell, Kernel can be seen.

Raw Cashew Kernal

Cashew: Kernel production and domestic consumption

Kernel production and domestic consumption level is presented in Table 1.3.
Table 1.3: Cashew: kernel production and domestic consumption (in Metric Tons)

Year	Kernel Production	Domestic Consumption
2000	935	843
2001	1,239	1,092
2002	1,288	1,145
2003	1,663	1,596
2004	1,732	1,544
2005	1,807	1,527
2006	1,944	1,744
2007	2,331	2,213
2008	1,000 *	791
2009	2,400	2,199
2010	1600 *	1,325
2011	1200 *	886
2012	2,000	1,854

Source: Sri Lanka Cashew Corporation, 2017

Further, the export content is created as below.

Cashew Quantity and Value of Exports

Table 1.4: Cashew quantity and value of exports

Year	Quantity (Mt.)	Value (Rs. Mn.)
2000	92.5	47.4
2001	147.1	73.8
2002	142.9	75.9
2003	66.2	42.5
2004	187.2	121.6
2005	279.5	178.4
2006	170.0	129.0
2007	117.5	101.4
2008	208.9	154.6
2009	201.1	133.8
2010	275.0	246.4
2011	314.4	309.9

Source: Sri Lanka Cashew Corporation, 2017

1.2. Statement of the problem

Cashew is one of the export revenue streams to Sri Lanka and there are several organizations are involving to export this product to several countries. Basically, it is a high-value product comparing to other agricultural product. As an example, below countries producing Cashew at low cost while Sri Lanka pricing retail price as Rs.2600.00 to 5300.00 per KG.

Table 1.5 Price comparison of Cashew

Item Description	**Ghana (M)**	**Mozambique(M)**	**Tanzania(M)**
Farmers' Gate Price	80.6	384.4	104.62
Price at V.Collectors/Collectors/Traders		443.3	
Warehouse Auction (Transport ,Grading) Price			111.04
Export Market price(Raw)			
First Level processing Center Price	1054	627.75	483.44
Second Level Processing center Price	1550	2325	769.46
Retail Price	2635	3875	833.95
Price is converted to Rupees assuming one US Dollar as Rs.155.00			

Further, the production output per hectares is low than other countries and below table showing how Sri Lankan productivity comparing to other three countries.

Table 1.6 Production output (per Ha) in different countries

Country	**Total Land (ha)**	**Cashew Production Per Year MT**	**Output(MT) Per - ha**
Ghana	150,000	35,736	4.20
Tanzania	300,000	75,000	4
Mozambique	275000	72,263	3.81
Sri Lanka	20300	6,890	2.95

There is a good brand image for Sri Lankan cashew as we are producing a good quality product. The reason is well summed up by the spring tree corporation of USA when they declared that the tastiest cashew in the world is the product from Sri Lanka. Even though the situation is like that, we have to face huge competition as the cost of the product is higher

than other countries. Mainly the labour cost & material cost higher than the other countries as Sri Lanka is still not applying the automated process. The reason is for high percentage of breaking cashew when automated. Because when process manually, the quality standard is higher and that is the reason for a good demand for Sri Lankan cashew from European market.

However, Industry has faced to a serious situation as there are some parties are importing cashew at cheaper cost and sell at lower price challenging to local processors. As a matter of fact, most of the parties are being faced with problems and their financial status is dropped down. Further, there is no structural format for the local industry and it might be a problem for such situation. Also, there are some actors are giving up the industry as they are not capable to compete with competitors.

On the other hand, maintain the sustainability is a huge problem while doing such process. Sustainability is a very important matter within the process and industry and it will be affected by the environment, economic and social aspects. This is a question how Sri Lankan exporters can run the business further while maintaining the sustainability. In such situation, the competitors will take advantage using sustainability.

The process might be improved further and need to find out how it can be done. Also, need to be checked whether export quantity could be increased or not.

There is no systematic process in the industry. Even Cashew Corporation has not focused on this so far.

1.3. Research objectives

The ultimate goal of this research is to gather insights on the Sri Lanka cashew industry that will help enhance the competitiveness of its exports, in a global marketplace.
Specific objectives of this assignment are:

a. Develop a comprehensive value-chain map of the industry that identifies the role of all stakeholders and their impact on the industry.
b. Analyze the value chain to determine performance gaps affecting competitiveness and recommend appropriate interventions.
c. Provide a framework for the further detailed analysis of the cashew value chain beyond the scope of this assignment.

1.4. The Scope of the research

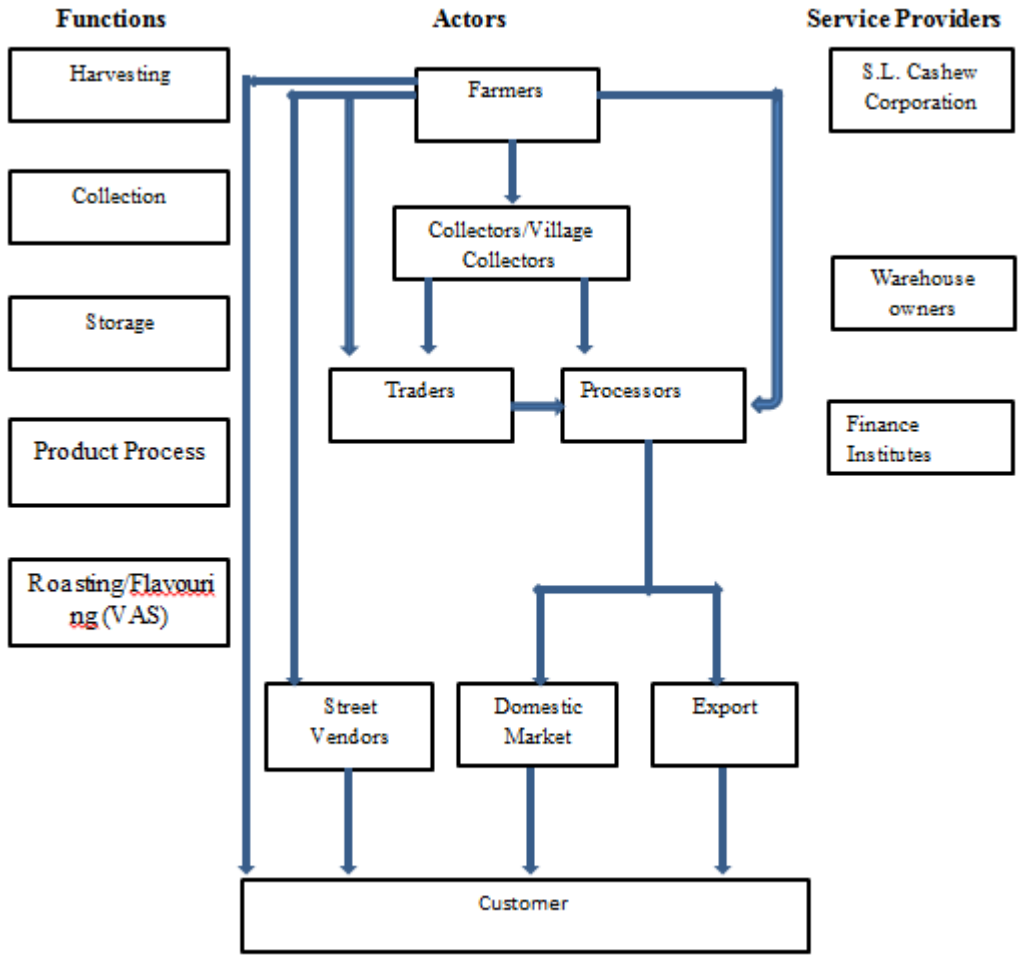


Figure 1.1: Research scope

As per the above scope of research, the areas which are going to be discussed have been divided into three sectors, namely functions, actors & service providers. Under the functions, the process of harvesting, collection, storage, and manufacturing process will be studied to get the knowledge of the existing process. Subsequently, the actors will be questioned to collect the primary data. By studying actors, both quantitative and qualitative data would be collected as other two areas are having secondary data. However, to get a proper understanding it is compulsory to study and observe the service providers. Based on the results, the researcher will cover up the below scope and design a map for the process.

1.5. Scope clarification

Due to the challenge of conducting an exhaustive value chain analysis in the allotted time for this assignment, the study will primarily focus on the areas identified under the "In scope" column in the following table.

Table 1.7: Scope clarification of the research

In scope	**Out of scope**
Cashew industry functions, actors and support service providers	The consumer
Puttalam, Kurunagala&Anuradhapura districts (65% of cashew cultivation)	Factors behind the low levels of cashew cultivation in all other districts.
Value chain mapping ➢ The various supply chain across the industry ➢ Volumes along the individual chains ➢ Value addition along the chain ➢ Domestic Supply chains and imports	
Current challenges faced by exporters	➢ Gap analysis of the export market ➢ Recommendations on developing export markets.
Productivity ➢ Opportunities to optimize the individual supply chains ➢ Potential to reduce the number of intermediaries in the supply chain	
Identify opportunities for application of technology/automation in the supply chain	Recommendations on available technology
Identification of industry labour issues	Solutions to industry labour issues.
Discussing the quality issues in the industry	Development of quality standards for the industry
Identification of environmental issues under	➢ Economic or social factors under

sustainability related to cashew cultivation	sustainability ➢ Sustainable agricultural practices, how they are important? ➢ Recommendations on sustainability.

2. LITERATURE REVIEW

2.1. What is the value chain?

A Supply chain refers to the system and resources required to move a product or service from origin to end customer. The value chain concept builds on this to also consider the manner in which value is added along the chain both to product / service and the actors involved. From a sustainability perspective, value chain has more appeal since it explicitly reference internal and external stakeholders in the value creation process.
(University of Cambridge, 2018)
A value chain analysis is used as an aid to better performance undertaken by organizations that are related to the competitive position in the Industry.
According to Porter (1985), the primary activities are explained as below:

2.1.1. Primary activities

Inbound logistics-
Involve relationships with suppliers and include all the activities required to receive, store, and disseminate inputs for the production process.

- Receipts of inputs
- Storage
- Stock control
- Internal distribution of inputs

Operation
The all the activities required to transform inputs into outputs (products and services).It is the process of manufacturing, assembling, packaging, and maintenance of the equipment and testing of inputs to produce the final product.

- Transformation inputs into final products
- Use of labour
- Manufacturing technology

Out bound logistics

Include all the activities required to collect, store, and distribute the output.

- Distribution of finished goods
- Stock control and inventory
- Distribution of final product to buyers

Procurement

Procurement is not a supportive function anymore. Now it has become a primary activity as it is aligned with strategic objectives of organization or industry. The procurement is a purchasing process that controls quality, quantity, sourcing and timing to ensure the best possible total cost of ownership (Agboyi, 2014).

2.1.2 Secondary activities

Human resource management

Consists of all activities involved in recruiting, hiring, training, developing, compensating and (if necessary) dismissing or laying off personnel. However, it is basically the process of developing employees in order to achieve organizations' objectives.

It includes job analyzing, planning personal needs, recruiting the right people, orienting and training, managing wages and salaries, providing benefits and incentives, evaluating performance, resolving disputes and communicating with all the employees at all the levels(Internet center for Management Business and Administration, Inc., 2010).

Technological Development

Pertain to the equipment, hardware, software, procedures and technical knowledge are brought to bear in the firm's transformation of inputs into outputs.

Infrastructure:

it consists of functions or departments such as accounting, legal, finance, planning, public affairs, government relations, quality assurance and general management. Further, we can understand that it is a combination of material activities, Production activities, and sales activities to add value to the end product (Internet center for Management Business and Administration, Inc., 2010).

Marketing and Sales

According to Internet center for Management Business and Administration, Inc. (2010), activities which inform buyers about products and services induce buyers to purchase them and facilitate their purchase.

- Advertising
- Promotional activity
- Persuading people to buy

Service

Includes all the activities required to keep the product or service working effectively for the buyer after it is sold and delivered.

2.2. Global cashew industry

The global content of the cashew industry and history should be discussed before study the Sri Lankan cashew industry. The plant is known as Anacardium Occidentale botanically which is originally from Brazil then it's moved to India and Africa during the 16th century through Portuguese sailors (Balasubramian, and Singh, 2002).

The cashew was cultivated as a commercial plant in 21st century in warm and humid cultivates which are the basic requirements for the plants. Basically, there are 23 countries plant this product .The Vietnam (1,237,300 Mt), India (674600 MT), Nigeria (835,000 MT), Cote d'Ivoire (393000MT) &Brazil (230,785.MT), are the main harvesters in the cashew industry as per the year 2011 record (Food and agriculture organization of the United Nations, 2013).

Table 2.1: Global cashew production

	Country	**Cashew production**	**% of World total**
1	Vietnam	1,237,300	28.9%
2	Nigeria	835,000	19.5%
3	India	674,600	15.7%
4	Cote d'Ivoire	393,000	9.1%
5	Brazil	230,785	5.3%

Sources: FAOSTAT Data, (2017)

The cashew industry ranks third in the world production of edible nuts. The major exporters of cashew in the world are India and Brazil with 60% and 31% respectively of the world

market share. The major cashew nut importers are the United States (55%), the Netherlands (10%), Germany (17%), Japan (5%) and the UK (5%). Cashew kernels are ranked as either the second or third most expensive nut traded in the US. The retail prices in the US range between USD 9 – 23 per kilogram.

The cashew market segmentation is based on the European market, especially the Netherland, Germany, and United Kingdom. Out of three countries, Netherland and Germany import more than 50% of total imports. Apart from that, there is a growing market in Central and Eastern Europe. Also, these countries are importing cashews directly rather than through intermediates (CBI Ministry of Foreign Affairs, 2016).

2.2.1. World cashew production vs. Sri Lanka

Table 2.2: World cashew production vs. Sri Lanka

Country	**Production(MT)**
Vietnam	1,272,000
Nigeria	813,023
India	674,600
Cote d'Ivoire	452,656
Brazil	230,785
Philippines	133,388
Guinea Bissau	128,684
Indonesia	122,100
Tanzania	75,000
Mozambique	72,263
Benin	70,000
Ghana	35,736
Thailand	29,060
Kenya	20,927
Malaysia	15,118
Guinea	8,458
Senegal	6,996
Sri Lanka	6,890
Madagascar	6,677
Burkina Faso	5,876

During last few years, the production has been increased in Asian countries. That means 45.2% of world production is acquired by Asian countries. Sri Lanka is the 18th largest cashew producer in the world (Department of Census and Statistics,2016).

However, the value chain process is not mapped properly and the actors are not mentioned in anywhere. Therefore, the research will be mapped the value chain process of cashew industry.

2.3. Cashew value chain in Other Countries

Tanzania Value chain

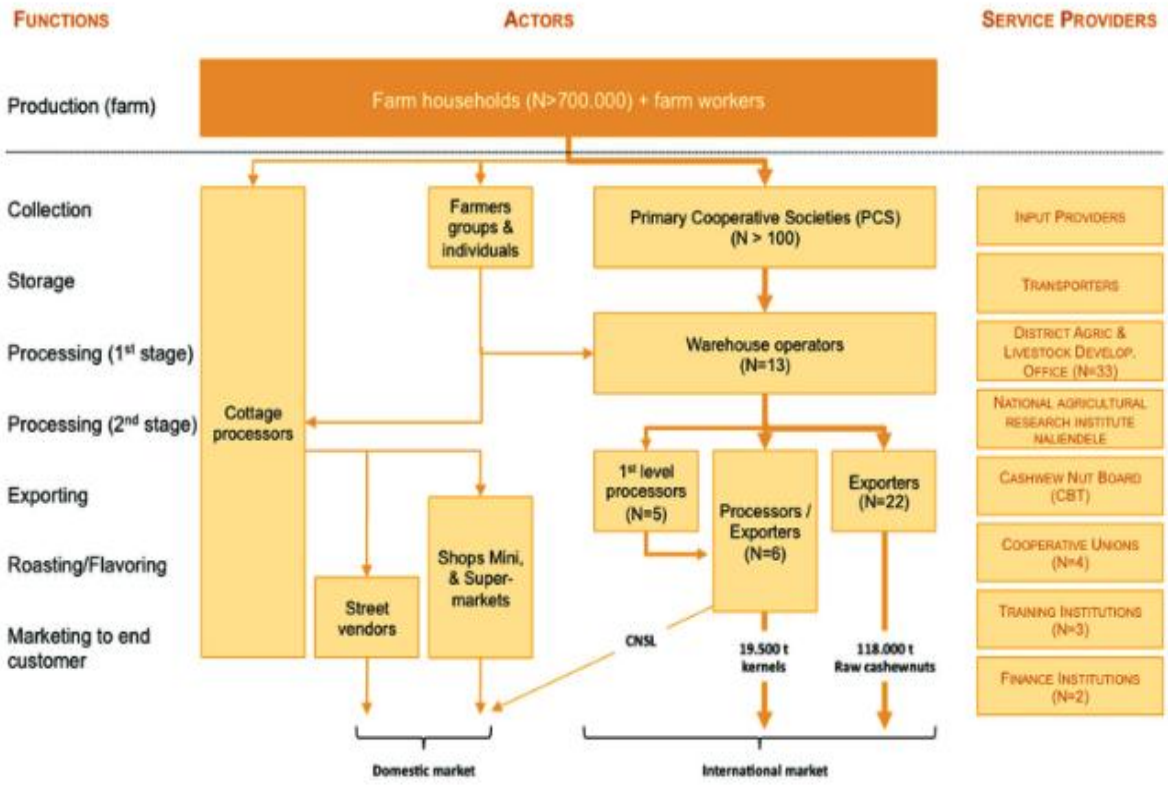


Figure 2.1: Cashew value chain in Tanzania

As per the above process, there are two government banks are offering cooperative loans for the primary cooperatives, and they collect the cashew for an auction which is held in a warehouse. In that place, both processors and buyers (Exporters) are biding and purchasing cashews and process as retail/wholesale market as well as global market. Meantime Indian processors are bid cashews from the auction and produce final output for the Indian market as well as global market.

2.3.1. The value chain factors and their functions in Tanzania

According to the United Nations, Industrial development organization has been identified the below actors and service providers who involve to the Cashew industry in Tanzania. The householders are not hiring labours for their cultivation, and they use their own labour for the cultivation.

Farmers

In Tanzania's many householders are doing cashew cultivation while many of large-scale cashew plantation owners are operating to get maximum output. The householders are not hiring labours for their cultivation, and they use their own labour for the cultivation (United Nations Industrial Development Organization, 2011).

Primary corporative societies

They provide the inputs and purchase supplies in bulk such as fertilizer, farm equipment on behalf of farmers. The cooperative societies purchase raw cashew from its members and sell to buyers through warehouse system (United Nations Industrial Development Organization, 2011).

Corporative unions

Help the largest cooperative associations to buy materials in a large number of quantities such as scrap and hull bags, loan purchases and transfers to headquarters, identification and registration of importers of raw beans into stock, as well as interaction with stock management systems. They also create a sales catalog for each shipment in the warehouse based on the information provided each week by the stock staff to the union (United Nations Industrial Development Organization, 2011)

Farmer groups and individuals and processing groups

They have their own processing plant in addition to cashew plants. For such groups have legal status such as a corporative or private company to sell the cashew nuts to the export market (United Nations Industrial Development Organization, 2011)

Warehouses

All the cashew nuts should be transported to certified standard warehouses that stock them separately in lot wise for each corporative. The auction will be held in here and varies parties attend to the auction and money will be transferred to the bank accounts of the particular parties. This system is intended to eliminate or minimize the many intermediate parties.

First level processors

The process of the cashew nuts up to the de-shelling before peeling will be done by the first level processors. This process is being outsourced at most of the time while doing the second level processing.

Second level processor/Exporters

They start the process when finishing the first level process and do the job till shorting and packing. Sometimes they are doing both first level process activities and second level as well. These processors are categorized into three as small, medium and large. Small-scale producers are producing cashew nuts for the local market while medium and large scale producers are producing for the regional and international market.

Customer

Customers are in locally as well as internationally. Their main international market is located in Europe, India, Middle East and USA while export raw cashew only for India.

Service Providers

Input Supplies

They provide and supply the input material for primary production. The inputs are privately licensed business. They provide the material to the local government within the context of subsidy voucher scheme.

Transporters

The job is delivering the raw cashew nuts from the corporative to warehouses. Also, the processed cashews deliver to the local market as well as to the particular ports.

Cashew nut boards of Tanzania

The board objective is guidance government on the industry regarding approaches and techniques. Their objective is help to every one of the elements of the industry. Direct and controls the quality gives specialized administrations to ranchers, purchasers, and exporters. The board is helping everyone to develop and upgrade the cashew industry in the nation.

Research

The national agricultural research institute and varies universities and varies institution help researching cashew value chain in Tanzania to develop the technology and efficiency of the chain.

District agricultural and Livestock offices

Collaborating with NGOs' provide services through farmer field school, media releases, and training.

Financial service providers

They act a main role in the chain and mainly two banks with government guarantee provide the credit facilities for stakeholders.

Factors affected for Performance of Tanzania Cashew Industry

- Crop Production

Existing plantation, land capacity, Traditional knowledge in production, Soil and climate, Existing farmer based organizations, Available research, enough human resources, removing old trees at the correct time and Plant health protection system as well as availability of such products are the key factors to perform the cultivation in Tanzania.

- Processing Plants

Categorize the 1st level processors and 2nd level processors which are easier and expedite the process and reduce the wastage. Also current abilities for compliance are with international level for small, medium and large scale companies.

Processors need to obtain the approval (Permit) from Tanzania Cashew nut board for Buying, Trading License, and Export license.

- Market & access

Market linkage with global market through warehouse auction system can be used as a service.

- Support Service

Cashew Development board occasionally provides training for Farmers and processors.
The extension services are decentralized under district commission.

- Quality Standard

Certification, Structures, Metrology, testing, Standards, Quality assurance are applied for the industry.

- Financial Support

Two major banks are providing financial aids through warehouse management system. Accordingly they have made a agreement for repayment.

2.3.2. Value Chain in Ghana

Figure 2.1 Cashew Value Chain Operators and their Functions

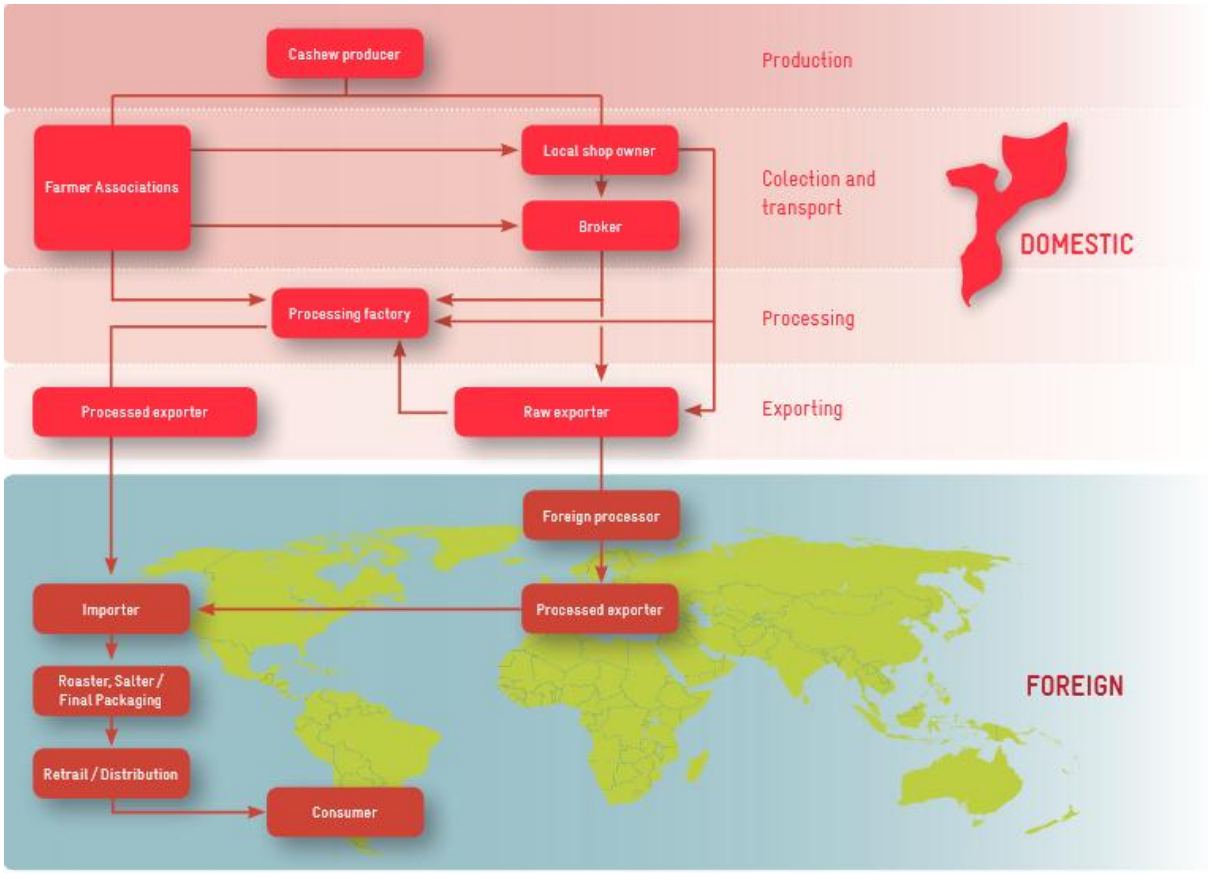
Source: (Große-Rüschkamp, 2010)

Figure 2.2: Cashew Value chain in Ghana

<u>Best Practices Used By Ghana</u>

- Correct information sharing among farmers
- Good quality equipment supply
- Skilled labour hiring for processing
- Bulk Purchasing
- Prefer to sell Raw cashew as they performing in that stage
- Giving more priority for hotels and restaurants

2.3.3 Mozambique Cashew Value Chain



Source: (Große-Rüschkamp, 2010)

Figure 2.3: Cashew Value chain in Mozambique

<u>Best Practices Used By Mozambique</u>

- Farmers' association has established for information sharing
- Raw cashew export chain

2.4. Sri Lanka cashew value chain industry

Sri Lanka cashew corporation has mapped the raw cashew trade in Sri Lanka which is only the reference map could be found so far. However, it is not a value chain and clearly mentioned it as a marketing channel.

2.4.1. Value chain mapping of cashew industry in Sri Lanka

Sri Lanka Cashew Corporation has mapped only the marketing value chain which is incomplete. Therefore, researcher is studying supply chain value chain of the industry.

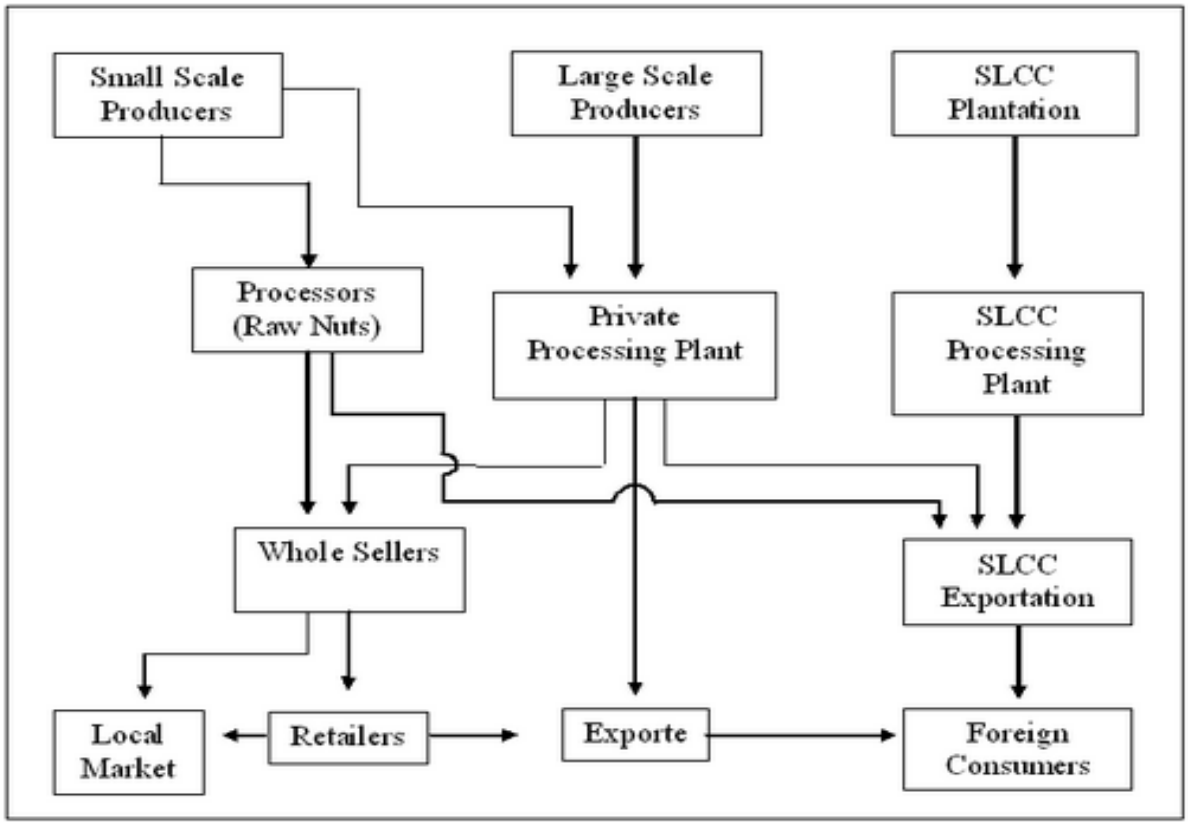


Figure 2.4: Cashew value chain mapping – Sri Lanka

It is imperative to prepare a procedure and define what the value chain is and how to develop the industry accordingly. However, it has not been done in Sri Lanka yet.

Hence the researcher intended to do this kind of research to contribute to the industry as well as to the economy of Sri Lanka.

2.4.2. The current constraints in cashew production In Sri Lanka

The limitations can be ordered as physical and biological. Physical imperatives identified with normal assets, for example, land and soil attributes, temperature, sun-oriented radiation, wind, and so on. The biological imperatives disease and pest/insect harms. The Sri Lanka cashew industry has done some investigates regarding these matters which are in agrarian view. (Sri Lanka Cashew Corporation, 2017).

3. RESEARCH METHODOLOGY

This chapter presents an outline of the research methods that were applied in the study in terms of answering the research problem and to fulfill the research objectives. Moreover, research strategy, method, approach, data collection, population, sampling, data analysis have been discussed in each subsection.

3.1. Research strategy

There are plenty of studies related to cashew industry in internationally, however critical analysis of Sri Lanka cashew exports has not yet taken place based on value chain perspectives. This research is a novelty and expected to contribute broader knowledge to the field of supply chain management.

3.2. Research method / Conceptual framework

The qualitative approach has been applied in this research. Primary data was collected by a survey and secondary data was collected from interviews, scientific papers, and publications. The uniqueness of the research is analyzing all many of the areas in the industry within Sri Lanka and also the researcher has studied about significant areas to understand the complete scope when mapping the cashew producing industry.

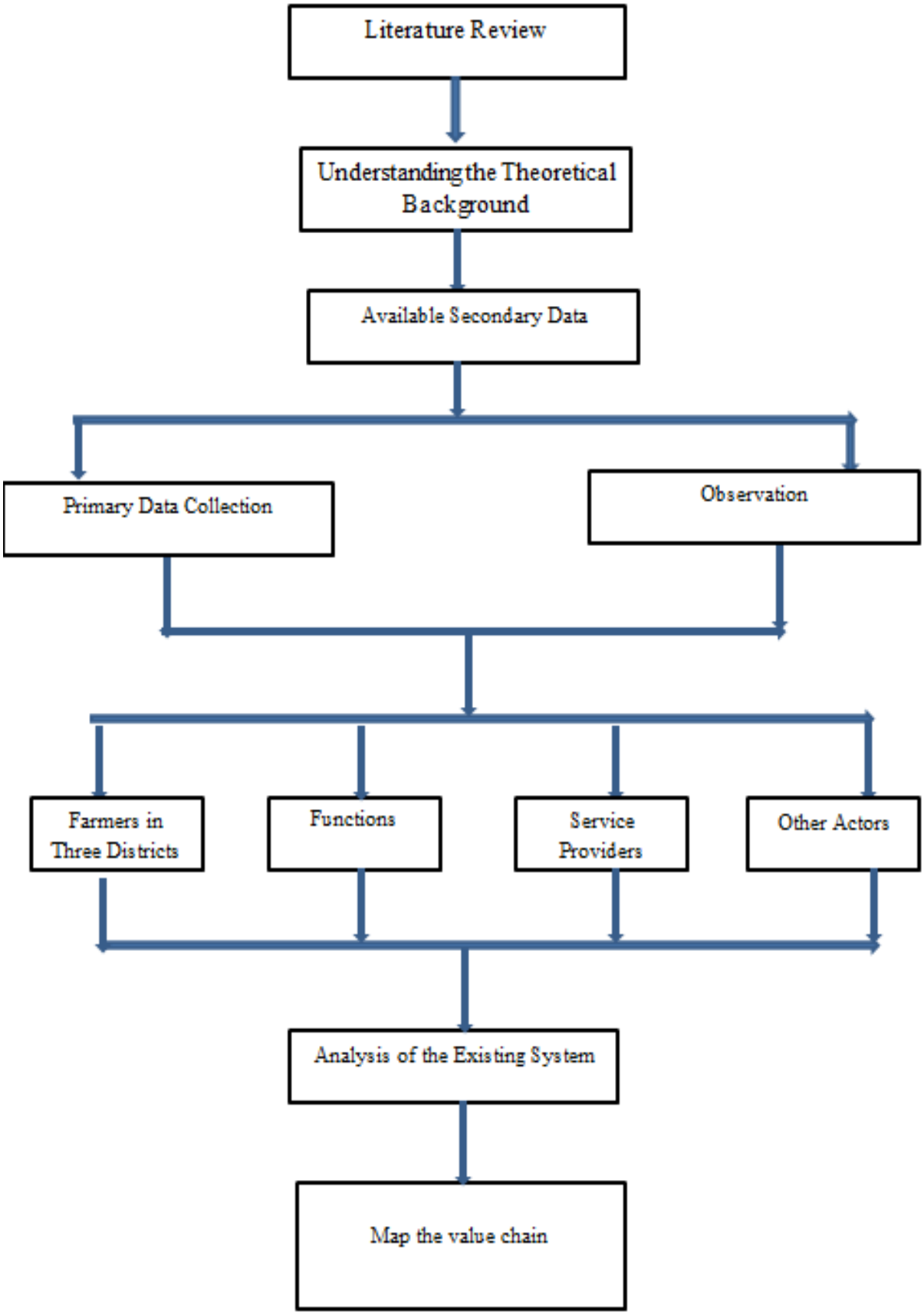


Figure 3.1: Conceptual framework of the research

3.3. Data collection method and tools

3.3.1. Primary data collection method

Primary data was collected by a questioner consisted of fifty questions and pocket discussions and interviews. Face to face interactions and other communication channels were used to collect related primary data.

Direct interviews and observations were very much fruitful since main players in the industry don't have a sound educational background and most of actors are involving to the industry as a part-time business or workers. Research scope consisted of three main areas as functions, actors and service providers and researcher has studied all three areas as planned.

3.3.2 Secondary data collection method

Electronic sources such as websites, publications, and reports from the Sri Lanka Cashew Corporation are referred to collect the secondary data. However, the Cashew Corporation website has been updated based on their research results.

3.4. Sample selection

The sample was selected mainly focusing the farmers, collectors, traders in Puttalam,Kurunegala and Anuradhapura areas, where the highest cashew production takes place in Sri Lanka according to Sri Lanka cashew corporations' records. However, few processors in Colombo also interviewed to gather more information.

The researcher interviewed and selected research sample as below from each particular area.

Twenty four farmers are interviewed from Puttalam,Kurunagala and Anuradapura and twenty one numbers of other stakeholders are interviewed.

The researcher has defined the major actors in the industry who are active in the industry.

- **Farmers**

Farmer can cultivate either in his own land or in a government-owned land. Further, the cashew cultivation can be either the main crop or intercrop. They sell raw cashew, Cashew nuts & Cashew Fruit to other actors.

- **Village collectors**

The farmer and village collector are living in one village. Also, village collector collects raw cashew in small scale and sells to the collector, traders, and processors without processing.

- **Collectors**

An individual who is doing same activities like Village collectors. However, collectors live in the same area as well as out stations and collecting raw cashews from farmers and village collectors and sell to traders, processors in small and medium scale.

- **Traders**

An individual who has more financial stability comparing to Village collectors and collectors and their business is registered under government authority. They keep a raw cashew stock buying from farmers, village collectors and collectors and sells to medium scale processors even in the off season.

- **Processors**

They collect raw cashews from Farmers, Village collectors, Collectors and Traders and store raw cashew, process them to convert raw cashew to processed cashew. They have a specific business location and most of them are doing their business in a reputed way. They sell processed cashews as value-added products to customers through vendors and their own shops.

- **Sri Lanka Cashew Corporation**

They are fully government organization, and they have both cultivation and processing plants. They are sourcing raw cashew only from farmers in addition to their own cashew farms. After processing, they sell processes cashew to customers through their own shops and their dealers.

- **Vendors**

Vendors are selling processed cashews and they are sourcing from processors.

3.5. Research process

It visually illustrates the relationship between the business in the value chain and other market players. It's like a flow chart. A more sophisticated version shows that some businesses are different in size, some connections are more important than others and they help identify bottlenecks and take advantage of points. Value chain analysis helps to quickly understand complex realities. For an example, it shows how transactions in the core of the value chain are linked to market players in a close and wide business environment.

The basic objectives will be as follows.

- To see the basic picture of the value chain to lead the full Value chain analysis.
- Identify the prevention and apply the best solutions in each level of the value chain
- Identify the weak position and locations in the value chain
- The network should be visualized to understand and connect between actors and processors
- To show the interdependency between processors and actors in VC (Value chain)

There are ten steps in the process.

a. Map the core process of VC

First, the different core process of the value chain needs to be understood. The process occurred from the inputs to final products consumed by the end customer. Find core process maximized to other processes which cover inputs to final product including sub suppliers' inputs material.

The simple core process is illustrated as per the below Figure 3.2, once the core process is finalized generally it consists of six or seven core activities.

Figure 3.2: Map of the core process in the value chain

b. Understand as well as map the main actors who involved in the process

Once map the main process, the actors were identified and is guided to understand the main players involved in the process and their key roles in the value chain.

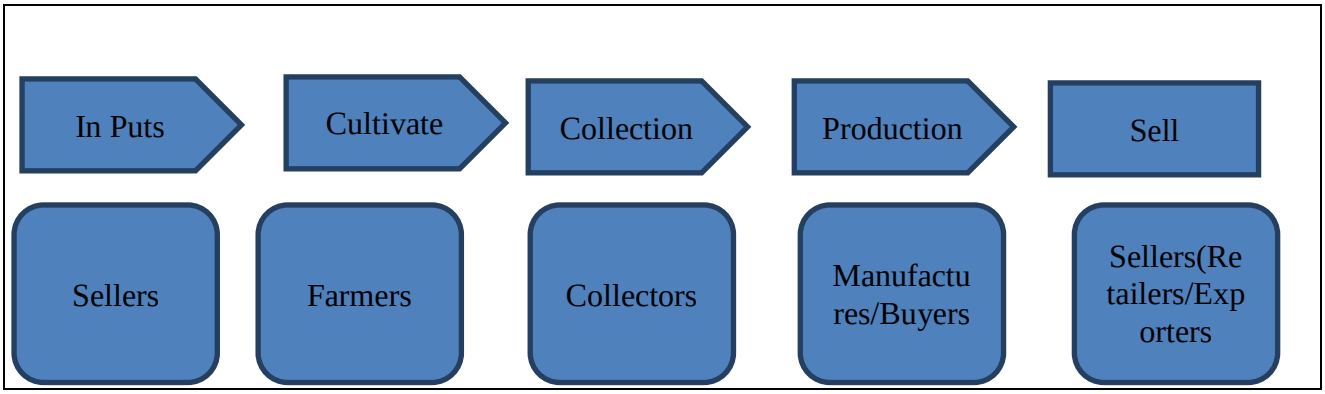


Figure 3.3: Cashew value addition process – Primary activities

c. Product flow mapping

Once the above two steps are covered, product flow will be mapped through the chain as the third step. Process mapping will be used in the research to identify the product in each stage and the forms of products handled in the chain.

d. Mapping the knowledge and information

Information and knowledge cannot be captured in the value chain as they have intangible. There are different parties in the value chain and when inquiring them, they have different views regarding different topics. As an example, the quality is defined by different way by the different characters in the chain as per their perspective.

e. Mapping the volume of the product

This is quantifiable as they are able to measure exactly. That means the volume of the product, number of actors and jobs in the value chain. Below is an example of volume mapping.

Figure 3.4: Volume mapping of the cashew value chain

f. Mapping the geographical areas

In this stage, the mapping helped to identify where the process is actually operated in each stage. As an example where the farms are located, where is the primary process, where is the secondary process etc.

g. Mapping the value in different stages.

Data collected from the questionnaire used to mapping processes. Process mapping helped to acquire an accurate understanding of the amount of value created in each stage of the value chain.

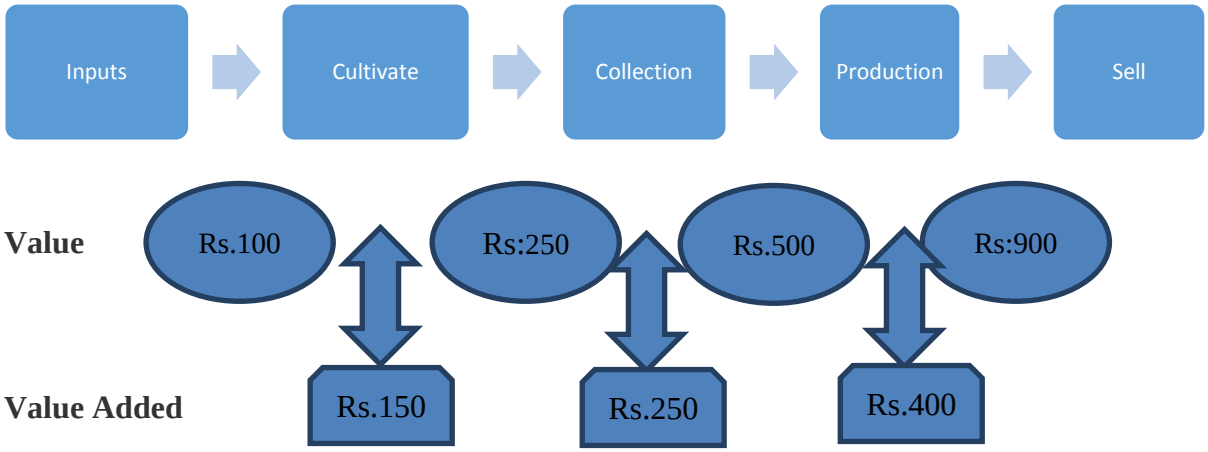


Figure 3.5: Mapping the value in different stages

h. Mapping the relationship between actors of the value chain

The relationship between value chain actors was analyzed to identify the correlation and interdependence of each actor.

i. Mapping the services which feed into the value chain

In this stage, basic services that were needed to feed into value chain were identified and included in order to measure the required service among many other available services.

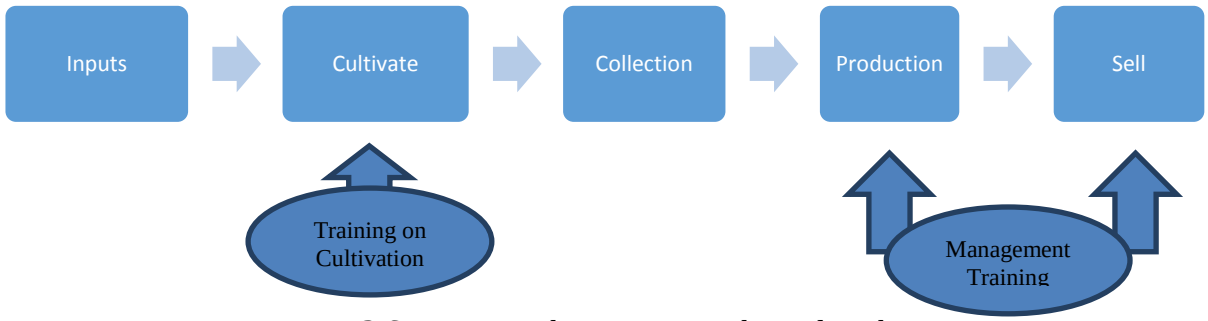


Figure3.6: Mapping the services to the Value chain

j. Mapping constraints and potential solution

Below is an example table for possible solutions for constraints.

Table3.1:Mapping constraints and potential solution

	Input	Cashew production	Procurement	Processing
Input		Land Fertilizer Agronomic practices	Money	Equipment,
Activities	Supply of Inputs	Cashew Planting Harvesting	Negotiation transporting	Boiling, Cutting Peeling, Roasting Packing
Actors	Equipment Sellers, Brokers & Transporters	Labours, Service Providers	Buyers, Sellers	Labour
Difficulties	Huge initial Investment , lack of capital	Lack of production techniques, labour issues, lack of capital, environmental factors, Lack of Information	Huge transport cost due to distance, Small quantity of production	New generation moving from the industry due to hard process
Feasible solution	Inputs based on credit term	Training, incentives, supply quality inputs	Suitable tax policies, Centralization	Investment in new technology

3.6. Data Analysis

The data will be analyzed according to the following procedure,

3.6.1 Organize the Data

As a first step, the collected data will be translated into codes and clean them. Then those data will be labeled to understand clearly.

3.6.2 Identify a framework

The research and reference article read by the researcher to get a clear picture about the process and thereafter research framework will be identified. It will be an exploratory (Guided by the data) and, accordingly to the framework (Coding plan). Collected data will be structured labeled and defined lately.

3.6.3 Short the data

As the next step collected data coding process started. Accordingly, the framework was modified and understood the relationship between each actor and processors as well as sub-processors.

4. DATA ANALYSIS AND RESULTS

The data and analysis presented in this chapter are based on survey responses of a cross-section of actors in the Sri Lanka cashew industry. These include farmers, village collectors, collectors, traders, street vendors, vendors, Processors and the Sri Lanka Cashew Corporation. The information was gathered through a formal questionnaire-based interviews and informal discussions.

In reviewing the contents of this chapter, the following limitations and gaps in the survey/data gathering process must be taken into consideration.

a. The sample size is relatively small. Only twenty-four farmers and twenty-one other cashew value chain business parties were interviewed.
b. Though survey was conducted in Puttalam, Kurunagala and Anuradapura less than the ideal number of interviews were conducted due to time limitation.
c. In some areas, most of the interviewers are reluctant to share information due to many reasons including the personal relationship with officers of Cashew Corporation.
d. Given time constraints, transport costs along the value chain was unable to be computed due to the level of complexity and effort required.
e. Since only very few exporters are in the industry, the researcher has not focused much on the export and import functions of the cashew value chain.
f. As a result of the above and due to limited data availability, the focus of this analysis is more on the qualitative side versus the quantitative.

4.1. Descriptive analysis of the sample

4.1.1. Gender status

Farmers

The majority of the surveyor sample is male in Sri Lanka cashew industry. However, there is a significant involvement from women as this is a households business and most of the plantations are located in the rural area. There is 38% female involvement while 62% of responders are male based on the researchers' sample size. Majority is doing the cultivation while employing in another job (Figure 4.1.).

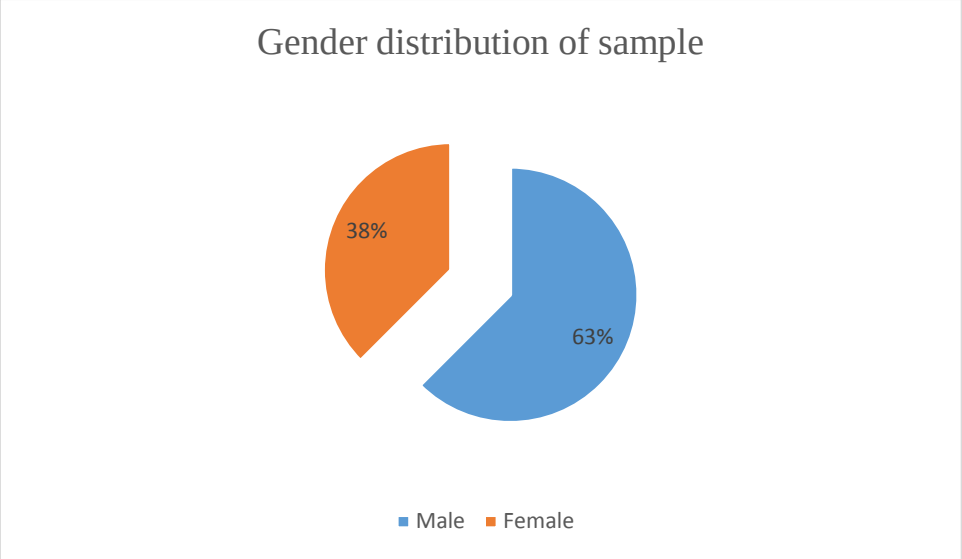


Figure 4.1:Gender status

Village collectors/Collectors/Traders/Street vendors /Vendors/Processors / S.L.C.C

The researcher has found that there is a large involvement from males when it is operating in business level.

Table 4.1: Basic data - Gender status

	Village collectors	Collectors	Traders	Manufactures	Street vendors	SL. Corporation
No. of responders	4	6	5	3	1	1
Percentage (%)	20%	30%	25%	15%	5%	5%
Male responders (Nos.)	4	6	5	2		
Male responders (%)	100%	100%	100%	66.67%		
Female responders				1	1	
Female responders' percentage (%)				33.33%	33.33%	

4.1.2. Business Type

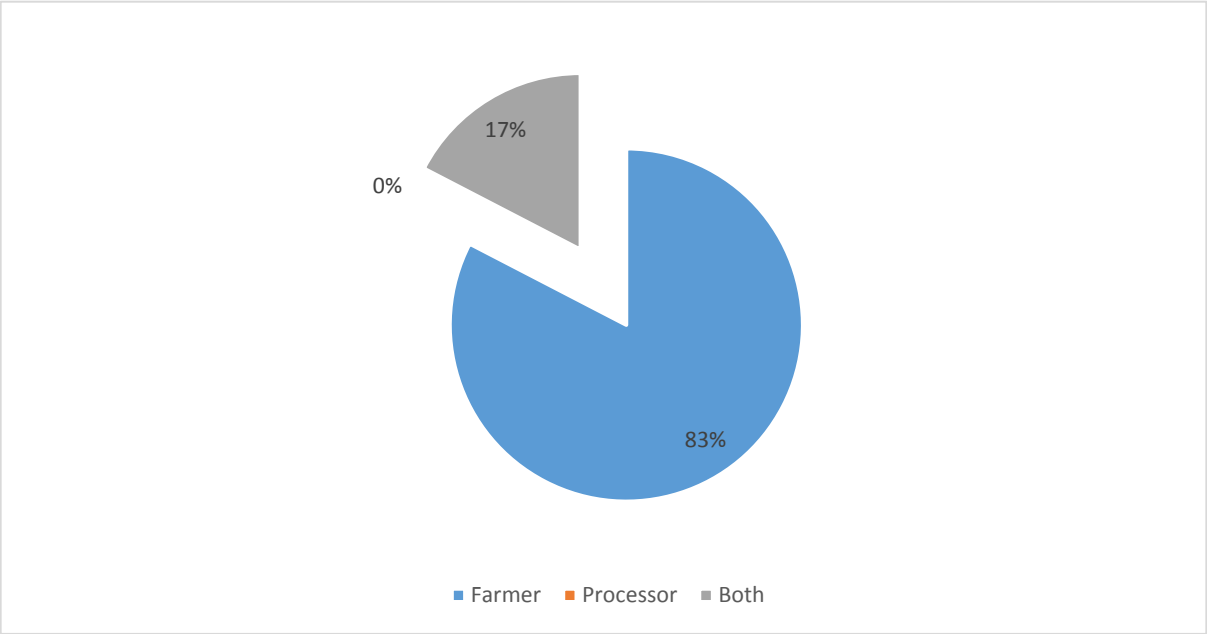


Figure 4.2: Business type

Farmers

Most of the farmers are acting as farmers only. But few farmers are acting as processors in terms of fulfilling household requirements. It means they are processing cashew in small scale. Farmers are processing cashew for their consumption and sometimes they sell for neighborhoods' requirements at low price. (Figure 4.2).

Village collectors/Collectors/Traders/Street vendors/Vendors/Processors/ S.L.C.C

There are many stakeholders involving in the cashew industry. Out of them, there are major actors who are in operational level identified as collectors, traders, street vendors and Processors, village collectors and Sri Lanka Cashew Corporation. The researcher has found that intermediate parties' involvement is high than direct business (Figure 4.3).

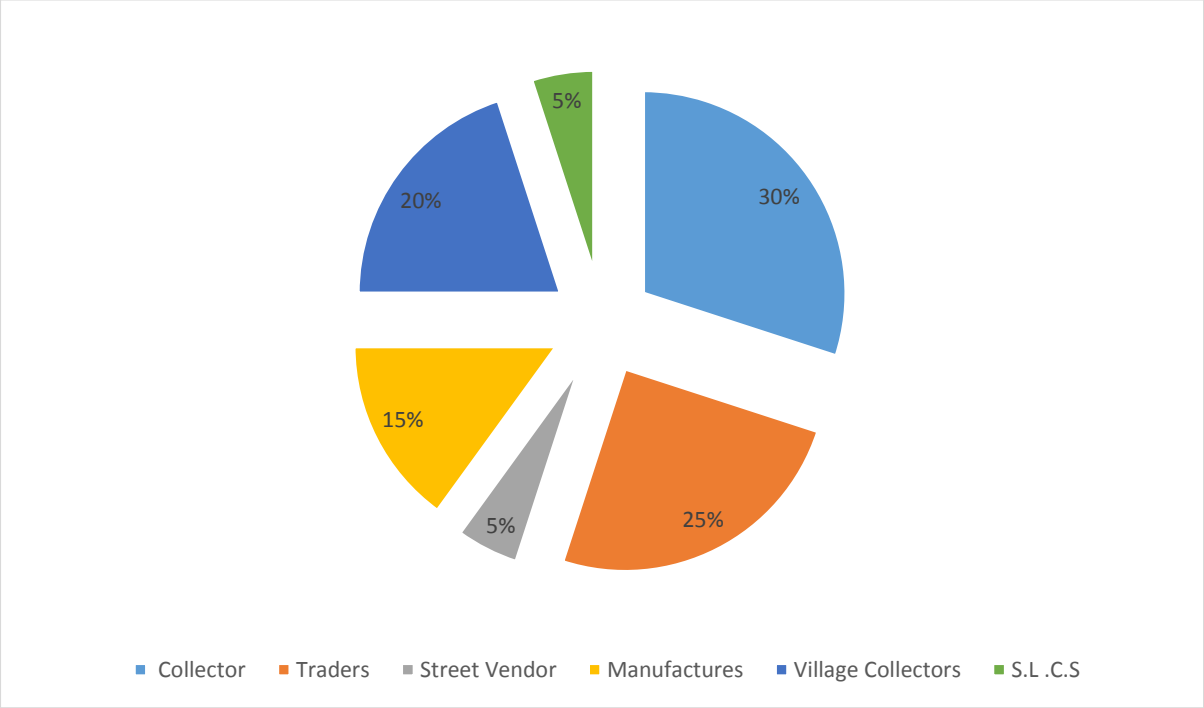


Figure 4.3: Stakeholders

4.1.3. Capital

The survey focused on the capital endowment of cashew production in terms of production and logistics. Table 4.2 shows production related and logistic related capital materials which are owned to farmers and other stakeholders. In addition, the farmers' land space has specified acres wise to identify the production capacity of them.

Table 4.2: Available capital of the main actors of the industry

		Production Related Capital								Logistic Related Capital					Others
	Resour	Hand Tractor	Tractor	Steam Boiler & Cooker	Automatic Cashew Shell cutting Machine	Electrical Oven	Moisture	Cashew Nut Peeling Machine	Cashew Kernels Grading Machine	Motor Bike	Tractor	Car or Van	Lorry	Store with a office	Nothing
Other Stake Holders	Total			1	5	3		2	2	3	1	3	3	7	5
	Category wise					**13**						**17**			**5**
Farmers	Total	10			2							1			13
	Category wise					**12**						**1**			**13**
	Net Total					**25**						**18**			**15**
Farmers Land Availability															
Farmers' Land Space	Acress	1 to 5	6 to 10	11 to 20	21 to 50	Above 50									
No: of Farmers	Nos	**9**	**9**	**1**	**4**	**1**									

Most of the farmers are doing the cultivation in small-scale and they don't have much capital and lands. As a result their output also comes down. However, only one farmer had more than 50 acres of cashew and Cashew Corporation has their own large-scale plantations which output is high.

When analyzing the data, the researcher has found that other stakeholders are using machinery and equipment mainly under logistic related things such as Motor bikes, Tractors, Cars, Van, Lorry as they are needed for transportation. However, Processors are using stream boiler and cooker, automatic cashew shell cutting machine, electrical oven, cashew nut peeling machine and grading machine under production related category. However, most of the equipment is used by medium scale processors and only a few others are using some equipment which related to production.

4.1.4. Land Ownership and acquisition

Farmers

96% of responders are the owner of the land. However, 4% of farmers have cultivated in government-owned lands (Figure 4.4).

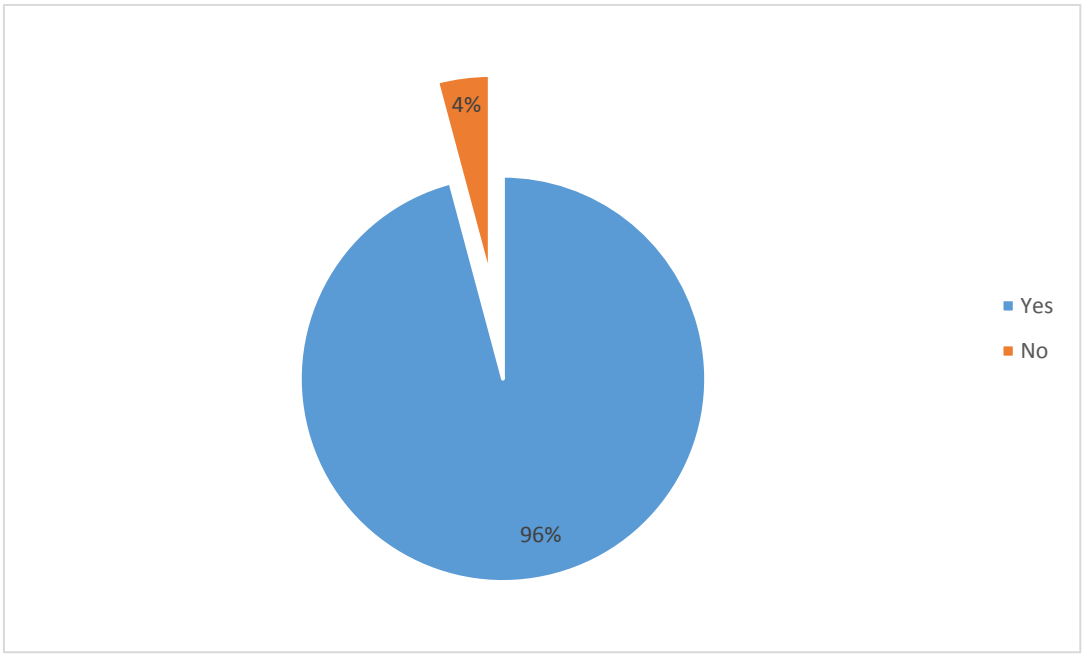


Figure 4.4:Ownership of the land/properties

Above 96% of Land Owners are acquired the lands in two ways.

- 79% lands by inheritance
- 17% by purchasing

Balance 4% cultivate on Government lands. (Figure 4.5).

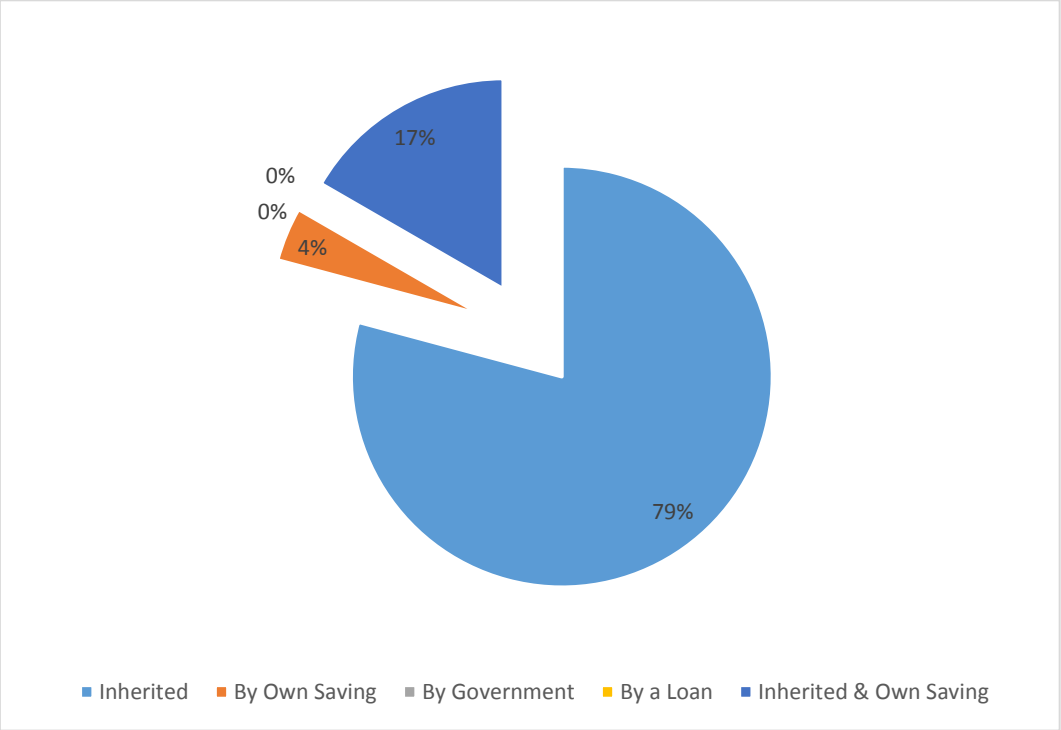


Figure 4.5: Land Acquisition

Village Collectors/Collectors/Traders/Street Vendors /Vendors/Processors / S.L.C.C

Both village collectors (3 Out of 4 responders) and street vendors (01 out of 01) don't have any capital which related to the business. Also, one collector (01 out of 6) indicated that he doesn't use any logistic or production-related capital to the business. However, all others are having one or more production-related or logistic related equipment which are owned to them. Understanding is, even intermediate parties also involve to the business in small scale.

4.2 Sourcing and Procurement

4.2.1. Agricultural inputs & equipment

Farmers

- Farmers are not purchasing fertilizer or plants by spending their own money as SLCC is aiding such facilities.
- However, 54% responders informed that they received these facilities only one time which is a reason for low productivity.
- 33% of responders had not commented as they already have matured trees which cause to reduce the harvest.

- Only 13% farmers are purchasing the material from Private firms but randomly(Figure 4.6).

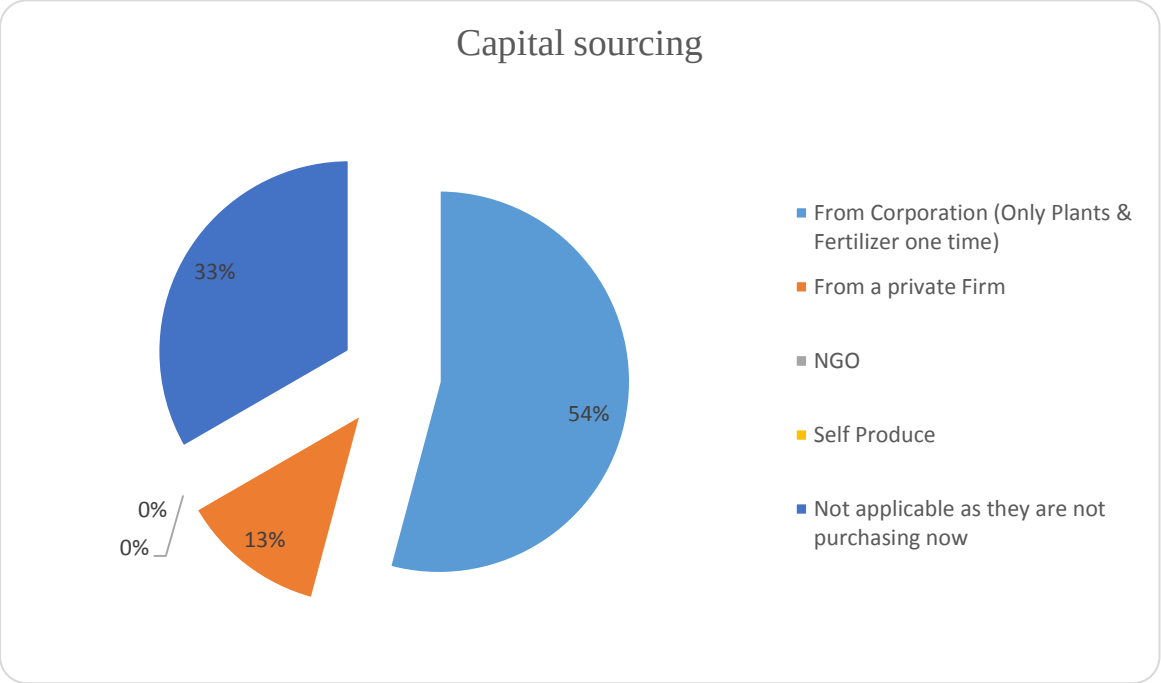


Figure 4.6: Capital sourcing

Village Collectors/Collectors/Traders/Street Vendors /Vendors/Processors / S.L.C.C

- Most of the other stake holder don't use these equipments as they are doing in small scale.Moreover , the logistic related equipment also are second hand ones as the stake holders are unable to spend huge capital for such.
- S.L.C.C is sourcing main machinery and Equipment based on the cost, efficiency and management decisions.

4.2.3. Raw cashew movement from the farmers

The study found twelve value chains in the raw cashew process.

a. S.L.C.C from S.L.C.C-34%
b. S.L.C.C from farmers-2.34%
c. Street vendors from farmers-0.29%
d. Processors from farmers-11.73%
e. Village collectors from farmers and sell to collectors-1.17%
f. Village collectors from farmers and sell to traders -3.51%
g. Village collectors from farmers and sell to processors -7.03%
h. Collectors from farmers (14.07%) to traders (2.93%)
i. Collectors from village collectors (3.51%) to processors (14.66%)
j. Traders from farmers(26000Kg) to processors-15.24%
k. Traders from village collectors (6000Kg) to processors-3.51%
l. Traders from collectors (6000Kg) to processors-3.51%

The following flowchart is an overview of all the movement of raw cashew in the value chain.

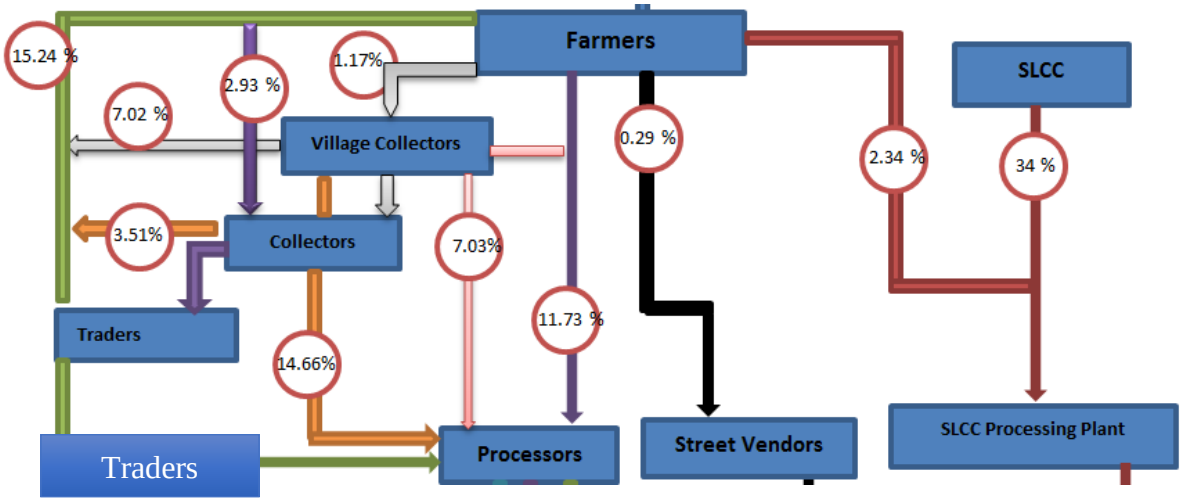


Figure 4.7: Raw cashew process

Sri Lanka Cashew Corporation is acting as the main character in the industry as a facilitator as well as a processor and a farmer (Planter). They are the largest cashew processors in Sri Lanka who is cultivating and having plants in island wide. Also, they have their manufacturing plants in Ja-Ela. Approximately their yield per year is 120 Tons but in last year it was reduced up to 58 Tons due to unavoidable reasons.

4.2.4.Raw cashew collection/Transport

As per the above observation, the researcher has found that both buyer and seller travel to opposite parties' places to collect cashew. 75% other Village collectors / Collectors / Traders / Street Vendors / Vendors/Processors commented that they are traveling to sellers' place to collect the raw cashew. However, some of the traders and S.L.C.C (25%) commented that sellers are delivering raw cashews to their place.

Distance from collecting point to sourcing point

Basically, distance from collectors place to farmers place is around 5 Km to 30 Km. that means there are some actors who are involving to the business surrounding the particular area. In addition, four (4) responders out of twenty are in zero Km to five kilometers. five numbers of responders from five to fifteen Km. Nine numbers of responders from 16 to 30 Km. Only one responder is from 31 to 60 Km. There are two (2) responders are in over 60 Km (Table 4.16)

Table 4.3: Distance from collecting point to sourcing point

Distance (Km)	**5**	**15**	**30**	**60**	**Above 60**
0	4	0	0	0	0
5	0	5	0	0	0
16	0	0	9	0	0
31	0	0	0	1	0
Above 60	0	0	0	0	2

4.2.5. Raw cashew storage & handling

Farmers are having storage facility (92%) to store the harvest. Basically, they use a place in their house itself to store the harvest.8% of farmers don't have storage facilities. Damage and wastage also indicated from this percentage in opposite way. That means damage and wastage possibility is 8% while damage less possibility is 92% according to the responders. (Figure 4.8)

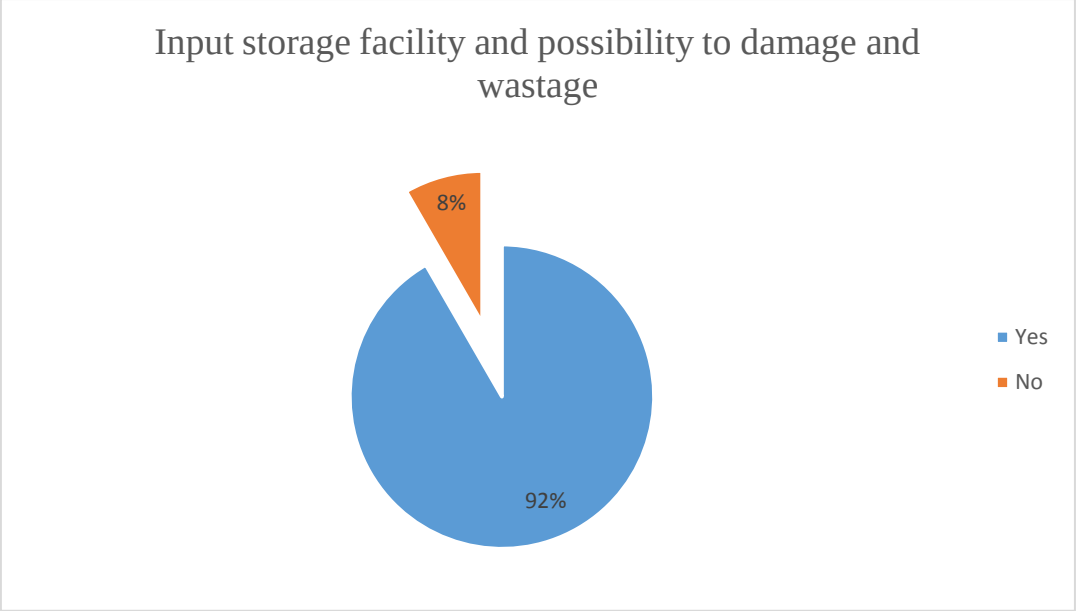


Figure 4.8:Input Storage facility and possibility to the damage and wastage

Village collectors/Collectors/Traders/Street vendors/Vendors/Processors/S.L.C.C

Village collectors, Collectors, Street vendors are ground level actors and their main input procurement is raw cashew from farmers. They have storage facility in their houses as they are doing the business in small scale. There is no damage prevention facilities provided which can be occurred in between transporting to processing plants.

Traders

They are purchasing raw cashews from farmers and village collectors and collectors. They have the storage facility in their places as they are purchasing some other products as well. There is no damage prevention facilities provided while transporting as most of the cashews purchased in raw type.

Processors/S.L.C.C

Their main input is raw cashew, secondly machinery and other equipment. They have structural organization and all strategies applied in the view competing with others rivals in the industry. Therefore damaging possibility is less.

4.3. Production

4.3.1. Cultivations from the main crop to others

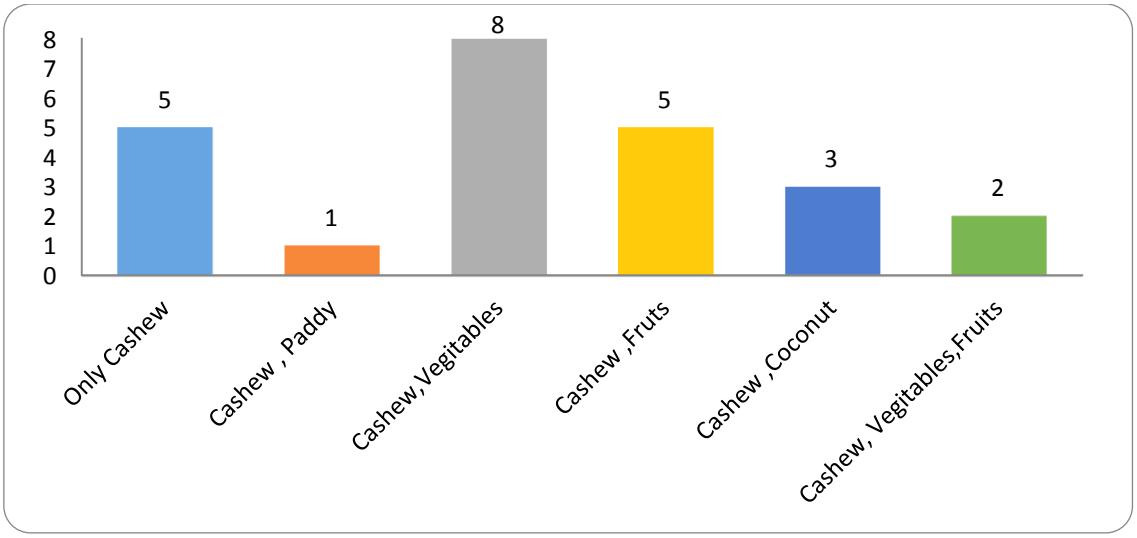


Figure 4.9: Cultivation from main crop to others

- Most of the farmers are cultivating cashew with some other crops.
- 21% farmers are cultivating only cashew in their lands.
- 79% of farmers are cultivating cashews with some other crops as below.
    - 33% out of 79 % cultivate vegetable with cashew.
    - 21% out of 79% cultivate other fruits with cashew.
    - 13% out of 79% cultivate coconut with cashew.
    - 8% out of 79% cultivate both Fruits and vegetable with cashew.
    - 4% out of 79% cultivate paddy with cashew.

4.3.2. Cashew production in last year

Farmers

Majority of farmers have taken harvest less than 10000Kg.Only few farmers had good output during last year.(Figure 4.10).

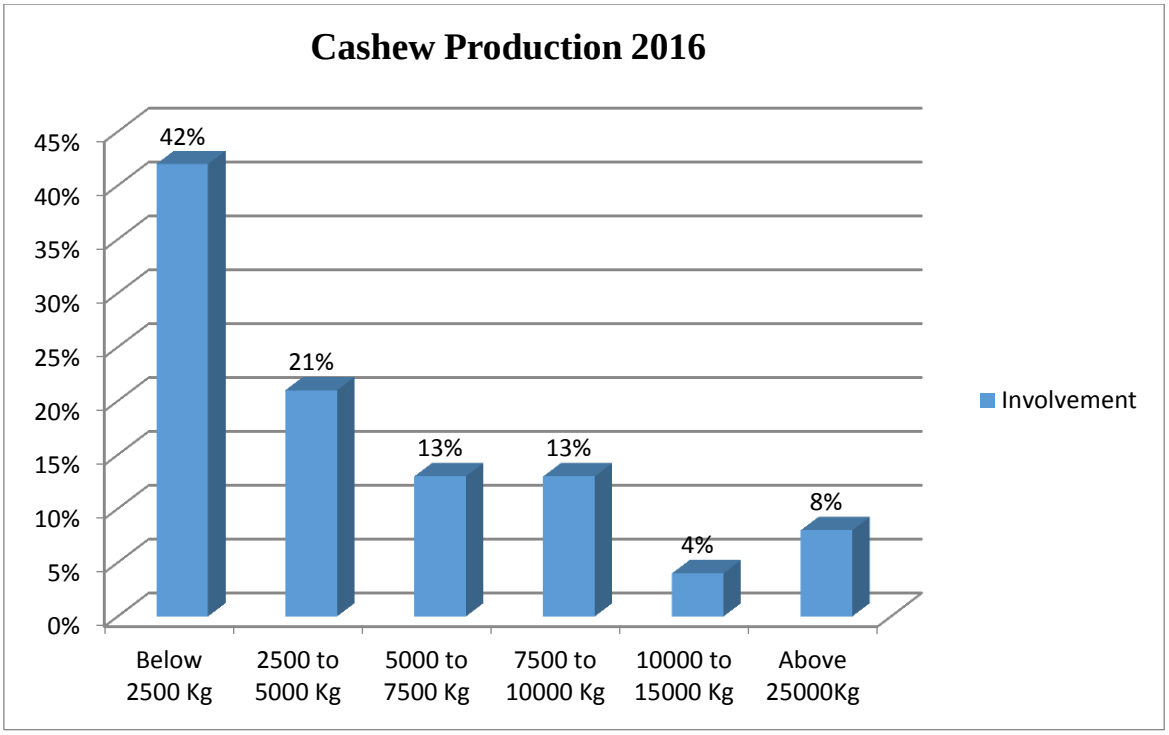


Figure 4.10:Cashew production in last year

Accordingly, what we can understand is the large numbers of farmers are cultivating cashews in small scale as a household income.

Processors

Researcher interviewed two processors who are processing cashew in small-scale one responder is processing in large-scale. The large scale processor has produced 20 Ton of roasted cashew while other two processors processed 5000 Kg of roasted cashew per year. Apart from that, The Cashew Corporation processing whole the harvest that received from their own plants. That means their output was around 20MT during 2016.In addition to that Cashew Corporation has processed another 20MT of processed cashew.

4.3.3. Cashew production of 2016 compared to 2015

Farmers

According to the farmers, the production has been reduced comparing to the previous year. However 8% of the sample status that the harvest has been increased because of the acquired land and new planted trees.

Only 8% of farmers harvest is same as previous year as they also added some lands or plants to their properties. Accordingly cashew production has been decreased and reasons are discussed below.

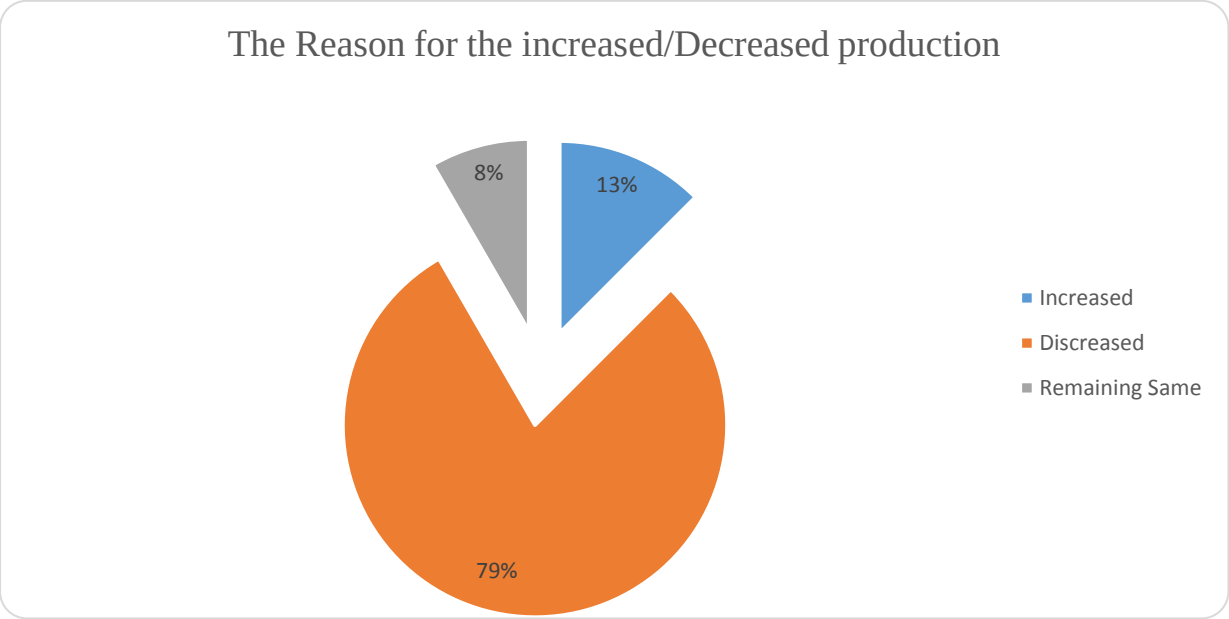


Figure 4.11: The reason for the increased/Decreased production

Processors

Their production also reduced by 40% as they have an interrelationship with farmers. When the farmers are getting low production output, supply quantity will be less and finally total output also reduced.

4.3.4. The reason for the increased/Decreased of production

Farmers

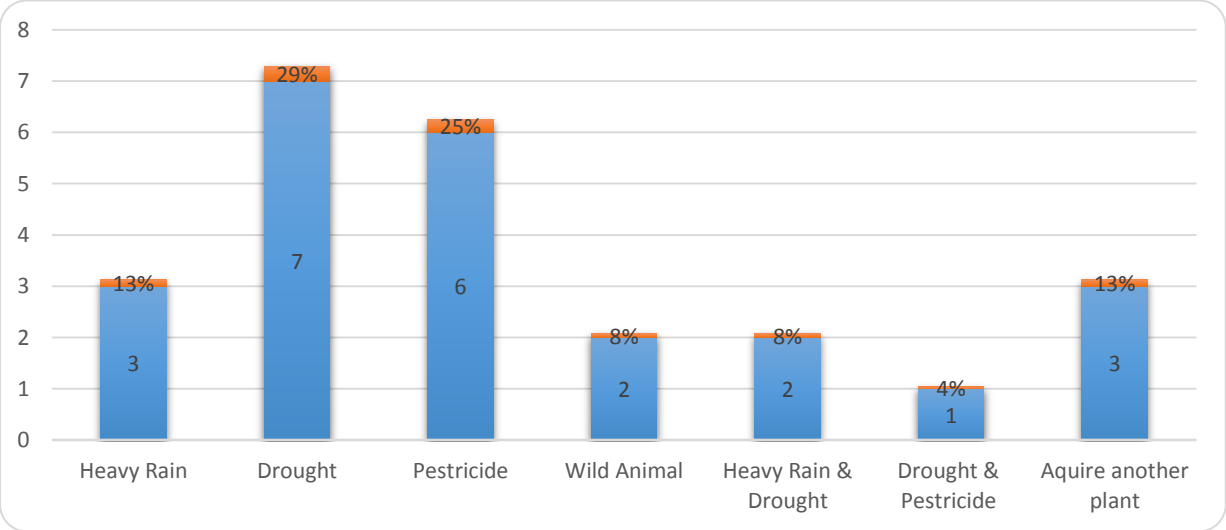


Figure 4.12: The reason for the increased/Decreased of production

Basically, the environmental factors are affected to reduce the output as below.

- Heavy Rain
- Drought
- Pesticide
- Wild animal

13% of responders indicated that, acquiring another plant as the reason for increased the harvest.

Processors

Basically, Farmers and processors are having interrelationship. That means, when farmers are getting lower harvest same result will be received to the processors as well. Therefore processors also have taken less output during last year.

4.3.5. The requirement of expands the plantation or yield/capability of manufacturing

Farmers

Most of the respondents (96%) indicated that they need to expand the land but it is hard to do so as many reasons such as land issue, wild animal issue and environmental issues (Figure 4.13).

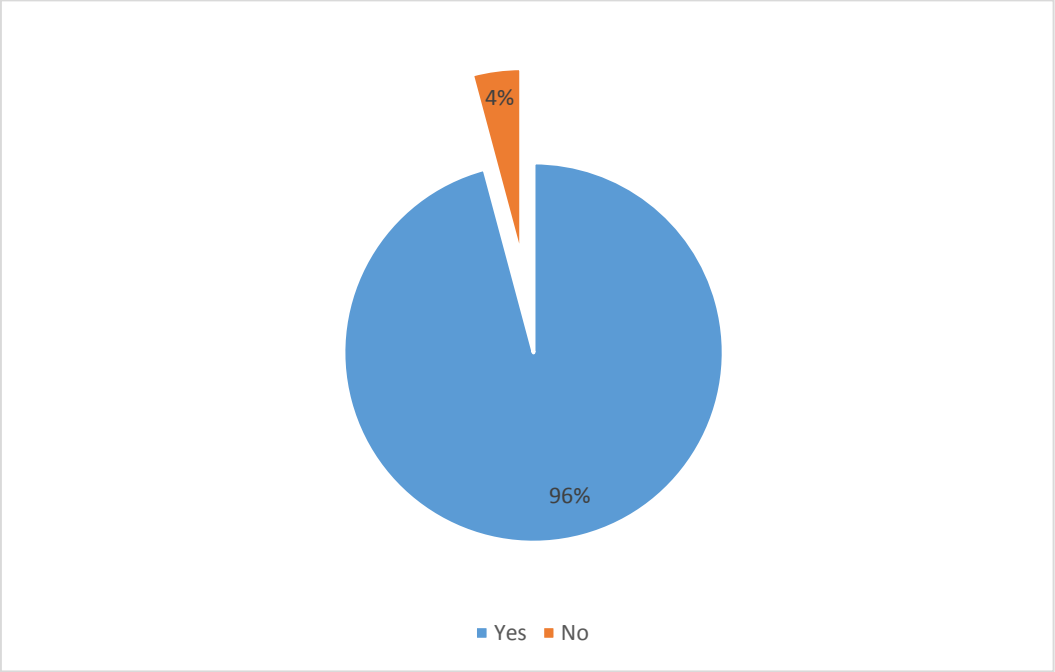


Figure 4.13: Requirement to expand the business

Processors

Due to less input of raw cashews and different reasons they have analyzed the industry and determined not to invest for the cashew furthermore.

4.3.6. Quality

Farmers

Majority of the farmers 79% are not concern about the quality level of the product. But only 21% said that they are following quality of the products (Figure 4.22).

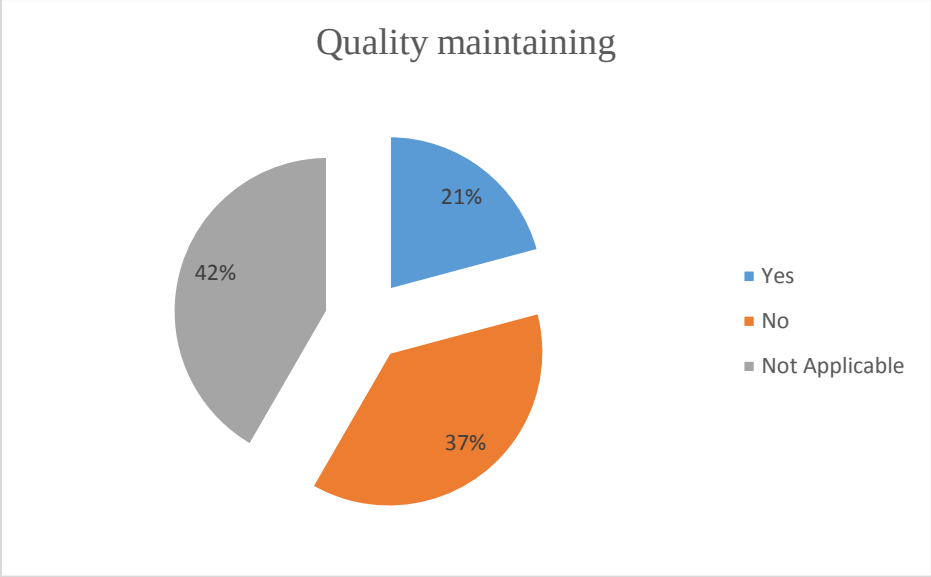


Figure 4.14: Quality maintaining

Processors

The researcher has observed, that the quality is maintained only by the processors because of the food regulations established by the government.

4.3.7 Sustainability

Farmers

58% of farmers don't have understanding about the sustainability and not aware about the subject, but 38% of the farmers informed that they are not using pesticides and use only carbonic fertilizer. Also, 4% of farmers informed that they apply only carbonic fertilizer to maintain the sustainability (Figure 4.15).

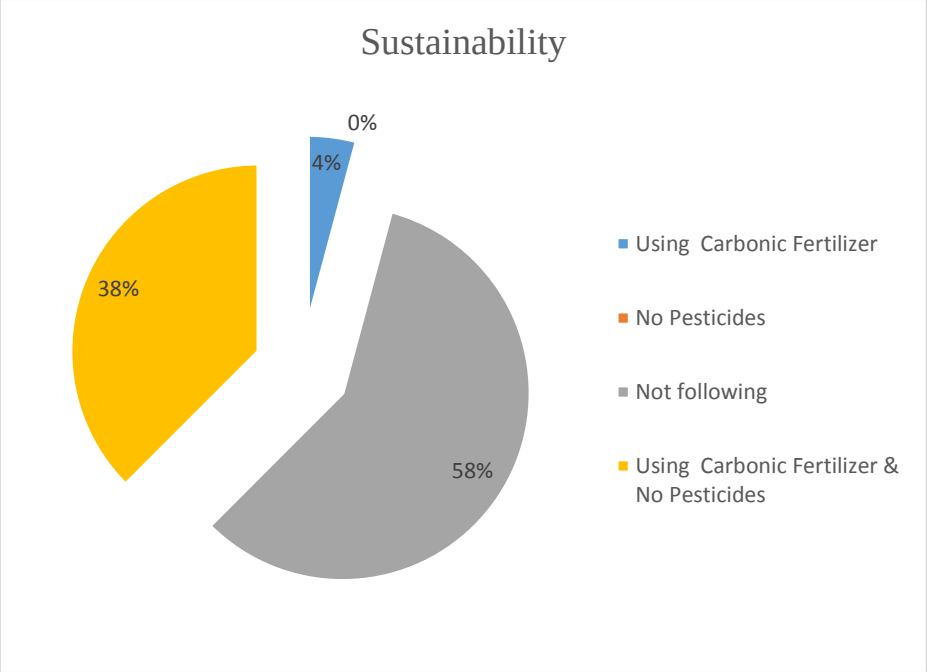


Figure 4.15 : sustainability while doing cultivation

4.3.8.Process strategy

Processors

Semi process strategy is followed by most of the processors but still 33% of responders are processing manually. This indicates that Sri Lanka is still using semi processing method. (Figure 4.16).

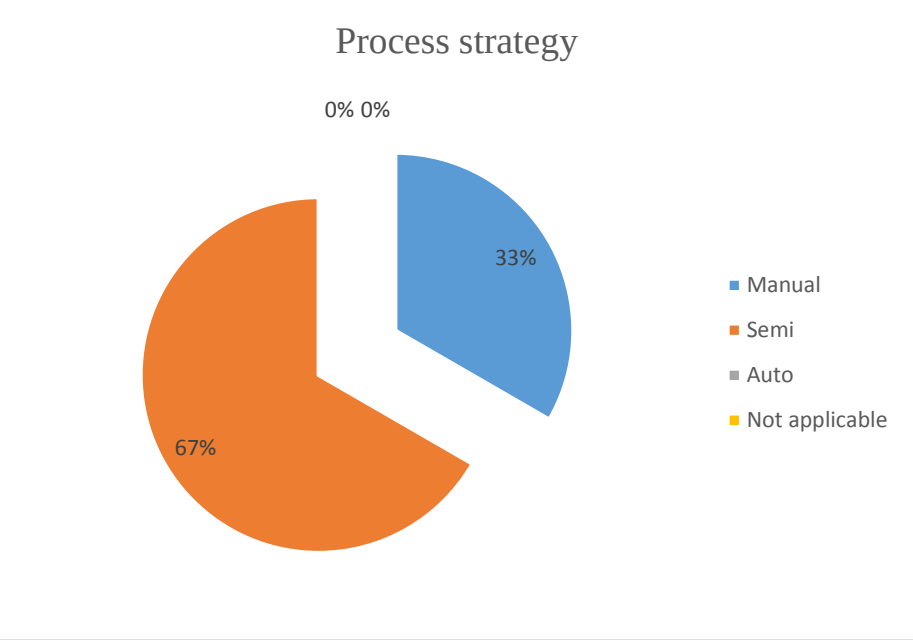


Figure 4.16:Process strategy

4.4.Value addition

In addition to the processors, all other actors (Intermediate parties) in the value chain sell raw cashew. However, 7% of farmers responded that they also process cashew for their individual requirement.

4.4.1 Value added services

Village collectors/Collectors/Traders/Street vendors/Vendors/Processors/S.L.C.C

100% of responders commented that they are applying value-added service as each actor is adding value to the products. Basically, researcher has considered that collection and storing facilities are also as a value-adding service. Therefore, each and every party has involved adding a value to the products.

4.4.2. Value added products

Processors

In addition the main processes of cashew, below are the value added products.

- Wine from Cashew Fruit.
- Cashew shells use to produce power to run the cashew machines
- Salted and garlic quoted cashews and biscuits

Moreover, the researcher has gathered more information by interviewing ETA Lanka who is producing value-added products by using cashew. They use cashew, kithul trickle, and milky coconut and produce a product and sell to local and international market (Dubai,Ireland,USA and Japan). He is selling a 340g pack for Rs.1300.00. For that, they need only 150G of cashew, small volume of kithul trickle and coconut. Accordingly, they have produced this value-added product by using 2000Kg of cashews during 2016. According to them, this is the best strategic solution to compete with the competitors in the cashew industry.

4.5. Distribution

4.5.1. Distribution of processed products

The study found nine value chains in the processed cashew value chain.

a. Processors sell the product directly to the local customer -16.28%
b. Processors sell to the local customer through an agent – 5.15%
c. Processors sell to the local customer through vendors to -3.79%
d. Processors sell to the local customer through the own shops -25.23%
e. Processors (Street vendors) sell to the local customer – 0.67%
f. Processors sell to the export market- with 14th chain-4.07%
g. SLCC factory to their own outlet to customer (Local)-30.00%
h. S.L.C.C to the franchise dealers to customer (Local) -14.09%
i. Processors (Farmer) direct sales to customer-0.67%

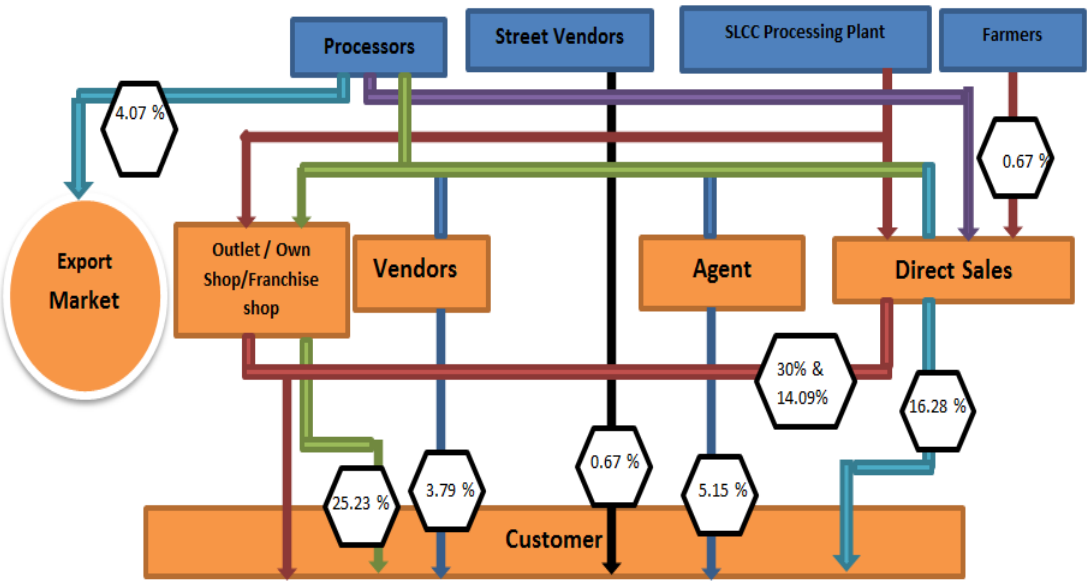


Figure 4.17:Processed cashew nut chain

4.5.2. Finished goods delivery method

Processor

Majority of the buyers visit the sellers to buy processed cashew. Sometimes the seller delivers the product to buyers' place. (Figure 4.34).

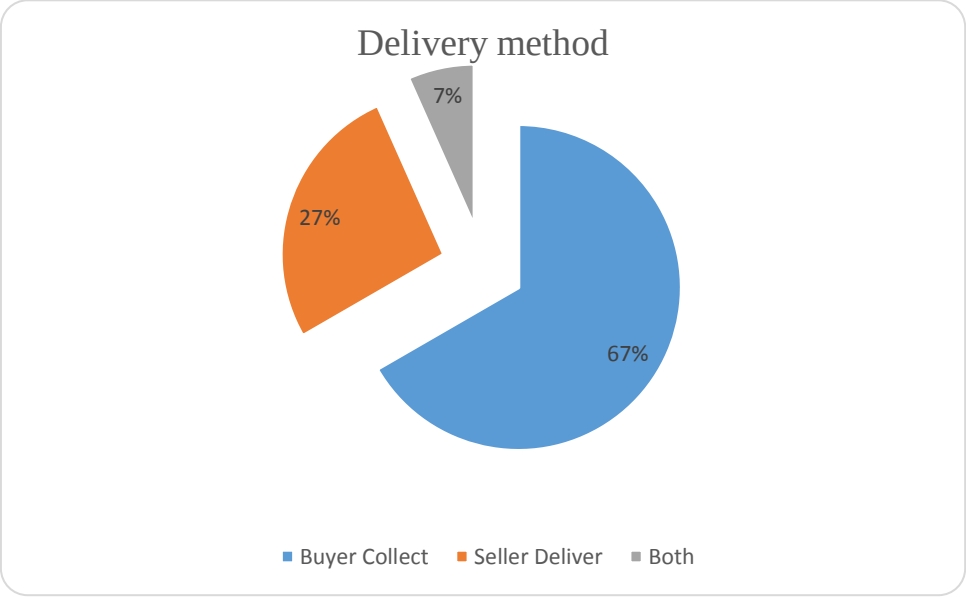


Figure 4.18: Finished goods delivery method

4.6.Negotiation power

Farmers

25% of farmers indicated that they have the power to decide the price.29% of responders indicated that the market has pricing power. Also,42% of farmers indicated that the buyer has power for this.4% mentioned that the government body has the power to decide the price. This 4% is the farmers who sell the cashew to SLCC.

Village collectors / Collectors / Traders / Street Vendors

60% has indicated that they decide the price based on the market and 25% indicated that farmers have more power to decide the price, as well as 15% of responders, indicated that they have the power to decide the price.

Processor / S.L. Corporation

Since they are doing the business in large scale, these two parties have more pricing powers. They have good customer base. However, market is controlled the pricing power.

4.6.1. Payment method for product

Farmers-Cash Basis

Village collectors / Collectors / Traders / Street vendors / Vendors-

They sell cashews only cash basis.

Processors / S.L. Corporation–Cash/Checques & Credits are acceptable

They sell cashews cash checques & credits basis .The payment method will be decided based on the relationship between buyer and seller.

4.7. Sales &Marketing

4.7.1 Purpose of selling products

Farmers

Farmers are selling their products with certain aims (Figure 4.19).

They are;

- To generate an income that satisfies day to day house hold requirements.
- To earn income based on the offered Price.
- To generate incomes to settle the loans

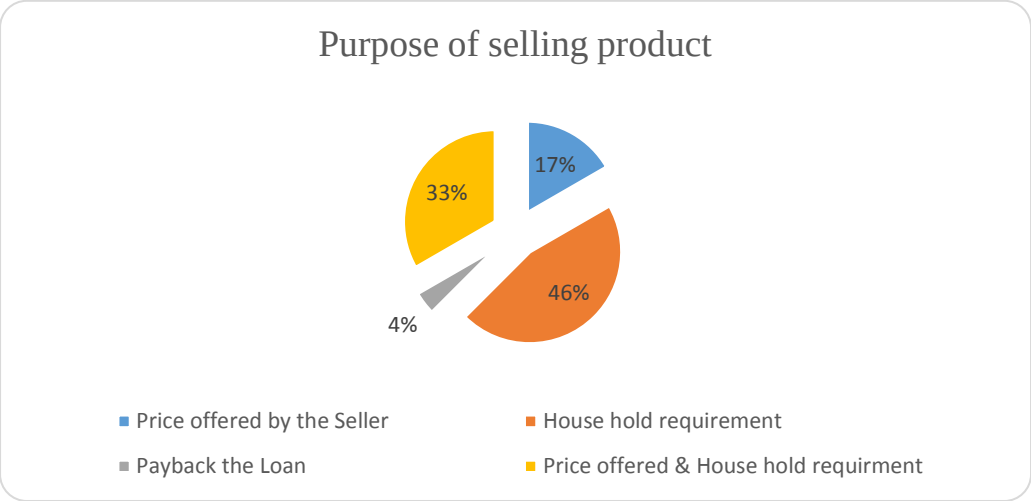


Figure 4.19: Purpose of selling the product

Village collectors/Collectors/Traders/Street vendors/Vendors/Processors/S.L.C.C

Their objective is making profits for fulfilling production-related expenses.

4.7.3. Willingness to collaborate

Farmers

62% of responders are willing to collaborate with another party when selling the product as they are able to get more power to bargaining. But 38% saying that they cannot make a partnership with another body to sell the products (Figure 4.38).

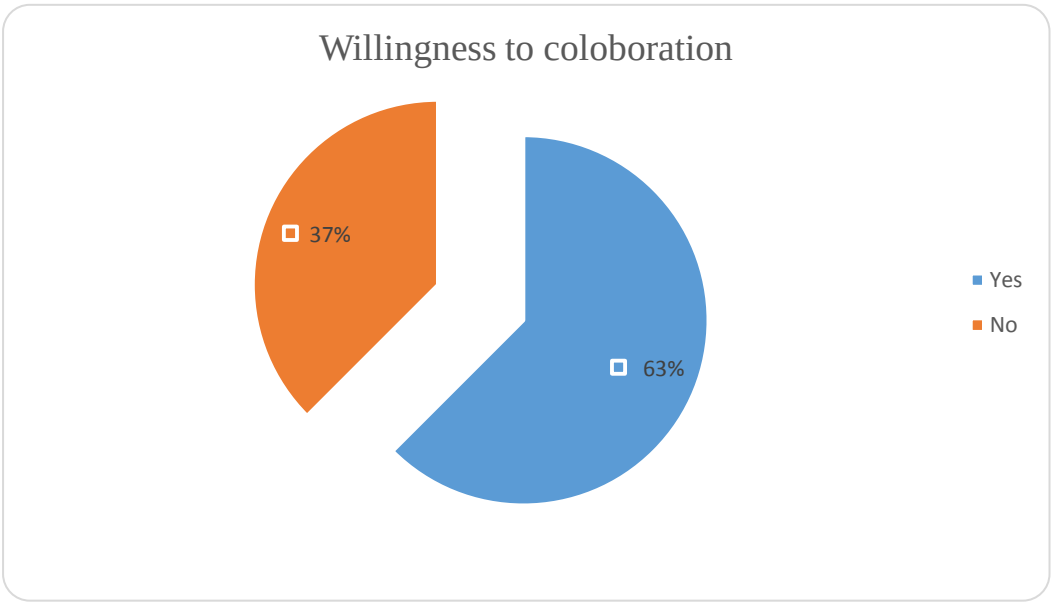


Figure 4.20: Willingness to collaborate

Village collectors / Collectors / Traders / Street Vendors / Vendors

They don't believe that profit or any advance benefit can be gained because of the collaboration. Therefore, they prefer to do the business individually.

Processors / S.L. Corporation

They are not willing to collaborate because of the brand name and quality of the products.

4.7.4.Sales strategy

Farmers

Farmers don't like to make an agreement with one buyer or specific buyer as they cannot take the benefits from demand. Also, there are many buyers are visiting them every day and sometimes their prices are higher and also farmers need money immediately to fulfill the household requirement. Therefore they are not giving priority to a specific buyer.

Village collectors/Collectors/Traders/Street vendors/Vendors/Processors/S.L.C.C

Their concept is to serve whoever comes first. Therefore they don't have specific buyer or seller.

4.7.5.Factors for deciding the price

Processors

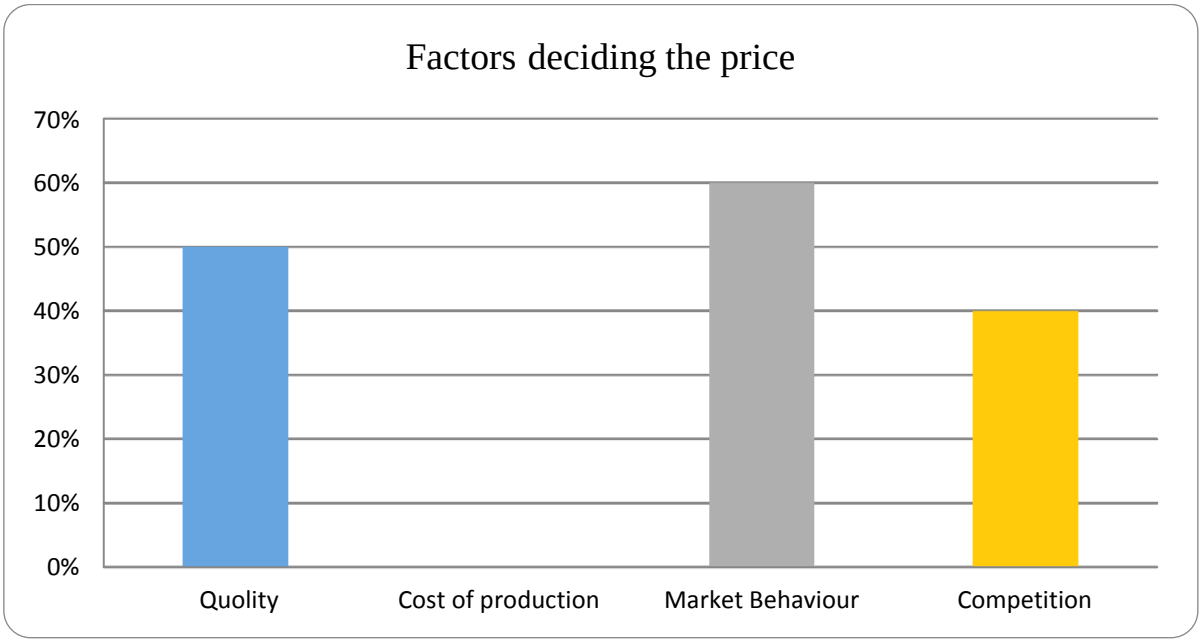


Figure 4.21: Factors for deciding the price

4.7.6. Bottle neck issue

The Village collectors, Collectors, Street vendors, Traders and Processors indicated that their main problem is input shortage (raw cashew) and lack of information about the market and industry. Also, other responders indicated about the unreliable market conditions (Table 4.5).

Table 4.4: Bottle neck issues

Factor
Low Price
Unreliable market
Lack of market information
Lack of support from SL Cashew corporation
Other (Specify)-Lack of inputs(Cashew)

4.7.7.Finding Buyers

Village collectors/Collectors/Traders/Street vendors/Vendors/Processors/S.L.C.C

- Continuous buyers.
- Through their friends.
- Visiting randomly.

4.7.8. Market competitions

Village collectors/Collectors/Traders/Street vendors/Vendors/Processors/S.L.C.C

60% of responders indicated that there is a market completion for the product and only 40% of responders indicated that there is no competition in the market (Figure4.40).

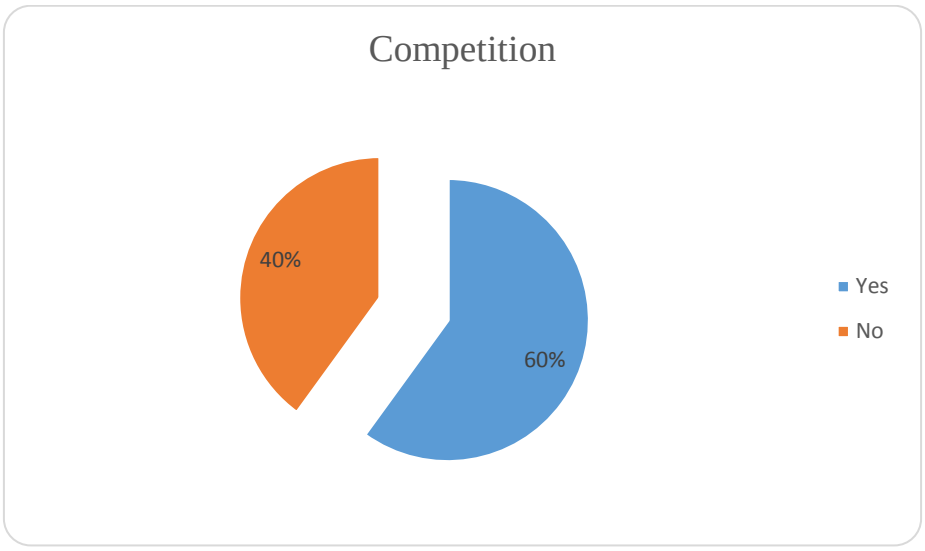


Figure 4.22: Market competitions

4.7.9. Export market

Processors

- Few Processors are doing Export.
- Based on the sample, only one responder is doing export (Quantity less than 2500 Kg)
- Particular party sells roasted cashew by pricing between Rs.7000-10000 per Kg
- Their Clients are from Europe, USA and UAE.
- India and Africa Cashew exporters are the main competitors of them.

Apart from that, the ETA Lanka has produced value-added products by using cashews and used cashew quantity is around 1000Kg which earned more revenue to them. They have a good market in Dubai, Japan, Ireland. However, the USA market was not succeeding due to some health issues.

4.7.10. Challenges of export market

Processors

Based on the above analysis, the exporter indicated that there is a competition in the export market as we are unable to compete with the price offered by African and Indian cashew exporters.

4.8. Labour

4.8.1. Labour arrangement

Farmers use few labour sourcing strategies.

- Family labour used for the cultivation
- Large scale farmers are hiring labour
- Few others are doing both during the session

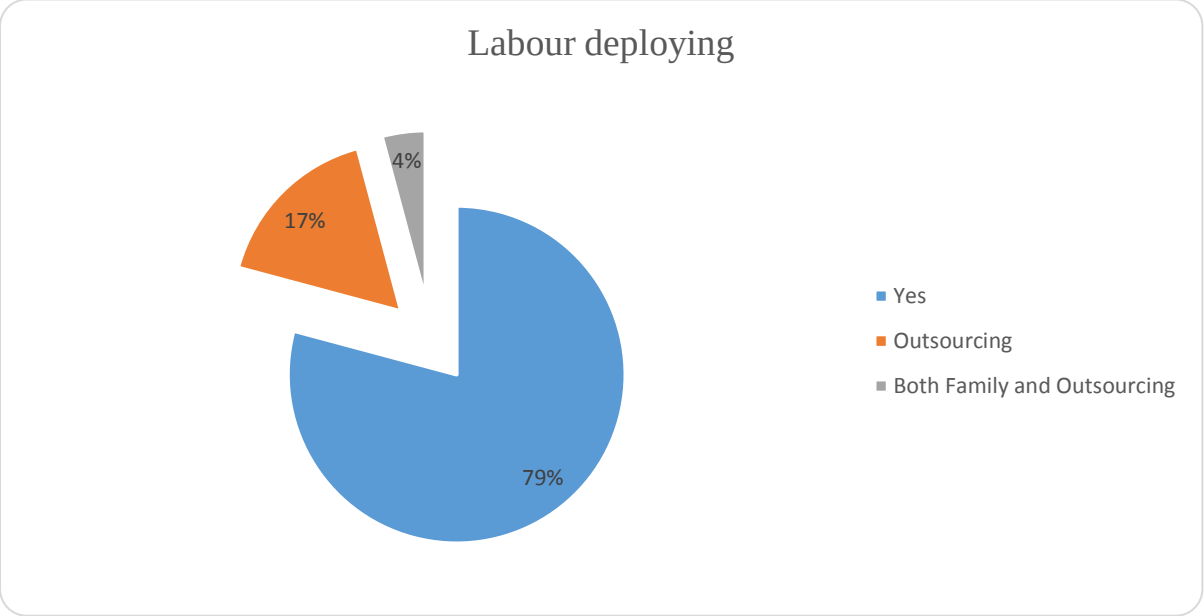


Figure 4.23: Labor Deploying

Village collectors/Collectors/Traders/Street vendors/Vendors/Processors/S.L.C.C

73% other stakeholders are also employing their family labour asset. Balance is outsourcing.

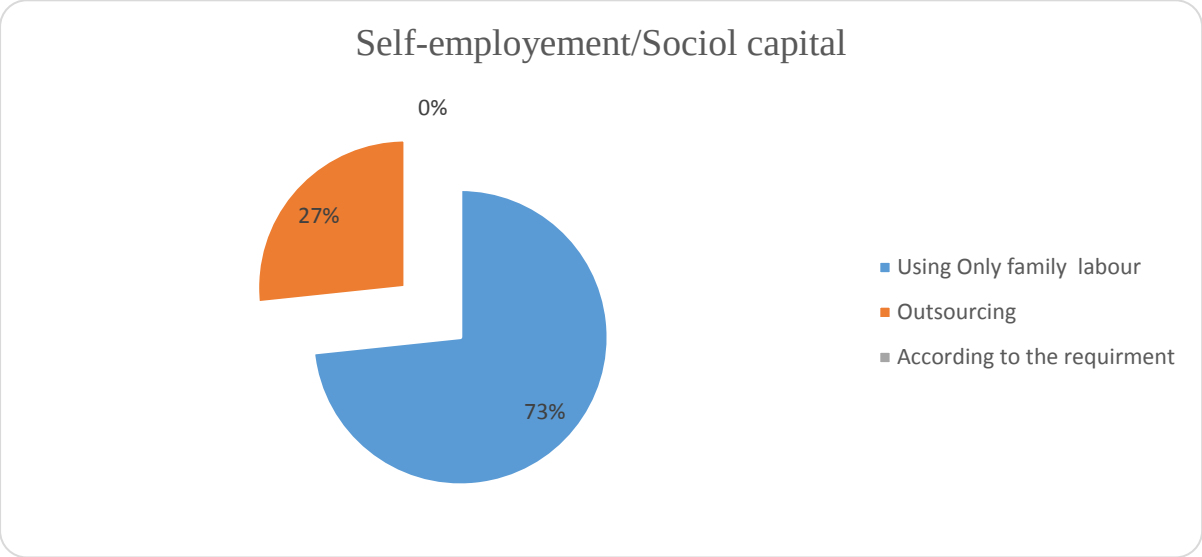


Figure 4.24: Self-employment/ Social capital

4.8.2.Labour availability

Farmers

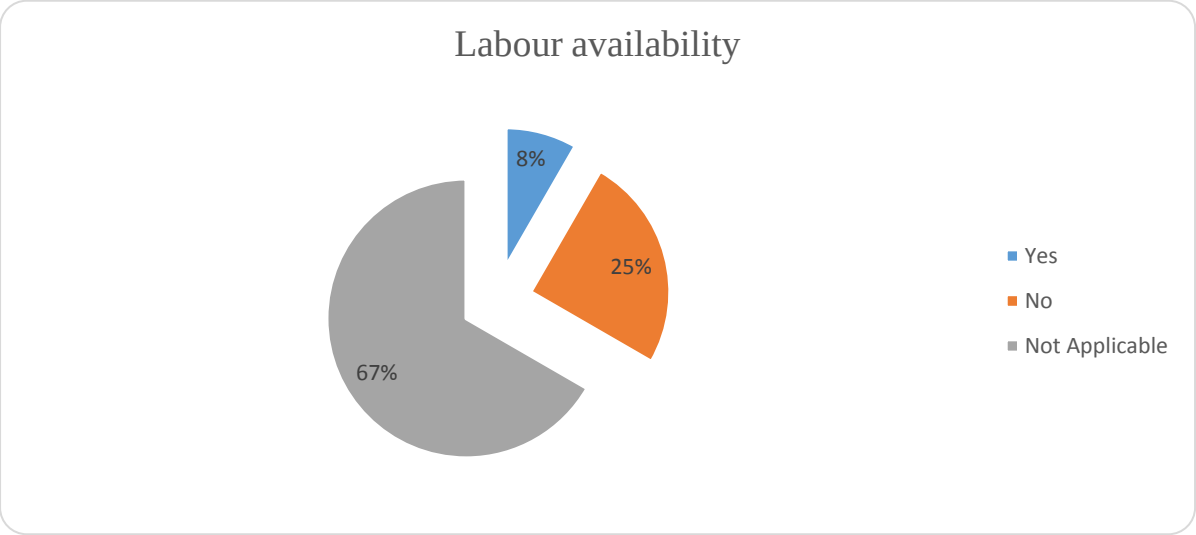


Figure 4.25: Labour availability

67% of responders commented that this is not applicable as they are using family labour. Also, another 25% of responders indicate that labours are rare to use for the industry. Only 8% of responders indicated that labours are available (Figure4.43).

Village collectors/Collectors/Traders/Street vendors/Vendors/Processors/S.L.C.C

Other stakeholders also indicated similar feedback. 66% of responders indicate that this is not applicable to them. Also, 27% of responders indicate that they can find labours easily. Only 7% of responders indicate that it is hard to find labours in the industry (Figure 4.44).

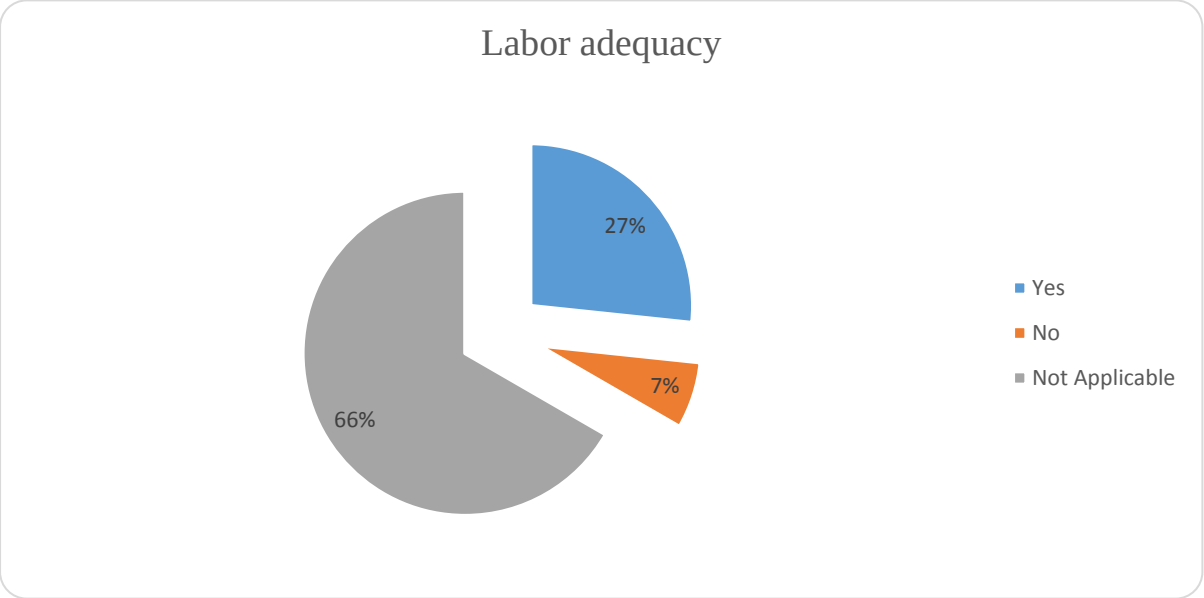


Figure 4.26: Labour adequacy

4.8.3 Problems with labours

Farmers

58% of responders indicated that most of the labours are not interesting on the jobs. As a matter of fact they are moving to different jobs. 42% indicators mentioned that there is no issue with labours in the industry (Figure4.45).

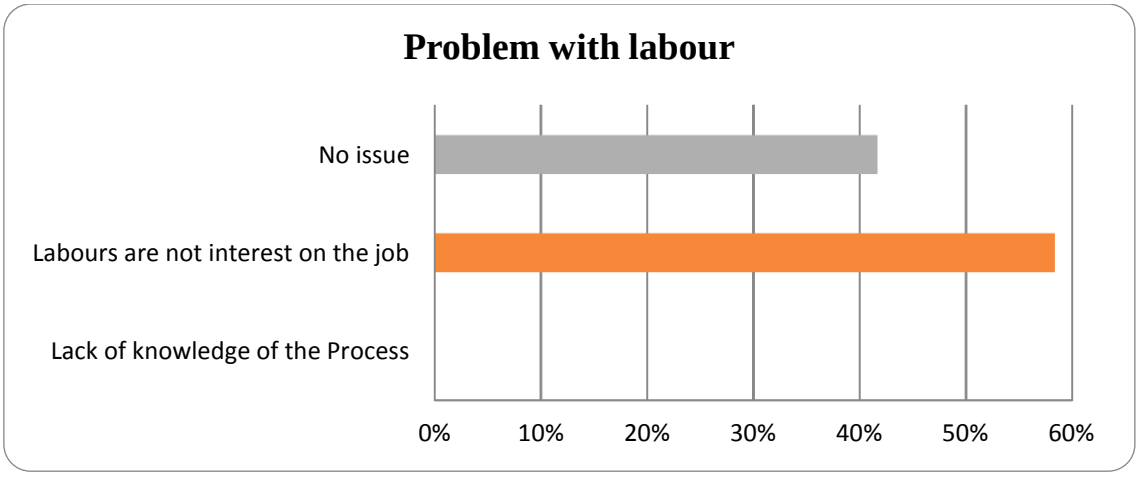


Figure 4.27: Problem with labour

Village collectors/Collectors/Traders/Street vendors/Vendors/Processors/S.L.C.C

While 47% of responders indicating that labours are not interesting on the job 53% of responders indicated that there is no issue with labours. However,these53% responders are traders and Collectors who are doing buying and selling business (Figure 4.46).

4.8.4 Work force

Village collectors/Collectors/Traders/Street vendors/Vendors/Processors/S.L.C.C

Other stakeholders are doing this as single ownership business. It means, The owner acting as an all-rounder which rate is 47%. 13% of responders have 2 assistants. The 3-5 labour force is working with 27% of responders. 13% of responders are having more than 50 employees (Figure4.47).

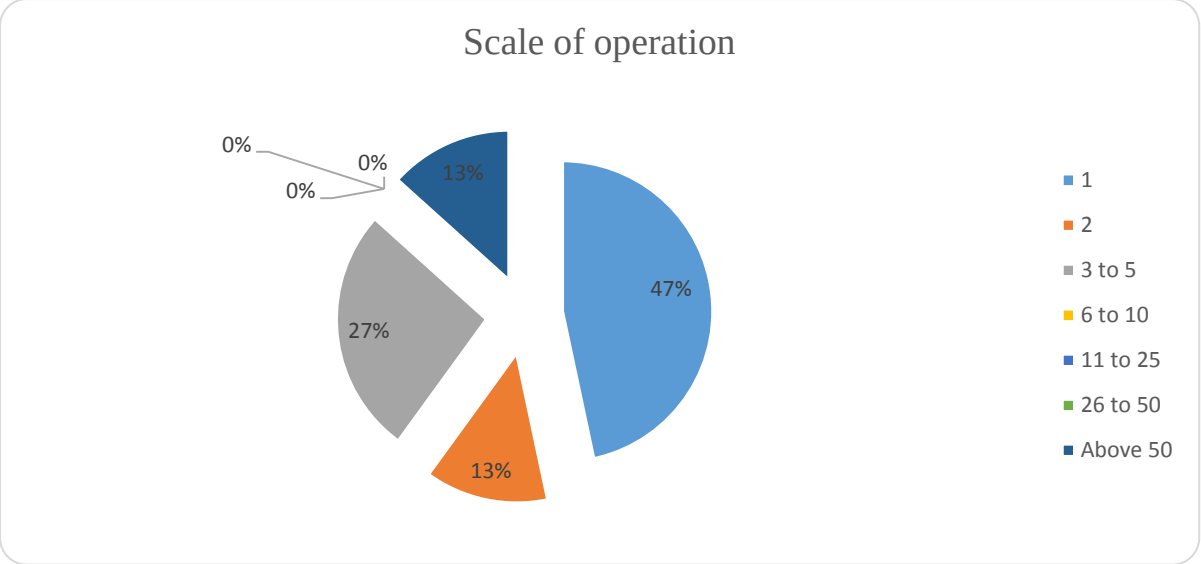


Figure 4.28: Scale of operation

4.8.5. Approximate cost during the season (Labour cost)

Farmer

The exact cost of labour cannot be measured as some of the jobs are not continuously occurring. The cost is calculated based on farmers' information and they have given the figures for five acres of cashew land. Accordingly, approximate cost is only Rs.8000.00 if the labours are outsourced (Table 4.7).

Table 4.5: Approximate cost during the season (Labour cost)

Process	No of labour days required	Per day/Per hour cost average	Total labour cost
Planting Plants, Landscape	3	1000	3000
Removal of wild plants	3	1000	3000
Fertilizing	0.5	1000	500
Seeding		1000	0
Harvesting	0.5	1000	500
Drying of cashew		1000	0
Grading	0.5	1000	500
Cleaning	0.5	1000	500
			8000

Processors

Production costs analysis (For 1000 Kg of Finished cashew with semi process)from the view of processor, farmers point to customer point cost is below 9750.00 to produce 1000 Kg of cashew nuts. That means per Kg labour cost is Rs.97.50 (Table 4.6).

Table 4.6: Approximate cost of processors

Process	No of labour hours required	Per day/per hour cost Ave:	Total labour cost
Collecting cashew	1	1200	1200
Grading raw cashew	2	1200	2400
Boiling	0.5	1200	600
Cutting	0.5	1200	600
Dryer	1	1200	1200
Moisture	0	1200	0
Peeling	0.5	1200	600
Grading	0.5	1200	600
Roasting & packing	1.5	1200	1800
Documentation	0.5	1500	750
			9750

4.8.6 Labour rules

Village Collectors/Collectors/Traders/Street Vendors/Vendors/Processors/S.L.C.C

Other Stakeholders, 87% of responders indicate that they are not following any labour rules when operating the business. Also, only 13% of responders indicate that they are following labour rules as a medium scale company (Processors).

4.9. Environmental/External factors

4.9.1. Challenges

Farmers

- 38% of farmers having climate issues.
- 21% indicated price fluctuation as their biggest problem. Also, they have challenges with the technical issue and finding a good buyer.
- Land issues affected to 8% of responders (Figure 4.48).

Other stakeholders

- Quality issue
- Set a price
- Finding a buyer
- Technical issue
- Climate issue
- Transport issue

4.9.2 Threats from animals or individuals for the pants to yield

Farmers

100% of responders mentioned that they have threats from animals and individuals to their yield as some of the plants are locating near to wild area.

4.10.Government support/Regulatory issues

4.10.1 Approval

Farmers

There is no requirement to obtain any approval to start or to continue the cultivation.

Village Collectors/Collectors/Traders/Street Vendors/Vendors/Processors/S.L.C.C

They also don't require an approval. However, to perform as an organization, the traders, vendors, processors have to register under a government body but not compulsory.

4.10.2. Support from S.L. Cashew Corporation

Farmers

54% responders indicate that they are not getting support from SLCC but 46% of responders indicate that they are having support from SLCC, because of the awareness program and plants and fertilizer which they are giving only one time.

Village collectors/Collectors/Traders/Street vendors/Vendors/Processors/S.L.C.C

They are not dealing with Sri Lanka Cashew Corporation at all.

4.11.Future of industry

The following is a summary of feedback received from interviewees on their view of the current needs and future direction of the industry.

4.11.1. Satisfaction/Prospects

Farmers

While 42% of the responders are happy with the industry majority of 58% of responders are not happy due to reason indicated and described in previously.

Village collectors/Collectors/Traders/Street vendors/Vendors/Processors/S.L.C.C

The feedback is totally on the opposite side comparing to above. 93% of responders mentioned that they are happy with the industry as they are making a good profit. Only 7% of responders are not happy with the industry.

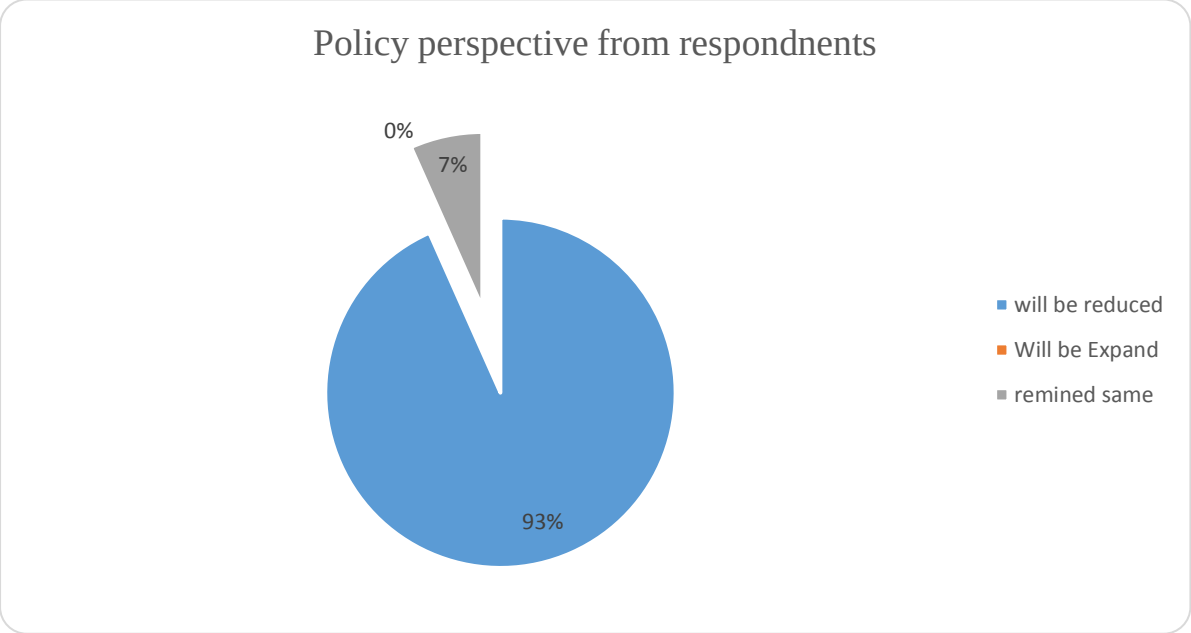


Figure 4.29: Policy Perspective

4.11.2.Future of Cashew Industry/Policy Perspective

Farmers

Most of the farmers are not happy with the industry and its' future. (Figure 4.50).

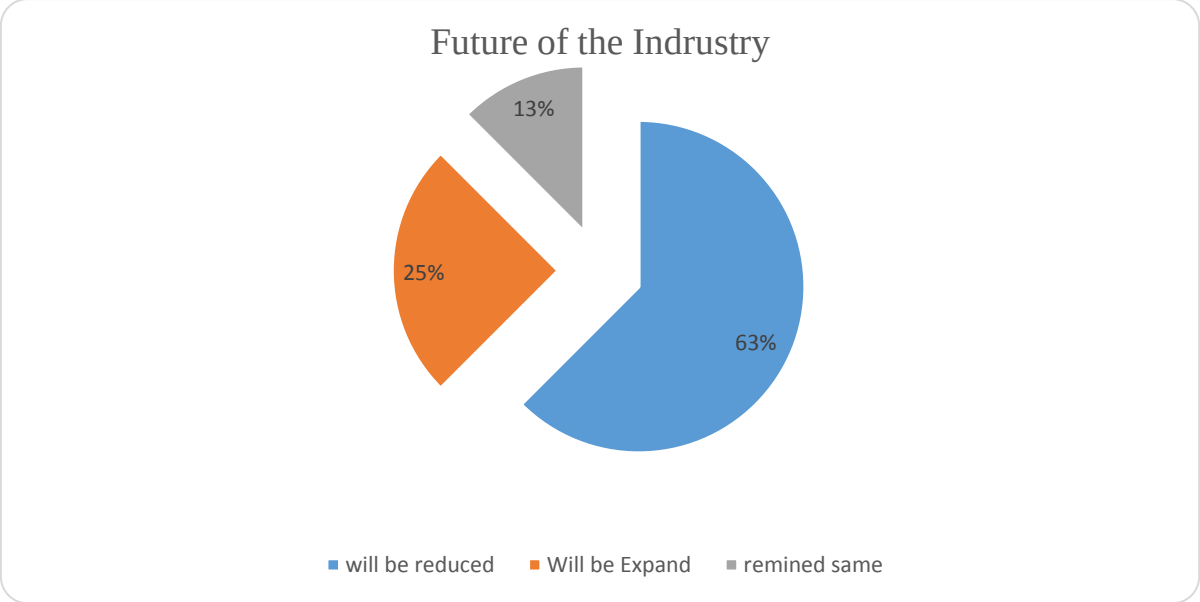


Figure 4.30: Future of the industry

Village collectors/Collectors/Traders/Street vendors/Vendors/Processors/S.L.C.C

Other stake holders (93%) assume that industry will be drop down and only 7% of responders commented that it remain as same.

4.11.3. Suggestions received from stake holders for the development of the industry

Village collectors/Collectors/Traders/Street vendors/Vendors/Processors/S.L.C.C

When analyzing the feedback of problems of farmers and other stakeholders, most of the problems are interrelated.

- Natural impacts

As a solution, Responders suggest government involvement in proper way.

- Wild animal and pesticide impact affected to the farmers.

Responders are expecting proper solution from government such as electric wiring system.

- Land allocation

Lot of lands in Puttalam and Anuradapura areas which are not cultivated, the farmers are asking these lands for cultivation. Therefore government involvement is required.

- Regulations/Tax for low-quality imports (Table 4.10).

Table 4.7: Government support required areas

Problem and Solution	**Weightage**
Land allocation/Solve the land issues	17%
The solution for the natures' impact (Technical solution)	31%
Solve for the wild animal & pest problem (Government and technical support)	24%
Regulation for low-quality import cashews	7%
Introduce new technology for all the functions	21%

Most of the responders are losing their outcome because of the natures' impact. Therefore they have given more comments for the problem and they suggest and expect advanced technical solution from government to mitigate the problem. Moreover, wild animal and pest are destroying their production output and stakeholders suggest and expect the government support.

5. RESEARCH FINDING & LEARNNING

5.1 Actors and Activities of the Sri Lankan cashew industry

By questioning and discussing with different actors of the industry, the researcher has found who are the actors and functions in Sri Lanka cashew industry and understood their duty and impact on the industry. Accordingly, the researcher has mapped the Sri Lanka value chain in order to achieve the first objective of the research.

Table 5.1 Actors and activities of the Sri Lankan cashew industry

Value Addition	350-450	375-475	2800-3500	400-500	425-525	2800-4700	2800-4700	2800-5300	2800-4700	2800-5300
Activities & Actor	Farmer	Village Collector	Street Vendor	Collector	Trader	Processor	S.L.C.C	Vendors	Agents	Distributors
Cultivating										
Harvesting										
Drying										
Segregating										
Storage										
Shelling(Cutting)										
Moisturizing										
Peeling										
Grading										
Roasting										
Salting / Flavoring										
Packing										
Distribution										

According to above table, the street vendors & processors are involving to eleven activities out of thirteen .Also S.L.C.C are doing all the activities in the industry. The other actors are involving to only few activities and their value adding also limited as they are intermediate parties except farmers. Moreover, the above table showing how value is added at each actor's level with function they do. That means the processors and S.L.C.C are the biggest value adding actors in the industry.

5.3. Research Findings & Learning and Observation

Further researcher has summarized the research finding, learning as well as observations after as below.

- Householders are attending to the industry more in small-scale and producing less, In such situation, the other stakeholders have to visit several farmers to collect big inventory. As a matter of fact, their transport cost can be increased and ultimately the cost per kg has been increased and wastages are occurred.

- Only a few large-scale farmers can be seen in the industry which result is impossibility to bulk selling.
- Environmental factors are critically affected to reduce the harvest and finally total output. This is an unavoidable factor but could be minimized if there is government intervention as industry stakeholders are unable to find solution for such factors.
- Some of the lands are still not cultivated and available for cultivation as they are owned by government. Some of the farmers are still looking lands to undertake. The isolated lands are owned to the government.
- This is traditional cultivation and no need to allocate skilled labours to maintain the cultivation.
- S.L.C.C support and extension services are less and their service is not available in rural and remote areas.
- The new technologies are not been used by farmers yet, and they are not aware of that.
- There are many intermediates in the industry and as a matter of fact, many chains can be seen in the first layer before processing the cashew.
- Most of the processors are used semi-processing system and manual involvement is higher. As a matter of fact, labours are not interesting to the industry and they are moving from the industry.
- The technology is not used much for the production too.
- Meanwhile, some small companies are involving to produce some value-added products by using cashew which gains greater revenue.
- In the raw chain, money flows to the upside and goods flow to the downside. Transport is moving to both sides. That means, sometimes buyers collect and sometimes sellers deliver the goods to the suppliers' place. The price is between Rs.350.00 to Rs.525.00. Even though many chains are identified, the quantity of raw cashew is less in the industry.
- After processing raw cashews in the factory or houses (Factory/House/SLCC Factory), processed cashews distributed as finished goods.
- Both farmers and other stakeholders are having labour issues as labours are not satisfied with the jobs. The reason is low wages and manual involvements which are not attracting jobs.
- Also, the researcher has observed, that the finished goods price is varied based on the quality and quantity and area. The finished goods price is around Rs.2600.00 to 5300.00

and it may be higher when displaying in the supermarkets. Value addition per kg is around Rs.2250.00 per Kg and product adds value by farming, collecting, transporting, roasting, salting etc. However, there is no much additional cost of the value-added services comparing to other products.

- It's required 4 Kg of raw cashew to produce 1Kg of finished cashew nut. Raw cashew price is around Rs.350 to Rs.525(Rs.1400.00 for four kilograms of raw cashews) and finished goods cashew per kg is around 2,600.00 to Rs.5300.00. The gap is Rs.1200.00 (Value added)

Table 5.2 Cost comparison against Sr Lankan cashew industry

Item Description	**Ghana (M)**	**Mozambique(M)**	**Tanzania(M)**	**Sri Lanka**
Farmers' Gate Price	**80.6**	**384.4**	**104.62**	**350 to 450**
Price at V.Collectors/Collectors/Traders		443.3		375-525
Warehouse Auction (Transport ,Grading) Price			111.04	
First Level processing Center Price	1054	627.75	483.44	
Second Level Processing center Price	**1550**	**2325**	**769.46**	**2600-4700**
Retail Price	**2635**	**3875**	**833.95**	**2600-5300**
Price is converted to Rupees assuming one dollar as Rs.155.00				

Why Ghana & Tanzania cashew cost is lower

- ✓ Cheaper labour charges
- ✓ Excellent extensive service services from Government
- ✓ Good cultivating practices (Removing old plants on time, planting trees according to correct places guided by government body)
- ✓ Producing large quantity.
- ✓ Financial support to farmers from the bank and repayment facility after selling cashew. This encourage farmer to expand the cultivation.
- ✓ Availability of the required equipment for production.
- ✓ Less intermediate parties' involvement.
- ✓ Warehouse auction system.

- ✓ Excellent customer base

However Mozambique focus to export raw cashew in bulk wise as their processing cost is higher than other countries.

5.2 Cashew nut value chain of Sri Lanka

The researcher has identified two layers in the value chain of Sri Lanka cashew industry. The first layer is up to the manufacturing process from farmer's gate which process moving raw cashew and the second layer is from the manufacturing process to the end customer which chains moving processed cashew. Each and every chain in the industry are having capability to move the product either raw cashew or processed cashew and their volume has been indicated in percentage wise based on the researchers' sample data.

According to the below Sri Lanka cashew nut value chain map, The main raw cashew actor of the industry is Sri Lanka cashew corporation and their production volume capacity is 34%.Then the second largest raw cashew carrier is the trader who is moving product to processors by collecting raw cashew from farmers which volume is 15%.However, the trader is sourcing cashew from collectors and village collectors as well. Those actors' volume has been shown separately. In addition, processors are buying raw cashew from collectors who collecting raw cashew from village collectors and farmers when moving volume is 14%.but the direct purchasing is only 12% which in fourth place of raw cashew chain.

The Sri Lanka cashew corporation is the main actor in the processed cashew value chain as well. SLCC is moving the processed cashew through their own shop/direct sales/ outlet and franchising shops which volume is 44% comparing to other chains in the industry. Then the second largest volume is moving through own shops and outlets of processors which volume is 25% also the processors are direct selling to end customers which volume is 16%.

The understanding is SLCC is the main actor who is doing in business level rather than the service providing. However, most of the cashew cultivating countries having cashew board who is providing only extension services.

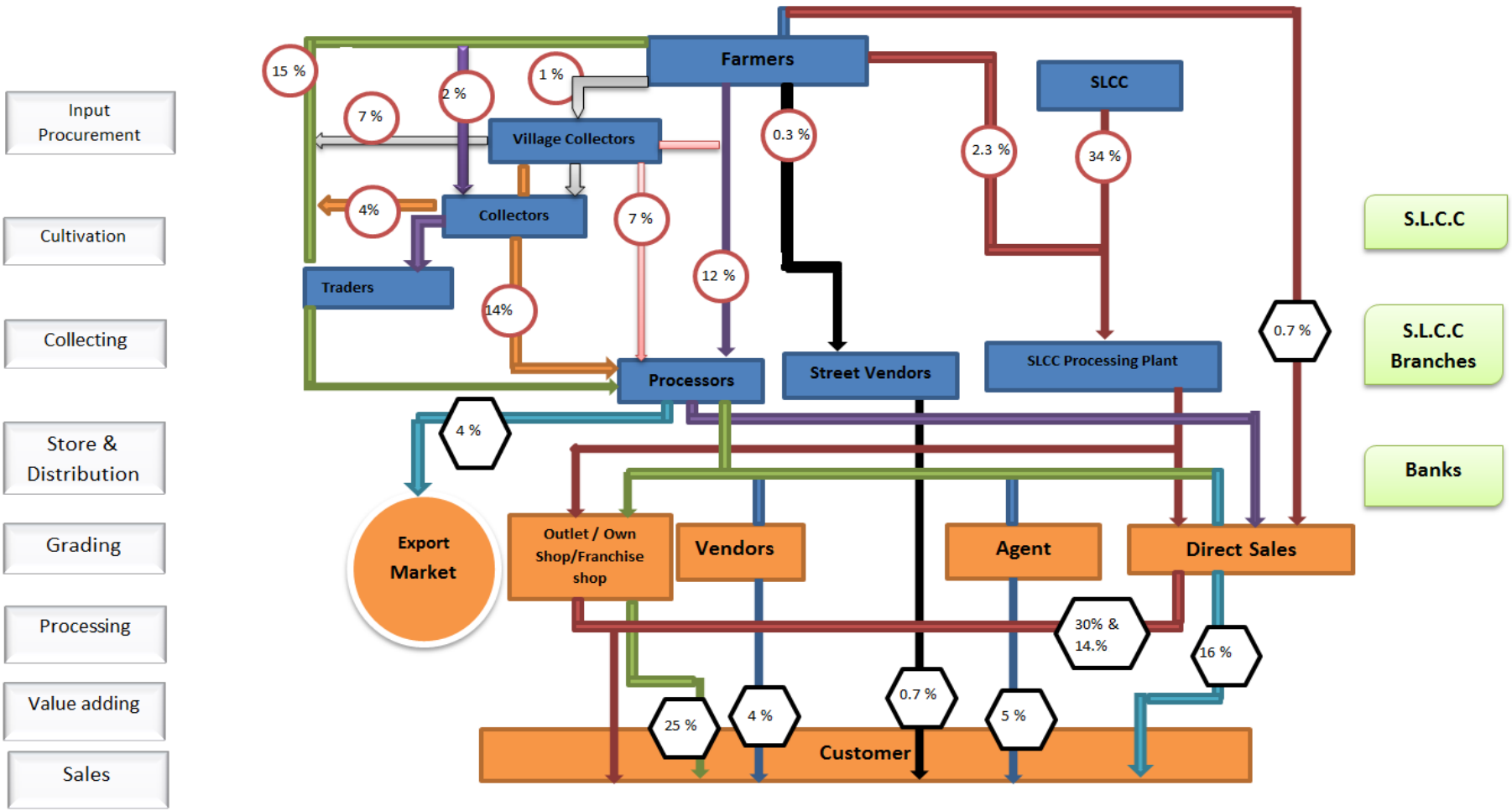


Figure 5.1: Value chain mapping of Sri Lankan cashew nut industry

5.4. Sri Lanka cashew industry SWOT analysis

The following is aSWOT analysis in the cashew industry.

Strengths

- ✓ Lands located in dry zone are helped for best quality harvest. The particular areas are still not populated. Therefore available lands can be cultivated more.
- ✓ Sri Lankan people having good relationships among the society. Therefore information can be shared very quickly.
- ✓ As this is a traditional cultivation, stakeholders can do the job without having special knowledge, also Sri Lankan having experience doing the job from hundred years ago. This experience is strength of Sri Lanka cashew industry.
- ✓ The high demand of the product creates a competition which helps to get more income. The demand is high means the supply quantity not enough to fulfill the customers' requirements. Then the price will be automatically increased as there is no alternative product for the cashew.

Weaknesses

- ✓ Many of the stakeholders are not having good technical knowledge to increase the productivity of the industry. They just doing the business without expanding.
- ✓ The available information is not sufficient. Therefore they are not aware about the market changes, and requirements of others.
- ✓ Most of the stakeholders are having primary educational level. Therefore they don't try to think in different ways to change the business.
- ✓ Poor labour attraction because of the hard task and less reputation. Most of the employees are leaving the industry as they are able to find reputed employment somewhere else. Especially the young generation is leaving the industry.
- ✓ Traditional thinking pattern of the stakeholders create poor performance.
- ✓ Transport cost is high as cultivation area and processing areas are located in far from each other. Basically large scale cultivating areas are located in Anuradapura,Puttalam and kurunagala while processing areas located in Gampaha and Colombo.
- ✓ Most of the stake holders are not focusing about the market behavior and customers' requirements. Further they don't have good idea about market segmentation.

- ✓ Seasonal cultivation.
- ✓ Most of the stake holders are not strong in finance wise. Therefore they are unable to invest to expand the business.

Opportunities

- ✓ Core cultivation. The farmers can be cultivated the products while cultivating another crop to get more revenue and best utilization of land. Even other stakeholders can do another business simultaneously.
- ✓ Sri Lanka cashew has a good certification for the quality of the cashew. This is a good opportunity to promote the product in USA and European countries. Unfortunately still Sri Lankan processors have not entered to international market using this advantage.
- ✓ As Sri Lanka has good tourism industry, it is a potential market to promote the product. There are many hotels and restaurants which are famous among foreign visitors who can be interested to the products.
- ✓ The cashew can be used to produce many value additional products and that help to create more customer attraction as well as market segments. Especially Sri Lanka has many natural products such as bee honey, Kithul trickle, and different type of nuts which can be used to prepare the value added products.
- ✓ Competition which will help to think in different way and create new products and reduce the cost of production.
- ✓ Free trade agreements and GST is an opportunity to enter European market.

Threats

- ✓ Many of environmental factors, Pest problem are affecting time to time to destroy the output of the cashew.
- ✓ Large scale producers are producing at lower cost which will be a problem for small scale producers and for their income.
- ✓ Lack of human resources help to increase the labour cost and finally end product cost.
- ✓ Few of cashew importers buying low quality cashew at cheaper price .The end result will be damage of the brand image of Sri Lanka cashew.
- ✓ Competition will be reducing the income of the stakeholders.

6. RECOMENDATIONS

Here the researcher has listed out some recommendation and how those recommendations can be implemented.

- Establish a cashew auction system

To avoid unnecessary intermediate parties and much wastage in the process the researcher proposes a new module which is a little bit similar to Tanzania cashew industry process. However, the researcher has presented it complying Sri Lankan cashew industry behavior and its requirements. Accordingly, all the cultivators are directly delivering the raw cashew to the warehouse without any intermediate party and sell to the processors by an auction. However, in the warehouse there will be a separate process which helps to segregate the cashew sizes and sell through an auction. Cashew Corporation or government invention suggested. Accordingly, the warehouse and auction will be operated by an independent organization under the supervision of the Cashew Corporation and government. This module is similar to centralization module in Supply chain management.

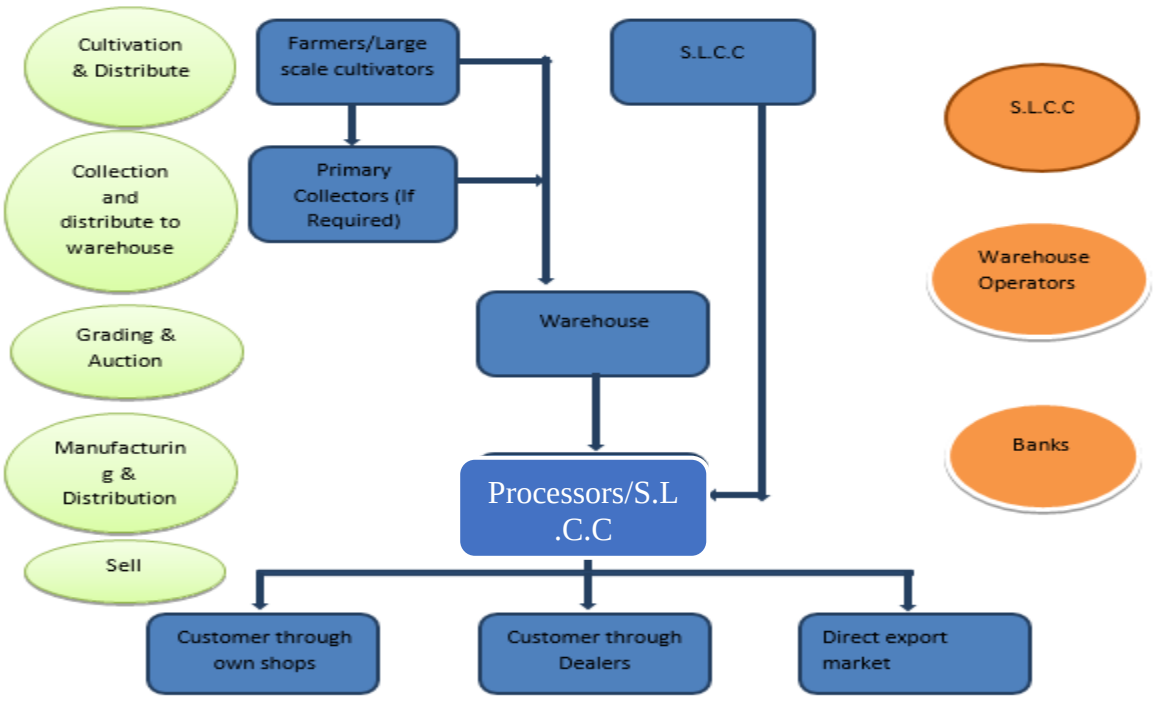


Figure 6.1: Recommended value chain process

- Improve cashew extension services and address land issues

Government support is really required to educate farmers and facilitate to them for better plantation and better harvest, especially the government should supply technical knowledge and solution for the environmental issues, and also they have to sort out the land issues and should release them for the cultivation.

Further they can start the training programs, seminar to educate the stakeholders for best practices, new method etc.

- Introduce new technology

The automated processing method should be applied to enhance the productivity and reduce the manual involvement, which reduces the cost of production.

-Cashew planting in standard method

Most of the plants are in their gardens without standard. The standard distance of the plants is 6 meters in to six meters.

- putting a net under the trees

This is good method to protect the output of the farmers as initial wastage occurs under the tree. Small hole net should be put under the trees as raw cashews sizes are small.

-Cashew drying machine instead of sunshine drying method

Basically Sri Lankan farmers are drying the raw cashew under sunshine but this method cannot be used all the times as Sri Lanka having long rain period. Therefore drying machine should be applied which facilitated by tempering 50c to 55c around six to eight hours.

- Cutting machine

This is a must as it is the hardest task in the industry. If it is possible to introduce a machine for this most of the employees will be retained in the industry.

-Peeling machine

This is also another hard task and should be done very carefully without damaging to cashew nut. Therefore advanced technological machine is required for the peeling.

-Segregating machine

To enhance the productivity segregating machine should be introduced in both level .ies raw cashew process and processed cashew process.

- Increase value addition

In addition to that researcher has recommended encouraging the processors to produce value-added products to create more revenue. The processors must focus on the production of value adding production such as cashew fruit juice targeting hotel and restaurant sector, cashew powder, cashew soup mix, adding chocolate or milk to cashew, adding Kithul trickle, coconut or honey to cashew nuts etc as we are unable to compete with the international market by exporting processed cashew without adding value.

- Financial Aid

Two banks of Tanzania provide loan facilities to farmers through the warehouse auction system. As per their system any cashew farmers can be obtained a loan from the bank and the same amount will be reduced after selling relevant actors' stock in the warehouse.

- Remove the old trees from the plantations.

Farmers of Tanzania& Ghana are removing the old trees at the right time. That is a reason for higher output. Therefore Sri Lankan farmers also applied the same system by removing old trees and replacing new plants.

- Global market linkage

Tanzania has a good global market linkage through warehouse auction system. Therefore they have good customer network. The researcher recommend to online buying and selling system for cashew industry.

- Local and International quality standard

In fact, Tanzania has good customer base and market as they have quality certificates for their products in local wise and international wise. Therefore obtaining quality certificates will help to build the customers' satisfaction and their trust.

- Raw cashew export chain

Some of the Mozambique exporters are selling raw cashews directly to the international market as they have huge volume and their processing cost is higher. That is a strategy of them. Therefore researcher point out to implement the same process as an alternative option. The researcher does not guarantee on this as it might be affected to the quality of the Sri Lankan cashew industry.

- Farmers Association

In Mozambique, Farmers association has good relationship with farmers and farmers are getting good support from them as those association managed by the farmers. Therefore they have good understanding about farmers' problem and address them properly.

- Target market

In Ghana, they mainly focus the hotels and restaurants as they could obtain good price from higher income level customers. Therefore researcher recommends target the hotels and restaurant in Sri Lanka as we have many hotels and many clients for them. Accordingly researcher assumes that we could create good market from them.

6.1 Research limitations

- The researcher was unable to calculate and quantify the findings in figure wise due to selected small sample size and small geographical area.
- The researcher had to collect information by discussing with related parties in addition to questioning.
- The researcher was not able to calculate the transport cost as it is a separated and complex activity.
- As there are limited exporters and small quantity researcher was not encouraged to study the export and import functions.

6.2 Future research directions

For future researchers following areas are recommended for studies.

- Study about available technologies to enhance the productivity of the cashew industry.
- Find the solutions for the environmental factors.
- Enhance the government involvement to maintain the productivity and to encourage the actors in the cashew industry.
- Develop quality standards for the industry.
- Study economic and social factors for a sustainable cashew industry in Sri Lanka.
- The systematic operation method for the cashew warehouse operation and auction that proposed by the researcher.
- New product developments using cashew
- International market opportunities for value-added products
- Sustainability for cashew industry
- Automation to minimize the wastage.

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APPENDIXES

Appendix 1.1.Questioner Form for Farmers

A) Basic Data

1) Farmers Name :
2) Gender Status :
    I. Male
    II. Female
3) Address and Contact No :
4) Village & District :
5) Are you only a farmer or Processor?
    I. Farmer
    II. Processor
    III. Both

B) Capital and Assets Details

6) Is this your Own Land? If so how many Acres belong to you?
    I. Yes
    II. No
7) Available Land Space (Acres)
    I. 1 to 5
    II. 06 to 10
    III. 11 to 20
    IV. 21 to 50
    V. Above 50
8) If Yes How did you acquired?
    I. Inherited
    II. By your own saving
    III. By Government
    IV. By a Loan
    V. Inherited & By Own Savings

9) Available assets except the land as at today with approximate value (If applicable)

Hand Tractor	1
Tractor	2
Car or Van	3
Automatic Cashew Shell cutting Machine	4
Nothing	5

C) The Cultivation

10) List out your Cultivations from main crop to others

Cashew	1
Paddy	2
Vegetables (Specify)	3
Fruits (Specify)	4
Coconut	5

11) Duration for Yield from planting?

I. 3-6 months
II. 6-12 Month
III. 1-2 Years
IV. 2-5 Years

12) How do you involve to sustainability while doing cultivation?

I. Using Carbonic Fertilizer
II. No Pesticides
III. Not following

D) Inputs (Procurement)

13) Where do you buying plants & Fertilizer?

I. From Corporation (Only Plants & Fertilizer one time)
II. From a private Firm
III. NGO
IV. Self-Produce
V. Not applicable as they are not purchasing now

14) Do you have facility to store them? Possibility to damage them
    I. Yes
    II. No

E) Cashew Production/Yields/Quality

15) List out your Cultivations from main crop to others
    I. Cashew
    II. Cashew and Paddy
    III. Cashew and Vegetables
    IV. Cashew and Fruits
    V. Cashew and Coconut
    VI. Cashew ,Vegetables & Fruits
16) Cashew Production in last year
    I. Below 2500
    II. 2500Kg to 5000
    III. 5000Kg to 7500
    IV. 7500 Kg to 10000
    V. 10000Kg to 15000
    VI. Above 25000
17) What do you think about the Cashew production of 2016 comparing to the 2015
    I. Increased (Qty)
    II. Decreased (Qty)
    III. Remaining Same (Qty)
18) The reason for the increased/Decreased
    I. Heavy Rain
    II. Drought
    III. Pesticide
    IV. Wild Animal
    V. Heavy Rain & Drought
    VI. Drought & Pesticide
    VII. Acquire another plant
19) Do you want expand the plantation or Yield?
    I. Yes
    II. No

20) Do you want to maintain the quality standard? if so How ?

I. Yes
II. No
III. Not applicable

F) Distribution

21) Are you selling raw cashew or Kernels?

I. Raw
II. Semi
III. Roasted
IV. Raw & Processed
V. All

22) The Quantity you sell for each party in each type?

I. Below 2500
II. 2500Kg to 5000
III. 5000Kg to 7500
IV. 7500 Kg to 10000
V. 10000Kg to 15000
VI. Above 25000
VII. Raw below 2500 Kg & Roasted Below 500Kg

23) Are they come and collect or do you want to sell at their place?

I. Buyer collect from Sellers' Point
II. Seller deliver to Buyers point
III. Both

24) The distance from your home to collecting point

I. Below 5Km
II. 5 TO 15KM
III. 16 TO 30 KM
IV. 31 to 60 KM

G) Sales & Marketing

25) Why do you sell the cashew?
   I. Price offered by the Seller
   II. House hold requirement
   III. Payback the Loan
   IV. Price offered & House hold requirement

26) How do you know the market price and do you consider about that
   I. Visiting the market
   II. Crosschecking with other farmers
   III. Hear from Friend
   IV. As offered by the Buyer

27) Who set the price for the product?
   I. You
   II. Buyer
   III. Market
   IV. Government Body

28) Products sell with
   I. Cash
   II. Cheque
   III. Credits
   IV. Others

29) The problems related to selling the product
   I. Low Price
   II. Unreliable market
   III. Lack of market information
   IV. Lack of support from SL Cashew corporation
   V. Other (Specify)

30) Do you willing to Collaborate with another party and sell more Qty to get better price?
   I. Yes
   II. No

31) Do you willing to sell the Cashew for one specific Buyer?
   I. Yes
   II. No

H) Labour

32) Are you deploying your family labour assets or is it out sourcing?

I. Yes
II. No
III. According to the requirement

33) Can find Labours easily?

I. Yes
II. No
III. Not Applicable

34) What is the biggest problem you have with Labours?

I. Lack of knowledge of the Process
II. Labours are not interesting on the job
III. No issue

35) Approx. Labour Cost during the season

Process	No of Labour Hours Required	Per Day/Per Hour Cost Aver:	Total Labour Cost
Planting Plants, Land scape	3	1000	3000
Removal of wild plants	3	1000	3000
Fertilizing	0.5	1000	500
Seeding			
Harvesting	0.5	1000	500
Drying of Cashew			
Grading	0.5	1000	500
Cleaning	0.5	1000	500
Total cost per Acres			8000

I. 1 to 5 (8000 to 40,000)
II. 06 to 10(48000-85000)
III. 11 to 20 (88000-160000)
IV. 21 to 50 (168000-400000)
V. Above 50 (Above 400000)

I) Environmental/External Factors

36) What are the challenges you have?

I. Land issue
II. Set a price
III. Finding a buyer
IV. Technical issue
V. Climate issue

37) Do you have threats from animals or individuals for the pants to Yield? If so How?

I. Yes
II. No

J) Government Support/Regulatory issues

38) Do you want to get any approval? If Yes from where?

I. Yes
II. No

39) Are you getting support from S.L. Cashew Corporation?

I. Yes
II. No

K) Future of Industry

40) Are you happy with the industry? If not why?

I. Yes
II. No

41) What do you think about the future of Cashew Industry?

I. It will be reduced
II. Will be Expand
III. remained same

42) What are the suggestions for the development of the industry?

I. Land allocation/Solve the land issues
II. solve for the Nature impact (Technical Solution)
III. Solve for the wild animal & pesticides issues (Government and technical support)
IV. Regulation for low quality import cashews
V. Introduce new technology for all the functions

Appendix 1.2.Questioner Form for Traders/Collectors/Village Collectors/Processors

A) Basic Data

1) Name :
2) Address and Contact No :
3) Gender :
   I. Male
   II. Female
4) Village & District :
5) Role of the business
   I. Collector
   II. Vendor
   III. Street Vendor
   IV. Medium Scale Company/Manufacture

B) Capital and Assets Details

6) Available Resources

Motor Bike	1
Tractor	2
Car or Van	3
Lorry	4
Steam Boiler & Cooker	5
Automatic Cashew Shell cutting Machine	6
Electrical Oven	7
Moisture Machine	8
Cashew Nut Peeling Machine	9
Cashew Kernels Grading Machine	10
Warehouse and office	11

7) Are the above your own assets?
   I. Yes
   II. No

III. Not Applicable

C) Inputs

8) Where do you buy Machines and Equipment?
   I. From Government
   II. From a local private company
   III. NGO
   IV. By direct importing
   V. Others
   VI. Not Applicable
9) Who decide the price for Cashew?
   I. You
   II. Farmer/Village collector
   III. Market
   IV. You and Market
   V. Farmer and Market
10) Where do you buy the Raw Cashew?
   I. Village Collectors
   II. Collectors
   III. Vendors
   IV. Medium scale companies
   V. S.L Cashew corporation
   VI. Farmer
11) Purchased Cashew Type?
   I. Raw
   II. Semi
   III. Roasted
   IV. Raw & Semi
12) The Qty you purchased from each party in each type?
   I. Below 2500
   II. 2500Kg to 5000
   III. 5000Kg to 7500
   IV. 7500 Kg to 10000

V. 10000Kg to 15000
VI. Above 15000
VII. Raw Below 5000Kg with less than 500 Kg of Roasted
VIII. Above 200,000

13) Delivering Method?
I. Buyer go and collect
II. Seller come and sell

14) The distance from your home to collecting point
I. Below 5Km
II. 5 TO 15Km
III. 16 TO 30 Km
IV. 31 to 60 Km
V. Not Applicable

D) Manufacturing

15) Are you a Manufacture
I. Yes
II. No

16) Is your process in Manual /Auto or Hybrid
I. Manual
II. Auto
III. Hybrid
IV. Not applicable

17) Are you doing Value added services?
I. Yes
II. No
III. Not Applicable

18) What are the byproducts you are producing with Cashew production?
I. Wine
II. Machine running Power
III. Salted Cashew
IV. Garlic Quoted Cashew
V. None

E) Distribution

19) How do you distribute your product and quantity?

I. Through your own shops
II. Through an agent
III. Through Traders
IV. Direct sale to local market

20) Who decide the price for sold Cashew?

I. Seller
II. Buyer
III. Market price
IV. Government Body
V. Seller & Market

21) Delivering Method?

I. Buyer come and collect
II. Seller go and sell

22) Price Per Kg of Finished cashew

I. Rs. 2500 to 3000
II. Rs. 3000 to 3300
III. Rs. 3300 to 3800
IV. Rs. above 3800

F) Sales and Marketing

23) How do you decide the price

I. Based on quality
II. Based on the cost of production
III. Based on the market Behavior
IV. Based on the competition

24) Product sells with

I. Cash
II. Cheque
III. Credits
IV. Others

25) The problems related to selling the product

I. Low Price
II. Unreliable market
III. Lack of market information
IV. Lack of support from SL Cashew corporation
V. Other (Specify)

26) How do you find Buyers?

I. Continues Buyers
II. By newspaper advertisements
III. By friends
IV. By web advertisements
V. By visiting them

27) Do you have market competitions?

I. Yes
II. No

G) Export Market

28) Do you have Export Market

I. Yes
II. No

29) What are the countries you sell the cashew

I. Europe
II. USA
III. Asia
IV. Africa

30) The Sold Cashew Type?

I. Raw
II. Semi
III. Processed

31) The Qty you sold from each party in each type?

I. Below 2500
II. 2500Kg to 5000
III. 5000Kg to 7500
IV. 7500 Kg to 10000
V. 10000Kg to 15000

VI. Above 15000

32) Price Per Kg of Finished cashew

I. Rs. 3500 to 5000

II. Rs. 5000 to 7500

III. Rs. 7500 to 10000

IV. Rs. above 10000

33) What are the challenges in export market and how they overcome?

I. Finding a Customer

II. Competition

III. High tax

IV. No political support

H) Labour

34) Are you deploying your family labour assets or is it out sourcing?

I. Yes

II. No

III. According to the requirement

35) Can find Labours easily?

I. Yes

II. No

III. Not Applicable

36) What is the biggest problem you have with Labours?

I. Lack of knowledge of the Process

II. Labours are not interest on the job

III. No issue

37) How many employees do you have?

I. 1

II. 2

III. 3-5

IV. 5-10

V. 10-25

VI. 25-50

VII. Above 50

38) Approximate Labour Cost to produce 1000Kg of Finished cashew nuts

Process	No of Labour Hours Required	Per Day/Per Hour Cost Aver	Total Labour Cost
Collecting Cashew	1	1200	1200
Grading Raw Cashew	2	1200	2400
Boiling	0.5	1200	600
Cutting	0.5	1200	600
Dryer	1	1200	1200
Moisture	0.5	1200	600
Peeling	0.5	1200	600
Grading	0.5	1200	600
Roasting & Packing	1	1200	600
Documentation	0.5	1500	600
			9750

I. Below 9750 (Below 1000Kg)
II. Rs.9750 to 24,375 (1000 to 2500 kg)
III. Rs.24375 to 48,750 (2500 to 5000 Kg)
IV. Rs.48,750 to 97,500(5000Kg to 10000 kg)
V. Rs.97,500 to 195,000(10000 to 20000Kg)
VI. Above 195,000 (Above 200000 Kg)

39) Are you following Labour rules?

I. Yes
II. No

I) Environmental/External Factors

40) What are the challenges you have?

I. Quality Issue
II. Set a price
III. Finding a buyer
IV. Technical issue
V. Climate issue
VI. Others (Specify)

41) Do you have threats from animals or individuals for Cashew? If so How?

I. Yes
II. No

J) Government Support/Regulatory Issues

42) Do you want to get any approval?

I. Yes
II. No

43) Are you getting support from S.L. Cashew Corporation?

I. Yes
II. No

K) Future of Industry

44) Are you happy with the industry? If not why?

I. Yes
II. No

45) What do you think about the future of Cashew Industry?

I. It will be reduced
II. Will be Expand
III. remained same