

## CHAPTER 3: METHODOLOGY

### 3.1 Introduction

Constructing the conceptual framework is the main concern and it will be incorporated as the main guide for the entire study. It is given a special attention to the research design and the data collection process while deciding the methodology adopted.

Consistency of any industry is dependent on the degree to which the edge could be achieved from the market conditions. But it had been constrained by different issues created within the industry. These issues could be considered under the three processes Plantation & Maintaining, Harvesting & Processing & Marketing & Sales. In order to assess the existing situation it is necessary to carry out situation analysis to identify the internal and external factors affecting. Then continuous product and process improvement should be focused to upgrade the performance and the cost efficiency. These aspects are focused through the incorporation of new technological applications to couple with sustainable growth in the long run.

Technology Competency and Market Orientation are the main concerns in the whole industry processes. These two aspects help to meet research objectives and achieving the final outcome (i.e.: Gaining the competitive edge of the Cinnamon industry).

The reason for special consideration on Marketing and sales aspects is that the industry crucially needs to plan for the long term sustainability with the short term survival. Because the current environment doesn't provide any information on what is actually taken place for the Cinnamon beyond the Sri Lankan boundary. Therefore this study has to limit at that level while hindering the evaluation of the economic aspects too.

The sampling methods and techniques are designed for the purpose of justification and the selection of the best sample in obtaining necessary data for the study. Then it is discussed the questionnaire design portraying the development employed in the study. The method of data collection and data analysis are briefly summarized in the final part of the chapter and the actual implementation would be done in the next chapter in detailed form.



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## CONCEPTUAL FRAME WORK

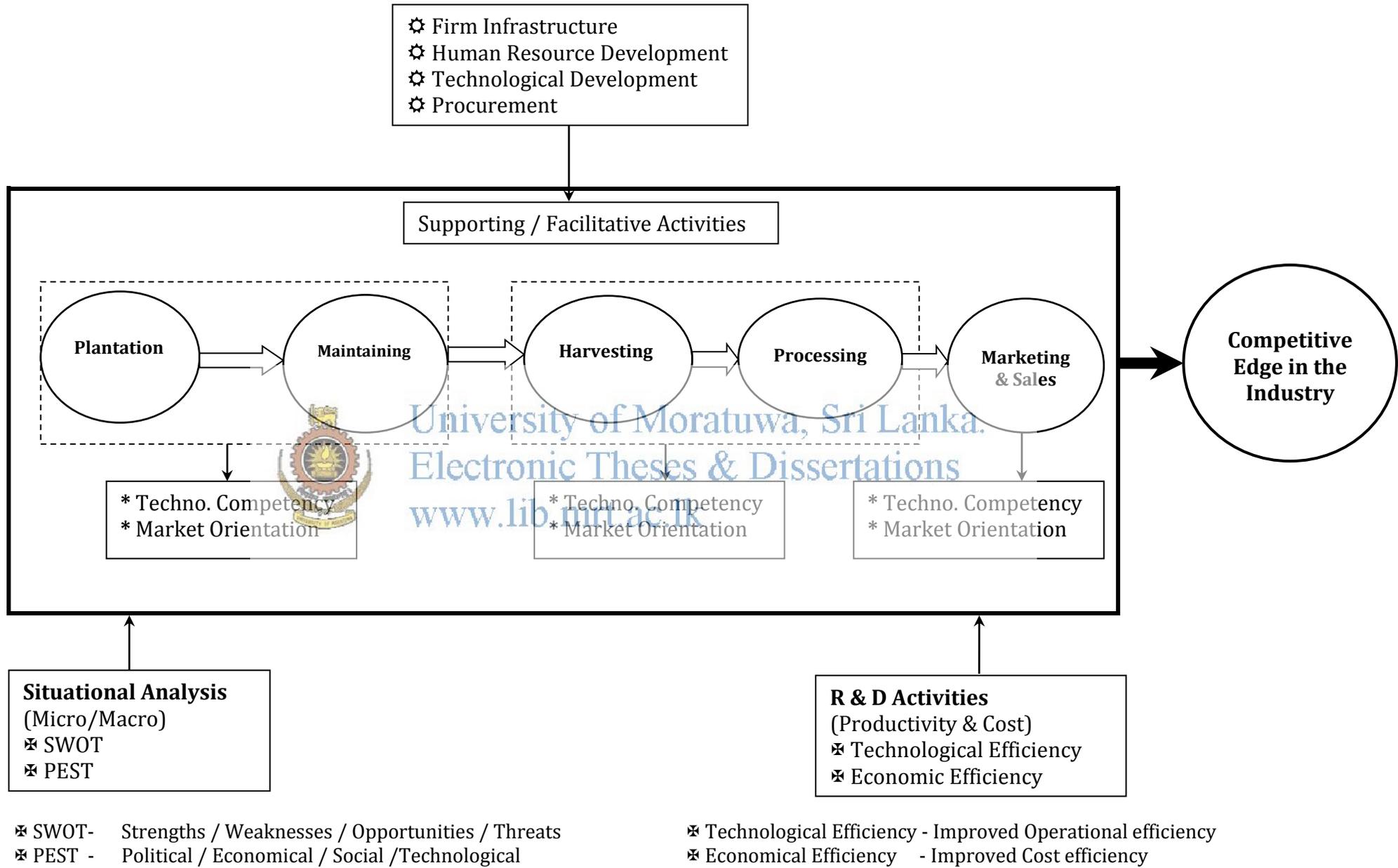


Figure 3.1 : Conceptual Model of the Study

### **3.2 Conceptual Framework of the Study**

Design stage of the conceptual frame work mainly emphasized to the 3 phases identified under the Porter's value chain model for agricultural sector. It has been significant by focusing the final outcome to be the competitive edge in the industry through technological application and proper marketing program selection for the long run. Therefore it is necessary to consider Technology Competency & Marketing Orientation as main constructs to gain the competitive edge as the final outcome of the total process.

These 3 phases combined with value chain activities has to be focused for the development of the current situation. These activities have to be coupled with supportive activities such as Firm Infrastructure, Human Resource Development, Technological Development and the Procurement to gain the required results as expected.

The model is further elaborated by emphasizing the importance of the situation analysis for the whole industry considering internal and external factors. R&D activities considering the productivity and the cost aspects related to the industry will be analyzed subsequently to improve the effectiveness and the efficiency of the industry performance.

#### **3.2.1 Competitive edge**

It is a great benefit to obtain the competitive advantage from the other rivals in the market through proper market alternative strategies proposed by the Ansoff. It has become a vital aspect in the Cinnamon industry to consider the price elasticity of demand for the products. But it is also necessary to give a high weight to the technological development and marketing strategies since they are very dynamic and complex in nature at global level.

It is an important aspect for the total industry to focus on long term sustainability. In achieving this objective it is necessary to add value to entire product range and enhance the processing technology in an effective manner to gain the edge in the global market.

### **3.2.2 Impact of technological competency**

*'Competency is the ability to do something well'*

- Cambridge Advanced Learners Dictionary

According to the above definition Technology Competency means how to use scientific discovery or latest findings and apply it in a more practical manner in improving the product or process effectiveness and efficiency to meet required industrial objectives.

Therefore from the industry's point of view effectiveness of technology is not only based on the competency that an individual organization is acquired but also up to what extent it has been used and developed to convert into value added, cost efficient products and processes to meet target customer requirements.

### **3.2.3 Impact of market orientation**

Market orientation is one of the key inputs to gain the competitive edge from the industry. It is vital to consider how market orientation has evolved and helped to overcome the industry's competitiveness. Lafferty and Hult (2001) reported five different major attempts to conceptualize the construct which has emerged on market orientation. They are described as perspectives as follows:

- the decision-making perspective
- the market intelligence perspective
- the culturally based behavioural perspective
- the strategic perspective
- the customer perspective

Chapter 2 also revealed that Market orientation has to be considered not only as an external activity (customer orientation & competitor orientation) but also as an internal activity (inter-functional coordination). Therefore from the Market Orientation's perspective it is not only a strategic driver to achieve business objectives but it also should focus the sustainable growth of the industry.

### **3.2.4 Porter's value chain model**

Conceptual frame work was primarily designed depending on the Porter's Value Chain model for entire plantation industry. According to the value chain explanation Cinnamon industry's prime activities could be categorized into 3 main sectors as shown in the conceptual model namely Plantation & Maintaining, Harvesting & Processing and Marketing and Sales. However the sequence of the processes could be changed based on value chain players' role and their degree of involvement. In the case of Cinnamon industry traders, they generally used to visit and collect the harvest from the cultivators in a directly manner. This will change the sequence considerably and the processing and the rest of the forward activities will not be followed in such situation.



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The other important aspect to note under these three main processes is that the Technological applications and the Market orientation activities need to function through these prime phases successfully. As per the Porter's Value chain explanation all the supportive activities should have to be aligned with these individual processes to upgrade the performance of the entire process.

For the purpose of improving the productivity and cost efficiency, situation analysis is carried out to identify the important factors contributing to the long term sustainability of the industry. But to ease the analysis main decision making unit is compounded within above three processes under the conceptual model.

### 3.2.5 Supportive / Facilitative activities

Porter's Value Chain model highlights many supportive / facilitative activities to assist the main functions on improving the value addition of the total process. It has become a very vital factor for any industry to be distinct nowadays, merely due to the high competition and homogeneity among the products and the services being offered. The only possibility to make it different from competitors' strategies is to change these supportive activities as much as possible. This solution being common for most of the products/services in the current scenario it has become the much easier aspect with respect to the implementation too. Therefore it would be necessary to keep the core activities within the control limits and if possible sub contract the other secondary or supportive activities depending on the cost effectiveness. These supportive activities and their nature are discussed as follows:

#### a. Firm infrastructure

Especially in the plantation & maintaining and harvesting & processing sectors of the Cinnamon industry, infrastructure plays an important role. But transportation facilities for delivering the seeds/crops/fertilizers, raw materials and finished products to relevant destinations, electricity for processing mills and telecommunication for communicating with regards to certain information...etc. and decision making activities have to be carried out very successfully to complete all these three functions without any constraints. Information has become a very important fact under competitive environment enabling to make right decision at the right time. Therefore it is purely based on gathering right information at the right time. It needs the right mechanism to gather relevant information through the sources such as internet, satellite communications, video conferencing, other simulation technologies ...etc. in operating at international level.

### **b. Human resource development**

Cinnamon is labour intensive industry. Therefore it is very essential to manage the Human Resource in a proper manner to improve the productivity and keep them bound within the industry in the long run. It affects all the three processes and the factors such as people's attitudes, perceptions, motivations and positive thinking which provide substantial impacts to the main functional activities of the industry.

### **c. Technological development**

Improvement in any activity incorporates new machines, new skilled labour and/or reducing them without losing the existing level of operation. But it is necessary to consider the cost aspects for the compatibility. As a total research study, it is based on the Technological impact and its competency. This will be discussed in details in future topics on how it affects and make use of it in all three processes and how it could be upgraded based on the findings.

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### **d. Procurement**

Cinnamon industry has commercial aspects & due to the expansion of its operational area at global level the procurement has become an important aspect in day to day operations of the business. When it considers the international business, the transactions and export procedures require many forms of various documentations and approvals for smooth running of the total process. Good procurement management will assist timely receipts and delivery of the required materials. The smooth running of the manufacturing process becomes dependent on it and ultimately & most importantly the customer receives the goods in expected quality without any delay as a result.

### 3.2.6 Situation analysis

The conceptual model compound with situation analysis is identified as a requirement to measure the correct position of the industry. This is vital to suggest and implement any product or process development activity to focus the improvements ahead from the existing position. The situation analysis is performed at two different levels named micro and macro levels.

#### a. SWOT analysis

Micro level situation analysis could be done through SWOT analysis (Strengths, Weaknesses, Opportunities and Threats). This analysis will help to identify internal industry strengths & their abilities to capitalize towards success while the weaknesses which need to be rectified or controlled for the purpose of overcoming prevailing issues. At the meantime it is identified the external opportunities and industry threats which lead to convert the strategic activities in a more appropriate manner to gain the competitive advantage.



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#### b. PEST Analysis

On macro point of view, the industry could be analyzed for environmental factors such as Political, Economical, Social and Technological situations on how they affect the industry's strategic position. Since the industry is consistently connected with domestic and international market, all these factors are equally important and affecting to drive the industry towards any direction. Therefore it is important to do continuous survey with regard to these macro factors as it provides a substantial impact (positive or negative) not only for industry decisions but also to bottom line. Economical influences (duties/taxes) affect the Sri Lankan Cinnamon industry to face price variations and the ultimate profits and the returns. Social habits and perceptions lead to up bring the Cinnamon handicraft industry and protect the

cultural values. Technological applications lead to competitive edge will help to manufacture finished products in a more customer oriented and novel manner.

### **3.2.7 R&D activities**

Since the industry is in the maturity stage of its life cycle, R&D has become a vital factor for the industry's survival in both short & long run. It has become further important when the industry is facing stiff competition in the global market conditions. Like any commercial industry R&D activities provide two main contributions. One is to improve the operational efficiency (could be achieved through technological efficiency) and the other one is to improve the cost efficiency (could be achieved through economic efficiency).

#### **a. Technological efficiency**

For the purpose of improving the industry it is important to upgrade all three processes based on the situation analysis. The main expectation of the task is to upgrade operational performances through product and process development. Technological efficiency is a method of production which involves the minimum number of combinations of different factors. This is carried out mainly through acquiring and transferring right technology at the right time to cater new domestic and international market needs. It plays a significant role in the industry by supporting the manufacture of value added products and improving the manufacture process. Ultimately it upgrades the plantation sector by improving the Cinnamon yield.

#### **b. Economic efficiency**

In the context of the model it is implied on how to arrive at the industry goal in a more cost effective manner. The Economic efficiency is the use of resources to produce any given output level at a minimum cost. In the functional form cost is based on capital, labour, land and material. Therefore it is not only to gain the

competitive edge in the industry but also to achieve business objectives. It is crucial to seek the possibilities combined with the suitability in reducing the cost functional factors and their degree of success in order to sustain the industry in a consistent manner.

### **3.3 Operationalization of Variables**

Operationalization of the constructs of the research model proposed in this study is considered in this section. As indicated in Figure 3.1, the model of the study comprised of two main constructs namely Technological Competency & Marketing Orientation linked with the 3 main processes. According to the research model's main objective of gaining the competitive edge in the industry these two constructs must be operational and enabled to measure relationships. Therefore the abstract notions of the constructs must be reduced into observable behaviour or characteristics. Operational definitions provide meaning to the constructs and a tangible way to measure them.

Additionally the two constructs uses multi-item measures and a five point Likert scale. The constructs were adopted from various relevant literatures. For the purpose of identifying the relationship each construct compounds with experimentally designed variables. These variables measure through a structured questionnaire from industry source by conducting a survey.

#### **3.3.1 Measurement of variables**

For the purpose of measuring variables and to identify relationship through operationalization two main constructs are incorporated. These two constructs are empirically measured from all the relevant variables.

The definitions and how these constructs measured are discussed in details as follows.

## A. Technology Competency

The technology competency is one of the main constructs and the leading factor to gain the competitive edge of the entire industry. In reaching the ultimate objective for the industry it is required the positive effects of this construct to be applied and implemented throughout the value chain activities. According to Goedde (2006) and Sheffield (2007) observable behaviour of the Technology Competency compounded with four variables listed below:

- Knowledge & experience
- Innovativeness & creative ability
- Exposure (both internally & externally) and
- Attitudes and perception.

They will be discussed in detail as follows:

1.  *Knowledge & Experience.* University of Moratuwa, Sri Lanka.  
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This variable indicates the knowledge that is learnt and the experience that is acquired during a period of time. It provides substantial impact to the Technology competency performances. Not only the learnt knowledge but also the ability to acquire the correct and required knowledge at the right time to improve the process as needed in an effective manner is also taking into consideration.

2. *Innovativeness & Creative ability:*

If there is a Technological solution it generally incorporates some novel applications, which help to improve the productivity. It is needed to evaluate and measure up to what extent the innovative solution leads to improve the process effectiveness or cost efficiency to meet industry objectives.

### 3. *Exposure:*

This is also one of the key observations under Technological Competency. The exposure could be internally or externally oriented. Internally, the management support and culture has to be aligned with technological solutions. At the same time external factors like infrastructure facilities, marketing impact and political policies play a significant role under technology competency. Therefore the exposure on these aspects is very vital in taking strategic decisions which will ultimately affecting the success of the industry.

### 4. *Attitudes and Perceptions*

It has been practically proven that people don't like change. Therefore in introducing new methods, technological applications...etc. the stakeholders have to be very positively oriented to face such changing environments. In this situation attitudes and perceptions towards technological improvements are very important aspects to get the required results. Because the right attitudes and the right perceptions will naturally provide definite motivation and the power to the entire industry to reach expected level.



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Table 3.1 : Operationalization of Technology Competency

Construct	Dimension/ Variables	Indicators	X	Q. No.
<p><b>Technology Competency</b></p> <p><i>Factors predicating preserved technology competency: Goedde 2006</i></p> <p><i>Necessary Variables for Technology Integrations : Sheffield 2007</i></p>	<p><b>Knowledge &amp; Experience</b></p> 	1. Amount of knowledge to provide technical support to fulfill the basic operation successfully	K1	1
		2. Period of experience to carry out the duties & meet the targets	K2	2
		3. Ability of acquiring technology knowledge and implement in a more practical manner to support organization strategies to achieve business objectives	K3	3
		4. Ability of understanding any operational issues in a technical point of view & provide technological solution to improve operating effectiveness	K4	4
		5. Ability to use technology as a tool to increase the productivity	K5	5
		6. The extent of making use of experience to overcome any practical issue which come across during the operations	K6	6
		7. Capability of making use of not only limited resources internally but also to handle external factors in an appropriate manner to meet technical objectives	K7	7
		8. Having adequate knowledge & experience to evaluate the technological performances	K8	8
		9. Ability of training & developing the staff to build technological competency	K9	9

*Operationalization of Technology Competency Contd...*

	<b>Innovative &amp; Creative Ability</b>	1. Ability of creative thinking in an innovative manner to propose technological solutions	C1	10
		2. Degree to which innovative solutions help to improve operational effectiveness (quality & productivity) & cost efficiency ( reduce cost / time)	C2	11
		3. Ability of supporting the business /.marketing objectives through innovative solutions	C3	12
		4. The amount of resource/constraints effect for innovate solutions (ability of making use of current resources/working conditions in an effective manner)	C4	13
		5. Ability of providing the most social/ethical/environmental friendly innovate solutions (reduce legislation & at the same time to gain competitive edge)	C5	14
		6. Degree of motivating human resource aspect for the purpose of improving performance of production process	C6	15
	<b>Exposure - within &amp; outside organization</b>	1. Organizational vision aligning with technological objectives	E1	16
		2. Internal management to support technological competency	E2	17
		3. Organizational resources (Assets) assistance to fulfill technological aspirations	E3	18
		4. Internal & external infrastructure impact to provide technological oriented solution	E4	19
		5. Support org: culture to improve Technological competency	E5	20
		6. Get the assistance from the latest tech: developments & industry related new findings to improve the performances	E6	21
		7. External marketing push/pull impact to motivate tech: competency	E7	22
		8. Political assistance to the industry (Decisions supporting technological industry solutions)	E8	23

*Operationalization of Technology Competency Contd...*

	<b>Attitudes &amp; Perception</b>	1. Likeness & positive thinking towards technological solutions	A1	24
		2. Industrial & social influences for technological solutions	A2	25
		3. Overall management perception / attitudes towards technological oriented applications for the production / process system	A3	26
		4. Extent of motivation of technology for operational activity (believe it gives positive results)	A4	27
		5. The amount of technology literacy & also using non obsolete equipment	A5	28
		6. Complexity of technology & simplicity of understanding the proposing methods	A6	29
		7. Social living standard, which leads to have different types of values and perception against technology	A7	30

## B. Market orientation

As the research study has provided special emphasis on improving the technological aspects related to the Cinnamon industry, Marketing and Sales promotion too has to be provided a similar emphasis to function in hand to hand with the improvements and diversifications that may result in. Because Market orientation too plays an important role similar to the above construct and becomes the other most important construct in achieving the research objectives. According to the conceptual model the main outcome is to gain the competitive edge in the industry. Narver and Slater (1990); Lado, Olivares and Rivera (1996); Sargeant and Mohammad (1999) observations reveal that marketing orientation consists of external and internal dimensions. Under External dimension there are two factors such as Customer orientation and Competitor orientation and the Inter-functional co ordination falls under internal dimension.

### 1. Customer Orientation:

Customer is the most important factor in any business and therefore it will become the main target for whole industry's sustainable performance. Their buying decision and perception towards the product will give impact to the entire industry's position. Customer Orientation will directly depend on the factors such as product modifications, pricing strategies and extent of after sales services ...etc. Therefore these indicators can be used to measure the customer orientation variable and that shows the direct linkage with Market Orientation construct.

### 2. Competitor Orientation:

Although this product has native characteristics for Sri Lanka and enabled to secure the highest market share at global market the competitive level and the stiffness of the competition is growing slowly day by day. It is very important to measure the Competitor Orientation under different indicators such as:

- how strong the products and services against the other competitive products in the market

- relative capacities of the strengths and weaknesses with the competitors
- ability to capitalize external opportunities against the threats
- competitive strategic ability to incorporate against competitive forces...etc. to sustain as an industry in the long run.

### 3. *Inter functional Co ordination:*

Being the single internal dimension that will affect the Market Orientation construct, it has a high impact on the marketing aspects. This variable indicates the ability to integrate the multi functional divisions to fulfill customer needs as necessary. This will be further decomposed to indicators such as ability to share resources, communicating information in an effective manner and working ability as a team for the purpose of creating customer value...etc. to achieve common business objectives.



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Table 3.2 : Operationalization of Market Orientation

Construct	Dimension / Variables	Indicators	X	Q. No.
<b>Market Orientation</b> Narver and Slater (1990); Lado, Olivares and Rivera (1996); Sargeant and Mohammad (1999)	<b>Customer Orientation</b>	1. Monitor level of commitment in serving customer needs	U1	1
		2. Business objective of customer satisfaction	U2	2
		3. Competitive advantage based on understanding customer needs	U3	3
		4. Business strategy driven by greater customer value	U4	4
		5. Measuring customer satisfaction	U5	5
		6. After-sales services	U6	6
		7. Corrective actions taken immediately	U7	7
		8. Modifying products / services based on customer ideas	U8	8
		9. Meet customer quality expectations	U9	9
		10. Pricing is appropriately designed according to customer expectations	U10	10
		11. Supplies on time without any shortage	U11	11
		12. Promotional campaigns meet customer awareness objectives	U12	12
	<b>Competitor Orientation</b>	1. Rapidly responding competitive actions	P1	13
		2. Sharing information on competitors' activities	P2	14
		3. Discussing competitors' strengths & strategies	P3	15

*Operationalization of Market Orientation...*

		4. Differentiation from competitors	P4	16
		5. Targeting opportunities for competitive advantage	P5	17
		6. Analyzing evolution of substitutes	P6	18
		7. Precautions been taken for new entries	P7	19
		8. React with strategies for suppliers bargaining power	P8	20
<b>Inter</b>		1. Integration to serve target customers' needs	T1	21
<b>Functional</b>		2. All activities are responsive to each other's needs & requests	T2	22
<b>Coordination</b>		3. Activity (Plantation, Processing, Marketing) heads try to identify total market requirements	T3	23
		4. Communicating market experiences among the activities processes	T4	24
		5. Everyone understands how to create customer value	T5	25
		6. All three processes are working as a team	T6	26
		7. Sharing resources with other sections (among processes when it is needed)	T7	27
		8. All sections involving in product / service modifications	T8	28
		9. Informal information exchange to fulfill industrial Expectations	T9	29
		10. All three processes common perception is to achieve overall business objectives	T10	30

Each indicator listed above is linked to a relevant question and it will be measured according to the Likert scale through interviewing the necessary sample. Then the total information gathered was analyzed to identify the relationships within the entire industry.

This will lead to propose industry related most appropriate solutions with the combination of technology and marketing aspects to gain the competitive edge within the industry.

### **3.4 Sample of the Study**

In general the population comprises of the total value chain players of the Cinnamon industry in Sri Lanka. Cinnamon Cultivators, Processors (Peelers and other producers), Traders and Cinnamon related products manufacturers and Marketers taken altogether could be considered as the Population. Therefore in data collecting it was focused the subsets from each unit (Plantation, Processing & Marketing sectors) and considered the perspectives of each sector in fulfilling the research objectives.



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#### **3.4.1 Sampling technique**

Sampling technique is one of the important tools required to guide the research study in the right direction. On the other hand it should enable to select the most appropriate number of elements as a sample from the population according to the statistical analysis. So that the properties and characteristics decided on the sample analyzed would make it possible to generalize for the entire population.

The research study is carried out by focusing the entire Cinnamon industry, which is scattered in many parts of the country. Objectives of the study are significantly qualitative in nature. Due to the time limitations and other factors it was chosen the convenient sampling technique. Therefore the Galle district (where the most number of Cinnamon value chain players are dispersed in almost in the entire district and the

major extent of Cinnamon cultivated lands are available) was chosen as the geographical area for the study.

**Cinnamon Cultivators' Association (CINCA)** Galle is one of the major associations comprised of more than 5,000 membership base. These members are actively involved in the Cinnamon industry value chain activities mostly within the southern province. Since the author has experience in working closely with these members it became a great asset. Also CINCA is expecting positive results and suggestions for their current industry to implement through this research since the team of top level CINCA officials helped me a lot to carry out this research successfully.

It was made easier for me to select the members of their association and the other closely working stakeholders of the industry for interviewing purposes. Especially they showed a higher interest in answering the questionnaires without hiding any information to make this research a success.

#### **3.4.2 Unit of analyzing**

 Cinnamon cultivation has dispersed largely over the western & southern coastal areas and Sabaragamuwa province. Convenient data collection was carried out focusing only the Galle district due to the above highlighted reasons.

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Majority of the Cinnamon processing centers are located in the Galle district. But it was observed that these centers can be categorized in to different scales namely large, medium and small depending on the sales revenue. But there is no any reliable source to attain the sales figures on individual basis. Therefore the experience of the CINCA officials helped to categorize these members considering the business domain as well. The questionnaire focused all these 3 levels of revenue capacities in the plantation sector to gather the actual data for current situation.

There are many Cinnamon exporters registered in the EDB for Cinnamon diversified products for the international market. Out of these exporters there are only few exporters who are doing the regular international transaction mostly in the bulk form

(Cinnamon Quills and Cinnamon Oils) within the global market. Since the study targets to develop the marketing aspects combined with the overall technology applications, the selection of the sample was fine tuned to select the active exporters who have industrial knowledge to a certain depth.

Therefore in conducting interviews Cinnamon value chain players were selected as indicated in Table 5.1. On the other hand industry stakeholders such as the DEA, EDB, Sri Lanka Standard Institute (SLSI) respective officials who are actively involved and well experienced in the relevant field were interviewed for effective and up to date data gathering. Focused group discussions were also conducted as necessary by selecting CINCA officials to check and gather more technical information and their viability.

### **3.5 Questionnaire Design**

Research survey needs to be carefully carried out to gather useful information, especially when very busy and multi educational level target groups are interviewed. Questionnaire design is one of the most critical stages in the research process. A questionnaire is a pre formulated written set of questions to which respondents record their answers, usually with in rather closely defined alternatives. Questionnaires are efficient data collection mechanisms when the researcher knows exactly what is required and how to measure the variables of interest.

It is further explained that a good questionnaire design should focus upon three areas; the wording of the questions, the principle of measurements, the general appearance of the questionnaire and they were discussed broadly in the latter parts.

Questionnaire development is guided by the field observations. In order to address the research objectives, two separate questionnaires were developed based on the two main contributors 'Technological Competency' and 'Marketing Orientation'. Each construct compounded with the necessary variables & they were measured from different indicators led to separate questions.

According to the research carried out by Mendis (2010) it was incorporated a similar model to analyze the coconut industry and also followed similar constructs in evaluating the industry position. Since this research too follows the similar objectives but reference to the Cinnamon industry it is pushed towards incorporating the similar assessment methodology. In the questionnaire designing some relevant wording with the special focus to suit the Cinnamon industry was concerned as necessary.

Then a pilot survey was conducted using 7 industry experts and also several other experts attached to the Technology & Marketing fields. Then it was further fine tuned and finalized the questionnaire. The expertise of a language specialist in improving the wording to a more understandable format for the industry players was also incorporated in an effective manner.

The full questionnaire comprised of 60 questions detailed under two different sections to identify the relationship of two constructs through measuring relevant variables. First section comprised of 30 questions under different variables such as Knowledge & Experience, Innovativeness & Creativity, Internal & External Exposure and Attitudes & Perception targeting the technological competency and their individual impacts are measured through 5 -10 questions.

Second section is emphasized on Market orientation having 30 questions to measure the relevant variables namely customer orientation, competitive orientation and inter functional coordination. All these questions are measured similarly incorporating five point Likert scale ranging from strongly agreed (5) to strongly disagreed (1).

The set of questions are well revied through industry experts and professionals in order to target the questions more towards Sri Lankan industry and to get the best appropriate answer of analyzing. The questionnaires are shown on appendices 3 &4.

### 3.5.1 Wording principles

Wording and questioning is very essential since the meaning of words vary in a wider scale depending on the knowledge level, locality, facial impressions, tone...etc. Therefore certain aspects need to be carefully attended and sometimes considered as principles in conducting the survey. These principles relate to biases resulting from respondents' responses and the questionnaire itself. Consistent with the following principles were considered very essential during the development of the questionnaire:

- Questionnaire incorporated a simple language to approximate the understanding level of the respondents where ever possible
- The questions have a sequence order for the purpose of the responder to drive his/her thinking in a logical manner
- Most of the questions try to communicate through industry language to understand better
- Closed questions with alternative answers, were chosen as they help the respondents to make a quick answer much easily
- Contents and purpose of the question always focus for the specific variable under consideration
- The purpose of each question was scrutinized to minimize unnecessary question
- The length of the questions was kept as short as possible
- Ambiguous, double barreled, leading, and loaded questions were also considered to minimize confusion and bias of responses
- Avoid questions which has impact to personal life or individual/organizational informal activities where ever possible

It was needed to field test the questions before starting the real survey with the actual interviewees in the field. The team of interviewers required to be trained considering the above necessary aspects. In certain situations the reliability was cross checked from time to time after interviews were carried out.

### 3.5.2 General appearance

Introduction of the research objectives at the inception of the interviews and the establishment of contacts through their organizational heads helped a lot to improve the interviewing. Because they knew this study is going to benefit them to uplift their current level of business. It helped the interviewees to understand the purpose of answering the questions and the importance of the questions being asked.

Both questionnaires focused industry related variables and they were easy to answer. But gradually it drives to deeper aspects of the constructs and finishing with questions which are not much related to the industry. But they were focused on elaborating their own personal opinions. This type of flow helped a lot to answer with positive mindset.



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### 3.6 Summary of Methodology

The methodology of the research study in achieving the first and the second objectives are discussed. The developed conceptual model depicted in figure 3.1 was incorporated in developing the structured questionnaire to measure the variables of specific theoretical constructs. A semi structured questionnaire /interview guide will be used to identify major technological problems and current status of the Sri Lankan Cinnamon industry.

The convenient sampling technique was incorporated and around 30 members from each category were selected for the interviews. Therefore the total number interviewed became 170. In finding a relationship among the members under cultivators it was further divided into 3 scales namely Large, Medium and Small.

Under Technology Competency construct there are 4 variables discussed and they were further subdivided into 30 indicators altogether. Therefore there are 30 indicators and corresponding 30 questions under Technology competency in the Questionnaire. Likewise there are 3 variables under Market Orientation construct. Again there are 30 indicators under 3 variables and therefore 30 questions included under market orientation.

Important factors to be considered by the interviewer while conducting the interview are discussed in details. It became an important aspect to guide the interviewers since they are meeting the low level to high level educated people. Therefore proper usage of the language is vital and the meanings of certain technical terms should be clearly illustrated prior to getting the answers for the questions.

Based on the model the final questionnaire plans to gather the maximum possible extent of data with accuracy and the relevancy to identify the Cinnamon industry situation. That identification is vital for proposing appropriate industry related recommendations to turn the Cinnamon industry from a declining stage to a positive direction in a consistent manner.