Exploring strategic upgrading options of smaller shrimp producers in Ecuador:

A global value chain perspective

A thesis submitted in fulfilment of the requirements for the degree of M.Sc. in Business, Language and Culture

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January 2009

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Number of Tabs: 174.151
Abstract

This study explores the situation of smaller shrimp producers in Ecuador. As many other producers from developing countries they are facing major changes in the way their operate their businesses. They are today competing in the global economy where the coordination and integration with other actors in so-called Global Value Chains (GVCs) determine their success. This raises a number of challenges for these firms which in many cases may be suffering from inadequate managerial and financial resources, little experience of cooperation with other firms and difficulties in meeting new product standards and quality requirements. With this point of departure the study embarks on an exploratory journey to discover whether it can find any indications to what the smaller producers can do to improve their competitiveness in the industry.

The study applies the Global Value Chain (GVC) framework to develop an appropriate methodology which includes important aspects such as chain governance characteristics and firm-level upgrading. Data is collected through a range of secondary sources and primary input from 20 semi-structured interviews with producers and other actors in the Ecuadorian shrimp industry. The results are presented on two levels. The first level provides a mapping of the Ecuadorian shrimp industry and a discussion of global drivers that shapes the industry. It also includes an analysis of governance elements related to chain coordination and rule making and monitoring. The second level emphasises on the smaller producers by examining their operational practices, linkages with other actors in the chain, and upgrading efforts.

Overall, the thesis provides a number of interesting indications. First, it suggests that the chain is moving away from a market-based structure to the modular-based type due to increased product specification brought forward by legislative developments. Second, it proposes that the producers play a limited role in the chain serving as input suppliers in a relationship with the actors forward in the chain that is based on little more than price and volume. Third, in this setting the producers have in general only been able to introduce modest cases of process upgrading that are not likely to generate a competitive advantage in the chain. The producers face in general a number of internal and external barriers. It is proposed that all producers should improve their production efficiency and on a collective level consider the strategic option of taking part in forming a co-operative that could give them the scale of resources and scope to initiate various forms of upgrading. The study ends with a call for further studies into the viability of this option along with a more general research agenda.
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Chapter 1 – Introduction

1.1. Introduction

In the last few years smaller shrimp farmers in Ecuador have been frustrated with their situation in the industry which is one of the most important in the country. Many of them have seen a significant decrease in their income. This is in spite of a steady demand for shrimps in the major export markets. The producers complain about the low prices and blame the other participants in the sector (e.g. exporters) for keeping most of the value paid by the consumers. However, the difference between producer and consumer price might as well be the reflection of an inefficient market system as the reflection of exploitative behaviour (Goletti, 2005). An inefficient market system is caused by a number of factors e.g. the lack of industry policies and little vertical and horizontal coordination between the participant firms.

A main contributing factor is undoubtedly the impact of the global economy which has entered a new phase of deeper, more immediate integration that is exposing national and local economies to the winds of economic change as never before (Sturgeon, 2008). These winds can fill the sails of domestic firms and industries, blow them away, or perhaps even worse, bypass them entirely (Sturgeon, 2008). The fact is that globalization ties the sustainability of firms to the competitiveness of the industries in which they participate. Firms within an industry in a country must increasingly compete – even in local market – with firms and industries from around the globe. Today the question is not whether producers in developing countries should participate in the global economy but rather how they should do so (Unido, 2001a). The concept of global value chains may offer an answer (Gereffi et al., 2005).

GVC are consistent with a new view on development for agricultural products such as shrimps as it emphasizes creating or strengthening existing linkages among different actors (Goletti, 2005). It is also oriented towards the market rather than being supply oriented. There is increasing support for the argument that participation in GVC benefits small and medium-

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1 Two recent developments that have enabled this even greater functional integration in the global economy are 1) rapidly increasing industrial capabilities in developing countries, e.g. in China and India, and 2) new computer-mediated approaches to real-time integration of distant activities.

2 Henceforth referred to as GVC or GVCs (plural) in this thesis.
sized enterprises\(^3\) by enhancing their internationalization process and growth, and improving their efficiency through co-operating with partners upstream and downstream (OECD, 2007). The increased opportunities for SMEs come along though with serious challenges. These include a lack of awareness and understanding of the structure and dynamics of GVCs, difficulties in identifying competitive strengths, inadequate managerial and financial resources, and problems in meeting product and quality standards (OECD, 2007). On the other hand, these firms may also have unique resources to draw on like untraditional ways to solve problems, commitments and other social resources that are more easily mobilized in a less structured organisation (Schaumburg-Müller, 2003).

The current challenge then for researchers, development bodies and others is to examine how smaller firms in developing countries such as the shrimp producers from Ecuador can draw on any unique competences they have to overcome challenges so that they can benefit from value chain integration that will potentially allow these firms not only to supply raw material but to participate more in the adding of value which could given them a real opportunity to improve their economic situation. This process is described as upgrading which is a critical element in the GVC literature (Unido, 2001a). In a more metaphorical sense, it can be described as entering the “high road” to competitiveness that provides for sustainable growth in contrast with the “low road” typical of smaller firms from developing countries that often compete by squeezing wages and profit margins rather than by improving productivity, wages and profits (Pietrobelli and Rabellotti, 2006).

In this context, this thesis intends to examine using a GVC framework and possibly other approaches whether it can assist in indicating what the smaller shrimp producers can do to improve their situation. This would response to a call for more research on developing firms as a central actor and unit of analysis to understand how production is organized and what determines firms’ survival and growth challenges by global developments (Schaumburg-Müller, 2003). Having provided the rationale for the initiation of this study, the problem formulation is introduced below.

\(^3\) Henceforth referred to as SMEs in this thesis.
1.2. Problem formulation

“What are the strategic options of smaller producers to upgrade in the Ecuadorian shrimp value chain in order to improve their competitiveness?”

To answer the problem formulation, three research questions are added:

1. “How are the smaller producers included in the chain?”
2. “Which forms of upgrading have the producers attempted?”
3. “Which strategic upgrading options could be pursued to improve their competitiveness?”

The three research questions will be answered by leveraging on the GVC framework and its emphasis on chain governance and firm-level upgrading. A brief overview of how the three research questions will be answered follow next. The first question will be assessed by mapping the Ecuadorian shrimp industry in which the function of the producers will be identified. Additionally, a description of governance characteristics on aspects such as chain relationships (coordination) and rule making and monitoring will provide further insight into the inclusion of the producers. These secondary sources are then compared to the insight of the empirical data which explore the linkages that producers have with the other main participants in the chain. The second research question will be answered by reviewing the inputs which have been gathered on the upgrading options of the smaller producers which have been interviewed for this study. To further assess the question a general discussion on external and internal barriers is also featured.

Finally, research question three takes a future oriented view providing the first initial reflections on which strategic options the smaller producers could approach to improve their competitiveness in the chain. It draws in this regard on the insight of the first two research questions in its evaluation of the identified upgrading options. Some new indicative literature may be introduced at this point. This is meant to be a short introduction of one or more topics that warrant further examination. Having provided an overview of how this study attempts to answer the three research questions,

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4 Figure 3.3 in chapter three will also provide more information on how the three research questions are answered.
1.3. The structure of the thesis

Figure 1.1 displays below that there are a total of seven chapters in this thesis.

Chapter 1: Introduction
Chapter 2: Theory
Chapter 3: Methodology
Chapter 4: The Ecuadorian shrimp industry and global drivers
  - Mapping
  - Global enabling environment
  - Governance characteristics
Chapter 5: Exploring the situation of the smaller shrimp producers in Ecuador
  - Operation
  - Linkages
  - Upgrading
Chapter 6: Discussion
Chapter 7: Conclusion

Figure 1.1. The structure of the thesis
Source: own development

Chapter one introduces the thesis to the reader. It discusses its rationale, the problem formulation and how the three main research questions will be answered which is followed by an overview of the structure of the thesis and its delimitations. Having provided an introduction to the thesis, chapter two discusses relevant theory. To identify useful theoretical frameworks is of critical importance to ensure that the theoretical foundation of the study is sound. As implied above in this chapter the focus will concentrate on key elements of the GVC approach, namely the theory of governance and the notion of industrial upgrading but it shall also been seen that there are other interesting terminologies concerning chains, networks and cluster which have some useful rationale that should be kept in mind when moving forward in the theory building process. Having discussed relevant theory in chapter two, chapter three emphasises on developing the most appropriate methodology to ensure the gathering of relevant information. It discusses in this regard the applicability of analytical frameworks used in GVCs studies and how it aims to leverage upon the theoretical and methodological insight learned so far in the process. This is followed by a description and structure of the research procedure in which further details are given on the use of secondary and primary sources. There is also a note on the ramification of the sampling approach and how the study has attempted to deal with validity and reliability threats.
Chapter four presents a general GVC analysis of the Ecuadorian shrimp industry while also discussing important global developments that shape the shrimp sector. It uses secondary sources to map the industry, to describe the global enabling environment of the shrimp industry, and to provide some general governance characteristics on chain coordination and rule making and monitoring. Figure 1.1 displays a horizontal arrow that indicates that this chapter serves as an important point of departure for chapter five which examines the situation of the smaller shrimp farmers in Ecuador. An interview form is used to gather primary data on their operation methods, their relationships with other actors in the chain, and their efforts to upgrade in the chain. The viewpoints of other participants are also featured to enrich the discussion. With point of departure in the analytical assessment, chapter six follows with an overall discussion. This chapter answers the three main research questions which have been discussed above in section 1.2. Finally, chapter seven concludes on the thesis and includes also a note on limitations and future research perspectives. What remains in chapter one is to comment on the delimitations of the thesis. These follow next.

1.4. Delimitations

There are a number of delimitations to this study which are highlighted in this section. To begin with, it should be stressed that this is a study undertaken as part of master degree by one person. Thus, this limits the scope of the study due to time and resource constraints. It should therefore been seen as a preliminary and exploratory study into assessing the GVC of the Ecuadorian shrimp industry with a particular emphasis on the smaller producers. Thus equal attention is not placed to other chain participants including those that reside outside the national boundaries of the chain. Overall, the findings and recommendations should therefore be put forward as indications which can be tested in future studies. These should serve a useful role as few if any publications have previously been conducted on the Ecuadorian shrimp industry using the GVC methodology. It should also be noted that the GVC analysis does not introduce comparative studies on smaller shrimp producers from other countries. It has not been possible to find enough information for this purpose without having to conduct primary research which is not possible given this study’s constraints. However, the study intends to draw on much global knowledge to ensure that it does not take a national view on matters. Finally, the study confines itself to the boundaries of the analytical phase. It does not get into actual value chain implementation, facilitation and monitoring. With this overview in mind, chapter two follows next with a review of relevant theory.
Chapter 2 – Theory

2.1. Introduction

This chapter reviews appropriate theory which is useful in answering the problem formulation featured in chapter one. To ensure that the GVC approach is the most appropriate theoretical framework upon which to conduct this study, a comparative review is initiated of the GVC concept vis-à-vis related approaches outlining their strengths and weaknesses respectively. It shall be seen that the comparative review confirms the usefulness of the GVC approach as the most appropriate choice but there are useful aspects of the other approaches which this study takes note of. Having selected the GVC approach as the main theoretical building block the chapter moves forward emphasising on this perspective. It discusses two key theoretical pillars of the GVC framework. The first area concerns governance where it assesses chain relationships, power, and institutions. The second main area looks at the notion of upgrading and reviews types of upgrading strategies and factors which can enable and/or hinder certain kinds of upgrading. Finally, a conclusion is given drawing together how the reviewed theory will assist in developing a method to answer the problem formulation. This was a short outline of what follows in this chapter which begins next with the comparative view of the GVC approach versus other related terminologies.

2.2. Chains, networks and clusters

2.2.1. Introduction

Over the last decade-and-a-half, a rich and vibrant literature has evolved that attempts to explain how global industries are organised and governed, and how, in turn, those relationships affect the development and upgrading opportunities of the various regions and firms involved (Coe et al., 2008b). Three key interlinked strands of research in this field have been the global commodity chain (GCC) framework, the Global Value Chain (GVC) framework, and the global production network (GPN). In this period another related framework namely the notion of industrial clustering has also been introduced. This has created some confusion on how these concepts differ on their analytical emphasis and consequently they are at times used interchangeably (ESCAP, 2006). The concepts of GCC,
GVC, and GPN notably share a number of characteristics as they are all grounded in variations of a network/chain approach and they all acknowledge that governance structures have a major impact on firm-level upgrading prospects. There are however, also importance differences in the relative emphasis/coverage of the frameworks as this section shall illustrate. Such examples include the degree of analytical attention placed on institutions, non-firms actors, and the relative importance of territorial development impacts vis-à-vis firm competitive issues.

The point of departure for writing this section is that there is no single framework that can fully explain how global industries, hereunder firms are organised and governed. What is useful in this regard is to seek out a theory which has a modest and clearly defined explanatory scope, one that identifies one or a few important casual mechanisms that can be used to partially explain and predict outcomes (Sturgeon, 2008). It is proposed as stated earlier that the GVC theory is such a theory that would enable this study to answer the problem formulation. However, given that such a theory demands some parsimony, it is useful to seek compatibility and linkages with complimentary frameworks (Sturgeon, 2008). This may enable a researcher to find additional propositions which could be added as building blocks or simply confirm important points. A theoretical journey is therefore initiated presenting how these related concepts have emerged pointing out their theoretical maturity level, and highlighting their comparative strengths and weaknesses vis-à-vis the GVC concept. Having provided an overview of the main objectives and outline of the section, it begins below with a review of the GCC concept.

### 2.2.2. From global commodity chains to global value chains

The GCC approach which originates from a relatively structuralist world systems perspective is principally concerned with understanding how global industries are organised (Gereffi & Korzeniewicz, 1994). It consists of identifying the full set of actors (i.e. firms) that are involved in the production and distribution of a particular good or service and mapping the kind of relationships that exist among them (Bair, 2005). Four dimension of a GCC are defined: 1) the input-output dimension, 2) the territorial dimension, 3) the institutional framework, and 4) the governance structure (Gereffi, 1999). The focus has in particular been placed on the governance dimension (Kaplinski & Morris, 2001; Henderson et al., 2002). The GCC concept has contributed to generate important insight into existing chains such as
footwear, garments, electronics and horticulture (Henderson et al., 2002). It has also assisted in highlighting the restrictions of firms which participate in GCCs, including that the capacities to generate value are asymmetrically distributed because of aspects such as governance and power (Henderson et al., 2002). Furthermore, it introduces the notion of how global chains are governed through a bi-modal distinction of buyer-driven and producer-driven chains.

However, in subsequent research findings, a shift was detected in the organisation of global production towards external networks (Sturgeon, 2008). The buyer- and producer-driven GCC typology could not capture these changes as it was based on a static, empirically situated view of technology and barriers to entry (Sturgeon, 2008). There was a need for a more dynamic view of chain governance. At this stage the concept of GVCs was introduced. Today, the GVC concept has in practice superseded the GCC approach. It has leveraged upon the GCC framework and added explanatory and predictive power (Gereffi et al., 2005). Another framework which has also build upon the GCC concept is that of the global production networks which is reviewed next.

2.2.3. Global production networks – Emphasising on multiple stakeholders

The Global production network (GPN) is a broad relational framework which combines insights gained from the GCC/GVC concepts with ideas from the actor-network theory and varieties of capitalism/business systems literatures and aims to reveal the multi-actor and multi-scalar characteristics of transnational production systems through intersecting notions of power, value and embeddedness (Coe et al., 2008a). The view is that it is not simply firms who operate and governance GPNs. There are also other actors involved and the inclusion of these in analyses would allow for a more nuanced articulation of power relationships in chain (Coe et al., 2008a). There is no doubt that the GPN approach is potential in scope but the

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5 Capital and technology intensive industries such as electronics and autos tend to be governed by producers, while labour intensive industries such as apparel and consumer goods tend to be governed by buyers.

6 This can be debated of course. On one side, prominent GCC researchers such as Gereffi and Sturgoen (Coe et al., 2008a) now concentrated their research efforts within the GVC framework. On the other hand, there are still researchers which continue to use the GCC terminology such as Bair (2005, 2008), and Talbot (2008). One may argue that the GCC concept in particular still service a useful role when assessing generic commodities in developing countries.

7 Such “non-firm” actors include national and international regulatory bodies such as the WTO, organisations that establish technical global standards (ISO 9000, ISO 14000 etc.) and those that promote standards for labour
research outputs so far have been quite similar to those generated by the GCC analysis (Levy, 2008). A number of underdeveloped areas have therefore been put forward to address this criticism (Coe et al., 2008a). It is therefore put forward that this framework has some way to go before it can realise its full potential.

It is an advantage for this study to leverage on a predictive analytical framework which offers guidance on a key few steps that can be taken to gather input on key elements such as chain governance and firm level upgrading. This is arguably the case for the GVC conceptualisation which shall be described further shortly. However, there are some useful learning points which have been identified in the review of the GPN perspective. First of all, the review has underlined that importance of not being to narrow in the analysis of a GVC but instead aim to gather input from multiple stakeholders in a chain to obtain a more nuanced picture on governance characteristics such as linkages and on the scope for upgrading options. Furthermore, it is also noted that an analysis could benefit from looking at internal aspects concerning a firm organizational performance and relationships.

Next up is another related concept, that of clustering.

2.2.4. Industrial clustering - stressing the local context in global value chains

Since the early 1990’s, industrial cluster analyses have proliferated as an economic development strategy (Vom Hofe & Chen, 2006). An industrial cluster is a: “Concentrations of businesses that co-locate because of trading (buyer-supplier) relationships and/or to share common factor markets (including infrastructure, knowledge resources, and labour) and/or common goods market (Feser and Luger, 2002: 3)”. The cluster perspective became popular among politicians and policy makes in the early 1990’s when Porter (1990) introduced his conditions and environmental protection (fair-trade etc.). Other bodies include labour, consumers and civil society organizations.

8 These include a need to consider the importance of logistics, more focus on other actors in the network, intra-firm relationships, and environmental considerations.

9 This is not to say that it can not be used for specific purposes - e.g. Riisgaard (2008) used the perspective to examine the influence of labour organizations in Eastern African flower chains, and Cumber et al. (2008) examined the role of unions and labour agencies in GPNs.

10 This corresponds well with the suggestion to conduct an internal benchmarking study as suggested in the handbook of GVC featured in chapter 3. Chapter five provides results on the internal operation of the producers.
Diamond of Advantage framework. From an academic point of view, however, Porter’s concept remains, to some extent, generic and a vague way of thinking about regional economic development (Vom Hofe & Chen, 2006). What is clear is that firms which reside in clusters may overcome some of the major constraints they usually face such as lack of specialized skills and difficult access to technology, markets, information, credit, and external services (Pietrobelli and Rabellotti, 2006; Schmitz & Nadvi, 1999).

The allure of the cluster approach is in particular attractive for SMEs which through co-operation can upgrade to compete alongside large firms and in global market (Nadvi & Halder, 2005; Pietrobelli & Rabellotti, 2006). The firms are said to benefit from collective efficiency which is defined as the competitive advantage derived from local external economies and joint action (Schmitz, 1995). It has been proposed that it would be useful to bring the two perspectives of industrial clustering and GVCs together, particularly in the case of export-oriented clusters that are inserted into GVCs (Humphrey and Schmitz, 2002). A main difference in the analysis of these concepts is that cluster theory have focused almost exclusively on the internal governance of localities while conceptualizing external linkages simplistically as either contained within multi-locational firms or made through arms-length trading relationships (Humphrey and Schmitz, 2002). GVC theory by contrast has the opposite geographic focus, and it posits a range of governance structures that go beyond the vertically integrated transnational corporations and arms-length cross-border market transactions envisioned by the cluster literature (Sturgeon et al., 2008).

The clustering approach has been criticized of not taking into account the fact that many clusters is closely tied to external actors who connect such clusters to global markets (Lagendijk, 2002, Schmitz & Nadvi, 1999; Sturgeon et al., 2008). It is suggested that the best performing clusters are those that are well connected to external linkages including other clusters which can contribute with critical technical and market information, but not so

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11 Four determinants were listed in which governments can act as catalysts to foster competition in clusters: 1) firm strategy, structure and rivalry, 2) specialized factor conditions, 3) changing demand conditions, and 4) geographic proximity of downstream and upstream related and supporting industries.

12 Examples of successful clusters in developing nations include the Sinus Valley footwear district in Brazil (Schmitz, 1995), the surgical instrument district in Pakistan (Nadvi, 1999), the salmon cluster in Chile (Campos, 2006), and fresh fruit clusters in Brazil (Gomes, 2006).

13 Four areas of external economies have been put forward: 1) market access, 2) labour market pooling, 3) intermediate input effects e.g.: access to specialised input suppliers, and 4) technological spillovers (McCormick, 1999).

14 These are discussed further in section 2.3.2.
densely linked that local networks become diluted and ineffective (Nadvi & Halder, 2005; Sturgeon et al., 2008). Thus what this paper can leverage upon from the review of the industrial clustering concept is the notion of the importance of examining the local linkages between the main actors and the support offered by private and public stakeholders. At the same time moving forward with the GVC conceptual framework will take into account the global influences which are shaping a particular industry. The remaining sections of this chapter shall focus further on the GVC theory beginning with the concept of governance.

2.3. GVC governance

2.3.1. Introduction

GVC governance means that powerful actors (typically lead firms) set and/or enforce terms under which others in the chain operate (Schmitz, 2006). At any point in the chain, some degree of governance or coordination is required to in order to take decision on production regarding a wide range of issues such as price, volume and other attributes related to quality, and distribution. It is proposed that three pillars of governance can be identified (Sturgeon, 2008). The first pillar examines the character of linkages between tasks/stages in the chain of value added activities – this can be referred to as chain governance relationships. The second pillar assesses how power is distributed and exerted among firms and other actors in the chain, and the third pillar looks at the role that institutions play in structuring business relationships. These three governance pillars are discussed below in separate sections.

2.3.2. Chain governance relationships

In section 2.2 above the discussion described how the GCC concept had introduced the notion of a bi-modal typology of chain governance relationships referred to as product- and buyer driven chains. In the early 2000s, criticism rose as mentioned previously in section 2.2 to

15 A related view has been proposed by Gibbon et al. (2008) who refers to three main theoretical developments in the literature concerning GVC governance, namely as driving, coordination, and normalization. The first two stages are discussed in pillar one which looks at chain governance relationships. The latter one is not discussed further but refer to examining other theories that may assist in addressing limitations in the GVC governance theory such as clarifying issues regarding justification (Ponte & Gibon, 2005) and governmentality (Gibon & Ponte, 2008).
point out that this typology was too narrow and they failed to capture the diversity of inter-firm relationships observed in the chains (Gibbon et al., 2008). This led to a five-fold typology which explores the terrain between markets and hierarchies by intruding the network form of organisation intro three distinct modes of inter-firm governance: modular, relational and captive (Gereffi et al., 2005). This framework provides a more balanced understanding of the variety of possible power relationships in which (lead) firms coordinate or govern the linkages between value chain activities.

The five generic ways are 1) simple market linkages, governed by price, 2) modular linkages, where complex information used in a transaction is codified before being passed on to highly competent suppliers, 3) relational linkages, where tacit information is exchanged between typically closely interactive buyers and highly competent suppliers, 4) captive linkages, where less competent suppliers are provided with detailed instructions by lead firms, and 5) hierarchy, which refers to linkages within a vertically integrated firm. The combinations of three distinct variables predict when one of the five coordination forms prevails in a GVC (Gereffi et al., 2005). These are the complexity of information exchanged between tasks/activities, the codifiability of that information, and the capabilities resident in the supply base. An overview of these correlations is shown in figure 2.1 below.

![Figure 2.1. Forms of coordination in GVCs and their determinants](source: Gereffi et al., 2005, as adapted by Dicken, 2007).

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16 Although the buyer-driven category, grasped the importance of external networks in the coordination of global production processes, it did not differentiate between different network forms, and so failed to capture the diversity of inter-firm relationships that exist (Sturgeon, 2008).

17 This was in part inspired by Sturgeon’s concept of modular value chains (2001, 2002).

18 A variant of this is quasi-hierarchy which involves linkages between independent firms in which one is subordinate to the other, with a leader in the chain defining the rules to comply for the rest (Humphrey & Schmitz, 2002).
The GVC governance coordination framework outlined above in figure 2.1 assists in explaining why changes in one or more of the three variables may alter GVC governance patterns in predictable ways (Sturgeon, 2008). For example, if the introduction of a new technology complicates an established codification scheme, the ability to codify transactions is reduced and modular coordination would become more relational. In addition if competent suppliers could not be found, then captive networks and even vertical integration become more likely. In contrast, rising supplier competence tend to push captive governance toward the relational type and better codification schemes prepare the ground for modular governance. It should be pointed out that GVC patterns are not monolithic (Gereffi et al., 2005; Sturgeon, 2008). In a particular industry in a particular time and place, governance patterns may vary from one stage of the chain to another. In this regard regional, national, and local value chains are nested firmly within GVCs. On this note, this sections ends by stating that the examination of the five-fold typology will guide this study in describing the form of governance relationship(s) which exist in the Ecuadorian shrimp industry. Next, an examination of pillar two, the power aspect follows.

2.3.3. Power in the chain

The effect of power can be discerned at various levels in the analysis of a GVC. Institutional actors including state and multi-lateral institutions such as the WTO influence a GVC through the enforcement (or lack of it), of laws and the terms of international agreements. Consumers have power through the purchasing choices they make. Workers also have power when they are organised in unions. At the firm level, power is accumulated, held, and wielded in different ways and in different amounts by various actors in the chain (Sturgeon, 2008). In a GVC analysis an industry is typically divided into two broad types of firms: lead firms and suppliers. Lead firms can be buyers with little or no production of their own. Lead firms can (with limits) choose and replace suppliers and therefore wield purchasing power which they can use to pressure suppliers to lower costs, increase quality, and adopt to specific standards, (Sturgeon, 2008). Suppliers on the other hand may wield competence power which defines technical and service capabilities that are difficult to replace. Suppliers wield competence

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19 In the case of nature-resource based industries which are of interest to this study, the increasingly stringent standards (e.g. for product quality and consumer protection), competitive differentiation, and more direct forms of purchasing by large retails have led to a shift away from market-based coordination by introducing new levels of explicit coordination via modular linkages and hierarchy (Dolan & Humphrey, 2000; Pietrobelli & Rabellotti, 2006).

20 This again is used by e.g. advocacy groups when they attempt to change certain behaviours.
power when their products and services are seen as difficult for the lead firms they serve. Next up is the session which looks at the influence of institutions.

2.3.4. The influence of institutions

Institutions include a range of bodies such as governmental agencies and non-governmental entities such as multilateral agencies, industry trade groups, labour unions and advocacy groups. Institutions play a vital role in governing the society by introducing legal and voluntarily regulatory systems. The overall effect is that limits are placed on actions, and firms that surpass those limits run the risk of sanction, creating pressure for firms to operate according to the norms and expectations of the societies in which they operate (Yeung, forthcoming). The impact of institutions on the geography and character of GVCs can be profound (Bair, 2005). It is therefore important to examine the influence of institutions in a GVC analysis. A useful analytical tool which shall be introduced in chapter three examine different levels of governance that are exercised either internal or external to the chain (Kaplinsky & Morris, 2001). Next, the chapter turns to look at the second major theoretical pillar which is of particular interest to this study in order to answer the problem formulation, namely the concept of upgrading.

2.4. Upgrading

2.4.1. Introduction

The GVC literature defines upgrading as improving a firm’s position within the chain, and this is generally associated with increased competitiveness that allows for the capture of greater value-added through the production process (Kaplinsky and Morris, 2001). Innovation is crucial for upgrading but innovation is not here as a breakthrough into a product/process that is new to the world (Pietrobelli & Rabellotti, 2006). It is rather a story of marginal, evolutionary improvements of products/processes that are new to the firm and that allow it to keep up with an international (moving) standard (Pietrobelli & Rabellotti, 2006). In

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21 This form of power tends to diminish in effect with an increase in the number of available suppliers (Sturgeon, 2008).
22 Examples include the enlargement of the European Union, the establishment of the North American Free Trade Area (NAFTA), and China’s accession to the WTO, which all had a large effect on economic geography of many industries.
23 There are referred to as legislative, judicial, and executive.
this section, four main types of upgrading are presented along with a view on factors that may either enable or impede certain forms of upgrading.

2.4.2. Types of upgrading strategies

Four main upgrading strategies have been put forward in the literature which firms can pursue (Humphrey and Schmitz, 2002). These are:

1. *Process upgrading* is transforming inputs into outputs more efficiently by re-organizing the production system or introducing superior technology. Today, the capacity to meet standards (e.g. ISO, HACCP, traceability, industry and ethical trade marks such as Fairtrade) is emerging as an increasingly important category of process upgrading (Unido, 2001a).

2. *Product upgrading* is moving into more sophisticated product lines, e.g. if a processor is able to produce a higher quality of a dried fruit or if a tea processor introduce small tea bags instead of 1 kilo loose tea boxes (MP4, 2007). The end result can be measured in terms of increased unit values. The notion of value-added production where the quality is improved is also a strategy that can be pursued²⁴.

3. *Functional upgrading* is acquiring new, superior functions in the chain, such as design or marketing or abandoning existing low-value added functions to focus on higher value-added activities. The effect is an increase in skill content of activities. The functional upgrading route often discussed is the transition from assembly to OEM to ODM to OBM²⁵.

4. *Intersectoral upgrading* applying the competence acquired in a particular function to move into a new sector. For example, using the knowledge acquired in producing TVs in order to move into the computer sectors, initially by producing monitors.

In addition, it has been suggested that a new category could be considered examining the general skills acquired by managers and employees through a “learning by doing” process in the chain participation (Schaumburg-Müller, 2005)²⁶. Firms attempting to upgrade have in general considerable difficulty in doing so largely due to the increasing barriers to entry that exists as firms move along the chain. It has been stated that barriers to entry in intangibles

²⁴ This strategy enable e.g. smaller coffee producers to receive a higher selling price (see e.g. Pelupessy & Díaz, 2008).
²⁵ OEM= Original Equipment Manufacture, ODM= Own Design Manufacture, OBM= Own Brand Manufacture.
²⁶ Schaumburg-Müller in his study of local firms in Vietnam found that there were some intangible benefits in the form of improved management and know-how that are not product or chain specific (e.g. design and planning techniques).
activities are growing faster than tangibles ones (Gereffi et al., 2001). Intangible aspects of production include marketing, brand development, and design which are important for the profitability and power of lead firms. Tangible activities such as production and manufacturing are becoming increasingly standardised. In the long run, to sustain income growth SMEs’ will need to develop the capability to upgrade not just processes and products, but increasingly also their functions (Unido, 2001a). Functional and also intersectoral upgrading can reduce the fragility and vulnerability of a firm’s productive specialisation (Giuliani et al., 2005). To be able to reach these forms of upgrading, SMEs will need to pay more emphasis on learning skills related to managing and sharing knowledge as opposed to only focusing on aspect regarding production (Unido, 2001a). However, there are certain factors that are likely to either enable or hinder various forms of upgrading. These are discussed below.

2.4.3. Factors that influence the scope of upgrading

It has been suggested that the upgrading process may depend on sectoral specificities (Giuliani et al., 2005). Of particular relevance to this study is the fact that four industry groups27 have been suggested for Latin American, in which the natural resource-based sector which includes extraction of natural resources such as sugar, fruit and milk has the closest similarities with the shrimp sector. Research on this sector suggests that process and product upgrading are necessary to keep up with the increasing importance of international sanitary and quality standards but that global buyers and their intermediaries do not normally foster and support the SMEs’ upgrading process but nonetheless expect the suppliers to make the necessary changes and upgrade (Giuliani et al., 2005).

Another determining factor is that of chain governance relationships which was described above. In chains which consist of market-based relationships, producers encounter in general few obstacles but also little support in upgrading (Schmitz, 2006). Moving forward, in captive chains it has been found that producers who produce for global buyers can expect to advance fast on process and product upgrading (Schmitz, 2006). It is said that local producers learn a great deal from these buyers about how to improve their production processes, attain consistency and high quality, and speed of delivering (Schmitz, 2006). This upgrading is not

27 The other industry groups are traditional manufacturing (e.g. textile and footwear), complex product systems (e.g. automobiles and consumer electronics), and specialized suppliers (e.g. software).
automatic, however, as it requires a continuous investment by the local firms themselves in people, organisation and equipments which is rarely enough and therefore assistance of foreign buyers is frequently needed (Schmitz, 2006). Two main reasons for the buyers’ involvement are to provide the suppliers with specific product specification and due to risk of supplier failure in meeting demands (Schmitz, 2006).

While process and product upgrading seem likely in e.g. market-based and captive chains, functional upgrading is more uncertain. There have been some studies which have shown that producers can move from being suppliers of global buyers to also developing their own products and brands but other studies have shown that firms face obstacles when they attempt to move into functional upgrading which can be categorised into two main types: resource requirements and buyer resistance (Schmitz, 2006). On resource requirements it can be stated that the investment of moving into functional upgrading may be substantial and entail risks. Thus working for foreign buyers and accepting captive relationships may be a tempting solution even if it means low profit margins (Schmitz, 2006). In regard to the obstacle on buyer resistance it can be said that there is much added value as stated above in being in charge of non-production activities such as branding, marketing and product development and for this reason global buyers (or national lead firms) are not keen on sharing this competence with suppliers (Schmitz, 2006).

To overcome these obstacles, producers may be able to pursue a double strategy where they on the one hand adhere to the specifications of the global buyers/national lead firms and then on the other hand put emphasis on diversifying into other chains where it might be easier to upgrade. Two example are given (Schmitz, 2006: 1) pursue global chains where the buyers are smaller in size which often creates a relationship that is more symmetrical in terms of power, or 2) expand the upgrading efforts in a local chain where capabilities in general are easier to acquire before attempting to export. What remains now in this chapter is to conclude on the theoretical review.

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28 Gereffi (1999) which call this process “organizational succession” has seen this in East Asian garment chains, and Kishimoto (2004) also describes this in his research on the Taiwanese computer industry.

29 One such example is a group of Mauritius clothing producers which retreated from their functional upgrading efforts which involved exporting their own brand to Europe due to the financial resources but also the knowledge capabilities required to operate even a small chain (Gibbon, 2000).

30 For this reason a number of developing firms prefer to deal with smaller buyers where there is more space for learning - such an example is found in an Indian knitwear cluster (Tewari, 1999).

31 Studies from Indian and Brazil show that firms specialising in the national market are more likely to develop their own designs, brands and marketing channels (Tewari, 1999; Bazan & Navas-Alemán, 2004).
2.5. Conclusion

In a retrospective light, the theoretical review in chapter two has examined the rationale of using the GVC theory as the main guidance in developing an appropriate framework upon which to conduct this study. The chapter began with a comparative review of the GVC framework versus other related terminologies within chains, networks and clusters that are at times used interchangeably when assessing how global industries are organised and governed. The review would compare their similarities while also pointing out differences. It was furthermore the intention of this process to reflect on whether some of the argumentations of these other approaches should be included in the theoretical building process. It was interesting to observe how the GVC concept had evolved from the GCC approach. A notably contribution from this development had been an improved typology of chain governance relationships that went from a more simple two-fold typology of buyer- and producer driven chains to a five-fold terminology that also considered various forms of network coordination. The comparative review also learned the usefulness of obtaining the perspectives of multiple actors and to assess intra-firm aspects from the GPN approach. From the clustering concept, the importance of examining local linkages and institutions were stressed.

Having made the case for building on the GVC approach, the chapter focused on two key aspects, namely governance and upgrading. In the discussion of the GVC governance, three areas main areas emerged as important to review. These were chain governance relationships, power, and institutions. On the topic of upgrading four different types of strategies were introduced. While all forms of upgrading are important it was noted that functional upgrading in particular could enable the producers to improve their competitive position in the chain. This form of upgrading is, however, more difficult to reach as global buyers and other powerful firms in the chain are keen on not sharing intangible aspects such as marketing, product development and design with other actors. Additional factors that were identified to influence the scope of upgrading options included sectoral specificities and the form(s) of chain relationship. It was interesting to note that a multi-chain strategy in which suppliers sought to simultaneously compete in smaller global or domestic chains was suggested as an option which might enable them to move beyond the sphere of production. In closure of this chapter, the insight gained on discussing relevant theory has provided a good foundation which can be built upon in chapter three that discusses the development of an appropriate methodology.
Chapter 3 - Methodology

3.1. Introduction

A useful point of departure is to examine analytical frameworks found in the GVC literature. The insight gained from this assessment along with the previous theoretical discussion in chapter two will be illustrated in a section that reflects on how this accumulated knowledge can be applied to answer the problem formulation of this study. What is also relevant to describe in this chapter is more information on the research procedure. It shall be seen that interviews are used for the primary data collection and that a combination of desk research and personal visits to relevant organisations gather a number of useful secondary sources. Further details on the structure of the interviews and an overview of the respondents are added. It is discussed how this particular sample population was selected and the ramifications hereof. Finally, emphasis is placed on addressing potential threats to validity and reliability. With this overview in mind, the first section begins below.

3.2. Review of analytical GVC frameworks

3.2.1. Introduction

There are a number of useful analytical GVC frameworks. These provide further insight into ways of analysing the main GVC theoretical pillars from chapter two: governance and upgrading. This section shall feature two of these frameworks. The first one which primarily has been developed for academic researchers is the well know handbook of value chain methodology compiled by Kaplinsky and Morris (2001). The second framework has been developed by the US national development organisation, US Aid (2006) based on extensive field studies. It should be noted that what follows is a short concise description of relevant steps from these frameworks.

3.2.2. The global value chain handbook

The handbook of value chain methodology was compiled by Kaplinsky and Morris (2001) as a response to growing interest among researcher around the century to undertake GVC
research. It remains one of the most comprehensive and valued sources of its kind. Some of its main steps are illustrated below in figure 3.1.

As a starting point, it should be noted that it is not necessary to conduct all these steps and in one particular order, rather a GVC analysis should follow the approach which suits the research questions that are being answered (Kaplinsky and Morris, 2001). With this in mind, let us describe the steps further. The first step refers to the need to define the primary area of interest. In this study the smaller shrimp producers are in focus as specified in chapter one. The second step emphasises on mapping the GVC. With the producers as the main focal point, the mapping look both forwards to processors, buyers and customers and backwards to input suppliers. Other supporting actors such as public and private institutions should also be featured. Step three, looks at identifying product segments and discussing critical requirements which impact key markets and the global industry in general. This could also include ask various GVC stakeholders to discuss critical success factors of succeeding in the industry. Step four calls for an assessment of the producers regarding their practices and performances on a number of parameters.

Input to assessing the final two steps of upgrading and governance have already to a large extent been discussed in chapter two. On upgrading the four types of upgrading will assist in classifying the forms of upgrading which the producers pursue. The handbook adds that it is

Figure 3.1. A selection of key steps outlined in the handbook of value chain research
* CSFs= Critical success factors
Source: Own source, adapted from Kaplinsky & Morris (2001).
useful to analyse and record both upgrading practices and the performance outcomes of these practices. It is helpful here to distinguish between factors, which both block and which enable upgrading activities. One should further distinguish between those that are endogenous to the firm, and those which are a result of the actions of others. In regard to governance, the five-fold typology of chain relationships will define the dominant form of chain coordination. This will also provide further indication of the nuances of power in the chain and as chapter two mentioned on the scope of upgrading options available. The role of local and national institutions is examined during step 2 above in the figure which speaks of mapping the industry. Additional information on how to gather insight on the power aspects and the influence of institutions, including international entities follow below in the review of a tool from the handbook called the three realms of rule making and monitoring which refer to legislative, judicial, and executive governance. These can be exercised internal and external to the chain as portrayed below in Table 3.1.

Table 3.1. Examples of legislative, judicial, and executive governance in GVC governance

<table>
<thead>
<tr>
<th>Three realms of rule making and monitoring</th>
<th>Exercised by parties internal to chain</th>
<th>Exercised by parties external to chain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legislative governance</td>
<td>Setting standards for suppliers in relation to on-time deliveries, frequency of deliveries and quality</td>
<td>Environmental standards Child labour standards</td>
</tr>
<tr>
<td>Judicial governance</td>
<td>Monitoring the performance of suppliers in meeting these standards</td>
<td>Monitoring of labour standards by NGOs Specialised firms monitoring conformance to ISO standards</td>
</tr>
<tr>
<td>Executive governance</td>
<td>Supply chain management assisting suppliers to meet these standards. Producer clusters/clubs assisting members to meet these standards Representative agents assisting members to meet these standards</td>
<td>Specialised service providers Government industrial policy support Producer business associations assisting members to meet these standards</td>
</tr>
</tbody>
</table>

Source: Kaplinsky & Morris (2001)

Table 3.1 portrays the variety of rule making and monitoring which can take place in a GVC by internal and external parties to the chain. Legislative governance sets the parameters which govern the GVC, i.e. the basic rules which define the conditions for participation in the chain. In the past these rules were largely concerned with meeting basic cost parameters and guaranteeing supply, but recently the “rules” of participation have increasingly come to include conformance to international standards such as ISO9000 (on quality), ISO14000 (on environment), SA8000 (labour standards) and other industry-specific standards such as HACCP in the food processing industry (Kaplinsky & Morris, 2001). Some of these rules are
set by supernational bodies as the EU while various certification requirements have been set by various organizations as a response to (consumer) concern for the environment, use of child labour etc.

Judicial governance refers to monitoring the performance of value chain participants to ensure that they meet the rules that are set. The exercising of sanctions is an important function of governance in value chains (Kaplinsky & Morris, 2001). Sanctions include penalties to exclusion in the worst case if rules are not met. They can, however, also be of a positive nature such as rewarding a producer for meeting the requirements over a long and sustained basis. Executive governance plays an important role in this regard as it describes the form of proactive governance which offers assistance to value chain participants in meeting these operating rules (Kaplinsky & Morris, 2001). Some suggest that the assistance could come from the dominant rule setters (e.g. lead firms) but this is seldom the case, and there are generally a number of parties (e.g. NGOs, governments, trade associations) who act as intermediaries and help suppliers to meet the requirements. In closure, the review of the global value chain handbook has provided a number of useful steps which can be applied in conducting a GVC analysis. There is more information on how these steps have been applied in this study shortly in section 3.3, but first a review follows on the GVC analytical framework of the US Aid.

3.2.3. US Aid

The US Aid, one of the world’s largest national development aid organisations has for a number of years used the GVC concept as a tool in assessing the situation of SMEs in various different industry settings around the world (US Aid, 2006). It is therefore a well tested framework\(^{32}\) that is also grounded in theory which is presented below in figure 3.2:

\(^{32}\) The author can refer, to those researchers who are interested in reviewing similar frameworks, to the German national development cooperation GTZ (2007) and the Asian Development Bank (MP4, 2007).
The GVC framework of US Aid portrayed above in figure 3.2 displays six factors which are useful to examine when conducting a GVC analysis. First, there is the business enabling environment which refers to the notion that a GVC operates in an environment that can be at once global, national and local. It is therefore important to consider all three levels on aspects such as trade agreements and legislative initiatives. Second, end markets for an industry can be local, regional or international. End market demands drive both quality and standards. Third, supporting markets are critical to firm-level upgrading and include finance, business services, and input markets that support the core product market. Supporting markets can be crosscutting or sector-specific and involve embedded business services or chain finance that flow up and down the chain. Fourth, Inter-firm cooperation can be analyzed in terms of vertical (e.g. producers and exporters) and horizontal linkages (e.g. between producers). Fifth, firm-level upgrading has been well elaborated in chapter two and the same applies to the last factor which speaks of chain relationships.

In sum, the framework of US Aid represents a good visualization and understanding of some of the main aspects to consider when conducting a GVC analysis. At the same time its focus on these six factors confirms the appropriateness of the previous discussion in chapter two and on the GVC handbook. It is worth observing a number of points in regard to this framework which could be useful to leverage upon further. First, the framework’s notion of a business enabling environment and end-markets which shape the GVC is a useful way of
structuring several of the elements from the previous handbook of global value chain research (e.g. step 3-4). Second, its emphasis on supporting markets re-confirms the importance of considering this aspect in the mapping of the shrimp sector. Third, it also stresses that a discussion of upgrading efforts should include an assessment of constraints and opportunities. There is more information below in section 3.3 on how the insight from reviewing the US Aid framework is applied.

3.3. Leveraging on the methodological and theoretical insight

At this stage after having discussed the main critical elements of the GVC perspective in chapter two and reviewed a number of analytical GVC frameworks in this chapter, it is timely to provide in figure 3.3 below an overall reflection on how this study intend to leverage upon the insight it has gained so far in the process.

Figure 3.3. Application of theory and method to answer the problem formulation
Source: Own development

Figure 3.3 provides an overview of how the insight from the theoretical review of chapter two and the methodological assessment in this chapter three are leveraged upon in chapters four and five. Chapter six then builds on the findings from these chapters to answer the three main research questions. Let us look further at each of the chapters. The purpose with this exercise
is not to elaborate on how the different building blocks have been used explicitly as this is done in the subsequent chapters but rather as stated above to give an overview of how the study applied the theoretical and methodological insight.

With this clarification, let us look first at chapter four which provides a description of the Ecuadorian shrimp industry and the global drivers that influence the industry. A good point of departure to get an overview of an industry is to undertake a mapping. Section 3.2 showed that both analytical tools offer guidance in this regard. The next main section in chapter four titled “the global enabling environment” leverages also on several steps from the two analytical tools. Furthermore, this section serves as an essential foundation for the examination of the operational practices of the shrimp producers in chapter five. Finally, chapter four features a section on governance characteristics. This section which uses secondary sources examine based on the learning points it made in chapter two: chain relationships, power and institutions. This section has been placed in this chapter as it serves a useful role in providing an initial analysis of factors that are likely to influence the situation of the producers hereunder upgrading options.

Chapter five presents then the results of the primary research phase which examines the situation of smaller shrimp producers by examining them on three main areas: operation, linkages and upgrading. On the operational aspects, it draws as mentioned above on the insight gained on global drivers in the industry e.g. on production methods and farm management. This is a sort of an internal benchmarking assessment as suggested by the GVC handbook analytical tool and it is also a way to assess their internal configuration in parts as suggested by the review in chapter two. Moving forward in the chapter, the examination of their linkages leverage on steps from the two analytical tools discussed above in section 3.2. Input is not only sought from the producers but also other actors in the chain including experts. Finally, the section on upgrading draws on the discussed theory in chapter two which were also stressed in the two analytical tools.

With point of departure in the results of chapters four and five, the discussion of the three research questions follow in chapter six. It can be seen that question one which looks at the producers’ inclusion in the chain draws on chapter four’s mapping, and review of governance characteristics such as form of chain relationships and rule making and monitoring in the chain. Further indications are also added from the exploration of the producers’ horizontal and
vertical linkages. The theoretical discussion of chapter two is in this regard reflected upon to assess the ramifications of the findings. In answering research question two which emphasises on the producers’ upgrading options, it can be seen in figure 3.3 that the main building blocks are the findings presented in chapter five on the producers upgrading efforts including the barriers they encounter. Overall, the theoretical discussion of chapter two serves as a point of reference which is leveraged upon.

Building on the answers to the first two questions, research question three evaluate the pros and cons of the different upgrading options which have been examined in this study in its perspectivisation of which direction the smaller producers may take to improve the competitive situation in the chain. In this regard, it intends to draw on any new insight which is beneficial to assess the scope of any selected option(s). With this overview of what follows in the forthcoming chapters, the next section returns to chapter three to describe the research procedure applied.

3.4. Research procedure

3.4.1. Introduction

This section examines the procedure which is used to collect primary and secondary data. The assessment distinguishes between the requirements for secondary and primary sources. The secondary sources will be used to gather a further understanding of the national and global enabling environment of the shrimp industry which is described in chapter four. The primary sources are sought to obtain the viewpoints of smaller shrimp farmers in chapter five and some other actors and experts in Ecuador (presented in various places). The rationale for using interviews to obtain the primary data is also put forward in this section. This is followed by a description of the different types of interview forms which are used to collect data on the actors in the Ecuadorian shrimp industry. It should be noted that the three semi-structured interviews forms which are applied in this study are placed in Appendix 3.1-3.3. Having reviewed the different interview forms, it is timely to provide some more information on the sample population and the ramifications hereof.
3.4.2. The collection of secondary data

A number of secondary sources have been examined to gain a good understanding of the shrimp industry. In order to achieve this objective, it is important to not only study the Ecuadorian shrimp industry but also the global scene to understand important developments on a number of topics such as trade, legislation, advances in technology and current good shrimp farming practices. The research procedures consist of a detailed desk research phase examining relevant sources such as reports from global stakeholders like trade associations (e.g. Globefish), development agencies (World Bank), and specific trade (e.g. Panorama Acuicula) and academic articles (e.g. Aquaculture Economics & Management) which examines the shrimp industry. Contacts were also made to a number of GVC scholars to inquire if any of them had undertaken any specific studies on the shrimp industry33. In addition, the author spent time undertaking field research in Ecuador. This gathered access to unpublished information in Spanish on the Ecuadorian shrimp industry.

3.4.3. The collection of primary data

Interviews have been selected as the preferred method to collect the primary data. Interviews provide a rich descriptions and explanations of processes collected within their local context (Hüberman and Miles, 1994). Interviews would also increase the likelihood of collecting sufficient information. It is unlikely that many of the shrimp farmers would complete a quantitative survey. They are in general very busy people “who do not sit down for a long time” to answer a lengthy survey. Using a self-assessment survey would also be complicated by the fact that there is no easy way for them return the survey due to lack of postal service and limited internet access. As Perry et al. (1999, p. 21) argue “the need to understand the phenomenon can best be achieved by getting ‘physically and psychologically closer to the phenomena’ through the intimacy of interviews. Thus, it was decided to conduct personal interviews with each of them using a semi-structure format which would still allow the interviewer to ask into matters which were important according to the theoretical framework. There is information on their structure below.

33 This was not the case but Kaplinsky mentioned that one of his PhD students was considering a study on this industry.
3.4.4. The interviews

The interview form of the producers has three main sections. The first section which concentrates on examining shrimp operational aspects provides information on e.g. size, production system, certifications if any, and attention placed on water and soil management. The second section explores the producers’ horizontal and vertical linkages in the chain including affiliation with supporting institutions. The third section looks at the producers’ upgrading efforts and also asks into their main internal and external barriers. In regard to the interview forms developed to assess the processing plants and exporters it should be noted that they are quite similar to the form applied for the producers albeit shorter in length. In addition, they feature some questions on their relationship with the producers and their future viewpoints on the development of the industry in Ecuador.

Finally, as previously mentioned a number of interviews were held with leading experts in the industry to acquire further knowledge on particular topics. An interview was held with Jose Barrezueta, the President of the shrimp producers’ association of El Oro in Machala to inquire about what the organisation is working on to improve the position for its members and how he views the future of the sector. A similar interview took place with Sandra Feijoo a representative of Camara Nacional de Acuacultura, a national trade organisation. Furthermore to increase the knowledge on intensive shrimp farming, a visit was made to Peru which has emphasized this form of production. The author met with the operational manager of Domingo Rodas, Guillermo Trisollini and talked to him during a guided tour of the farm. During the stay in Peru, the author also had a chance to talk to Tulio Torres who owns a smaller exporting company, Aquatumbes in Peru on the challenges of being a shrimp exporter in Peru. Another visit was made to a banana co-operative to speak with project manager Lianne Zoetewej who comes from a Dutch NGO. The objective was to explore whether their experience with co-operatives could provide some learning lessons for the shrimp industry. In regard to this topic the author also spoke with Luis Chiriboga a small shrimp farmer and professor who in an article had spoken of the need for farmers to form a co-operative. Finally, a meeting was held with Bruce Banyai, a business developer of the Danish firm Novozymes, a world leader in enzyme production, who was in Ecuador to promote their use of products to water and soil management. There are more details on interesting insight from the various interviews in later chapters. Below, follows an overview of all the respondents.
3.4.5. Sample characteristics and ramifications hereof

The overview of the 20 subjects who were interviewed is placed in Appendix 3.4 which displays that a total of 20 interviews have been conducted. Ten of these interviews are with producers, seven with experts, two with packaging factories, and one with an export company. It was difficult to access the exporting companies. The author did, however, speak with two further exporters during the visit to Peru to examine the use of intensive shrimp production in which a variety of other issues were also discussed. This contributed to gaining an insight into the “mindset” of small to medium sized exporters. The respondents participated with great interest and willingness to share their views. In general, each interview lasted between 1 - 1.5 hours with some even taking more than two hours. Overall, it is argued that the sample population represents a good balance of views of different actors in the Ecuadorian shrimp sector considering that it is a small-scale exploratory study with limited resources. However, it is prudent to spend some time discussing the ramification of the sampling approach.

There are a number of useful questions which can be raised concerning the process of sampling (Ryan, 1995). These include whether the population has been identified in a way consistent with the research problem? Further does the sample frame represent the population? These questions are addressed in this section. As a point of departure it is useful to define when a shrimp producer is considered small. It shall be seen in the mapping of the industry in chapter four that smaller producers are classified as those that have between 10 hectares to 200 hectares of land. Chapter five will display that the average size of the smaller producers in this sample is 46 hectares. Thus, the sample population is well within these limits. However, does this mean that they represent smaller shrimp producers in general? This will be difficult given the scope and resources of this study. Having said that, however, the author intends to leverage on her local knowledge of shrimp producers in the region and use a judgement sampling to identify a balanced representation of smaller producers. This type of sampling technique is appropriate when the researcher has a good knowledge of the population and therefore can use this insight to generate some interesting observations (Hair et al., 2003). In addition, this also ensures that the researcher can approach individuals who are likely to have both an interest in, and an aptitude for answering the questions. This is highly important for the response rate and the quality of the collected information.

34 The author comes from a shrimp family and knows many producers in the region.
The downside to this approach is of course that the sampling might be less random in nature and thus it is not claimed that the sampling population reflects the average view points of smaller shrimp producers in Ecuador. However, this is a reasonable limitation of a small-scale qualitative exploratory study which aims to bring forward new indications that can be examined using a more rigorous research design in larger scale-studies with more resources. Nonetheless, it is put forward that much care has been taken to not select a bias sample population which only includes friends and family. Furthermore, the additional interviews with other actors and experts in the chain and the gathering of a variety of secondary sources on the industry have significantly assisted in broadening the perspective. Thus having concluded that the sampling approach has been in line with the research objectives of this study and has taken great care to get a balanced representation of smaller producers, a final section in this chapter will follow up on this discussion and examine on a more general level the issue of validity and reliability.

3.5. Validity and reliability

There are four general tests to validity and reliability that can be applied to all social science methods (Yin, 2003). These are construct validity, internal validity, external validity, and reliability. Table 3.3 summarises below how this study addresses these four tests.

Table 3.3. A summary of how the study addresses validity and reliability issues found to be relevant

<table>
<thead>
<tr>
<th>Validity</th>
<th>At what stage does the study deal with it?</th>
<th>How does the study deal with it?</th>
<th>Can the study overcome the threats?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content validity (Construct)</td>
<td>When translating GVC constructs to operational measures to design the semi-structured interviews.</td>
<td>Consult the leading thinking on GVC to identify and understand the main theoretical elements. Furthermore, study the global and national shrimp industry to apply emerging topics of relevance to the industry.</td>
<td>Yes – a good review of the GVC literature and the industry in general ensure that relevant concepts are described using industry terms which should ease the understanding. In addition the choice of interviews provides the opportunity to explain construct in further details.</td>
</tr>
<tr>
<td>How well have GVC concepts or constructs been translated into concrete language that people can understand and relate to.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Convergent validity</strong> (Construct)</td>
<td>In the development and analysis of the collected primary and secondary sources.</td>
<td>By examining and leveraging on insight from the GVC theory and other concepts that may enrich the understanding. In addition by applying relevant methodological GVC frameworks by leading scholars and national development agencies.</td>
<td>Yes - the interview guides and the subsequent analysis include and discuss main areas of a GVC study such as: mapping, operational aspects, governance characteristics, and upgrading strategies.</td>
</tr>
<tr>
<td>---</td>
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<td>---</td>
</tr>
<tr>
<td><strong>Internal validity</strong></td>
<td>This is a post-thesis objective if further research was to be conducted using larger sample size, different research methods etc.</td>
<td>Not applicable in this study as it is exploratory in nature,</td>
<td>It is difficult and not required of explorative studies to establish causalities in the data sets.</td>
</tr>
<tr>
<td><strong>External validity</strong></td>
<td>In closure of the study.</td>
<td>There are some reflections on how research can move forward.</td>
<td>No - not in this study. The scope of this research has not been intended to address external validity. It concentrates on identifying valuable assertions which can be applied in further studies of smaller farmers and other main actors in the Ecuadorian value chain.</td>
</tr>
<tr>
<td><strong>Reliability</strong></td>
<td>Throughout the thesis but in particular when the structured interview forms are documented along with the general analysis of the industry based on a wide selection of sources. Furthermore, as the author grew up in the region and also come from a shrimp farming family, it has been easier to approach them and speak with them (in Spanish) and create a comfort zone (high level of trust) in the interviews that could have been difficult to generate for outsiders.</td>
<td>By writing summary of meetings and interviews. In addition, links to a wide range of information of both a more theoretical and industry-specific nature are added to this thesis.</td>
<td>Yes, it is believed that much of the information can be leveraged upon in future research.</td>
</tr>
</tbody>
</table>

Source: own construct adapted based on insight from Yin (2003).
Having described how the study aims to address issues related to validity and reliability, the chapter ends with a conclusion on the overall methodological approach.

### 3.6. Conclusion

This chapter emphasised on developing an appropriate GVC methodology to ensure the gathering of relevant information to assess the Ecuadorian shrimp industry. The first step in ensuring this was to review a number of analytical GVC frameworks such as the global value chain handbook and a framework used by US Aid. These methods provided advice on which steps could be taken to collect data on a range of relevant GVC issues. This insight combined with the theoretical understanding from chapter two enabled the study to articulate how it intended to leverage on this learning to undertake the analysis in the subsequent chapters. This was illustrated in figure 3.3 which portrayed that the study would move forward on three levels. First, a general analysis in chapter four using secondary sources would map the industry and identify global enabling drivers in the shrimp industry. The first indication of governmental characteristics would also be addressed. The insight in chapter four would serve as an important foundation to move further in the process. Two, with this knowledge chapter five would use primary data to examine the specific situation of the smaller producers. It would explore their operational practices, linkages and upgrading strategies. Third, with point of departure in the last two chapters, chapter six would address the three research questions.

With this overview, more details followed on the research procedures to collect secondary and primary data. This included initiating a detailed desk research phase and a field visit to Ecuador. The field trip, in particular, ensured that a number of useful sources were gathered. A total of 20 interviews were made with the smaller shrimp producers, other actors, and various experts in the chain providing a rich source of data. The interviews were semi-structured ensuring that important aspects related to the GVC such as operational management aspects, linkages and upgrading strategies would be examined. The appropriateness of the sampling population was also discussed. It was concluded that the judgement sampling presented a reasonable approach to gather a balanced representation of smaller shrimp producers in the region. Finally, this chapter discussed threats to validity and reliability to this study, and found that these could be addressed. Thus, it is now timely to begin the GVC analysis of the Ecuadorian shrimp industry in chapter four.
Chapter 4 – The Ecuadorian Shrimp Industry and global drivers

4.1. Introduction

Chapter four provides a general view of the Ecuadorian shrimp industry using secondary sources to initiate an analysis of elements pertaining to the GVC framework. It begins with a mapping of the main participants and supporting institutions in the industry. Having gained an understand of the main participants and the supporting institutions, the next section looks at the global enabling environment of the shrimp industry by examining Ecuador’s performance on the main exporting markets and important global drivers which are shaping the global shrimp industry. In this regard, the latter includes topics which are relevant for producers to be aware of such as new forms of production methods, advances in shrimp management, and legislative developments.

With an understanding of these developments, it is timely to consider governance characteristics in the chain which can be determined at this stage. These include rule making and monitoring, and types of chain relationship governance. It shall be seen that external parties to the chain drive the rule making and that the chain relationship appears to be moving from a market-based structure to a modular form due to increased need for product specifications. Depending on the risk of supplier failure it may even in the future move to one that is captive or quasi-hierarchical in nature. Finally, a conclusion is given. Overall, this chapter serves as an important foundation to undertake the study of the smaller shrimp producers in chapter five. Its exploration of global drivers brings e.g. insight on useful operational factors to assess and its examination of governance characteristics aid in understanding the input in chapter five on linkages and upgrading strategies.
4.2. Mapping

4.2.1. Introduction

This section maps the Ecuadorian shrimp industry. A GVC illustration is introduced followed by a description of the main actors and their different functions and activities. The supporting environment featuring public and private stakeholders is also commented upon.

4.2.2. An overview of the main participants and supporting institutions

Figure 4.1 illustrates below the main actors and the supporting institutions in the Ecuadorian shrimp value chain.

Figure 4.1. An illustration of the GVC of the Ecuadorian shrimp industry
Source: Own development

*Exporters: Some exporters are vertically integrated (labs, feed, production, processing)
Figure 4.1 above which is inspired by the framework of the US Aid discussed in chapter three represents the GVC for the Ecuadorian shrimp industry. The national enabling environment is compounded by different participants involved directly and indirectly at the different stages of the production process of shrimp. In the right-side corner of the figure, we find at the bottom of the chain the suppliers of machinery, feed, and other supportive services. Moving up the chain, the producers are illustrated with a note on how they differ in their production methods. Above the producers within the national boundaries, we find the processing plants and the exporters. Moving outside Ecuador, the global enabling environment depicts other important actors such as importers, global retailers and the consumers. Finally in the left side of the figure, supporting institutions which are either private or public are mentioned. Other organizations which provide services to the industry are also highlighted such as financial institutions. Overall, the illustrations provide an indication of the producers’ role in the chain and their linkages with other actors. What follows below is further information on the main and supporting participants highlighted in this figure.

4.2.3. The functions and activities of the main participants

*Input suppliers:* At the bottom of the chain, there are a number of input providers who supply inputs such as machineries and equipment, chemical/bio products, petrol, fertilizers, net and filters, Post Larvae labs (PLs), and feed factories. A number of these functions such as the production of PLs and feed are becoming highly specialized in need of extensive research and development efforts (e.g. genetic and disease control programs) that can be best handled by integrated enterprises (Wurmann *et al*, 2004). Examples of specialized feed suppliers in Ecuador include Nicovita, Enaca, and Expalsa. As we shall see soon, a number of these are also exporters.

*Producers:* Ecuador’s shrimp production is concentrated along the provinces on the coast line of the country. An illustration of the geographical locations is shown in figure 4.2 to the right. These provinces are Guayas, El Oro, Manabi and Esmeraldas, who represents 50%, 35%, 12%, and 3% of the total shrimp production respectively. *Figure 4.2. Main areas of shrimp production in Ecuador (Notarianni, 2006)*
More exactly\textsuperscript{35}, Guayas contributes with 998 farms and 105,482 hectares, El Oro with 449 farms and 24,633 hectares, Manabi with 409 farms and 12,459 hectares, and Esmeraldas with 180 farms and 9,949 farms (Ledesma, 2006). It is estimated that 70% of the shrimp farms in Ecuador are small in size with the remaining 30% being large in size (Wurmann \textit{et al.}, 2004). The smaller farms are, in particular, found in the province of El Oro where they are typically between 10 hectares to 200 hectares. In contrast in the province of Guayas, shrimp producers are larger, on average between 500 to 600 hectares (Superintendencia de Companias, 2006). In Ecuador, small shrimp farmers usually concentrate on pond-farming their shrimp, from PL stage to market sizes, they do not produce their own PLs, nor do they process and sell their harvest directly to the public, or for export purposes (Wurmann \textit{et al.}, 2004). They use different production systems that include extensive, semi-intensive, intensive and more recently organic production methods. The semi-intensive production system which generates on average three harvests per year is the most popular among shrimp farmers in the country as intensive and organic farming require significant investment and certification requirements\textsuperscript{36}.

\textit{Processing plants:} There are close to 51 shrimp packing factories in the country (Unido, 2001b). The plants interact closely with the shrimp producers during the harvesting. Typically, the plants assist by providing transport, ice, and 2-3 employees. They try to compete with the exporters which may offer slightly better prices by offering advanced working capital. At the processing plants, the shrimps are further processed (heads removed) before they are sold to the exporters.

Exporters: The majority of the exporters\textsuperscript{37} are located in the province of Guayas. The larger exporters are increasingly integrated firms, handle their own broodstock, product PLs, and grow them to market sizes, process shrimp harvests\textsuperscript{38} and thereafter sell end products to foreign buyers. (Wurmann \textit{et al}, 2004). However, they are still dependent on receiving large quality of shrimps from the smaller producers and packaging factories to generate high

\textsuperscript{35} These figures are based on year 2000 – This was just after the WSSV crisis (see more in section 4.3.2). There may be more shrimp farms in some of the provinces today. It has e.g. been mentioned that there are 700 smaller and medium sized shrimp producers in El Oro (based on interview with Barrazueta, 2007).

\textsuperscript{36} There is more information on these types of farming in section 4.3.3.

\textsuperscript{37} The six largest exporters account for 62% of the total export. In contrast the two export companies of El Oro can only process 25,000 pounds daily. Consequently between 90-95% of the production in the province is transported to Guayas where the likes of Expalsa can process up to 200,000 pounds daily (Superintendencia de Companias, 2006)

\textsuperscript{38} Most have their own packaging factory while smaller exporters use a concept called co-packing where they “lease” the infrastructure and brand of other firms which have excess capacity and importantly an export permit.
production outputs. **Appendix 4.1** provides additional information regarding main shrimp exporters of Ecuador.

*Wholesalers:* Shrimp sales in the domestic markets are very insignificant being less than 1% to a few major supermarkets (Unido, 2001b). Shrimp production in Ecuador is indeed an export oriented activity. The buyers of the shrimps are therefore wholesale agents or independent buyers in the main end markets. There are, however, some exporters which bypass this step and sell directly to the retailers. One such example is Santa Priscila described in **appendix 4.1** which sells fresh shrimps (arrive in less than 48 hours) directly to a retailer in Canada (AquaCultura, 2006).

*Retailers and final consumers in international markets:* In the US, it is interesting to note that 70% of shrimps are consumed outside the home, particularly in the seafood restaurant chains dominated by the Red Lobster group (Wilkinson, 2006). It is not unlikely that retailers will gain in influence in the years to come if the development of the salmon industry is replicated. In this GVC, more than 90% of all supplied salmon in UK supermarkets come from farmed salmon (Wilkinson, 2006). This gives the supermarkets a direct interest in controlling this GVC to ensure consistency in controlling quality, disease prevention etc\(^{39}\). Having described the main actors in the GVC of Ecuadorian shrimps and their functions, the next section examines the main supporting organisations.

### 4.2.4. Supporting institutions

*The public sector:* The Ministry of Agriculture, Cattle, Aquaculture and Fishing is the main national ministry that regulates the shrimp industry’s activities (Ledesma, 2006). This ministry has recently created a Secretary for aquaculture which will be in charge of establishing standards for quality control of shrimp production and in general assist the industry in moving forward\(^ {40}\). Another important public actor is the National Institute of Fishing (INP)\(^ {41}\). INP is responsible for sanitary issues in the seafood industry. All seafood companies must obtain sanitary or quality control certifications issued by INP. Lately, the INP has launched a number of plans. *The national plan of monitoring of residuals* came into

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\(^{39}\) In section 4.3 we shall return to discuss the emergence of global drivers in the industry.  
\(^{40}\) www.subpesca.gov.ec  
\(^{41}\) Instituto Nacional de Pesca – www.inp.gov.ec
effect in January 2006 and its main objective is to offer official guarantees regarding the control of residual of pharmaceutical products, contaminant, and forbidden substances used in the productive chain of aquaculture products for exports to the EU (AquaCultura, 2007b). Another plan is the national plan of control which specifies how the industry must comply with various requirements such as HACCP, labeling and traceability\textsuperscript{42}.

The private sector: There are some relevant private organisations. One of these is the Export and Investment Promotion Corporation of Ecuador (CORPEI) which assist current and potential exporters including SMEs\textsuperscript{43} to sell their products abroad. It also provides market information through seminars, magazines etc. Another important private organisation is the National Chamber of Aquaculture (CNA) which was founded in 1992 and today holds 364 members from the entire shrimp sector. It provides its members with market information and assistance on legal issues. A similar organisation, on a regional scale is the Cámar de Productores de Camarón de El Oro\textsuperscript{44}.

Other organisations: These include educational and financial institutions. The most relevant educational establishment is Centro de CENAIM\textsuperscript{45} at Espol University in Guayaquil which conducts aquaculture research and offers some training courses. In general, it is very difficult for many private enterprises in Ecuador to access sufficient funds of credits from banks (El Universo, 2007). With this overview, the next section turns to examine the global enabling environment.

4.3. The global enabling environment

4.3.1. Introduction

The section begins with an examination of Ecuador’s performance on key export markets. It is followed by an assessment of important global drivers in the shrimp industry on aspects related to shrimp production and management, and legislative developments. The selection is neither exhaustive nor exclusive. However, attempts have been made to discuss some of the most critical drivers which are important to address for all actors in the Ecuadorian shrimp

\textsuperscript{42} There is more information on this in section 4.3.5
\textsuperscript{43} See e.g. www.al-invest3.org which is a joint program with the EU.
\textsuperscript{44} Shrimp producers’ Association
\textsuperscript{45} Centro de Acualcultura e Investigaciones Marinas – www.cenaim.espol.edu.ec
industry. What follow in this section is a short compiled information on these drivers. There is, however, more detailed information on these drivers in appendix 4.2. Insight on these aspects will assist in shaping and interpreting the analysis of the GVC concepts of governance and upgrading. Learning made for example on global developments in shrimp production and management will assist in examining whether the producers have adopted some of these practices and the extent to whether it is possible to further advance some of these practices as viable upgrading options. Further an understanding of the influence of legislation is likely to explain in parts findings on the type of chain relationship and the extent of rule making and monitoring in the industry which is discussed in section 4.4.

4.3.2. The performance of Ecuador on the main export markets

The historical development of the shrimp industry in Ecuador has played an important role in shaping the competitiveness of its global position. In the early golden days of the 1970’ties and 1980’ties, Ecuador enjoyed a competitive advantage in the region by being the first country to undertake shrimp farming on a larger commercialised scale (Wurman et al, 2004). It moved on to become the second largest farmed shrimp producers in the world in 1996 and two years later, Ecuadorian shrimp exports reached over 870 million dollars, and shrimps became the second largest export industry in the country after oil. However, bad times were ahead. The industry got hit by the WSSV crisis from 1999-2001 which severely impacted the industry with the loss of over 80,000 hectares of production, the closure of 200 hatcheries and 65 enterprises, and staggering number of job lost, estimated at 200,000, and export volumes dramatically decreased with 60% to just 35,000 tonnes (Wurmann et al, 2004).

Today, the country has recovered the production levels to those of 1998 with 125,000 MT of shrimp exported per year, and labour rates have increased to the same pre-WSSV levels of 250,000, (Superintendencia de Companias, 2006).

The main export markets for Ecuadorian shrimp are the U.S. and the European Community (EC) with an almost equal distribution. In 2006, Ecuador exported 130 Mio pounds to the US and 127 Mio pounds to the EC. The other market destinations are very small with the rest of the Americas accounting for 5 Mio pounds, Asia around 2 Mio pounds, and Africa 45,000

46 The WSSV crisis was a malicious virus that wiped out large percentages of the native shrimp population. Exports went down from 125,000 MT in 1998 to 35,000 MT in 2000.
pounds (AquaCultura, 2007a). There are more details regarding the two main export markets below.

**EC:** The EC market has in the last few years gained in importance for Ecuador due to higher prices than the US and the fact that tariffs have been reduced since 2007 (Globefish, 2007a). It is notably in Southern Europe that Ecuador has become one of the top shrimp suppliers with a market share of 34% in 2007 (Globefish, 2007a). In other countries in the region, Ecuador is also experiencing significant growth rates with a 12% market share in Spain, and 14% share in France. The main competitors in Europe are China, India, Argentina and Brazil but Thailand and Indonesia are emerging as future suppliers to reckon with.

**US:** Ecuador along with other exporting destinations has for a period been impacted by the antidumping tariffs brought forward by the Southern Shrimp Alliance of the US (Josupeit 2004). However, the WTO has now rules in favour of the petitions from Ecuador, Thailand, and India which means that their performance should improve again (Globefish 2007b). According to Globefish (2007b) the major shrimp suppliers to the US market are Thailand (34%), Ecuador (12%), Indonesia (11%), China (9%), and Vietnam (7%).

**Reflection of Ecuador’s performance on key export markets**

Overall, Ecuador has regained its position after the WSSV crisis as one of the main exporters to the US and the EC. It has been a good strategy to expand to the EC market given the situation in the US with the imposed anti-dumping tariffs but also because the US economy has been less strong which had led to a significant devaluation of the dollar. In the EC, Ecuador has scope for further gains in its major markets in the southern region, but it can also learn from the positive gains of Thailand in the northern region. Thailand has become the top shrimp supplier to Germany multiplying three fold its exports to this market in one year. In addition, it has double its export in one year to the UK which is considered a “cold water” shrimp market (Globefish 2007a). China is also expected to be a future growth market. If the current economic growth rates continue, it is projected to generate an estimated 20 million new shrimp consumers per year making China a net importer before year 2012 due to own supply constraints (Ledesma, 2006).

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47 Up from 35% of total volume to 50%
48 This refer to a case where the US shrimp producers (notable those in the south) accused the foreign producers on “dumping” shrimps on the market at unrealistic low price. Under a highly unusual U.S. law passed in 2000, they were eligible to get the proceeds of any duties slapped on imports. The World Trade Organization declared the law illegal but it took several years of negotiations before the regulations were changed.
49 Warm water shrimp have traditionally been preferred in the South and cold-water shrimp in the North.
50 If the current economic growth rates continue, it is projected to generate an estimated 20 million new shrimp consumers per year making China a net importer before year 2012 due to own supply constraints (Ledesma, 2006).
the current economic growth rates continue, it is projected to generate an estimated 20 million
new shrimp consumers per year making China a net importer before year 2012 due to own
supply constraints (Ledesma, 2006).

The Asian shrimp producing countries are in many ways making an impact on the competitive
playing field in the industry. One issue which has worried Ecuador is the fact that the Asian
exporters are turning away from growing the traditional black tiger shrimp to focus on the
Ecuadorian shrimp type the Litopenaeus Vannamei which offers more output (Laniado, 2006)
51. This speaks for an increasing emphasis on developing more innovative products which can
capture more value instead of only competing on volume of the generic frozen peeled shrimp
product as the world depression of shrimp prices is not likely to change anytime soon
(Globefish, 2007b)52. There is more discussion on value added products in the next section
which looks at emerging drivers in the global shrimp industry.

4.3.3. New forms of production methods

There are three significant drivers that are taking place shrimp production. These are organic
and intensive shrimp production and value added production. Organic production could assist
smaller shrimp producers to supply product with a high value added at international markets,
which would represent an improvement of their income and competitiveness (GTZ, 2003). To
become an organic shrimp producer, farmers need to be certified by one of the main
international organic organizations e.g. Naturland from Germany or BioSuisse from
Switzerland (Heerin, 2006). However, the process of converting the land into organic
production may take up to several years (BioSuisse, 2001; Naturland, 2005). Globally, there
are few organic producers. One of the successful cases is an Ecuadorian shrimp producer
Biocentinela53 which began this form of production in 2002. Today, the company exports its
organic certified shrimps to premium markets in the US and Europe.

The process of converting to intensive shrimp production would be faster but also more
expensive. This form of production refers to high production rates (5.000 – 10.000

51 Three cycles of harvest per year versus the black tiger shrimp that is typically harvest twice a year in Asia.
52 E.g. in the US in 2001, the average price for one pound of exported shrimp was between $3.28 and $3.29,
while, in 2005, the average price decreased to $2.26.
53 www.biocentinela.com
kg/hectare/year). It requires, however, significant amount of working capital, equipment, specialised labour and feed (Marriot, 2003). It is estimated that the cost of developing an intensive production system in Ecuador would require an investment of $85,000 per ha, and production costs of $42,800 dollars/ha (Otoshi et al., 2006; Quispe & Berger, 2006). This makes it typically cost prohibitive for smaller shrimp producers (Quispe & Berger, 2006). Nonetheless, the producers could consider cooperating to gain resources and/or adopting part of this system e.g. aeration systems (Trisollini, 2007).

In the case of value added production, the growing global consumer demand for fish products, in particular, those that are pre-processed and carry positive value provide the global shrimp industry with an opportunity to grow through this form of production (Monfort, 2006). In Ecuador, the main shrimp products for export are whole headless frozen (Superintendencia de Companias, 2006). To create a recognised brand is another way to add value to products. This has been seen in e.g. the coffee industry where the growers of Jamaica (Blue Mountain brand) enjoy a much high price than what other growers receive (Kaplinsky and Fitter, 2004). In Ecuador the main industries are working on the development of a country brand to promote main products: shrimp, flowers, banana, cacao (Lemmi, 2006). The main message of the brand would be “quality of origin”.

### 4.3.4. Advances in Shrimp farm management

Recent advances in the management of shrimp farms make it possible for producers to improve their operations on parameters such as cost savings, efficiency, quality improvement and volume output. Research has e.g. shown that reducing the quantity of fish meal ingredients in feeding does not compromise shrimp growth (Bart et al., 2006; Amaya et al., 2006). This is significant as expenses to feed can range from 28-50% of the total production costs (Bart et al., 2006). There is also scope for further improvements on water and soil management as the high density of aquaculture in closed growing-out pond facilities often lead to an accumulation of organic residuals and high level of toxic components like ammonia.

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54 Compared to typical in semi-intensive with a production rate of 500 – 5000 kg /hectare /year (Marriot, 2003: 15)
55 E.g. mechanical aeration and water recirculation systems.
56 From interview in May 2007 held at an intensive shrimp farm of Domingo Rodas Group in Tumbes, Peru.
57 These include e.g. shrimp rings, breaded shrimp or shrimp steak “fillets (Seafood Today, 2007).
58 E.g. in 2002, Blue Mountain coffee sold at $6-8,000/tonne vs. the London price for arabicas of around $1,200/tonne.
and sulphur. These conditions may lead to slow growth, diseases and risk killing of the entire yield (Banyai, 2007)\textsuperscript{59}. Producers can turn to using probiotics to address these problems (Banyai, 2007; Leonel \textit{et al}, 2005). Similar supplements also referred to as probiotics can be used to strengthen the immunological system of the shrimps which can lead to better survival rates and growth\textsuperscript{60}. Another measure on disease control management is to establish a health record system which would register data on various critical matters (Guzman, 2005; More, 2005)\textsuperscript{61}. Finally, there are also considerable advantages in improving the harvesting system. This is an often overlooked area but investing in new machinery could lead to a higher yield and of a better quality (Williams, 2006)\textsuperscript{62}. It should be stated, though, that this form of investment would be cost prohibitive for many smaller producers through own means\textsuperscript{63}.

4.3.5. Legislative developments

Some of the most important legislative developments which affect the industry in terms of its ability to sell shrimps to the main end markets in the USA and the EC are introduced below. These include HACCP, traceability and industry specific labels such as BAPs. Please refer to \textbf{appendix 4.2} for more information on the specific requirements of meeting these legislative concepts.

\textit{Hazard Analysis and Critical Control Points (HACCP)} is used in the food industry to identify potential food safety hazards, so that key actions, known as Critical Control Points (CCP's) can be taken to reduce or eliminate the risk of the hazards being realized. The system is used at all stages of food production and preparation processes. It has been mandatory for all foreign-based exporters of food items in the USA since 2001 and in the EC since 2004.

\textsuperscript{59} From interview held in Santa Rosa in Ecuador in 2007.
\textsuperscript{60} These compounds are divided into immunonutrients, immunostimulants, passive immunomodulators, and gut microflora components. For more information see e.g. Delbert & Peng (2006) and Valle \textit{et al.} (2006).
\textsuperscript{61} E.g. Pls origin, survival rates, weekly growth, and feeding rates. Training the employee in using the system is critical.
\textsuperscript{62} Most producers apply a traditional method using bag nets, baskets and a centralised drainage system which is cumbersome process that exposes the shrimp to environmental conditions for an extended period resulting in decreased quality and shrimps getting stranded on the bottom. In contrast using machinery such as a submersible centrifugal pump would give more control by maintaining the flow of water and empty the pond much quicker in a way that would be less harmful to the shrimps. It would also reduce the need to employ more personnel during harvesting.
\textsuperscript{63} E.g. the Aqua Life Harvester costs between $US 40,000- 47,000. Nonetheless, this system has been implemented by around 60 producers in Mexico who view it as a long term investment (Personal correspondence 2007 with Louie Owens, Director of Aqua Life Harvester - www.aqualifeproducts.com).
Currently, the US health authorities (FDA) are discussing whether it should also apply for processing plants in countries that export food items such as shrimps (Mariduena, 2006).

**Traceability:** Traceability can be defined as the ability to follow the movement of a food through specified stages of production, processing and distribution” (Dallimore & Weiroski, 2004). The EC and the USA require that all links in the food and feed supply chain have “one step forward – one step backward” traceability, keeping “trace and track” records of their immediate suppliers and customers. There are two types of traceability systems: external and internal traceability systems (Josupeit, 2006; Petersen & Green 2006). The external traceability systems in aquaculture allow the traceability of a product and/or attribute(s) of that product through the successive stages of the distribution chain (boat/fish-farm gate to table). This requires cooperation and development of standards among the links in the food supply to function (Petersen & Green, 2006). The internal traceability refers to the traceability of raw materials to track what came into a specific firm and how it was transformed before it left the shrimp operation facilities (Josupeit, 2006). In the case of shrimp producers, the traceability of products should include information regarding the shrimp operation from the beginning of the production cycle. There are also aspects that farmers need to include in the traceability that are of interest to retailer and consumer.

**Industry specific labels:** One such example is the development of Best Aquaculture Practices (BAPs) for shrimp aquaculture which address social, environmental and food safety concerns. It has been developed by the Global Aquaculture Alliance (GAA) which was founded in 1997 in response to a series of attacks from some NGOs who raised objection to parts of the early shrimp production methods that they claimed did harm to the environment. In developing the BAPs label, GAA founded the Aquaculture Certification Council (ACC). ACC certifies the shrimp hatchery, farms and the processing plants based on the BAP standards (Heerin 2006). Appendix 4.2 lists the requirements that the producers must meet in order to be certified. The BAP certification scheme got a major boost in 2006 when the large U.S. retailer, Wal-Mart, committed to only source shrimps which had the BAP logo (Global Aquaculture Advocate, 2006).

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64 Canada, Australia, Japan are currently working on similar regulations, (Petersen and Green 2006).
Having reviewed a number of the most important legislative developments which are affecting the shrimp industry, the next section examines the governance characteristics which can be indicated based on review of secondary sources.

4.4. Governance characteristics

4.4.1. Introduction

The objective of this section is to describe some general governance characteristics of the GVC of the Ecuadorian shrimp industry. The theoretical discussion in chapter two on governance emphasized on the characteristics of different typologies of chain relationships and the aspects of power and institutions. The methodological tool in chapter three titled the “three realms of rule making and monitoring” is introduced here as a useful way to examine these aspects further.

4.4.2. Rule making and monitoring

In chapter three, the three varieties of rule making and monitoring were introduced, namely governance related to legislation, judicial, and executive and whether these were performed by internal or external parties to the chain. With point of departure in the previous sections in this chapter, a summarized view is given below in table 4.1.

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65 The influence of institutions have to some extent also been addressed previously in this chapter e.g. in the mapping and when discussing legislative developments in the global shrimp industry.

66 Further insight into aspects of governance follows in chapter five e.g. on the producers’ linkages.

67 It should be stressed that it can be a rather subjective analysis to determine exactly when a party is external and internal to the chain. In this case, national parties are seen as internal to chain and the reverse for global parties.
Table 4.1. The three realms of rule making and monitoring in the Ecuadorian shrimp industry

<table>
<thead>
<tr>
<th>Legislative governance</th>
<th>Exercised by parties internal to chain</th>
<th>Exercised by parties external to chain</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Making the rules&quot; - e.g. setting standards for suppliers in meeting product and quality specifications.</td>
<td>• The National Institute of Fishing (INP) requires that exporters receive sanitary/quality certifications (national plan of monitoring of residuals) • INP is now launching the national plan of control in which notably traceability documentation will be required of all actors. • The newly formed Secretary of Aquaculture which is part of the Ministry of Fishing is also expected to be an important legislative governor in the future.</td>
<td>• The health authorities of the main exporting destinations require that the shrimps have been processed using HACCP standards. It is currently mainly an issue for the exporters. The FDA in the US has, however, argued that this should also be required of processing plants but this is still being debated. • However, the issue of traceability demanded by USA and EC health authorities is now required by all main stages in the chain. • International organizations such as GAA has environmental standards that must be met in order to be BAP certified. Naturland and BioSuisse also have standards that must be met in order to be organically certified.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Judicial governance</th>
<th>Exercised by parties internal to chain</th>
<th>Exercised by parties external to chain</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Enforcing the rules&quot; - i.e. monitoring the performance of suppliers in meeting these standards</td>
<td>• The processors and/or exporters monitor on a regular basis, mainly at harvesting periods that the producers meet the standards. • INP is also in charge of monitoring that the exporters meet HACCP standards.</td>
<td>• A number of international bodies monitor that an increasing number of exporters comply with their standards in order to be certified - e.g. ACC for BAP, and Naturland and BioSuisse typically appoint local representative to monitor those producers that in the process of converting the farm land into organic production).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Executive governance</th>
<th>Exercised by parties internal to chain</th>
<th>Exercised by parties external to chain</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Implementing the rules&quot; - i.e. assisting the suppliers in meeting these standards</td>
<td>• The National Chamber of Aquaculture (CNA) and regional organisations like the Chamber of Shrimp Producers in El Oro provide market information on important issues to their members through magazine, seminars etc. • The main exporters also offers assistance to some of the producers e.g. through contractual agreements. • In Ecuador, a private institution like Corpei has a special program to assist small and medium exporters. It is also sponsoring a project to motivate the producers to meet the traceability requirements commencing in 2008. • Of specialised service providers, CENAIM as an educational institution offers some insight into research findings while also offer training courses.</td>
<td>• The same international bodies as mentioned above assist also the producers in meeting these demands, however typically not with financial means. • Globally speaking, the shrimp industry has not received much attention from NGOs or global developments bodies as the participants at the &quot;bottom&quot;, at the chain i.e. the producers have been considered to be well off unlike their colleagues in other agro-based industries such as coffee and bananas (Zoetewejj, 2007).</td>
</tr>
</tbody>
</table>

Source: Own development adapted from Kaplinsky & Morris (2001).

68 Interview held in El Oro province, Ecuador May 2007.
When examining the information in table 4.1 above in more details, it is proposed that it is external parties to the chain who drive the rule making (legislative governance) with national bodies being focused on monitoring that these rules are met (judicial governance). As shrimps are an export commodity the national stakeholders in the industry (private and public) must conform to global standards. This includes mandatory demands such as HACCP and traceability as described in section 4.3.5 above. The latter will, in particular, be a major challenge for the industry which has so far only had to deal predominantly with international requirements at the exporting stage. Now, other players in the chain must also adapt their operations to meet the global demands.

In this regard, the chain truly becomes global in operation. The Ecuadorian shrimp industry is taking measures to respond to the situation. On a governmental level, the national plan is a step in that direction. The challenge, however, is to ensure that this plan will be implemented throughout the chain. The threats of sanctions are unlikely to work as a sole instrument. Is the government going to provide adequate resources or will it expect the firms and their associated trade associations to understand the implications of this plan and implement the requirements through their own desire and resources (executive governance)? So far, the government has not played an active role in assisting e.g. shrimp producers to upgrade to meet new requirements. In the case of the private enterprise support, the trade associations have provided some benefit for it members but these really only represent a smaller part of the producers and are dominated by the exporters. Having elaborated on rule making and monitoring in the industry, and found that external parties drive the rule making, the attention turns to define the type of chain relationships which exist in the industry. This has impact on whether private firms such as exporters may step in and assist the producers in meeting the new international production and quality standards required by parties external to the chain. As we recall from chapter two, it was mentioned that this would be less likely in market-based chains but more so in captive chains (Schmitz, 2006).

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69 The newly formed Secretary of Aquaculture may be able to change this (depending on resources etc).
70 According to the interviews with the producers explored further in chapter five.
4.4.3. Type of chain relationship

The discussion in chapter two identified five types of governance: hierarchy/quasi hierarchy, captive, relational, modular, and market. It was further mentioned that three aspects determined which of these types prevailed, namely, the complexity of the transaction, the possibility of coding information and knowledge, and the competence levels of the suppliers. Initially, it appears that the type of governance in the Ecuadorian shrimp industry could be market-based. First, the complexity of the transactions are easily codified (i.e. the product specifications are relatively simple). Second, the producers can produce the shrimps without little input from the buyers (little need for explicit governance). Third, the producers can be said to have a good competence level in doing what they have always done: namely grow shrimps. A market-based governance system also implies that the cost of switching to new parties is easy for both parties. This is true as producers can choose between a number of processors and exporters and reverse.71

However, as the review in this chapter indicates, there are signs of an increasing need for the different actors in Ecuador to coordinate their activities further due to the global legislative requirements. This could move the chain closer to the maybe the modular type where the product specifications become more complex or with time the captive form or even the (quasi) hierarchical type if the leading firms (i.e. the big exporters) feel it is necessary to take a more active role by further defining the rules for the other actors to follow. This is driven by what Schmitz (2006) referred to in chapter two by two main factors: 1) the need for product specification and 2) the risk of supplier failure. This development would also be in line with the development that is seen in nature-resourced based industries in Latin America as discussed in chapter two (Dolan & Humphrey, 2000; Pietrobelli & Rabellotti, 2006). It is timely now to conclude the chapter.

71 Although chapters 5 and 6 shall discuss further whether the fewer number of exporters could be a problem. On another note, this also implies that the suppliers do not wield any unique form of competence power.
4.5. Conclusion

The objective of this chapter has been to analyze and describe the Ecuadorian shrimp industry through the lenses of the GVC method. Based on secondary sources, it has discussed important elements which are important to understand in order to undertake a more specialized study of the smaller shrimp producers. The first step was to map the GVC of the Ecuadorian shrimp industry. All the major actors were identified and their roles described further. The emphasis was placed on the producers as they are the prime unit of analysis and the exporters given their lead role in Ecuador. The producers are on average small in size and their main function is to grow the shrimps which are then transported to a processor or alternatively directly to an exporter. The exporters in contrast participate in most of the functions in the GVC from cultivating the PLs to the final sale in the main export markets primarily sold through foreign buyers. In the assessment of the supporting environment some main stakeholders were identified. In the public sector these included the Ministry of Agriculture and Fishing which has now created a secretary of aquaculture which would be in charge of creating more transparent regulations in the industry. This is planned to be done in co-operation with the National Institute of Fishing which has launched two plans to ensure that the industry can meet international requirements. In the private sector, some organisations are found to offer support to the industry. The indications are, however, that these are primarily used by larger producers and exporters. Chapter five provides further indication of this when it explores the linkages of the producers.

Having mapped the industry, the chapter had a look at the global enabling environment. It began by reviewing the performance of the industry on the main global export market. In the last few years, Ecuador has been one of the main exporters in the USA and the EC. It is the southern part of Europe which primarily has an appetite for the Ecuadorian shrimps. There is significant scope for further growth in Europe. However, the competition is intensifying with Asian exporters like Thailand, Vietnam, and China producing the same type of shrimps as Ecuador. To remain competitive it is increasingly necessary to turn to value added production. This type of production was examined further in the next section which looked at emerging drivers that shape the sector.

The new production methods of organic, intensive, and value-added production offer an opportunity to the shrimp producers to improve their current situation. Organic farming could
provide an entry to new premium markets while intensive production could significantly improve the volume output. Both forms, however, require the producers to meet a number of standards which can not be met overnight. The intensive form would like value-added production require a level of investment which is not likely to be obtainable for individual smaller producers. Nevertheless, on an individual level, the discussion on advances in shrimp farming management indicates that the producers could improve their production efficiency (with reduced costs and increases profits) through adopting the recent knowledge on feed (avoid overfeed and use supplements), paying more attention to water and soil management, adopting better harvesting techniques, and creating a disease control system.

The section on global drivers also discussed the issue of legislation which has become a critical issue to address. It reviewed international requirements such as the necessity to implement HACCP principles, document traceability and the growth of industry specific labels (e.g. BAPs) required by international bodies such as GAA which demand exporters to adhere to their principles to obtain certification. The mandatory requirements of traceability on the main export markets, in particular, is going to have a significant impact on the Ecuadorian shrimp industry as it demands all actors to document their main activities in details which have so far only been required of the exporters. The challenge will be to assist the producers in meeting these new demands. The question was raised whether lead firms and/or private and public organizations would step in and do this.

The last section of the chapter would provide some indications to this as it examined a number of governance characteristics related to rule making and monitoring and chain relationships. It was indicated that external parties to the chain drive the rule making. This development may also lead to a change in the type of relationship governance in the chain, which so far could be characterized as being market-based. However, in the future it was concluded that the chain may need to coordinate its activities further to address the global legislative requirements which could move it toward the modular form of governance or in the longer run which has been seen in other nature-resource based industries in Latin America towards a captive or quasi- hierarchical form of chain relationship. Developments that were leading to these changes include a need for further product specification and the risk of supplier failure. In ending, this chapter has provided an insight into the Ecuadorian shrimp industry which serves as an essential foundation to move forward with chapter five which examine the situation of the smaller shrimp producers.
Chapter 5 – Exploring the situation of the smaller shrimp producers

5.1. Introduction

Chapter five introduces the findings from the exploratory empirical examination of smaller producers in Ecuador. The chapter begins with a description of shrimp operation practices followed by results concerning linkages and upgrading. The results are presented in a condensed form highlighting the most relevant findings for this chapter\textsuperscript{72}. There is an accompanying appendix 5.1 which features the raw data on the findings of the producers. It should be noted that this chapter will only present the empirical data. It will not move into a discussion on the ramifications of these results. These are discussed in chapter six where all research questions are answered. Thus, what is emphasised in chapter five is on observing interesting findings that can be of assistance in answering primarily the first two research questions\textsuperscript{73}.

As we recall from chapter one these state: 1) “How are the smaller producers included in the chain?”, and 2) “Which form of upgrading have the producers attempted?” On research question one, the assessment of their linkages with other actors in the chain will lead to two interesting observations: 1) do they have relationships forward in the chain that are based on more aspects than only price and quantity, and 2) do they receive any assistance from others actors in the chain to upgrade their capabilities? On research question two, clear indications are given by examining their upgrading options and general barriers they all face in their efforts to upgrade. With this overview in mind of what follows in chapter five and what should be noted in particular, the chapter begins below with a look at their operational practices. However, first it should be noted that it might be useful at times to refer to a couple of sections when assessing the findings. These include appendices 3.1 that contains the interview forms, 3.4 which has an overview of the respondents as they are referred to as A, B, C etc, and 5.1 as stated above that provides the raw data findings.

\textsuperscript{72} Interested readers are welcome to contact the author if they want to examine some of the other results.

\textsuperscript{73} As stated in chapters 1 and 3, research question 3 is more future oriented and builds upon the first two questions.
5.2. Shrimp Operation

5.2.1. Introduction

The main purpose of examining this area is to gather a view of how the smaller producers perform on a number of farm management best practices. An efficient production system which applies insight on these practices stand a better chance of being more competitive and being able to upgrade e.g. products and processes. First, some background information follows on the farm practices of the producers before the issue of productivity and certification programs are examined further.

5.2.2. Background information on the farms

This section introduces background information of 10 small shrimp producers of Santa Rosa in El Oro in Ecuador. On the size of the farms, it is found that most of the producers have farms that are less than 60 hectares (HA) with the average size being 46 HA. This is a typical size among smaller shrimp producers in this area as stated in chapter four on the mapping. There is one shrimp producer (A) who has approximately 925 HA but this is due to the fact that he is a caretaker of other farms. Table 5.1 in appendix 5.1 has the full view. In regard to use of production systems, the study indicates that the majority use a semi-intensive production system; except for producer (A) who is also in the process of converting part of the total area into organic production. There are no signs of intensive production due to the scale of investment as mentioned in chapter four. In regard to acquisition of PLs, all participants acquire directly from labs which are situated on the coast of Ecuador. The density of PLs per HA used by the participants goes from 60,000 to 180,000 with 100,000 being the standard. Table 5.2 – 5.3 in appendix 5.1 provide the complete picture.

5.2.3. Productivity

In this section, two measures about their productivity are examined. These are production cycles and production efficiency measures. In regard to the first measure, it can be observed that the majority of participants harvest on average three times per year, following by three producers (C,E,G) who harvest four times in a year, and finally one producer (H) who harvest five times per year. The producers indicate that they study the development of the

Producer A buys only partly from other labs as he also has his own lab.
local market price before they decide on the exact time to harvest\textsuperscript{75}. In regard to the second measure, it was found that the producers on average generate 1500 pounds of shrimps per HA. Although the mortality rate may appear high at an average of 42%, a large number of shrimps are still produced, but there is scope to reduce this rate to around 20-30% (three are already in that range – B, C & E) through better management practices and investments in infrastructure. On average the producers harvest the shrimps when they reach 14 grams. Table 5.4 – 5.5 in appendix 5.1 have the full data.

5.2.4. Other farm management practices

The following sections review the practices which were discussed in chapter four. These are feed, water and soil management, and harvesting procedures. The former two are featured in full in table 5.6 – 5.7 in appendix 5.1. In regard to the first practice, feed, it can be observed that the majority purchase the feed through a middleman, and the rest (A, C, G, J) purchase it directly from a feed supplier e.g. ABA, Nicovita, Expalsa, and Liris\textsuperscript{76}. In regard to the second practice, water and soil management, it is seen that a majority of the producers prefer to use various forms of “healthy” bacteria, organic fertilizers, and probiotics to improve water and soil conditions as substitutes of chemicals or antibiotics. The producers (B, E, and H) who use chemicals or antibiotics are currently decreasing this practice due to the legislative demands described in chapter four.

The study also indicates that the majority of the producers have some sort of system to measure water and soil conditions (e.g. measuring salinity, oxygen, and ammonia). However, the interviews revealed that the frequency of measurement of the water quality varies from farmer to farmer, only one farmer checks water and soil conditions every 15 days (a biologist in charge), while the rest evaluate the water conditions less frequently e.g. every two months or just once a year. It was also observed that all of the participants use a pumping system to exchange water with five of them also using a tidal system (used on farms located on islands). At the moment, none of them have any aeration system which provides additional oxygen to the water in the growing pond facilities. In regard to harvesting procedures, the study indicates that the majority of producers use in general a very traditional method to harvest

\textsuperscript{75} There is a different price for shrimps depending on whether they are 12 gram, 14 gram, 16 gram etc. The producer must evaluate whether it is worth waiting longer and thus have more operating costs to get a higher price.

\textsuperscript{76} Of which most are all exporters as described in chapter four.
their shrimps which is cumbersome and time consuming. There are two other producers (A, F) which have tried to improve this process with a simple mechanical lift system.

5.2.5. Involvement in certification programs

The study reveals in table 5.8 in appendix 5.1 that the majority of producers are not enrolled in any certification programs, but from this group, two of these participants (D, F) would like to implement a certification program in the future to be prepared to meet international demands. In general the producers are aware of the importance of having a form for certification. One farmer (A) is converting parts of his land to pursue organic production. He mentioned that it is a tedious process as it takes between two to three years to obtain it and that there is not guarantee of getting it. Furthermore, he may need to become an exporter to really benefit from this product upgrading as the domestic organic price he would received from the exporters is not expected to be much high than what he would get from selling conventional shrimps through the same sales channel.

5.3. Linkages

5.3.1. Introduction

This section reviews the linkages that the producers have formed with the other actors in the chain. As we recall from chapters two and three, inter-firm linkages is one of the important aspects to consider within the broader GVC governance theory. It begins with a view of the producers’ vertical relationship with other participants in the chain emphasising on those forward in the chain given their important role in the chain. It also looks at their interactions with other producers (horizontal), and with supporting institutions (private and governmental). The viewpoints of the interviewed processing plants and exporters are added to enrich the analysis. The section also comments briefly on the aspect of power.
5.3.2. Forward in the chain

Selection of sales channels and requirements
(See table 5.9 in appendix 5.1 for full overview)

The interviews revealed that most of the producers prefer to sell their shrimps to a processing plant with only three producers (A, B, C) selling directly to an exporter. The main reasons why most of the producers are not selling directly to the exporters are because they do not offer advanced cash payment (277), lacking a personal relationship (2), need to send staff to exporters’ factories in Guayaquil to control that they get the right classification of shrimp and price (2), or that the producers have their own processing plant/or someone in the family owns a plant (2). So although many of the producers know that they could probably get a better price by selling to exporters they choose not to do so due to various obstacles. The few producers (A, B, C) who do sell it directly explained that they prefer to deal with exporters because they are more professional in the commercialization and payment of the product78. In general irrespectively of whether the producers sell to a processing plant or exporter, they cite the following reasons for their choice of buyer: long-term relationship (5), i.e. trust, advanced working capital (5), good price (3), family/friendship (2), and close and convenient location of processing plants (1). Regarding the requirements they are asked to meet by the buyers. The ten producers mentioned that the most common requirement is the restriction of using chemicals and antibiotics in the production. Eight of the producers also point out that they are required to comply with certain quality and quantity specifications.

Improvements they would like to see with the buyer in the future
(See table 5.10 in appendix 5.1 for full overview)

The study revealed that the 10 producers in particular would like a better price. Three of the producers (A, G, J) would also welcome technical visits from buyers to assist them in optimising the production capacity of the shrimp farm. Among other improvements, it is mentioned by three producers (C, D, G) that it would be nice to see a more transparent and honest participation from the buyers when receiving and processing the harvesting. For

77 This refers to the number of times it has been mentioned by a producer.
78 Different from intermediaries, exporters send qualified personnel to evaluate the shrimp production a few days before the fishing (i.e. to verify whether shrimp production is free of antibiotics). Additionally, exporters assign a code for each producer, and if exporters find out that producers are using any illegal antibiotic, they would not buy their product in the future.
example, there are irregularities concerning the quantity, price, and weight of the shrimps sold.

**The viewpoints of the processing plants**

The interviewed processing plants agree with the producers that the most important parameters in their trading is to ensure that the shrimps are of good quality and free from any illegal substances. In the future they expect to receive more information about traceability. They state that there is in general a high level of trust between the two parties. They also confirmed the opinion of the producers concerning their competitive advantage in comparison with the exporters. They mention their close location, fast access to working capital and trust. In regard to future improvements they are considering offering additional services such as more visits to the producers before the harvesting to advice them on various production issues.

**The viewpoints of the exporters**

The interviewed exporter mentions that his relationship with producers is, in particular, based on price. However, he also stresses that personal relationships and documentation supporting traceability in the production are important factors in the relationship. Unlike most other exporters he is based in El Oro and this makes him more attractive for producers in the province. He also tries to compete on price and try to be upfront regarding payments and processing of shrimps. He praises himself on honesty and professionalism and claims that different processing plants cheat customers during the classification to reduce the buying price. He has no plans at this time of offering any new services in his relationship with the producers. He notes that all exporters have enough customers and there is therefore less need to do more to attract additional producers.

His particular focus is currently placed on meeting the demands of the main export markets. He sells using primarily own brand to foreign brokers in the USA (through own representative office), Canada, and Europe (Spain, Italy and France). The foreign buyers are very demanding in terms of quality and traceability. He needs as previously mentioned in chapter four to be HAACP certified. To inspect individual shipment is a costly affair. He mentions that it is easier to deal with the US market as Ecuadorian banks have few agreements with European
banks and consequently the payment can be complicated. On the global competition, he notes that the market is saturated by excess supply and that the buyers in general prefer those exporters who can offer a good quality to the cheapest price. In this regard to find nice markets and use branding are of importance. In general, he believes that there is a good co-operation between the exporters who share information on markets and price developments.

5.3.3. Horizontal Relationship
(See table 5.11 in appendix 5.1. for full overview)

The study indicates that the majority have not engaged in any cooperative activities with other shrimp farmers. Only three participants (C, H, F) have engaged in cooperative efforts. Participant (C) is member of a cooperative (Cooperativa Hualtaco) which operates with a joint management team. This co-operative main function is to assist the participating producers in acquiring inputs such as feeds at a discounted rate. The producers still sell their production independently. The second example of cooperative efforts is participant (H), who established a partnership with some friends (most common scenario of co-operation), but it ended due to personal differences among the members. The same happened for participant (F) who had a partnership with his dad and his brother-in-law. The ten producers agreed that the most common problem when engaging in cooperative efforts is the distrust between producers. They mentioned that there is a lot of rivalry between participants. Four of the producers also believe that a significant obstacle to form co-operatives is the lack of motivation of small and medium producers who are not encouraged to do things in a different way and take proactive measures. They often just accept their current situation.

5.3.4. Relationship with private and public institutions

Private organisations

Six of the ten producers do not belong to any private trade association within the shrimp industry or to other types of private associations for businesses. Three producers (C,F,D) belong to the Chamber of Shrimp Producers of El Oro which was described in chapter four. Producer D belongs also to the Association of Aquaculture Engineers of El Oro which offers training courses, and seminars. The general view is, however as mentioned previously, that no organisations really support their cause. In contrast the interviewed processing plants
belong both to the Chamber of Shrimp Producers in El Oro and the National Chamber of Aqualculture (CNA). The owner of one of the plants is also involved with the local Chamber of Commerce in El Oro. The exporter also belongs to the two private shrimp association mentioned above.

**Public organizations**

All ten producers have not received any type of support from public organizations such as the National Institute of Fishing and the Ministry of Agriculture and Fishing. After the white spot crisis in 1998, shrimp farmers have survived in this industry with their own resource. On the other hand the processors have received assistance from a public financial institution known as “Banco Nacional de Fomento (BNF)” to improve its operation. The National Institute of Fishing has also assisted the processors in meeting the requirements outlined in the national plan of control. The exporter did not mention any specific public assistance that had made a major impact.

**International affiliations**

Six of the ten producers have not had any contact with foreign organisations in regard to their operation. Three (C,D, F) have had some experience due to exporting for a limited period.

**5.3.5. Power in the chain**

The shrimp producers think that the exporters are the dominant participants in the chain who decide on most issues including how much they want to pay the producers. There is only a minority among the producers who think that other actors such as foreign importers may also have a very influential role in driving the chain. The processors agree with this view and refer to the fact that the exporters are now fewer in numbers and concentrated in Guayaquil. One of the processors has formed an informal group of other processors and producers to discuss this “monopoly” issue with the Ministry of Fishing. The interviewed exporter, on the other hand disagrees with this view. He argues that the final consumers are driving the chain with the international markets establishing the rules concerning quality, volume, and price. In his case, he review international sites such as Seafood to know which prices are being paid in the international markets. With this information, he established the price that should be paid to

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79 The owner of the second plant is on the board of directors of this organisation.
the producers. In his opinion there is still profit to be made by the producers but they problem is that they are very inefficient. In the heydays up to the white spot crisis in 1998 when they earned a profit of 3000% of more, they did not reinvest any of this in improving their businesses. His conclusion is therefore that they are in general not able to change the situation now when their profit is significantly less and the competition has also intensified. This is not only due to having less financial means available but also because they lack the business culture to be more proactive.

5.4. Upgrading strategies

5.4.1. Introduction

This section examines the types of upgrading strategies that the producers have attempted. It also looks more closely at the most critical internal and external barriers faced by the producers.

5.4.2. Types of upgrading

Table 5.12 in appendix 5.1 highlights that the producers primarily have undertaken various forms of process upgrading with a total of 22 forms registered. Most of these are about using supplements to improve the feeding system and the conditions of the water and soil. The producers opted for these upgradings due to their ease of implementation, environmental friendliness, and low cost. None of them expected in this regard any major improvement in their competitive situation. There are some interesting observations to be made concerning process upgrading. First, there is producer H who uses small grown out facilities which enables him to reduce his costs and increase the number of harvest seasons from the typical three times a year to five times a year. Second, Two producers (A & F) have built a simple harvest system to lift the shrimps up from the water and directly into the containers where they kept before being sorted further on the spot. This minimises the need to use people to carry the shrimps in buckets from the big nets in the ponds up to the containers. Third, one should also mentioned producer F again who is also planning to invest in an aeration system to improve the water conditions in his ponds. In regard to product upgrading, the only example as previously mentioned is producer (A) who is converting part of his operation to organic production hoping to enter a premium market in the future. He is therefore involved
in a certification program. Two other producers who have also been engaged in some sort of certification are D and F who have asked to be contacted by the National Institute of Fishing (INP) in advance so that they can prepare to meet the traceability demands discussed in chapter four.

Moving on to examine other forms of upgrading, it is noted that a few of them have succeeded in functional upgrading (6). The same producer (A) who is also involved in turning parts of his production into the organic form has ventured backward in the chain to become an input supplier of supplements e.g. for feed and disease control. This has given him some additional cash flow. Two other producers (D & F) have moved forward in the chain by becoming processors. They have been strengthened by the move and are today in a better competitive situation\(^80\) e.g. affording to invest in an aeration system (F). They have also attempted to export as did producer C but all three could only live up to the requirements for a limited period. Finally, the study did not find any examples of inter-chain upgrading. Seven of the ten producers have additional sources of income such as agricultural production but they did not seem to leverage on the shrimp operation to further expand in these fields. Rather they used income from these activities to sustain their shrimp operations.

5.4.3. Main external and internal barriers

The producers were asked to select the three most critical internal and external barriers which they face in their efforts to upgrade. The results are shown in table 5.13 in appendix 5.1 with 1 representing the highest barrier and so forth. It is found if we look first at the external barriers a majority of the producers rank “the current price received for selling the shrimps” as the most critical barrier for upgrading their business (7 votes). In second place, we find “the lack of support from financial institutions” and “too little co-operation between the producers” each with three votes. In third place are the barriers “there is a lack of governmental support” and “not enough support within the industry” with five and three votes respectively. In regard to internal barriers, the producers mentions first an “inefficient production system” (three votes) followed by lack of financial management and HR emphasis both with three votes. The rest of the barriers are only mentioned by a few producers. The above mentioned barriers of an external and internal character provide a good overview of the challenges which smaller producers face in their struggles to upgrade in the chain. They are

\(^{80}\) These producers have also benefitted from their family ties in this regard as some members are processors.
not able to directly shape the external barriers but could consider alternative forms of organisation while working on their internal barriers. There is more discussion of this in chapter six which follows after concluding the chapter below.

5.6. Conclusion

Chapter five has played an important role by introducing primary data collected on smaller shrimp producers. An insight into their operation methods, linkages, and upgrade efforts provides first hand indications of their current situation in the Ecuadorian shrimp value chain. The review of their shrimp operations show that most of them are traditional producers relying on the typical production system and harvesting methods with some use of supplement to improve water, soil, and disease conditions. None of them have yet undergone any form of certification. Moving on to linkages, it is found that they typically have a relationship forward in the chain which is based on volume and price. There is little else information that is shared between the buyers and the sellers. Furthermore, there is no real co-operation in general between the producers, nor do they participate much or receive assistance from any private or public associations. The general feeling among the producers is that they feel they have little influence on the decisions that are made in the chain. They blame the exporters for keeping most of the profit and claim that the handful of major exporters which exists effectively operates as a price cartel.

It is therefore no surprise that the review of their upgrading efforts tells of few cases which have made an impact on the competitiveness of these producers. The producers had in general only succeeded in modest process upgrading. There are a few producers who have succeeded in moving into product upgrading and functional upgrading by acquiring the competencies to also operate as processors. However, most of the producers face a number of obstacles in moving forward. The main barriers identified on the internal front speak of an inefficient production system and lack of use of management functions while the external dimension points to the low selling price, lack of financial support and not enough co-operation between the producers. Chapter six takes next these findings into account as it answers the research questions.
Chapter 6 – Discussion

6.1. Introduction

Chapter six discusses the implications of the analysis in the previous two chapters. It also draws more on the insight gained from the interviewed experts to answer the three research questions. In this regard, three main sections are presented in this chapter each addressing one of the research questions. It shall be seen that research question three builds on the findings of the first two research questions and is more future oriented. It examines the pros and cons of different strategic upgrading options. It shall be seen that a co-operative form of organisation is presented as an interesting option to examine further. In this regard the learning points of four short cases from Latin America are highlighted. Two of these cases are interestingly taking place within the shrimp industry. With this overview in mind, the first section begins below with an assessment of research question one.

6.2. Research question one: “How are the smaller producers included in the chain?”

The overall answer to this question is that the smaller producers seem to play a limited role in the chain. The mapping of the chain in chapter four illustrates that the smaller producers primarily grow the shrimps which are then sold to processors or exporters for further refinement. Additionally, the review of governance characteristics implies that external parties to the chain are in control of rule making notably on the needs to meet new legislative and certification requirements. These are subsequently enforced and in part monitored by public national institutions and to a lesser degree private firms and organisations in Ecuador. The producers will need to meet these demands or risk exclusion of the chain. It is suggested that the chain might moves from its current more market-based type to become more modular and in the long run maybe become captive or hierarchical in nature. This may take place if the exporters as the lead firms decide to take a more proactive role in assisting (or enforcing) the producers to meet these demands due to the need for further product specifications than hitherto required in the chain and the risk of supplier failure. Their degree of involvement is likely to depend on the concrete measures taken by the relevant national authorities to ensure that the national plan of control, hereunder traceability are met by all participants.
In chapter five, further insight into the situation of the smaller producers indicates that their relationship with the processors and exporters is primarily concerned about quality and price. There is little assistance or sharing of information from the other participants except at the time of harvesting. The producers feel in general powerless concerning the current situation with low market prices. They blame, in particular, the exporters for their marginalised position accusing them of operating like a monopoly keeping most of the profit to themselves. This view is in general supported by the interviewed processors. The interviewed exporter, on the other hand, rejects this claim and note that the end consumers drive the chain with the international markets and their associated food and health authorities regulating the rules concerning quality, volume, and quality. The previous analysis in chapter four on the characteristics of governance confirms this assessment. In addition, it should be taken into account that the global shrimp market is in a situation with excess supply and tough competitions from Asian shrimp producers. These factors are likely to have an impact on the price. However, it is a fact that the number of exporters in Ecuador has been concentrated in the hands of fewer firms since the white spot crisis in 1998. In a weak institutional environment such as Ecuador, this may lead some to opportunistic behaviour which e.g. could lead to the accused development of a price cartel.

It is not easy to assess the full scope of this claim at the moment but to begin with it is important for the smaller producers to speak as a more united and coherent voice in the industry. This is currently not the case where few of them neither belong to any private organisation in the industry nor receive more assistance from any public institutions. Thus, the smaller producers seem to be caught in a situation where they serve a limited role as supplier of shrimps with few opportunities to change their situation given their silent voice in the industry. Some of them have taken steps, however, to break free of this path dependency which will be discussed in the remaining two research questions beginning with research question two below.

6.3. Research question two: “Which forms of upgrading have the producers attempted?”

This question will be answered by reviewing the findings from chapter five on the producers upgrading efforts. To begin with, the review of the forms of upgrading attempted by the
smaller producers in chapter five reveals that few of them have moved beyond process improvements such as using supplements to strengthen the health of the shrimps and/or improve the water and soil conditions. While such initiatives are appraisable, they do little to improve the competitive situation of the shrimp producers. They have primarily been selected as they are easy to implement and cost little money. Furthermore, as the author understands many producers do often not spend sufficient time to examine the effectiveness of a particular product before they try a new one. One of the interviewed experts, Banyai (2007) mentions in this regard that shrimp farmers in Ecuador in general are not paying equally attention to water and soil management compared to their Asian colleagues. In his opinion improving this aspect of shrimp farming can significantly improve the productivity output. It is therefore important to stress that there is scope for further improvement in processes than what is currently being done. One such example is the producer who has invented a new innovative grown out system that can reduce his costs and increase his volume. Another example is the two producers who have developed a harvesting system that decreases the costs.

Chapter five also highlights that a few producers have moved beyond upgrading their processes. One producer is the in the process of venturing into organic production which could allow him to enter a more profitable market. He has also ventured into functional upgrading by going backward in the chain by becoming a distributor of supplements for feed and health. Two other producers are also engaged in functional upgrading by also being processors of shrimps. The same producers and one more have also attempted to become exporters but with limited success. In general, it is the same few producers who seem to have performed better than the rest of the sample population. These are portrayed in appendix 6.1. While their process improvements are interesting to note it is in particular their ability to move into functional and partly product upgrading that warrant further attention. These forms of upgrading as described in chapter two are likely to be more value added and not that easy in general to reach. So how did they achieve this? Are there some useful learning lessons that the other shrimp producers can leverage upon? Some common traits they all posses are multiple years of experience in the industry, a good level of education, and an entrepreneurial mentality that drive them to be well prepared to embrace new opportunities such as improving their farm management processes and venturing into more advanced forms of upgrading. This pro-activeness can also be indicated by their eagerness to be certified and being members of

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81 expert interview, 2007 in Santa Rosa, Ecuador
the local shrimp producer associations. Nonetheless, it should be acknowledged, that factors such as their larger land areas and their family connections to processors may enable some of these opportunities. Having said that the traits described above are certainly beneficial as they indicate that these producers are better organised and they are therefore in a better position of gaining a competitive advantage in the chain through their own upgrading efforts.

This is in general not the case for the sample as the examination of main barriers in chapter five showed. It indicated that the producers in particular face problems on the internal front concerning inefficiency in the production system with few investments being made, and lack of management practices within areas such as finance, HR, strategy, and marketing. On the external front, the products mentioned that the main barriers are the low market price, lack of support from the financial institutions and governmental agencies, and too little co-operation between producers. Thus while there are some encouraging examples in the sample population, it is useful to look further ahead and reflect on how more smaller producers may be able to improve their competitive position. The following main section therefore builds upon the first two research questions and introduces a third research question which discusses the relevance of different strategic options.

6.4. Research question three: Which strategic options could be pursued to improve their competitiveness?

A number of strategic upgrading options have been featured in this study. These are: 1) change to organic production, 2) enter co-operatives, 3) adopting a multiple chain strategy, 4) focus on maximising production efficiency, 5) acquire other functions in the chain, 6) select intensive production, and 7) consider value-added production. Table 6.1 provides below an overview of these options commenting on the insight gained in this study on their advantages and disadvantages.
<table>
<thead>
<tr>
<th>Options</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organic production</td>
<td>• Enter a lucrative market which provides a higher selling price.</td>
<td>• It is lengthy affair that may take two years or more with no guarantees.</td>
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<td></td>
<td>• International organisations provide guidance on meeting requirements.</td>
<td>• There are many requirements that must be met.</td>
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<td></td>
<td></td>
<td>• It is a niche market that may not continue to grow.</td>
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<tr>
<td></td>
<td></td>
<td>• Further unless the producers can export directly they may receive a reduced price if they sell the shrimps onwards to the exporters which in most cases also offer organic shrimps.</td>
</tr>
<tr>
<td>Co-operatives</td>
<td>• Join forces to enjoy scale of economies and scope to implement new technologies, acquire other functions such as processing and exporting, share knowledge, have training courses on management issues etc.</td>
<td>• The producers have little tradition for co-operating. Self interest, lack of trust, and a desire for all to take part in the decision-making can make a co-operative dysfunctional.</td>
</tr>
<tr>
<td></td>
<td>• A joint organisation provides a more coherent voice when negotiating with the other participants in the chain and with governmental authorities.</td>
<td>• There is a need for external facilitation to ensure its operational mode.</td>
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<tr>
<td></td>
<td>• In the long run this can also secure the livelihood of the producers who otherwise risk extinction or being integrated into the operation of the larger exporters.</td>
<td></td>
</tr>
<tr>
<td>Multiple chain strategy</td>
<td>• By operating in multiple chains the producers can minimise their dependency on one chain while also assessing whether another may offer a more favourable environment to pursue certain types of upgrading.</td>
<td>• If the producers are “locked” in their current position in the chain they are unlikely to have the resources and motivation to pursue new chains that may have to be developed from scratch and this take times.</td>
</tr>
<tr>
<td></td>
<td>• One option could be to examine the scope of upgrading nationally at first.</td>
<td>• The domestic market for shrimps is basically non-existing.</td>
</tr>
<tr>
<td>Production efficiency</td>
<td>• This is the most direct way for the producers to begin the process of improving their situation through increasing their volume output and reducing costs.</td>
<td>• There are none really. The investments will be paid back in the long run.</td>
</tr>
<tr>
<td></td>
<td>• Research shows that there are significant inroads to be made on improving their production efficiency by be more dedicated to aspects such as water and soil management, feed, and financial management.</td>
<td></td>
</tr>
<tr>
<td>Other functions</td>
<td>• To acquire more functions in the chain will assist in the diversifying the income, and gaining a better bargaining position in the chain.</td>
<td>• It will be cost prohibitive for most of the producers - although some backward functions may be within reach (distributor of supply). It is not easy, however, to build up a loyal customer base. There are many providers including the large exporters.</td>
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<tr>
<td></td>
<td></td>
<td>• Most shrimp producers may lack the necessary business skills to achieve the necessary gains e.g. dealing forward in the chain with international buyers and meeting international requirements.</td>
</tr>
<tr>
<td>Intensive production</td>
<td>• This form of production can generate a significant increase in volume output.</td>
<td>• It may be to technological complicated for smaller shrimp producers (learning challenge).</td>
</tr>
<tr>
<td></td>
<td>• The necessary technological instalments (e.g. aeration) will lead to a better water and soil environment.</td>
<td>• In addition, the costs involved are too high for many producers.</td>
</tr>
<tr>
<td>Value added production</td>
<td>• An introduction of shrimp products beyond the generic frozen shrimps can assist in getting better shrimp prices and findings new niche markets.</td>
<td>• To offer value added production requires that a shrimp producer has also moved into processing and export. Thus, this strategy is essentially tied to the other strategy above regarding</td>
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The comparative review of the different strategic upgrading options in table 6.1 above provides a number of indications. First, a number of options are unlikely to be relevant for a majority of the smaller producers due primarily to the cost and learning challenges involved of pursuing these strategic upgrades. These include intensive and value production, adopting a multiple chain strategy although the option of examining the scope of operating on the domestic market could be interesting, and acquiring further functions in the chain. It is noted that the latter could be possible if the producers find that there is opportunity to become a distributor of e.g. a feed or probiotics brand. It is stressed however that this option may not lead to a significant increase in income and competitiveness as there are many competitors and little customer loyalty to specific brands.

This is not to say that these strategic upgradings options could not be pursued at some stage, but currently, it may be a more suitable strategy to focus on improving the current operation. The findings in this study points to a significant scope concerning increasing the production efficiency through emphasising more on aspects related to feed, water and soil management, and general management of the farm. The latter include allocating more resources to understand using financial and strategic insight to operate the farm. This appears to be more emphasized among those producers that were identified above as better performers. It could also be worthwhile as suggested to examine if some elements of the intensive production system could be adapted (e.g. aeration). The producers can get more knowledge on these issues by being proactive and attending seminars organised by private and public institutions, using the web, and through other means.

Another option which they could consider is converting all or some parts of the farm into organic production. This product upgrading does offer the potential of moving into a more lucrative market with better prices. However, the benefits may not be fully realised unless the producer is also able to export directly. This is due to the fact that the exporters located in

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[82] Co-operative forms of organisation have in this study here been added as a relevant configurative form of upgrading.
Ecuador who also offers organic shrimps may offer a lower price if they sell through this channel. The other major challenge is the long time it takes to convert the farm into an organic operation. Finally, the market for organic fish products in general is still relatively small and there are no guarantees that it will continue to grow significantly. This leaves the strategic option of joining a co-operative which will allow the producers to acquire scale of economies and scope to embark on many of the other strategic options while also initiating a learning plan to improve their management skills. There are some challenges as mentioned above in the table regarding lack of experience in working together which are due to factors such as low trust of other producers, and resistance in letting others make decisions but the next section shares some insight which may assist in reducing the threats of these.

Thus the conclusion at this stage is that the producers in general should invest resources in improving their production efficiency. Steps should be taken immediately to begin this process irrespectively of other strategic options that are initiated. This should allow for some increase in their income and competitiveness. They could also consider organic shrimp production after a careful examination and the scope on the domestic market. Then, on a collective scale they could consider joining a co-operative shrimp operation. The next section looks further into the merits of this option which is currently being established by two groups of shrimp producers.

6.4.1. Are co-operatives the solution for smaller shrimp producers?

As noted in the comparative review of strategic options above, the co-operative form of organisation may be the strategic options that hold the best potential in terms of improving the competitive situation for the average smaller shrimp producers. However, as chapter five shows the producers have little experience in co-operating, and it will be difficult to change their mental mode from one of thinking about their needs only to those of the co-operative. A low level of trust is an issue in this regard. The lack of motivation to do things differently may also be a barrier. Another challenge will be to decide who should be in charge of making the decisions. An effective co-operative requires a good organisational set-up with clear guidelines set up by a proactive management team. In this regard there are learning lessons to be made from four short cases on co-operatives in the region which are featured below. It should be noted that the purpose is not to give a lengthy discussion on how a co-operative form of organisation may work. This is beyond the scope of this thesis. It is merely meant as a
short future perspectivisation drawing on primary and secondary source that may hopefully encourage further research into this option.

6.4.2. Learning lessons from Latin American co-operatives

Learning lessons are drawn from four cases of Latin American co-operatives primarily by interviews conducted by the author. The first two involve shrimp co-operatives in the making, the third example profiles a banana co-operative in Ecuador which has been operating for several years, and the fourth case sums up success factors of different Latin American rural group enterprises. What follows here is a short concise review. Appendix 6.2 features these cases in full length. The initial insight from the two shrimp co-operatives in the making primarily serve to illustrate that this is a strategic option which is given serious thought in the industry. Both co-operatives believe that they by pooling their resources would be able to move into functional upgrading and acquire the capability to process and export their shrimps. The main difference is that case one which is driven by Luis Chriboga (2007b) is more driven by smaller producers which traditionally have not belonged to any organisations. In contrast case two features the efforts by the shrimp producers’ association in El Oro\textsuperscript{83} which typically is supported by larger and more influential shrimp producers. Both projects are calculating with an initial cost of around $1 Mio to begin operation. It is encouraging to see that both of them seem to be moving forward with a professional set up.

In this regard both projects can learn from the experience which has been generated in the province in the banana industry. Case three features the association of smaller banana producers “El Guabo” which has been operating with the assistance of the Dutch Development Co-operation for a number of years. Lianne Zoetewejj who is the Dutch representative and on-site project manager pointed in an interview to a number of recommendations that other co-operative should take note of. These are highlighted in table 6.3 below.

\textsuperscript{83} Interview with the President of the association, Jose Barrezueta in May 2007.
Table 6.3. Learning lessons from the El Guabo co-operative

1. Strong leadership and vision, somebody should stand up, and make sure that the rest are following him/her.
2. Make a strategic plan and decide on the forms of production that should be pursued - e.g. organic production or other forms of fair trade with a social perspective can maybe more easily attract the interest of foreign organisations.
3. Acknowledge that it may be necessary to bring in external experts to obtain the required knowledge.
4. Hire professionals, who normally know the export business, hiring of specific experts e.g. organic advisers.
5. Hire independent management team as soon as possible. Consider bringing foreign experts from e.g. development agencies and NGOs.
6. Have a share vision: e.g. "we are going to export directly ......."
7. Communication: this takes a lot of time. It is important to explain the reasons (with detailed information) of doing things to producers, so that they can really understand why they need to fulfill with requirements. Producers need to see some value in doing these things. E.g. why they need to document traceability in their production. In this case she reminds them of cases where it has been important for the authorities to find the source of the contamination.
8. Organize them, to make producers feel that "we are here together, we fight together".
9. Establish loyal and long lasting contacts abroad to ensure stability in trading.
10. Ask for help from national export organizations like CORPEI.


These learning points can certainly be useful for the shrimp co-operatives that are currently being planned. The case of El Guabo is a positive example of how small and medium sized producers can improve their competitive position and be able to export directly. Key elements in this achievement have been the use of a fair trade concept using quality processes and the integration of foreign experts in the operation of the co-operative.

Additional insight into critical success factor is given in a report by Intercorporation, the Swizz development agency which have examined a number of rural group enterprises (RGEs)\(^4\) in Latin America (Camacho et al., 2007). Ten critical success factors have been identified categorised in four interrelated main themes. The first main theme refers to establishing a market position focusing on differentiation; value added production, innovation and quality. The second theme speaks of building social capital by promoting leadership, a collective vision and fostering entrepreneurial management. The third theme calls for the promotion of strategic enterprise management which speaks of forming a professional management team, creating good external contacts in which to distribute the products, and managing the balance between individual and collective benefits. The final theme calls for mobilising external support and adapting to a changing environment. Overall several of these

\(^{4}\) A RGE is an association made principally of small rural producers. It has a professional management structure and operates on a commercial basis. One of the main differences to a private enterprise is that it also has a social agenda.
success factors confirm the previous case. While it will be a challenge for any co-operatives to master these factors easily, it is nevertheless encouraging that existing co-operatives have showed that it is possible to provide a better position for the smaller producers. What remains now is to conclude the chapter.

6.5. Conclusion

Chapter six has emphasised on discussing the three main research questions which are put forward in this study. The review of research question one indicates that the smaller producers are marginally included in the chain. They are in general confined to operate as producers of raw unprocessed shrimps. Their main relationship forward the chain with the processors and exporters are concerned about quality and price. There are little sharing of market information or assistance to upgrade. Further beyond the national boundaries of the chain, the introduction of legislative and voluntarily demands push the chain towards meeting a number of new international standards. The general view among the producers is a sense of powerlessness toward the current situation.

In the light of this setting, the assessment of research question two shows, that the majority of the producers are limited in the strategic upgrading options. Most of them are only able to introduce modest process upgrading which make little impact on their overall competitiveness. Nonetheless, there is scope for the producers to improve production efficiency on aspects such as feed, water and soil, and harvesting. Some producers were also found to perform average. They were found to be driven by a determination and entrepreneurial spirit that the other producers seemed to lack. However, they are still somewhat limited in their options and sphere of influence in the chain. Further most of the strategic options may not be obtainable for a majority of the smaller shrimp producers given their current conditions with limited working capital to reinvest and with little emphasis on management functions such as finance, strategy, and market learning.

It is therefore proposed to consider the potential of examining co-operative forms of organisation as a strategic option. While co-operatives have their challenges and may not be an option for all producers, they do offer economies of scale which can be used to take on a number of the other strategic upgrading options. Highlights from four co-operative cases in the region showed that it is being considered in two projects that have been launched by
shrimp producers. In this regard, an existing banana co-operative in the province provides a number of useful learning points of how a co-operative can function successfully. It is, in particular, interesting to note the emphasis on bringing in an external management team ideally consisting of some foreign experts to assist in the daily management and to succeed in the international market. Time will tell if these shrimp co-operatives are likely to follow this suggestion and some of the other advices mentioned. In this regard, ten critical success factors based on a study of various Latin American rural group enterprises are also worth looking further into. What remains now is to conclude the thesis in chapter seven and also discuss limitations and general future perspectives.
Chapter 7 - Conclusion

7.1. Introduction

This final short chapter concludes the thesis by putting into perspective the insight it has gained into the situation of the smaller producers in the Ecuadorian shrimp industry. Thereafter, further sections looks at the limitations and call for future research for the shrimp industry and on the theory of industrial organisation of developing firms. Finally, a small section provides a few personal words on the learning experience of writing this thesis.

7.2. Conclusion

The GVC analysis of the Ecuadorian shrimp industry highlights the current situation of smaller shrimp producers. This is an emphasis which has not received much attention before in previous analysis of the industry where the focus has been more on the exporters\(^5\). It argues that they have a weak position in the chain suffering from a loose integration with the other main participants and the supporting environment. Some of the main reasons behind this situation are the low share of traders to suppliers (relatively few exporters), low product complexity, and the general low managerial capabilities of the smaller shrimp producers. They have little negotiation power in the current scenario when trading with the processors and notably the exporters. The latter part seems satisfied with the status quo and they do therefore not have any incentives to make changes. International regulations may force them, however, to take a more active role in the chain assisting the producers to meet the new demands such as traceability, but currently they are waiting to see whether a governmental institution such as the National Institute of Fishing along with the newly created Secretary of Aquaculture may step in and take responsibility of this task. Thus, the study implies that the current form of governance which is market-based seems to be changing to the modular form and could even become captive or quasi-hierarchical in the future.

Nonetheless, the smaller shrimp producers can certainly play a role in shaping their future fate in the chain as well. Their ability to upgrade is the key driver to initiate change. Unfortunately, the indications are that most of them are not able to move beyond insignificant

\(^5\) See e.g. Mariott (2003).
improvements to their processes. They lack know how of better aquaculture practices which limit their opportunities to reduce their costs and increase their volume through new relatively inexpensive innovations. This could otherwise over a period time provide them with cash flow to make new investments in their operations. Their inability to make significant improvement in their processes make them less likely to move into other forms of upgrading such as establishing new forms of production or acquiring new functions such as processing or exporting which have been the case of a few of the producers. Their cases, however, are not likely to be reachable for most of the other producers due to the majority’s entrapment in the current situation.

What is suggested is that they begin to take small steps to improve their production efficiency e.g. join organisations to learn about the markets and new innovation, and make a financial analysis of their operations to reduce unnecessary costs. Then a more significant step would be to consider joining a co-operative. Co-operatives could strengthen the position of the smaller producers and through scale of economies and scope they would gain more negotiation power and the ability to launch various training schemes and investments so that some of the mentioned upgrading options would be achievable. There is currently little tradition for co-operation among producers but it is likely that a successful outcome of two major current initiatives to form co-operatives may encourage more shrimp producers in Ecuador to join a co-operative.

In this regard, as this study has highlighted there are useful learning lessons to be made from such co-operatives in other agricultural based industries in Ecuador and elsewhere in the region. In contrast, there is a risk that only a small segment of the shrimp produces which was found in this study will be able to improve their competitive position. The rest will continue their current struggle and could with time in the pressure of increasing global legislative and operational requirements go out of business, or face a captive relationship or vertical integration with one of the larger exporters. This scenario is forecasted by one of the leading experts on the industry, Dr. Wuzmann who warns that many smaller producers will cease to exist in the future (Wuzmann et. al., 2004).

Thus, the scenario could be grim if something is not done to improve the position of the smaller shrimp producers. In ending, this section has mentioned a number of indications of relevance for the Ecuadorian shrimp industry. With an emphasis on the smaller producers, the
main indications drawing on insight from the previous chapters have been summarised in a SWOT analysis which is placed in Appendix 7.1. It has been added to provide a quick overview to researchers who might want to follow up on this study. What follows next is a look at the limitations of this study.

7.3. Limitations

Section 1.4 in chapter one highlighted a number of delimitations of this study. In short, it was mentioned that it was preliminary and exploratory due to resource and time constraints. This is further stressed by the relatively small sampling size of 10 producers and 10 other interviews. Thus, as it was mentioned in Section 1.4, the findings and recommendations of this study are indications which can not be generalisable to the whole population of shrimp producers in Ecuador. The usefulness of these indications is to leverage upon them as assertions that can be examined in large scale studies where more producers and other chain stakeholders are included. Overall, these are reasonable limitations based on one exploratory study undertaken as part of a master degree. Nevertheless, it is hoped that attention will be noted of the indications which have been generated in this study so that they can be further refined and clarified in future studies. There is more on this below in the section which looks at future perspectives.

7.4. Future perspectives

There are several broad perspectives that could be interesting to study further. These can be divided into those that are directly examining the shrimp industry nationally and globally, and those that examine issues that been put forward concerning the industrial organisation of developing firms. In regard to the Ecuadorian industry, it could be useful to conduct further studies using the GVC methodology to examine the Ecuadorian shrimp industry. Some of these should be done as indicated above with a larger sample size representing smaller shrimp producers ideally from various regions in Ecuador. It is in this aspect desirable to also increase the number of respondents of other relevant stakeholders: processors, exporters, and staff from relevant private and public institutions. Other studies that may place these stakeholders as the central focus of analysis or adopt other theoretical frameworks are also welcome. Further insight into distributional issues could also be a worthwhile endeavour if it
is possible to obtain meaningful data on this topic\textsuperscript{86}. It would also be valuable if some of the studies depending on scope of resources aim to move beyond the analytical phase and also consider dealing with implementation, facilitation, and monitoring.

Insight into these additional phases as suggested by e.g. GTZ (2007) would be useful to further understand which kinds of assistance can be offered to the shrimp producers to overcome various barriers such as improving their managerial and market learning capabilities. On a global scale, it would be interesting if one or more researchers could take the initiative to co-operate with international colleagues so that comparative data can be obtained on shrimp producers in countries such as Brazil, Vietnam, Thailand, and China. Interesting issues to consider include what kind of assistance they get, their position in the chain, linkages with other actors in the chain, whether they are more equipped with management and market learning skills, and overall upgrading efforts.

Turning to the perspectivisation on the industry organization of developing firms, this study has suggested the use of co-operatives as one strategic option that could assist a larger number of smaller firms in this case shrimp producers to improve their competitive position by pooling together their resources. A few cases and learning points from other types of smaller enterprises in Latin America were mentioned, but it would be useful to examine this topic in more depth in future studies along with other studies which examine forms of organization which may in particular be adapted for the needs of (smaller) developing nations’ firms. Overall, any studies that can contribute to better understand how developing firms such as SMEs organize and manage their businesses would be valuable as the theory on this topic is still limited. What remains in this study after having provided a perspectivisation on the direction which future studies could take, is a few final personal words on the journey of writing this thesis.

\textsuperscript{86} It is for example mentioned that studies which only focus on standard financial estimation such as the share of buyers and suppliers of final prices provide little information about distributional outcomes (Gibbon \textit{et al}, 2008). The cost aspect for example of each actor is not included.
7.5. Final words

It has been a good learning experience for the author to devote time and resources on understanding the Ecuadorian shrimp industry in more details. It is a vital industry for the country which employs a large rural population. By placing the emphasis on the smaller producers it has been possible to understand the industry from the “bottom up”. However, the additional interviews with other participants and experts have broaden the understanding of what the main challenges are for this industry and who should be responsible for addressing different issues. There are strong indications that the shrimp producers can take several steps to improve their own situation. It is not only a matter of asking other stakeholders such as the exporters and governmental institutions to improve the conditions. This is the message, the author wishes to communicate to the shrimp producers. It is in this regard interesting to observe that some producers are now taking initiatives in this direction. The launch of the two co-operatives if they succeed stand a good chance of making lasting impacts among the population of shrimp producers. They could certainly help to raise the level of professionalism which is needed.

On a final personal note, the author has confirmed that the shrimp industry and the aquaculture industry in general are significant global industries that hold interesting career opportunities. Through the contacts made during writing the thesis, the author may be able to identify one or more interesting job options. In this regard, it has been very useful to learn to apply the GVC method and confirmed its relevance. There is more to learn about this method and the author hopes to continue her scholarly learning path in future on this topic and other relevant development topics introduced by leading scholars while possibly holding a position in the industry. Let the journey begin!
Appendices for chapter 3: Methodology

Note that the interviews with the experts were open-ended and no forms have therefore been included for these interviews. All interviews have been translated into English.

Appendix 3.1 – The interview form used for the producers

1. Background information

<table>
<thead>
<tr>
<th>Profile:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Name of person interviewed:</td>
</tr>
<tr>
<td>2. Age:</td>
</tr>
<tr>
<td>3. Gender:</td>
</tr>
<tr>
<td>4. Educational Background:</td>
</tr>
<tr>
<td>5. Name of company:</td>
</tr>
<tr>
<td>6. Type of company:</td>
</tr>
<tr>
<td>6.1. Family business</td>
</tr>
<tr>
<td>6.2. Partnership between two farmers or more</td>
</tr>
<tr>
<td>6.3. Larger co-operative between multiple farmers</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Job Position:</th>
</tr>
</thead>
<tbody>
<tr>
<td>---</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contact details:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fax:</td>
</tr>
<tr>
<td>Telephone office and home:</td>
</tr>
<tr>
<td>Cell:</td>
</tr>
<tr>
<td>E-mail:</td>
</tr>
</tbody>
</table>

2. Description of shrimp operation

<table>
<thead>
<tr>
<th>Number of shrimp farms</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How many shrimp farms do you have?</td>
</tr>
<tr>
<td>2. How many hectares?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of production system</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. What kind of production system do you have?</td>
</tr>
<tr>
<td>3.1 Semi-intensive</td>
</tr>
<tr>
<td>3.2 Intensive (<em>Note: Do check if they fulfil requirements</em>)</td>
</tr>
<tr>
<td>3.3 Organic</td>
</tr>
</tbody>
</table>

*Note if they have an intensive or organic product form this is obviously one of the main upgrading to discuss latter – recall this*

<table>
<thead>
<tr>
<th>PLS On trading</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Where do you regularly buy your PLS?</td>
</tr>
<tr>
<td>4.1 At a lab (name of supplier)</td>
</tr>
<tr>
<td>4.2 Through a middleman (name) who buys from (name)</td>
</tr>
<tr>
<td>4.3 Both</td>
</tr>
<tr>
<td>5. How many PLs per M2?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>What are you reasons for selecting this PLS supplier?</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1 Long-term relationship (trust)</td>
</tr>
<tr>
<td>6.2 family/friendship</td>
</tr>
<tr>
<td>6.3 Price</td>
</tr>
<tr>
<td>6.4 Favourable credit conditions</td>
</tr>
<tr>
<td>6.5 Good quality</td>
</tr>
<tr>
<td>6.6 Other reasons (mention)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Improvements you would like to see in your relationship with the PLS supplier in the future?</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.1 Better price</td>
</tr>
<tr>
<td>7.2. More assistance after the sale (visit farm to check on the conditions of the PLS)</td>
</tr>
<tr>
<td>7.3 Transport of the PLS to the farms</td>
</tr>
<tr>
<td>Question</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>7.4 others (mention)</td>
</tr>
<tr>
<td><strong>Productivity (recall which system they use)</strong></td>
</tr>
<tr>
<td>8. How many times a year do you harvest?</td>
</tr>
<tr>
<td>9. What is your production in pounds per harvest?</td>
</tr>
<tr>
<td>10. What is the average size in grams of your shrimps?</td>
</tr>
<tr>
<td>11. What is the mortality rate per harvest in %, and how do you measure it?</td>
</tr>
<tr>
<td>12. What are your overall production costs per hectare and/or harvest?</td>
</tr>
<tr>
<td>13. What are your revenues per hectare and/or harvest?</td>
</tr>
<tr>
<td><strong>Feed source and handling</strong></td>
</tr>
<tr>
<td>14. Where do you regularly buy product(s) to feed the shrimps?</td>
</tr>
<tr>
<td>14.1 Directly at the producer of the food (name of supplier)</td>
</tr>
<tr>
<td>14.2 Through a middleman (name) who buys from (name)</td>
</tr>
<tr>
<td>14.3 Both</td>
</tr>
<tr>
<td>15. Do you use any probiotics and/or other supplements as well? (name supplier(s) and products)</td>
</tr>
<tr>
<td>16. What are you reasons for selecting this feed supplier(s)?</td>
</tr>
<tr>
<td>16.1 Long-term relationship (trust)</td>
</tr>
<tr>
<td>16.2 family/friendship</td>
</tr>
<tr>
<td>16.3 Price</td>
</tr>
<tr>
<td>16.4 Favourable credit conditions</td>
</tr>
<tr>
<td>16.5 Good quality</td>
</tr>
<tr>
<td>16.6 Other reasons (mention)</td>
</tr>
<tr>
<td>17. Improvements you would like to see in your relationship with the feed supplier in the future?</td>
</tr>
<tr>
<td>17.1 Better price</td>
</tr>
<tr>
<td>17.2 Better credit deals</td>
</tr>
<tr>
<td>17.3 More assistance after the sale (visit farm to ensure maximum feed management)</td>
</tr>
<tr>
<td>17.4 Transport of the feed to the farms</td>
</tr>
<tr>
<td>17.5 Offering of additional probiotics and/or other supplements</td>
</tr>
<tr>
<td>17.6 others (mention)</td>
</tr>
<tr>
<td><strong>Chemicals/ fertilizers /antibiotics (recall system they use - not compatibly with org. prod)</strong></td>
</tr>
<tr>
<td>18. Do you use any chemicals/fertilizers and/or antibiotics in the production?</td>
</tr>
<tr>
<td><strong>Water and soil management</strong></td>
</tr>
<tr>
<td>19. Which system do you apply to exchange water?</td>
</tr>
<tr>
<td>19.1 Tidal,</td>
</tr>
<tr>
<td>19.2 Pumping (ask for amount of water exchanged)</td>
</tr>
<tr>
<td>19.3 Zero Water exchange</td>
</tr>
<tr>
<td>20. Do you use any form of aeration in the ponds?</td>
</tr>
<tr>
<td>21. Do you apply any microorganisms (bacteria) to improve the quality of the water and soil?</td>
</tr>
<tr>
<td>21.1 No</td>
</tr>
<tr>
<td>21.2 If yes - which product(s) and from whom?</td>
</tr>
<tr>
<td>22. Do you measure the quality of the water on a regular basis</td>
</tr>
<tr>
<td>22.1 Salinity</td>
</tr>
<tr>
<td>22.2 Oxygen</td>
</tr>
<tr>
<td>22.3 Ammonia</td>
</tr>
<tr>
<td>22.4 Others (specify)</td>
</tr>
<tr>
<td><strong>Harvesting</strong></td>
</tr>
<tr>
<td>23. Have you made any improvements in the last few years to how you harvest the shrimps?</td>
</tr>
<tr>
<td>23.1 No - I am happy with current process</td>
</tr>
<tr>
<td>23.2 Yes - which initiatives have these been:</td>
</tr>
<tr>
<td>23.3 Reduced the time needed to harvest a crop</td>
</tr>
<tr>
<td>23.4 Technological improvements that decreases the need for manpower</td>
</tr>
<tr>
<td>23.4 Others (specify)</td>
</tr>
<tr>
<td><strong>Certification programs</strong></td>
</tr>
<tr>
<td>24. Are you currently undertaking any certification programs (legislative or voluntarily) in your operation, and who are the respective monitoring organizations? -</td>
</tr>
<tr>
<td>24.1. No</td>
</tr>
<tr>
<td>24.1.1. Are you interested in implementing any of these in the future?</td>
</tr>
<tr>
<td>24.2. Yes - <strong>Note return to in upgrading if they say yes</strong></td>
</tr>
<tr>
<td>24.2.1. ISO standards</td>
</tr>
<tr>
<td>24.2.2. HACCP</td>
</tr>
<tr>
<td>24.2.3. BAP</td>
</tr>
</tbody>
</table>
3. Zooming in on relationship with other key actors in the chain

### Sale of harvest

1. To whom do you regularly sell your shrimps?
   - 1.1 Processing plant
     - 1.1.2 What are the reasons for not considering selling directly to exporters?
       - 1.1.2.1 They do not offer advanced cash payment,
       - 1.1.2.2 I do not have a personal relationship with the exporters
       - 1.1.2.3 Need to send a person to their processing plants (often in Guayaquil) to check the classification of my crop
       - 1.1.2.4 Other reasons (specify)
   - 1.2 Exporter
   - 1.3 Directly to foreign importer
   - 1.4 Other way (specify)

2. Does the buyer have any requirements in regard to your production?
   - 2.1 Certain quality and volume
   - 2.2 That they should have been fed with certain type of food (and supplements)
   - 2.3 The use of certain products for water and soil management
   - 2.4 No allowance of chemicals/artificial fertilizers
   - 2.5 The implementation of international production standards
     - 2.5.1 HACCP
     - 2.5.2 ISO
     - 2.5.3 BAP
     - 2.5.4 Organic
   - 2.6 That you document all activities involved in your operation from buying the PPLs to the harvest of a crop (traceability)
   - 2.7 Others (specify)

3. What are your reasons for selecting this buyer?
   - 3.1 Long-term relationship (trust)
   - 3.2 Family/friendship
   - 3.3 Good Price
   - 3.4 Advance working capital
   - 3.5 Contractor agreements (e.g. crop in return for feed and PLs)
   - 3.6 Other reasons (mention)

4. Improvements you would like to see in your relationship with the buyer in the future?
   - 4.1 Better price
   - 4.2 Better advance payment deals
   - 4.3 Assistance in implementing international quality standards
   - 4.4 Provide more information on market development
   - 4.5 Visits to farms to assist in maximizing production capacity
   - 4.6 Offering of seminars and courses to gain more knowledge on production etc.
   - 4.7 Others (mention)

5. What price do you get from your shrimps?
   - 5.1 Is it the same all year around?
     - 5.1.1 Yes
     - 5.1.2 If no, specify

6. Who is setting this price, how are you informed about it?

7. Do you have other income sources than farming?
   - 7.1 No
   - 7.2 Yes (please specify)
     - 7.2.1 Have you in this case been able to apply the knowledge and experience from the shrimp industry to move into new areas that are not shrimp related?
## Horizontal relationship

8. Have/are you engaged in any cooperative efforts with other shrimp farmers?

8.1 No

8.1.1 Have you considered it?

8.1.2 Have you heard of such examples? *(if yes then move to 8.2)*

8.2 Yes –

8.2.1 If so, what have been the benefits?

8.2.1.1 scale of economies,
8.2.1.2 cutting out the middleman
8.2.1.3 contract with foreign buyer,
8.2.1.4 pooling of technology etc,
8.2.1.5 Co-funded R&D projects etc.
8.2.1.6 Others (specify)

9. In general which problems do you see to engage in cooperatives with other producers?

9.1 Distrust between producers - no sharing of info
9.2 No motivation
9.3. Who should be in charge of governing this co-operative?
9.4. It would be difficult to enforce that all producers follow the same procedures in terms of production
9.5. Others (specify)

## Private organizations (primarily trade)

10. Do you belong to any private trade associations within the shrimp industry directly or other kinds of private associations for businesses?

10.1 No
10.2 Yes

10.2.1 If so has this organization(s) played any role in improving your operation?

10.2.1.1 Access to credits/other ways of financing new investments
10.2.1.2 Assistance in meeting international production standards
10.2.1.3 Offering of courses and other training program
10.2.1.4 others (specify)

## Public organizations (national, regional, local)

11. Has any public organization(s) played any role in improving your operation?

11.1 No
11.2 Yes

11.2.1 If so has this organization(s) played any role in improving your operation?

11.2.1.1 Access to credits/other ways of financing new investments
11.2.1.2 Assistance in meeting international production standards
11.2.1.3 Offering of courses and other training program
11.2.1.4 others (specify)

## Foreign exposure

12. Had/have you had any dealings with foreign companies/persons in regard to any aspects of your operation?

12.1 No
12.2 Yes

12.2.1 If so, how this cooperation made an impact on your business?

12.2.1.1 Access to credits/other ways of financing new investments
12.2.1.2 Assistance in meeting international production standards
12.2.1.3 Offering of courses and other training program
12.2.1.4 Consultancy assistance
12.2.1.5 Others (specify)

## General on the power in the chain

13. Who do you feel in general is driving/governing the chain (most power) and thus gaining the greatest profit? *Show value chain illustration again.*

13.1 processing plants
13.2 exporters
13.3 importers
13.4 others (specify)

14. Please comment further on why you think this is this case
4. Upgrading

In this final section we are looking at which efforts you have made over the last few years to upgrade your shrimp operation.

1. Which kind of upgrading (improvements and innovations) have you implemented in your shrimp production in the last 3-5 years which have **made a significant difference to your business**? That is, I am asking into one or more initiatives which you feel have strengthen your position in the EC shrimp value chain and increased your competitiveness (i.e. better financial position, done something new and different to give added value to your production)

(Major upgrading efforts could be - of which several may take place concurrently):

<table>
<thead>
<tr>
<th>1.1. Improved the production efficiency and capacity through one or more of these:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1.1. Improved the feeding management system</td>
</tr>
<tr>
<td>1.1.2. Improved the water and soil conditions</td>
</tr>
<tr>
<td>1.1.3. Improved the harvesting system</td>
</tr>
<tr>
<td>1.1.4. Financial management system</td>
</tr>
<tr>
<td>1.1.5. New technology (aeration, pumps etc)</td>
</tr>
<tr>
<td>1.1.5. Others (specify)</td>
</tr>
</tbody>
</table>

| 1.2. Invested in organic shrimp production |
| 1.3. Invested in intensive shrimp production |
| 1.4. Acquired additional functions in the EC shrimp industry |
| 1.4.1. Backward integration (input supplier) |
| 1.4.2. Forward integration to also process shrimps |
| 1.4.3. Forward integration to not only process shrimps but also direct export |
| 1.5. Introduce value added products (peeled, butterfly, tall-on, breaded) |
| 1.6. International certification: HACCP, and maybe also ISO, BAP, organic, others |
| 1.7. Formed a partnership with one or more producers/ entered a co-operative |
| 1.8. Entered a contractual agreement with a larger exporter (specify benefits) |

2. Which positive results have you gained from investing in this upgrading?

(of which multiple options exist)

| 2.1. Increased volume capacity in existing production system |
| 2.2. Significant larger volume and maybe additional crop a year - intensive production |
| 2.3. Higher price for the shrimps sold (better quality and larger) |
| 2.4. Lowered production costs |
| 2.5. Access to a premium market (organic or value added) - better price received |
| 2.6. Strengthen position in the chain by adding more functions (i.e. process, export) |
| 2.7. Acquired more knowledge and skills (technical, market, etc) - specify |
| 2.8. Overall more profit |
| 2.9. Others (specify) |
3. Could you explain in more details why you decided to opt for this upgrading (instead of others) and which barriers you had to overcome in able to achieve this upgrading such as finding the necessary financial means to develop the infrastructure, acquiring the skills and know how to manage the upgrading etc?

On the selection of this upgrading mainly
3.1. Sounded like a good new opportunity based on what I had heard/seen
3.2. It was the easiest way for me to upgrade my business (less cost and change)
3.3. The best strategy for the future to ensure my business and strive for profit
3.4 Others (specify)

On the financial aspect mainly (to develop the necessary infrastructure)
3.5. Obtained a loan to invest in this upgrading (from whom)
3.6. Own invested money (savings)
3.7. It became accessible through collective funds/resources (partnership/co-op)

On the learning aspects mainly
3.8. Assistance from external party (ask which one e.g. state, private, NGO)
3.9. Attended seminars/courses
3.10. From other producers (partnership or cooperative)
3.11. Others (specify)
Other aspects
3.12. Specify

4. Do you think that this could be a way forward for other producers as well who feel they are not getting enough benefit from their current position? (i.e. stuck with selling their raw unprocessed shrimps at what appear to be a consistent low market price)

4.1. No - why not?
4.2. Yes - which good advices would you given them then? (probably related to q3 above)

5. Can you think of other forms of upgrading that producers could take to improve their position - which you may be considering as well for the future?
(Note not all forms will be applicable depending on upgrading efforts above)

5.1. Venture into organic production
5.2. Venture into intensive production
5.3. Upgrade to meet international product standards and be certified
5.4. Enter a partnership/co-operative with other producers
5.5. Acquire other functions in the shrimp value chain (suppliers, processing, export)
5.6. Secure a lucrative contractual agreement with a main exporter
5.7. Focus on maximizing production efficiency: feed, water, soil, harvesting, financial management system, strategic planning etc
5.8. Others (specify)

6. To sum up this important section (and the interview) let us examine on a more general level the barriers you face when you are trying to upgrade (improve and innovate) your business and how you believe these could be addressed. We will be looking at factors that are both internal and external to your operation.

Pass sheet (see annex next page)

After having completed the exercise
Now having completed this exercise, let us spend some time discussing the 3 most critical barriers you selected externally and internally.

6. 1. Why did you select these 3 external barriers as the most critical to address at first?
6. 2. How do you think these barriers should be overcome
6. 3. Why did you select these 3 internal barriers as the most critical to address at first?
6.4. How do you think these barriers should be overcome?

5. Closing the survey
Any final words, you would like to state?
Annex to Appendix 3.1 – the sheet with internal and external barriers

EXTERNAL BARRIERS

Below is a list of potential barriers that takes place outside the firm - with this I mean that they have been created by external parties beyond the boundaries of your decision-making (i.e. you can not alone do something about these). If you were asked to select between these barriers in terms of priority, which would you choose to address first so that you could more easily invest and improve your business? Please select the three most critical issues with 1 being to the most critical to address first to 3 being the least critical to address for the moment. Do cite up to 2 additional barriers and rank these if you think I have left some important barriers out.

Please select only one number per barrier and only use it once (e.g. number 3 can only be written 1 time)

<table>
<thead>
<tr>
<th>External barriers</th>
<th>Priority ranking 1-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The current price received for selling the shrimps</td>
<td></td>
</tr>
<tr>
<td>• There is not enough assistance within the industry in terms of offering access to credits, training courses, sharing market and new research information etc</td>
<td></td>
</tr>
<tr>
<td>• There is not enough cooperation between producers in terms of establishing co-operatives, joint research projects, sharing information etc.</td>
<td></td>
</tr>
<tr>
<td>• There is a lack of governmental support in areas such as training, financial assistance etc</td>
<td></td>
</tr>
<tr>
<td>• There is no support from the financial institutions to obtain loans for investments etc.</td>
<td></td>
</tr>
<tr>
<td>• The infrastructure needs to be improved (roads, access to electricity at cheaper rates, telecommunication etc</td>
<td></td>
</tr>
<tr>
<td>• The business and legal system needs to become more stable</td>
<td></td>
</tr>
<tr>
<td>• Other 1 .............................</td>
<td></td>
</tr>
<tr>
<td>• Other 2 .............................</td>
<td></td>
</tr>
</tbody>
</table>
INTERNAL BARRIERS

Below is a list of major barriers that takes place within the firm – with this I mean that they can to a large extent be improved by your own actions. If you were asked to select between these barriers in terms of priority, which would you choose to address first so that you could more easily invest and improve your business? Please select the three most critical issues with 1 being to the most critical to address first to 3 being the least critical to address for the moment Do cite up to 2 additional barriers and rank these if you think I have left some important barriers out.

<table>
<thead>
<tr>
<th>Internal barriers</th>
<th>Priority ranking 1-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Lack of investment in new technologies</td>
<td></td>
</tr>
<tr>
<td>E.g. this could be the lack of not investing in a better feed system, not adding products to treat the water and soil, using old equipment for the harvesting, not buying equipment to measure and monitor the water on a regular basis to more extensive upgrading such as aeration.</td>
<td></td>
</tr>
<tr>
<td>• No strategic planning</td>
<td></td>
</tr>
<tr>
<td>E.g. no long-term planning and no goals are set for how the business can be improved</td>
<td></td>
</tr>
<tr>
<td>• Inefficient production system</td>
<td></td>
</tr>
<tr>
<td>E.g. overfeed, high mortality rate, not enough focus on the water and soil quality, harvesting procedures leads to loss of shrimps and reduced quality</td>
<td></td>
</tr>
<tr>
<td>• Lack of financial management</td>
<td></td>
</tr>
<tr>
<td>E.g. not having a system to keep track of unnecessary expenses or not cash is set aside to be used for future necessary investments etc</td>
<td></td>
</tr>
<tr>
<td>• Lack of marketing learning</td>
<td></td>
</tr>
<tr>
<td>E.g. no efforts is made to stay updated with new market and research developments</td>
<td></td>
</tr>
<tr>
<td>• To little emphasis on human resource development</td>
<td></td>
</tr>
<tr>
<td>E.g. : training of employees, offering job rotations, giving them more responsibility, and other forms of personal development</td>
<td></td>
</tr>
<tr>
<td>• Acceptance of current situation</td>
<td></td>
</tr>
<tr>
<td>E.g. Believe that the situation is largely caused by external parties and lack also the time to do things differently.</td>
<td></td>
</tr>
<tr>
<td>• Other 1 ................................................................</td>
<td></td>
</tr>
<tr>
<td>• Other 2 ................................................................</td>
<td></td>
</tr>
</tbody>
</table>
### Appendix 3.2 – The interview form used for the processing plants

**Version: Survey of processing plants**

1. **Background information**

<table>
<thead>
<tr>
<th>Profile:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Name of person interviewed:</td>
<td></td>
</tr>
<tr>
<td>2. Age:</td>
<td></td>
</tr>
<tr>
<td>3. Gender:</td>
<td></td>
</tr>
<tr>
<td>4. Educational Background:</td>
<td></td>
</tr>
<tr>
<td>5. Name of company:</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of company:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1. Family business</td>
<td></td>
</tr>
<tr>
<td>6.2. Partnership between two farmers or more</td>
<td></td>
</tr>
<tr>
<td>6.3. Larger co-operative between multiple farmers</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Job Position:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Years of experience in the shrimp industry</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>8.</td>
<td></td>
</tr>
</tbody>
</table>

**Contact details:**

<table>
<thead>
<tr>
<th>Fax:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Telephone office and home:</td>
<td></td>
</tr>
<tr>
<td>Cell:</td>
<td></td>
</tr>
<tr>
<td>E-mail:</td>
<td></td>
</tr>
</tbody>
</table>

### 2. Description of operation

<table>
<thead>
<tr>
<th>Description of operation:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>From how many producers do you roughly receive shrimps?</td>
</tr>
<tr>
<td>2.</td>
<td>Any estimation of what you get on a monthly basis / every 3 month? (pounds)</td>
</tr>
<tr>
<td>3.</td>
<td>Are you involved in any value-added processing beyond processing the raw shrimps?</td>
</tr>
<tr>
<td>3.1 Peeled</td>
<td></td>
</tr>
<tr>
<td>3.2 Butterfly</td>
<td></td>
</tr>
<tr>
<td>3.3 Tail-on</td>
<td></td>
</tr>
<tr>
<td>3.4 Breaded</td>
<td></td>
</tr>
<tr>
<td>3.5 Organic</td>
<td></td>
</tr>
<tr>
<td>3.6 Others (specify)</td>
<td></td>
</tr>
</tbody>
</table>

**Certification programs**

<table>
<thead>
<tr>
<th>Certification programs:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4.</td>
<td>Are you currently undertaking any certification programs (legislative or voluntarily) in your operation, and who are the respective monitoring organizations? -</td>
</tr>
<tr>
<td>4.1.No</td>
<td></td>
</tr>
<tr>
<td>4.1.1. Are you interested in implementing any of these in the future?</td>
<td></td>
</tr>
<tr>
<td>4.2.Yes</td>
<td></td>
</tr>
<tr>
<td>4.2.1. ISO standards</td>
<td></td>
</tr>
<tr>
<td>4.2.2. HACCP</td>
<td></td>
</tr>
<tr>
<td>4.2.3. BAP</td>
<td></td>
</tr>
<tr>
<td>4.2.4. Organic</td>
<td></td>
</tr>
<tr>
<td>4.2.5. Others (specify)</td>
<td></td>
</tr>
</tbody>
</table>

### Assistance

<table>
<thead>
<tr>
<th>Assistance:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5.</td>
<td>Have/had you received any assistance from any private or public organizations at some time in your operation to improve it?</td>
</tr>
<tr>
<td>5.1 No</td>
<td></td>
</tr>
<tr>
<td>5.2 Yes</td>
<td></td>
</tr>
<tr>
<td>5.2.1 If so has this organization(s) played any role in improving your operation?</td>
<td></td>
</tr>
<tr>
<td>5.2.1.1 Access to credits/other ways of financing new investments</td>
<td></td>
</tr>
<tr>
<td>5.2.1.2 Assistance in meeting international production standards</td>
<td></td>
</tr>
<tr>
<td>5.2.1.3 Offering of courses and other training program</td>
<td></td>
</tr>
<tr>
<td>5.2.1.4 others (specify)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Employees:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>6.</td>
<td>Do you belong to any trade associations within the shrimp industry?</td>
</tr>
<tr>
<td>6.1. No</td>
<td></td>
</tr>
<tr>
<td>6.2 Yes (specify)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Employees:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7.</td>
<td>How many people do you (roughly) employ on a permanent and temporarily basis?</td>
</tr>
</tbody>
</table>
3. ZOOMING IN ON RELATIONSHIPS WITH OTHER ACTORS IN THE CHAIN

<table>
<thead>
<tr>
<th>Backward in the chain - with the producers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Which aspects are important for you in trading with the producers?</td>
</tr>
<tr>
<td>1.1. Price</td>
</tr>
<tr>
<td>1.2. Volume and quality</td>
</tr>
<tr>
<td>1.3 Personal relationship (trust)</td>
</tr>
<tr>
<td>1.4 That they can document traceability in their production</td>
</tr>
<tr>
<td>1.5 That they meet certain international standards</td>
</tr>
<tr>
<td>1.6 Others (specify)</td>
</tr>
</tbody>
</table>

2. What are the comparative advantages you offer to the producers? Why should they e.g. not choose to sell directly to exporters?

2.1 Better advanced payment deals
2.2 Assistance/good service during harvesting
2.3 Long-term relationships (trust)
2.4 Located in same local area - they can easily get hold of me
2.5 Good price
2.6 Other form of services (specify)

3. Is there in general an intensive competition between the different processing plans or do you all have enough customers?

3.1 No, we all have enough customers
3.2 Yes, the competition is hard
3.2.1 How do you then try to distinguish yourself from the other plants? (specify)

4. Are you considering implementing new services in the future to regain/attract more producers as customers?

4.1 No
4.2 Yes, e.g.
4.2.1 Better advanced payment deals,
4.2.2 Visits to the farms on a regular basis - more assistance
4.2.3 Ongoing information flow
4.2.4 Others (specify)

5. Are there any improvements you would like to see in your relationship with the producers in the future?

5.1 No
5.2 Yes, e.g.
5.2.1 More information on traceability (how they produced the shrimps),
5.2.2 Improved quality etc.
5.2.3 More information before fishing on status etc./
5.2.4 In general more communication
5.2.5 Others (specify)
Forward in the chain - with the exporter

1. To whom do you regularly sell your shrimps?
   1.1 Exporter
   1.2 Others (specify)

2. Does the buyer have any requirements in regard to your production?
   2.1 Certain quality and volume
   2.2 That you maintain control with the shrimps you receive on aspects such as:
      2.2.1 No use of chemicals/artificial fertilizers
      2.2.2 Other aspects (specify)
   2.3 That you had undergone international certification(s)
      2.3.1 HACCP
      2.3.2. ISO
      2.3.3. BAP
      2.3.4. Organic
   2.4 That you document all activities involved in your operation from buying the
      shrimps from the producers to the shipment of the shrimps to the buyer (traceability)
   2.5. Others (specify)

3. What are your reasons for selecting this buyer?
   3.1 Long-term relationship (trust)
   3.2 family/friendship
   3.3 Good Price
   3.4 Advance working capital
   3.5 Contractor agreements
   3.6 Other reasons (mention)

4. Improvements you would like to see in your relationship with the buyer in the future?
   4.1 Better price
   4.2 Better advance payment deals
   4.3 Assistance in implementing international quality standards
   4.4 Provide more information on market development
   4.5 Visits to plant to assist in maximizing production capacity
   4.6 Offering of seminars and courses to gain more knowledge on processing etc.
   4.7 Others (mention)

5. What price do you get from your shrimps?
   5.1 Is it the same all year around?
      5.1.1 Yes
      5.1.2 If no, specify

6. Who is setting this price, how are you informed about it?

7. Are the many buyers to select from or few?

Horizontal relationship

1. Have/are you engaged in any cooperative efforts/partnerships with other processing plants?
   1.1.No
   1.1.1. Have you considered it?
   1.1.2. Have you heard of such examples? If so move to 1.2
   1.2 Yes - If so, what have been the benefits?
      1.2.1 scale of economies,
      1.2.2 cutting out the middleman
      1.2.3 contract with foreign buyer,
      1.2.4 pooling of technology etc,
      1.2.5 Co-funded R&D projects etc.
      1.2.6. Others (specify)

2. In general which problems do you see to engage in cooperatives with other plants?
   2.1 Distrust between plans - no sharing of info
   2.2 No motivation
   2.3. Who should be in charge of governing this co-operative?
   2.4. To enforce that all plants follow the same procedures in terms of production
   2.5 I see them primarily as competitors
   2.6. Others (specify)
General on the power in the chain
1. Who do you feel in general is driving/governing the chain (most power) and thus gaining the greatest profit?
   1.1 producers
   1.2 exporters
   1.3 importers
   1.4 others (specify)

2. Please comment further on why you think this is this case

3. How is the situation in general for the processing plants? Are you satisfied with the situation of the processing plants in the chain or do you think there will be a need to acquire additional functions in the future to maintain a strong and profitable position?
   Note: The US FDA has for a number of yrs required foreign exporters to implement HACCP - now they are considering also demanding this of the secondary processing plants
   3.1 Satisfied
   3.2. Yes, need to e.g.
      3.2.1. Undergo International certifications programs
      3.2.2 Be able to process organic shrimps
      3.2.3. Do further processing at the plant
      3.2.4 Take over other functions in the chain
      3.2.5. Others (specify)

4. Have you heard of any recent cases of other processing plants which have taken any initiatives to improve its position in the chain?

4. Final perspectives

On the smaller producers
1. What would you think the smaller producers could do in order to ensure a more profitable position in the value chain considering that they may feel that they are stuck selling their raw unprocessed shrimps at a consistent low market price?
   1.1. Organize a strike
   1.2. Focus on maximizing production efficiency to gain larger volume: feed, water, soil, harvesting, financial, management system, strategic planning etc
   1.3. Venture into organic production
   1.4. Venture into intensive production
   1.5. Upgrade to meet international product standards and be certified
   1.6. Enter a partnership/co-operative with other producers
   1.7 Acquire other functions in the shrimp value chain (suppliers, processing, export)
   1.8 Secure a lucrative contractual agreement with a main exporter
   1.9 Others (specify)

Overall in the industry
2. As I understand, the EC shrimp industry is currently experiencing growth again with increasing export to key markets. It has been said to have recovered from the devastating white spot disease in the 1999/2000 - so there is reason to be optimistic but it is tough competition with the likes of Brazil, Asia (now also producing large amount of white shrimps) etc. In your opinion, is there a need for the industry to take new measures in the future to maintain competitive and ensure a profitable position for all the actors in the chain?
   2.1. could be need for consolidations in the industry (larger farms)
   2.2. Upgrading to meet international production requirements (certifications) for plants and producers too
   2.3. Much more support from governmental agencies: financial and capability training
   2.4. Launch of more co-founded research initiatives and investments in technology by the industry and government(partnership)
   2.5. In general de-commodify the EC shrimp product to address over supply and low market prices. So increasingly pay attention to other factors than the current market price and product efficiency by focusing on how to differentiate the offered shrimp product(s) from other country suppliers
**Appendix 3.3 – The interview form used for the exporters**

Version: Survey of exporters

1. Background information

<table>
<thead>
<tr>
<th>Profile:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Name of person interviewed:</td>
</tr>
<tr>
<td>2. Age:</td>
</tr>
<tr>
<td>3. Gender</td>
</tr>
<tr>
<td>4. Educational Background:</td>
</tr>
<tr>
<td>5. Name of company:</td>
</tr>
<tr>
<td>6. Type of company:</td>
</tr>
<tr>
<td>6.1. Family business</td>
</tr>
<tr>
<td>6.2. Partnership between two farmers or more</td>
</tr>
<tr>
<td>6.3. Larger co-operative between multiple farmers</td>
</tr>
<tr>
<td>6.4 S.A. -</td>
</tr>
<tr>
<td>6.5 Others (specify)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>7. Job Position:</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. Years of experience in the shrimp industry</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contact details:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fax:</td>
</tr>
<tr>
<td>Telephone office and home:</td>
</tr>
<tr>
<td>Cell:</td>
</tr>
<tr>
<td>E-mail:</td>
</tr>
</tbody>
</table>

2. Description of operation

<table>
<thead>
<tr>
<th>Number of shrimp farms (check what can be identified beforehand)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How many shrimp farms do you have?</td>
</tr>
<tr>
<td>2. How many hectares?</td>
</tr>
<tr>
<td>3. What is your annual production?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of production system</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. What kind of production system do you have?</td>
</tr>
<tr>
<td>3.1 Semi-intensive</td>
</tr>
<tr>
<td>3.2 Intensive <em>(Note: Do check if they fulfil requirements)</em></td>
</tr>
<tr>
<td>3.3 Organic</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5. How many PLs per M2?</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. How many people (roughly) do you employ on a permanent and temporarily basis?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Certification programs (check what can be identified beforehand)</th>
</tr>
</thead>
<tbody>
<tr>
<td>x. Are you currently undertaking any certification programs (legislative or voluntarily) in your operation, and who are the respective monitoring organizations? -</td>
</tr>
<tr>
<td>x.1. No</td>
</tr>
<tr>
<td>x.1.1. Are you interested in implementing any of these in the future?</td>
</tr>
<tr>
<td>x.2. Yes <em>Note return to in upgrading if they say yes</em></td>
</tr>
<tr>
<td>x.2.1. ISO standards</td>
</tr>
<tr>
<td>x.2.2. HACCP</td>
</tr>
<tr>
<td>x.2.3. BAP</td>
</tr>
<tr>
<td>x.2.4. Organic</td>
</tr>
<tr>
<td>x.2.5. Others (specify)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Assistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Have/had you received any assistance from any private or public organizations at some stage in your operation to improve it? <em>(Note - including working with any foreign company/NGO)</em></td>
</tr>
<tr>
<td>5.1 No</td>
</tr>
</tbody>
</table>
5.2 Yes
5.2.1 If so has this organization(s) played any role in improving your operation?
5.2.1.1 Access to credits/other ways of financing new investments
5.2.1.2 Assistance in meeting international production standards
5.2.1.3 Offering of courses and other training programs
5.2.1.4 Others (specify)

6. Do you belong to any trade associations within the shrimp industry?
6.1. No
6.2 Yes (specify)

On the processing of shrimp

7. How much do the shrimp you produce at your own farms make up roughly in % of the total shrimp you receive for processing?

Note if they do not source externally continue to section 3

8. In regard to the rest of the shrimps, do you receive them primarily from processing plants or farmers? Could you give any figures on this?

Clues: number of plants and farmers, or percentage relationship between the two.

9. Which value-added processing are you undertaken beyond exporting the raw (frozen) shrimps?

Clues: Peeled, butterfly, tail-on, breaded, and organic (if this can not be found out beforehand)

3. Zooming in on the relationship

On the export of shrimp

1. How much shrimp do you export on an annual basis?

2. What are the main markets for you? Volume (if possible) and (%)
   2.1 USA
   2.2 Italy
   2.3 France
   2.4 Spain
   2.5 Germany
   2.6 Others (specify)

3. Can you tell more about how you export to these markets?
   3.1 Through an agent/wholesaler who sells it onwards to retailers, restaurants etc
   3.2 Directly through retailers, restaurant chains, etc
   3.3 Other way (specify)

4. Does the buyer have any requirements in regard to your production?
   4.1 Certain quality and volume
   4.2 That you maintain control with the shrimps you receive on aspects such as:
      4.2.1 No use of chemicals/artificial fertilizers
      4.2.2 Other aspects (specify)
   4.3 That you had undergone international certification(s)
      4.3.1 HACCP
      4.3.2 ISO
      4.3.3 BAP
      4.3.4 Organic
   4.4 That you document all activities involved in your operation from buying the shrimps from the producers/plants to the shipment of the shrimps to the buyer (traceability)
   4.5. Others (specify)

5. What are your reasons for selecting this buyer?
   5.1 Long-term relationship (trust) -
   5.2 Good service - we share much information on market development, legislative requirements etc
   5.3 Family/friendship
   5.4 Good Price
   5.5 Advance working capital
   5.6 Contractor agreements
5.7 Other reasons (mention)

6. Improvements you would like to see in your relationship with the buyer in the future?
   6.1 Better price
   6.2 Better advance payment deals
   6.3 Assistance in implementing international quality standards
   6.4 Provide more information on market development
   6.5 More involvement in NPD by co-sponsoring research activities
   6.6 Co-sharing for marketing campaigns to differentiate Ecuadorian shrimps
   6.7 Offering of seminars and courses to gain more knowledge on processing etc.
   6.8 Others (mention)

7. What price do you get from your shrimps?
   7.1 Is it the same all year around?
      7.1.1 Yes
      7.1.2 If no, specify

8. Who is setting this price (You?), how are you informed/decide about it?

9. Are the many buyers to select from or few when you want to export the shrimps?

### Relationship with processing plants

1. How is your relationship with the processing plants? Would you characterize it as being one that is mainly concerned with price (the transfer between them and you) or are you also involved in other ways in their operation?
   1.1 We share market information,
   1.2 We assist them in meeting certain requirements/Certifications: ISO, HACCP etc
   1.3 We provide regular training and seminars for them to attend
   1.4 We can offer access to banks loans by being affiliated with us
   1.5 We can offer a long-term contractual agreement
   1.6 Others (specify)

2. Are there some improvements you would like to see in your relationship with them in the future?
   **Note:** Well if the FDA decides that secondary foreign processing plants must also meet HACCP
   2.1 Lower selling price
   2.2 Implementation of international production standards (certifications): ISO, HACCP
   2.3 They need to keep more systematic control of the shrimps they receive (traceability)
   2.4 We would like them to do further processing of the shrimps
   2.5 In general be more communicative
   Others (specify)

3. In general do you think that it is good that the processing plants are also there and can take some of the “traffic” from the producers - i.e. easier to deal with fewer processing plants than a larger number of producers?

### Relationship with producers

1. Which aspects are important for you in trading with the producers?
   1.1 Price
   1.2 Volume and quality
   1.3 Personal relationship (trust)
   1.4 That they can document traceability in their production (no use of antibiotics etc)
   1.5 That they meet certain international standards (certifications)
   1.6 Others (specify)

2. Which incentives do you offer to producers who decide to sell directly to you rather than selling to a processing plant (or other exporters for that matter):
   2.1 They get a good price for the shrimps (better than processing plants?)
   2.2 We offer them a contractual agreement which include additional benefits e.g.
      2.2.1 (discounted) PIs and shrimp food and/or other supplements (probiotics, bacterias)
      2.2.2 Regular visits to farms by our technical specialists etc to assist in improving their production efficiency
2.2.3. We advice them on how they can meet international certification demands (ISO, HACCP, others (BAP, organic etc)

2.2.4. We have negotiated on their behalf the opportunity to receive credits at a bank

2.2.5. They are invited to attend regular training and seminars with news on the industry

2.2.5. Others (specify)

2.3 Others (specify)

3. Note - if they do not offer any contractual agreements ask whether they have considered this and mention if some of the benefits above would be considered?

4. I have heard from a number of smaller producers that they feel it is difficult to invest in upgrading when they face a consistent low selling price that over the last years has been going further down. Given that there seems to be an ever growing consumer demand for shrimp, they find this situation difficult to understand. Can you explain why this is the case in more details?

Horizontal relationship

1. Have/are you engaged in any cooperative efforts/partnerships with other exporters?
   1.1. No (note could be large enough on its own - economies of scale)
      1.1.1. Have you considered it?
      1.1.2. Have you heard of such examples? If so move to 1.2
   1.2 Yes - If so, what have been the benefits?
      1.2.1 scale of economies,
      1.2.2 cutting out the middleman
      1.2.3 contract with foreign buyer,
      1.2.4 pooling of technology etc,
      1.2.5 Co-funded R&D projects etc.
      1.2.6. Others (specify)

2. In general which problems do you see to engage in cooperatives with other exporters?
   2.1 Distrust between exporters - no sharing of info
   2.2 No motivation
   2.3. Who should be in charge of governing this co-operative?
   2.4. To enforce that all plants follow the same procedures in terms of production
   2.5 I see them primarily as competitors
   2.6. Others (specify)

General on the power in the chain

1. Who do you feel in general is driving/governing the chain (most power) and thus gaining the greatest profit? Show value chain illustration again.
   1.1 producers
   1.2 processing plants
   1.3 exporters
   1.4 importers
   1.4 others (specify)

2. Please comment further on why you think this is this case

3. How is the situation in general for the exporters? Are you satisfied with the situation in the chain or do you think there will be a need to initiative new activities in the future to maintain a strong and profitable position?
   3.1 Satisfied
   3.2. Yes, need to e.g.
      3.2.1 Undergo (further) International certifications programs
      3.2.2 Intensify production at own farms/plants to gain more volume
      3.2.3. More diversification in products: organic, value-added etc
      3.2.4 Enter contractual agreements with producers to source more shrimp
      3.2.5 Enter more export markets (multichannels)
      3.2.5. Others (specify)

4. Have you heard of any recent cases of other exporters which have taken any initiatives to improve its position in the chain?
4. Final perspectives

On the smaller producers
1. What would you advice the smaller producers to do in order to ensure a more profitable position in the value chain considering that they may feel that they are stuck selling their raw unprocessed shrimps at a consistent low market price?

1.1 Focus on maximizing production efficiency to gain larger volume: feed, water, soil, harvesting, financial management system, strategic planning etc
1.2. Venture into organic production
1.3. Venture into intensive production
1.4. Upgrade to meet international product standards and be certified
1.5. Enter a partnership/co-operative with other producers
1.6 Acquire other functions in the shrimp value chain (suppliers, processing, export)
1.7 Secure a lucrative contractual agreement with a main exporter
1.8 Others (specify)

2. Have you considered taking a larger role in ensuring that more knowledge is spread and applied to the whole chain? E.g. by stepping in and assisting the smaller producers in upgrading their production facilities (could e.g. be through a contractual agreement etc).

Overall in the industry
3. As I understand, the EC shrimp industry is currently experiencing growth again with increasing export to key markets. It has been said to have recovered from the devastating white spot disease in the 1999/2000 - so there is reason to be optimistic but it is tough competition with the likes of Brazil, Asia (now also producing large amount of white shrimps) etc. In your opinion, is there a need for the industry to take new measures in the future to maintain competitive and ensure a profitable position for all the actors in the chain?

3.1. could be need for consolidations in the industry (larger farms)
3.2. Upgrading to meet international production requirements (certifications) for plants and producers to ensure a general upgrading in the industry
3.3. In general more co-operation between the producers, processing plants, exporters etc
3.4. Much more support from governmental agencies: financial and capability training
3.5. Launch of more co-founded research initiatives and investments in technology by the industry and government(partnership)
3.6. In general de-commodify the EC shrimp product to address over supply and low market prices. So increasingly pay attention to other factors than the current market price and product efficiency by focusing on how to differentiate the offered shrimp product(s) from other country suppliers through marketing campaigns, product quality etc
3.7. Others (specify)

5. Closing the survey

Any final words, you would like to state?
## Appendix 3.4 – An overview of the sampling population

### Table 3.1. Sample population

<table>
<thead>
<tr>
<th>Name</th>
<th>Age</th>
<th>Sex</th>
<th>Education</th>
<th>Position</th>
<th>Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Producers</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Julio Jimenez (A)*</td>
<td>41</td>
<td>M</td>
<td>Business Management</td>
<td>Manager</td>
<td>14</td>
</tr>
<tr>
<td>2 Luis Romero (B)</td>
<td>36</td>
<td>M</td>
<td>Business Management</td>
<td>Owner Manager</td>
<td>20</td>
</tr>
<tr>
<td>3 Romel Coronel** (C)</td>
<td>42</td>
<td>M</td>
<td>Business Management</td>
<td>President</td>
<td>15</td>
</tr>
<tr>
<td>4 Juan Vicente Ortega (D)</td>
<td>45</td>
<td>M</td>
<td>Aquaculture Biologist</td>
<td>Biologist</td>
<td>20</td>
</tr>
<tr>
<td>5 Jose Zambrano (E)</td>
<td>25</td>
<td>M</td>
<td>Aquaculture Biologist</td>
<td>Manager</td>
<td>4</td>
</tr>
<tr>
<td>6 Luis Aguirre (F)</td>
<td>31</td>
<td>M</td>
<td>Aquaculture Biologist</td>
<td>Production Manager</td>
<td>15</td>
</tr>
<tr>
<td>7 Vinicio Chavez (G)</td>
<td>35</td>
<td>M</td>
<td>High School</td>
<td>Owner Manager</td>
<td>15</td>
</tr>
<tr>
<td>8 Eduardo Noblecilla (H)</td>
<td>25</td>
<td>M</td>
<td>Agronomy Economist</td>
<td>Owner Manager</td>
<td>6</td>
</tr>
<tr>
<td>9 Luis Gonzaga (I)</td>
<td>49</td>
<td>M</td>
<td>High School</td>
<td>Owner Manager</td>
<td>14</td>
</tr>
<tr>
<td>10 Vinicio Diaz (J)</td>
<td>28</td>
<td>M</td>
<td>Agronomy Economist</td>
<td>Manager</td>
<td>6</td>
</tr>
<tr>
<td><strong>Processing Factories</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 Manuel Valdiviezo</td>
<td>36</td>
<td>M</td>
<td>High school</td>
<td>Owner</td>
<td>15</td>
</tr>
<tr>
<td>(Grunalmar Packing Factory)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 Martha Aguirre</td>
<td>29</td>
<td>F</td>
<td>Accountant (daughter of owner)</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>(Grucam Packing Factory)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Exporters</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13 Rodolfo Vintimilla</td>
<td>50</td>
<td>M</td>
<td>Marine Biologist</td>
<td>CEO</td>
<td>20</td>
</tr>
<tr>
<td>Oceaneaxa - (his own office in the US)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>Experts</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14 Guillermo Trisollini</td>
<td></td>
<td></td>
<td></td>
<td>Operations manager</td>
<td></td>
</tr>
<tr>
<td>Shrimp export company</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grupo Domingo Rodas, Tumbes, Peru</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><a href="mailto:domiropa@terra.com.pe">domiropa@terra.com.pe</a>; <a href="mailto:gtrisollini55@yahoo.es">gtrisollini55@yahoo.es</a></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 Tulio Torres, Tumbes, Peru</td>
<td></td>
<td></td>
<td></td>
<td>CEO</td>
<td></td>
</tr>
<tr>
<td><a href="http://fis.com/acquatumbs/indexi.html">http://fis.com/acquatumbs/indexi.html</a></td>
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<tr>
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<td></td>
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<tr>
<td>shrimp export firm: <a href="mailto:tulio_torresgi@hotmail.com">tulio_torresgi@hotmail.com</a></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>16 Jose Barrezueta,</td>
<td></td>
<td></td>
<td></td>
<td>President</td>
<td></td>
</tr>
<tr>
<td>la Cámara de Productores de Camarón de la Provincia de El Oro</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shrimp producers association of El Oro</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17 Sandra Feijoo</td>
<td></td>
<td></td>
<td></td>
<td>Project Coordinator</td>
<td></td>
</tr>
<tr>
<td>Camara Nacional de Acuaculta</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(National shrimp association)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(<a href="mailto:machala@cna-ecuador.com">machala@cna-ecuador.com</a>)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 Lianne Zoetewegj</td>
<td></td>
<td></td>
<td></td>
<td>Project manager</td>
<td></td>
</tr>
<tr>
<td>Asociación de Pequeños Productores de Banano El Guabo</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Banana co-operative in El Guabo</td>
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<td><a href="http://www.asoguabo.com.ec">www.asoguabo.com.ec</a></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19 Luis Chiriboga</td>
<td></td>
<td></td>
<td></td>
<td>Professor, and part-time shrimp farmer</td>
<td></td>
</tr>
<tr>
<td>Universidad Técnica de Machala (UTM)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 Bruce Banyai</td>
<td></td>
<td></td>
<td></td>
<td>Business developer</td>
<td></td>
</tr>
<tr>
<td>Novozymes Biologicals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* The producers had this ID i.e. A, B, C etc during the interviews. They will also be presented this way in Chapter five.

** A partnership – the majority of the farms are family businesses.
Appendices for chapter 4 – The Ecuadorian shrimp industry & Global drivers

Appendix 4.1 - More insight on the exporters

Table 4.1. Largest shrimp companies in Ecuador

<table>
<thead>
<tr>
<th>Company</th>
<th>Established</th>
<th>Production Details</th>
<th>Export Details</th>
<th>Competitive Advantage</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENACA</td>
<td>1962</td>
<td>141 shrimp farms, 15,000 hectares, 6000 tonnes of shrimp, 15,000 of tilapia.</td>
<td>35% to US, 20% to Italy, 19% to UK, 15% to Spain.</td>
<td>Low production costs.</td>
</tr>
<tr>
<td>SONGA</td>
<td>2000 people</td>
<td>9000 tonnes per year, 60% to EU, 40% to US.</td>
<td>China in the next 5 years.</td>
<td>low production costs.</td>
</tr>
<tr>
<td>Promarisco</td>
<td>1982</td>
<td>1224 tonnes of shrimp, 3447 tonnes of tilapia.</td>
<td>62% of profits from value added products, highest export rate.</td>
<td>Integrated business.</td>
</tr>
<tr>
<td>Santa Priscilla</td>
<td>27 years</td>
<td>8,500 hectares of shrimp, 2,400 hectares of tilapia, 1,200 hectares of mango.</td>
<td>50 stable clients abroad.</td>
<td>“Tropical Aquaculture”.</td>
</tr>
</tbody>
</table>

Source: adapted from AquaCulture (2007c)
Appendix 4.2 – Global legislative developments

Table 4.2. HACCP Principles for shrimp exporters

1. Conduct a hazard analysis to identify hazards likely to occur
2. Identify the critical control point (CCP) to determine a point, step or procedure in the production process where controls can be applied to prevent, eliminate or reduce food safety hazards likely to occur,
3. Establish critical limits for each CCP by setting maximum or minimum parameters of factors, such as cooking time and temperature, that must be controlled at each CCP to prevent, eliminate or reduce the hazard to an acceptable level,
4. Monitor each CCP to ensure the process is under control at each CCP,
5. Establish corrective actions taken when monitoring shows deviation from established critical limits,
6. Establish verification procedures to ensure HACCP plan accomplish intended goal of safe product production and,
7. Establish record-keeping and documentation procedures such as the HACCP plan, CCP monitoring, corrective actions and verification activities.

Source: Kulkarni (2005)

Table 4.3. Traceability aspects for shrimp farming

<table>
<thead>
<tr>
<th>1. Number of ponds</th>
<th>5. Date of harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Date and density of PLS place in the growing out pond facilities</td>
<td>6. Quantity harvested</td>
</tr>
<tr>
<td>3. Feed used</td>
<td>7. Codification of batch</td>
</tr>
<tr>
<td>4. The use of medicaments in the farm</td>
<td>8. Codification of transport</td>
</tr>
</tbody>
</table>

Source: Mariduena (2006)

Table 4.4. Traceability aspects that are of interest to the retailer and consumer

| 1. The genetics of the fish: to ensure consumers in the EU that products are not from GM stock | 6. Even if limited processing, the facility must meet HACCP standards, as set out the recommended book from Eurofish |
| 2. The ingredients of the food feed to the fish: undesirable to have genetically modified ingredients | 7. Environmental monitoring: organic products do have niche markets, often paying in excess 20% of normal prices, |
| 3. The use of medicaments in the farm: need to be approved in the proposed market | 8. Ethical and management traceability |
| 4. The use of finishing feeds | |
| 5. The method of harvesting | |

Source: Dallimore and Weiroski (2004)

Table 4.5. BAP Farm Standards

<table>
<thead>
<tr>
<th>community:</th>
<th>environment:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. property rights and regulatory compliance</td>
<td>1. mangrove conservation and biodiversity protection</td>
</tr>
<tr>
<td>2. community relations</td>
<td>2. effluent management</td>
</tr>
<tr>
<td>3. worker safety and employee relations</td>
<td>3. sediment management</td>
</tr>
<tr>
<td></td>
<td>4. soil/water conservation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Food safety</th>
<th>Traceability</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. drug and chemical management</td>
<td>1. record keeping requirement</td>
</tr>
<tr>
<td>2. microbial sanitation</td>
<td></td>
</tr>
<tr>
<td>3. harvest and transport</td>
<td></td>
</tr>
</tbody>
</table>

Source: Global Aquaculture Alliance (2007)

---

87 GM: genetically modified
Appendices for chapter 5 – Exploring the situation of the smaller producers

Appendix 5.1. – The assessment of the smaller producers

This appendix provides information on the performance of the small shrimp producers of Santa Rosa – El Oro on their operational practices, linkages and upgrading efforts. The findings are based on a small exploratory study.

Shrimp operation

1. Background information on the farms

Table 5.1. Size of the farms

<table>
<thead>
<tr>
<th>Number of shrimp farms</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>Sum</th>
<th>Average size*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size in hectares</td>
<td>925</td>
<td>16</td>
<td>120</td>
<td>60</td>
<td>30</td>
<td>16</td>
<td>45</td>
<td>64</td>
<td>30</td>
<td>10</td>
<td>48</td>
<td></td>
</tr>
</tbody>
</table>

* excluding the large producer.

Table 5.2. Type of production system

<table>
<thead>
<tr>
<th>Type of Production system</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extensive - Traditional</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Semi-intensive</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Intensive</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
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</tbody>
</table>

Table 5.3. Source of PLs and intensity of PLs stocking

<table>
<thead>
<tr>
<th>Options</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>At a lab directly</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Own Lab</td>
<td>X</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>How many PLs per HA?</td>
<td>80.000</td>
<td>60.000</td>
<td>150.000</td>
<td>100.000</td>
<td>100.000</td>
<td>100.000</td>
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<td>100.000</td>
<td>100.000</td>
<td>100.000</td>
<td>10</td>
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</tbody>
</table>

Table 5.4. Production cycles

<table>
<thead>
<tr>
<th>Production cycle</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>Sum</th>
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<tbody>
<tr>
<td>3 times per year</td>
<td>X</td>
<td>X</td>
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<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
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<td>6</td>
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<tr>
<td>4 times per year</td>
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<td>3</td>
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<td>5-6 times per year</td>
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<td></td>
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<td>1</td>
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</tbody>
</table>
Multiple options

### Table 5.5. Various production indications

<table>
<thead>
<tr>
<th>Production measures</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production in pounds per Hectares</td>
<td>1500</td>
<td>1000</td>
<td>1800</td>
<td>1700</td>
<td>1500</td>
<td>2000</td>
<td>1800</td>
<td>1500</td>
<td>1500</td>
<td>1000</td>
<td>1500</td>
</tr>
<tr>
<td>Mortality rate per harvest</td>
<td>50%</td>
<td>30%</td>
<td>30%</td>
<td>30%</td>
<td>40%</td>
<td>50%</td>
<td>50%</td>
<td>40%</td>
<td>50%</td>
<td>40%</td>
<td>42%</td>
</tr>
<tr>
<td>Average size in grams</td>
<td>15</td>
<td>12</td>
<td>16</td>
<td>14</td>
<td>10</td>
<td>17</td>
<td>15</td>
<td>12</td>
<td>14</td>
<td>12</td>
<td>14 g</td>
</tr>
</tbody>
</table>

3. Other farm management practices

### Table 5.6. Feed source

<table>
<thead>
<tr>
<th>Feed source</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directly at the producer of feed</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>4</td>
</tr>
<tr>
<td>Through a middleman</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>6</td>
</tr>
</tbody>
</table>

### Table 5.7. Water and soil aspects

<table>
<thead>
<tr>
<th>Production issues</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemicals/fertilizers/antibiotics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you use any chemicals/fertilizers and/or antibiotics in the production?</td>
<td>Yes</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Probiotics</td>
<td>Yes</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water measurement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you measure the quality of the water on a regular basis</td>
<td>No</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Exchange of water</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tidal</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pumping</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Do you use any form of aeration in the ponds?</td>
<td>Yes</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>10</td>
</tr>
<tr>
<td>No</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>10</td>
</tr>
</tbody>
</table>

4. Involvement in certification programs

### Table 5.8. Enrolment in certification programs

<table>
<thead>
<tr>
<th>Enrolment in certification programs</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>SUM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>No</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>9</td>
</tr>
<tr>
<td>Are you interested in implementing any of these in the future?</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>
Linkages

1. Vertical relationships - forward in the chain

Note: the results on the backward linkages with input suppliers can be obtained by contacting the author. They have not been presented here as those actors forward in the chain are more influential in governing the chain and deciding on the scope of upgrading options available to the producers.

Selection of sales channels and requirements

Table 5.9. Selection of sales channels and requirements

<table>
<thead>
<tr>
<th>Relationship with buyer</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sales channels</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Processing plants</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Exporters</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

*What are the reasons for not considering selling directly to exporters? (for those who sell to the processing plants)*

<table>
<thead>
<tr>
<th>Reason</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>They do not offer advanced cash payment</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>I do not have a personal relationship with the exporters</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Need to send a person to their processing plants (often in Guayaquil) to check the classification of my crop</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Other reasons (specify)</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

*Reason for selection of their buyer*

<table>
<thead>
<tr>
<th>Reason</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long-term relationship (trust)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Family/friendship</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Good Price</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Advance working capital</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Other reasons (mention)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

*Requirements desired*

<table>
<thead>
<tr>
<th>Requirement</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>If yes - mention some</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Certain quality and volume</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>No allowance of chemicals/artificial fertilizers</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>10</td>
</tr>
</tbody>
</table>
Improvements they would like to see with the buyers in the future

Table 5.10. Improvements desired in relationship with buyers

<table>
<thead>
<tr>
<th>Improvements</th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
<th>e</th>
<th>f</th>
<th>g</th>
<th>h</th>
<th>i</th>
<th>j</th>
<th>Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better price</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>10</td>
</tr>
<tr>
<td>Better advance payment deals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Assistance in implementing international quality standards</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provide more information on market development</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visits to farms to assist in maximizing production capacity</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Offering of seminars and courses to gain more knowledge on production, etc</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others (mention)</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>No, I am satisfied</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

Multiple options

2. Horizontal Relationship

Table 5.11. Co-operative efforts with other shrimp producers

<table>
<thead>
<tr>
<th>Co-operative initiatives</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>If so, what have been the benefits?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Scale of economies,</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>- Cutting out the middleman</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>- Purchase of inputs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Upgrading strategies

1. Types of upgrading

Table 5.12. Upgrading initiatives in the last three to five years

<table>
<thead>
<tr>
<th>Types of upgrading</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Process upgrading</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>22</td>
</tr>
<tr>
<td>feeding system</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Water and soil conditions</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Harvesting system</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>X**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Organic production</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Major investment in new technology</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X*</td>
<td>1</td>
</tr>
<tr>
<td>Intensive production</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Certification</td>
<td>X***</td>
<td>X***</td>
<td>X***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td><strong>Product upgrading</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Organic production</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Introduced value added products</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td><strong>Functional upgrading</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Backward in chain (Input supplier)</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Forward in the chain: Processing</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Forward in chain: Exporting</td>
<td>X***</td>
<td>X****</td>
<td>X****</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td><strong>Interchain upgrading</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>0</td>
</tr>
</tbody>
</table>

* This is a future project to install pumps which can bring more oxygen to the ponds – but he will not venture into intensive production.
** This producer is using small growing out facilities as they allow him to harvest 4-5 times per year to a lower cost. This is a relatively low cost form of innovation which other producers could adopt if this knowledge was shared.
*** Producer A is in the process of converting the operation to organic. Producers D & F are eager to be certified to meet traceability demands.
**** These producers have attempted exporting but only for a limited period. D and F are, however, still involved as processors.
## 2. Main external and internal barriers

Table 5.13. Ranking of main external and internal barrier faced by the producers

<table>
<thead>
<tr>
<th>External barriers</th>
<th>Votes*</th>
<th>Internal barriers</th>
<th>Votes*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The current price received for selling the shrimps</td>
<td>7</td>
<td>1. Inefficient production systems</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>E.g. overfeed, high mortality rates, not enough focus on the water and soil quality, harvesting procedures leads to loss of shrimps and reduced quality</td>
<td>3</td>
</tr>
<tr>
<td>2. There is no support from the financial institutions</td>
<td>3</td>
<td>2. Lack of financial management</td>
<td></td>
</tr>
<tr>
<td>E.g., to obtain loans for investments etc.</td>
<td></td>
<td>E.g. not having a system to keep track of unnecessary expenses or no cash is set aside to be used for future necessary investments etc</td>
<td>3</td>
</tr>
<tr>
<td>2. There is not enough cooperation between producers</td>
<td>3</td>
<td>2. Not enough emphasis on human resource development</td>
<td></td>
</tr>
<tr>
<td>E.g. in terms of establishing cooperatives, joint research projects, sharing information etc.</td>
<td></td>
<td>E.g.: training of employees, offering job rotations, giving them more responsibility, and other forms of personal development.</td>
<td>3</td>
</tr>
<tr>
<td>3. There is a lack of governmental support</td>
<td>5</td>
<td>3. Lack of investment in new technologies</td>
<td></td>
</tr>
<tr>
<td>E.g. in areas such as training, financial assistance etc.</td>
<td></td>
<td>E.g. this could be the lack of not investing in a better feed system, not adding products to treat the water and soil, using old equipment for the harvesting, not buying equipment to measure and monitor the water on a regular basis to more extensive upgrading such as aeration.</td>
<td>3</td>
</tr>
<tr>
<td>4. There is not enough assistance within the industry</td>
<td>3</td>
<td>4. Lack of marketing learning</td>
<td></td>
</tr>
<tr>
<td>E.g. in terms of offering access to credits, training courses, sharing market and new research information etc.</td>
<td></td>
<td>E.g. no efforts are made to stay updated with new market and research developments.</td>
<td>2</td>
</tr>
<tr>
<td>5. The infrastructure needs to be improved</td>
<td>-</td>
<td>4. No strategic planning</td>
<td></td>
</tr>
<tr>
<td>E.g. (roads, access to electricity at cheaper rates, telecommunication etc)</td>
<td></td>
<td>E.g. no long term planning and no goals are set for how the business can be improved.</td>
<td>2</td>
</tr>
<tr>
<td>5. The business and legal system needs to become more stable</td>
<td>-</td>
<td>5. Acceptance of current situation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>E.g. Believe that the situation is largely caused by external parties and lack also the motivation to do things differently.</td>
<td>1</td>
</tr>
</tbody>
</table>

* The number of producers who selected a certain factor as number one, two etc. A certain factor can be mentioned more times than another one despite being lower ranked. On external barriers for example “the lack of governmental support was mentioned as the third most important external factor to address by five people whereas fewer respondents agreed on the second most important factor. What is important is to stress that this is not a mathematical exercise but rather just a simple exercise to get a feel for possible main barriers.
# Appendices for chapter 6 – Discussion

## Appendix 6.1 – An overview of the best performing producers

Table 6.1. An overview of the best performing producers in the sample

<table>
<thead>
<tr>
<th>Producers</th>
<th>Facts</th>
<th>Noteworthy forms of upgrading</th>
</tr>
</thead>
</table>
| A         | 41 years of age with 14 years of experience in the industry  
           | Holds a business management degree and has previously been employed in the banking sector  
           | He is also a caretaker of other farms and he therefore manages a total of 925 HA which is well above the average of 46 HA in this sample | Process: Improved harvesting system that reduced costs.  
           | Product: In the process of converting part of the area into organic production.  
           | Functional: Input supplier of feed and probiotics to other producers |
| C         | 42 years of age with 15 years of experience in the industry  
           | Holds a business management degree  
           | His farm is 120 HA which is also well above the average. Of 46 HA  
           | He is the only producer in the sample who is currently involved in a co-operative as a president (limited to joint purchasing)  
           | He is one of three producers who belong to the local shrimp producer association of El Oro | Functional: He has experienced with exporting for a limited time. |
| D         | 45 years of age with 20 years of experience in the industry  
           | Educated as a biologist  
           | His farm is 60 HA which is just above the average of 46 HA  
           | He has family ties who work as shrimp processors  
           | He is eager to be prepared to meet the demands of traceability by asking for a certification if possible.  
           | He is one of three producers who belong to the local shrimp producer association of El Oro. He is also a member of the Association of Aquaculture Engineers of El Oro | Functional: Processing and has some experience with exporting. |
| F         | 31 years of age with 15 years of experience in the industry  
           | Educated as a biologist  
           | His farm is 32 HA which is below the average of 46 HA  
           | He has family ties who work as shrimp processors  
           | He is eager to be prepared to meet the demands of traceability by asking for a certification if possible.  
           | He is one of three producers who belong to the local shrimp producer association of El Oro.  
           | He has been involved in a small co-operative (family-oriented) | Process: investing in aeration system to improve water and soil conditions and improved harvesting system which reduces costs.  
           | Functional: Processing and has some experience with exporting. |

Source: Own development
Appendix 6.2 – Cases of Latin American co-operatives

Case one - “Corporación de Productores de Camarón del Ecuador”

Introduction

The leader and project mentor on this initiative to establish a shrimp co-operative in El Oro is Luis Chiriboga who is a small shrimp producer. He also holds other positions as professor of International Marketing at a local university in Machala and as an operation manager of company which provides ice bags for the shrimp industry. Tired of the current situation affecting small shrimp producer, Chiriboga has published an influential article\(^{88}\) in a local newspaper where he outlines the obstacles currently faced by smaller producers and how forming a co-operative is an appropriate organisational form which can defend their interest and improve their current position in the industry. Additional information has been gathered through a personal interview\(^{89}\).

The proposal

Chiriboga (2007a) proposes the creation of a cooperative for shrimp export with the objective to export directly to the foreign markets. In order to that, he estimates that the cooperative would need around 200 small and medium-sized shrimp producers to join it bringing in a total of around 10,000 hectares of production. To begin the process, each member would contribute with $5,000 so that a collective capital of $1 million could be raised. The co-operative would with time acquire its own processing plant that would be used for conventional and value added production. A feed factory and a lab to analysis the shrimps could also be considered. A number of facilities would be needed to meet the necessary standards demanded by the international market. Chiriboga suggests that the cooperative would need a board of directors where it would be desirable to have members from the co-operative but also independent participants.

\(^{88}\) Chiriboga (2007a)
\(^{89}\) Chriboga (2007b)
Moving the project forward

After receiving initial positive feedback to the proposal, the project was presented in 2007 to CORPEI\(^\text{90}\), which approved the project and granted funds to initiate a feasibility study. At the end of 2007, the “Corporación de Productores de Camarón del Ecuador” was finally established with 99 members from El Oro, Naranjal, Balao and Tenguel. The corporation is managed by Luis Chiriboga together with a Board of Directors consisting of shrimp producers. The co-operative is now in the process of obtaining export permits, and hire sufficient personal, etc. Initially, the co-operative would begin exporting through the co-packing system leveraging on two existing processing plant. Overall the situation is looking promising for this co-operative and if it continues to grow successfully it will attract more producers. In this regard, it is interesting to observe that a similar effort is being pushed by the local producers’ association in El Oro. This is reviewed below.

Case two – The efforts by the Producers’ association of El Oro

**Introduction**

This is a project driven by the association of shrimp producers in El Oro. It is primarily supported by large shrimp producers unlike the smaller ones which seem to be the target group for Chiriboga’s project. An interview\(^\text{91}\) was held with the president of the association, Jose Barrezueta to learn more about the project.

**The proposal**

The proposal is being launched to encourage producers to form an association and through this co-operation allocate funds to establish a processing plant in the province of El Oro. As previously mentioned most shrimps are today being transported to the Guayas province for further processing. This association would then also approach foreign buyers directly in order to export. It is estimated the plant would cost between US$ 1.5 – 2 million and would process around 60.000 pounds daily.

\(^{90}\) CORPEI as mentioned in chapter four is an institution created to promote and assists exporters.

\(^{91}\) Interview held in Machala in May 2007
Initiatives being launched to support the proposal

Jose Barrezueta (2007) informed that his association is working on getting governmental support for this project which would enable the producers to access credits to finance some of the activities. In addition, the association is working on launching a branding strategy to differentiate the shrimps from other competitors. He also mentioned that it may be possible to introduce a fair trade light label, which is environmental responsible without necessary going all the way and being organic. Having reviewed two initiatives in the shrimp industry, the third case examines an existing banana co-operative which offers a number of useful learning points.

Case three - Asociación de Pequeños Productores El Guabo (APPBG)

Introduction

This is the case of a successful cooperative operation in the southern part of Ecuador. The APPBG is a co-operative for small and medium sized producers who grow and trade banana. The association has more than 10 years of experience and began its activities with 14 producers from the El Guabo area in the province of El Oro. Today, the co-operative has 450 members from El Oro and other provinces. The majority is still conventional producers but an increasing number are turning to organic production (around 140). They are organised into 15 sell-governing groups which deals with practical day to day management issues. On a more strategic level, the co-operative has an office which is staffed with administrative and technical personnel. The co-operative trades its bananas to a number of countries in Europe and to the USA. The following information is from an interview with a representative from the organisation, Lianne Zoetewejj (2007), who has been a general manager of APPBG since 2004.

The influential role of the Dutch development corporation

The Dutch development corporation has played a critical role in the developing of the co-operative. Zoetewejj mentions that the Dutch Development Cooperation has been working with the APPBG since 1997. The corporation got interest in working with the co-operative as

92 There was talk of this at a conference in Brussels in April 2007 which examined how smaller and medium sized producers from developing countries could sell directly to the EC.
93 http://asoguabo.com.ec
94 Interview held in El Guabo in May 2007.
it saw an opportunity to include a fair trade perspective as one of the main founding pillars in
the organizational set up. The fair trade concept means among other things that the co-
operative needs to follow certain international certification standards and use some of its
income on social and environmental programs for the workers and their families. Zoetewejj
explains that foreign experts have played an important role in developing the management
structure of the co-operative. The roles of these professionals are 1) to insert APPBG into the
global markets, 2) to guarantee a professional way of managing APPBG and making sure that
the international markets view them in a positive light “as small producers with equal quality,
equal commitments, and volume.” These are key points, because banana producers do not
know how this works abroad. On the internal restructuring, Zoetewejj notes that it has been
important to bring in a number of professionals to work in the management team e.g. quality
inspectors from multinational banana companies. She has also found it important to leverage
regularly on some of the founding producers to explain to newcomers the underlying rationale
for joining a co-operative.

**Advantages developed by the APPBG**

The professional and ethic dimension of the co-operative has secured a number of European
importers who have been very loyal to the co-operative since the beginning. This stability
ensures that the cooperative can continue to grow and set aside resources for further
development. The concrete benefits for the producers are 1) a fixed prices most of the year, 2)
a guaranteed market, and 3) secure contractual agreements. In the future the co-operative
would like to increase it share of bananas which are sold directly to major supermarkets to
further increase it gains from trading in the main international markets.

**Small producers versus large producers in APPBG**

Zoetewejj explains that the larger producers know that the smaller ones play an important role
in marketing their products in the end markets (fair trade image). The smaller producers on
the other hand know that they need the larger producers to gain critical volume mass. Both
parties therefore know that they need each others. In cases of disputes, the management board
has been able to solve any issues.
Learning Lessons from the APPBG

The learning lessons of the APPBG are listed below in table 6.1.

Table 6.1. Learning lessons from the APPBG co-operative

<table>
<thead>
<tr>
<th>Learning Lesson</th>
</tr>
</thead>
<tbody>
<tr>
<td>11. Strong leadership and vision, somebody should stand up, and make sure that the rest are following him/her.</td>
</tr>
<tr>
<td>12. Make a strategic plan and decide on the forms of production that should be pursued - e.g. organic production or other forms of fair trade with a social perspective can maybe more easily attract the interest of foreign organisations.</td>
</tr>
<tr>
<td>13. Acknowledge that it may be necessary to bring in external experts to obtain the required knowledge.</td>
</tr>
<tr>
<td>14. Hire professionals, who normally know the export business, hiring of specific experts e.g. organic advisers.</td>
</tr>
<tr>
<td>15. Hire independent management team as soon as possible. Consider bringing foreign experts from e.g. development agencies and NGOs.</td>
</tr>
<tr>
<td>16. Have a share vision: e.g. &quot;we are going to export directly .........&quot;</td>
</tr>
<tr>
<td>17. Communication: this takes a lot of time. It is important to explain the reasons (with detailed information) of doing things to producers, so that they can really understand why they need to fulfill with requirements. Producers need to see some value in doing these things. E.g. why they need to document traceability in their production. In this case she reminds them of cases where it has been important for the authorities to find the source of the contamination.</td>
</tr>
<tr>
<td>18. Organize them, to make producers feel that &quot;we are here together, we fight together&quot;.</td>
</tr>
<tr>
<td>19. Establish loyal and long lasting contacts abroad to ensure stability in trading.</td>
</tr>
<tr>
<td>20. Ask for help from national export organizations like CORPEI.</td>
</tr>
</tbody>
</table>


These learning points can certainly be useful for the shrimp co-operatives that are currently being planned. APPBG is a positive example of how small and medium sized producers can improve their competitive position and be able to export directly. Key elements in this achievement have been the use of a fair trade concept using quality processes and the integration of foreign experts in the operation of the co-operative. There is more information on the learning points of Latin American co-operatives in case four below.
Case fourth – The learning lessons from Rural Group Enterprises

Additional inspiration can be found in a recent report by Intercorporation, the Swizz development agency which have examined a number of rural group enterprises (RGEs) in Latin America. Ten critical success factors have been identified categorised in four interrelated main themes which are illustrated below in figure 6.1.

![Diagram](image)

**Figure 6.1. Ten critical success factors of operating a rural group enterprise**

Source: Adapted from Camacho *et al.* (2007).

It can be seen that in Figure 6.1 above that it lists a number of the issues which are also mentioned in the case of APPBG, and which this study has also discussed such as the need for product differentiation, value added production, a strategic management orientation, and upgrading (innovation). It is beyond the scope to go more into details with themes such as building social capital but a point should be made to examine this concept and other themes of relevance for managing a co-operative in more details if this strategic option gains interest among practitioners and/or academics.

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95 A RGE is an association made principally of small rural producers. It has a professional management structure and operates on a commercial basis. One of the main differences to a private enterprise is that it also has a social agenda.
Appendices for chapter 7 – Conclusion

Appendix 7.1. – Swot analysis

Table 7.1. A Swot analysis of the situation of the smaller shrimp producers

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>On the resilience and experience of smaller Ecuadorian shrimp producers</strong></td>
<td></td>
</tr>
<tr>
<td>• Many years of experience in producing shrimps.</td>
<td></td>
</tr>
<tr>
<td>• They are resilient and have managed previous downfalls in the industry (e.g. the white spot crisis).</td>
<td></td>
</tr>
<tr>
<td>• They have found ways to operate in a weak institutional environment.</td>
<td></td>
</tr>
<tr>
<td>• Some shrimp producers have also managed to improve their competitive position through upgrading. The indications are, however, that they remain a minority.</td>
<td><strong>On upgrading options which could be pursued by the majority at this point in time</strong></td>
</tr>
<tr>
<td>• Join a co-operative to gain economies of scale and scope.</td>
<td></td>
</tr>
<tr>
<td>• Improve their production efficiency by studying relevant sources through memberships and/or participation at seminars of relevant private and public institutions. The Internet is also a good source for this.</td>
<td></td>
</tr>
<tr>
<td>• Improve their managerial capabilities. Small steps such as hiring a financial accountant could be of assistance to identify areas where saving could be made by planning ahead: feed, transport etc.</td>
<td></td>
</tr>
</tbody>
</table>

**Weaknesses**

<table>
<thead>
<tr>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>On the management capabilities &amp; readiness to move</strong></td>
</tr>
<tr>
<td>• They lack a business culture: shrimp producers are family businesses which operate in traditional ways without the use of financial instruments and</td>
</tr>
</tbody>
</table>

**On external hindrances that must be met by others than the shrimp producers**

<table>
<thead>
<tr>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>• On the external front, the government could play a more proactive role in addressing some of the issues which have been highlighted namely:</td>
</tr>
<tr>
<td>o Difficulties of accessing credits - the solution may be to offer a specialised line of credits.</td>
</tr>
<tr>
<td>o Restrictions of property rights - ease these</td>
</tr>
<tr>
<td>o Whether there is a lack of competition in the chain (a cartel) - examine this</td>
</tr>
</tbody>
</table>

**On what a national branding campaign could do for the industry**

<table>
<thead>
<tr>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>• On a national level, a branding campaign to differentiate Ecuadorian shrimp could be of assistance but only if initiatives are taken to live up to the marketing promises.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The producers’ existence is at risk if they cannot improve their situation and also live up the</td>
</tr>
</tbody>
</table>
other management functions. 
- They are not proactive enough - they often accept their conditions rather than try to change them.  

On their lack of knowledge on new global developments in the global shrimp industry  
- The shrimp producers are in general unaware of new development in the shrimp industry that could potentially improve their operation (e.g. aquacultural practices) or enable them to be prepare for changes (e.g. traceability requirements). They do not seek out this information nor do they receive much information from other participants in the chain.

On their role and affiliation with others participants and institutions in the chain  
- They are loosely integrated in the chain with little interactions with the other participants apart from discussing price and quality when it is time to harvest every three months.  
- They are also not very actively engaged in any of the private trade associations in the industry. They do not think these associations represent their interests as small producers.

On their limited negotiation influence (power)  
- The producers have little influence on the decisions taken in the chain including their selling price.  
- The power is concentrated in the hands of a few larger exporters which use this to their advantage.

On their upgrading efforts  
- The majority of the smaller producers seem unable to move beyond simple process upgrading that will do little to improve their competitive position.  
- The current situation leaves them with little to none working capital to invest in upgrading that could potentially have an impact on their operations.

international requirements. They risk disappearing in large numbers or being bought up or integrated in the operation of large exporters.  

On the global legislative requirements which are influencing all participants in the chain  
- The Ecuadorian shrimp industry has now truly turned globally - and the impacts are not only felt at the exporting level. All participants must now meet a number of requirements.  
- There is a risk that the smaller producers may not be able to meet these requirements without assistance from other participants: private or public institutions and/or exporters.  
- It is likely that the chain will turn from a market-based governance form to a modular type and in the future maybe even quasi-hierarchical.

On the increasing global competition  
- The Ecuadorian shrimp industry is facing tough competition from other Latin American producers (e.g. Brazil) and Asian producers (e.g. Thailand, Vietnam, and China). They are today also offering the same type of the shrimps that used to be native only to Ecuador.  
- Ecuador will need to work on creating an effective branding campaign to differentiate itself from the competitors - This includes the introduction of more value-added production. In other words, there is a need to de-commodify Ecuadorian shrimps.

Source: Own development
References

A


B


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Barrezueta, J. (2007) Interview with Jose Barrezueta, President of Camara de Productores de Camaron de El Oro in Machala-El Oro, Ecuador.


C

Centro de Acualcultura e Investigaciones Marinas (CENAIM) See www.cenaim.espol.edu.ec


Chiriboga, L. (2007b) Interview with this expert in Santa Rosa- El Oro, Ecuador.


D


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M


N


O


P


T


Trisollini, G. (2007). Interview with Guillermo Trisollini, Production Manager of Domingo Rodas Group in Tumbes - Peru

U


V


W


