Quality management in the Pangasius export supply chain in Vietnam

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4 Research Methodology

4.1 Introduction

This chapter presents the conceptual framework used for the study. The conceptual model gives a clear picture of the structure of the study and shows how the theory is linked to practice. Subsequently, we present the methods used for the study: case study and questionnaire survey. We conclude in this chapter that a combination of qualitative and quantitative approaches provides a comprehensive understanding of how smallholders can be involved in the fish export supply chain. The chapter encompasses the choice of the research design, the methods of data analysis, and credibility of the results.

4.2 Fish quality management and smallholders: conceptual framework for the study

The literature review shows that food quality management is crucial to understanding the position of smallholders in the Vietnamese Pangasius industry. The global value chain perspective helps elucidate the role of business relationships and the role of the formal and informal institutional environment in managing food quality and safety among chain actors. The government is also important here. Our conceptual framework integrates all of these factors.

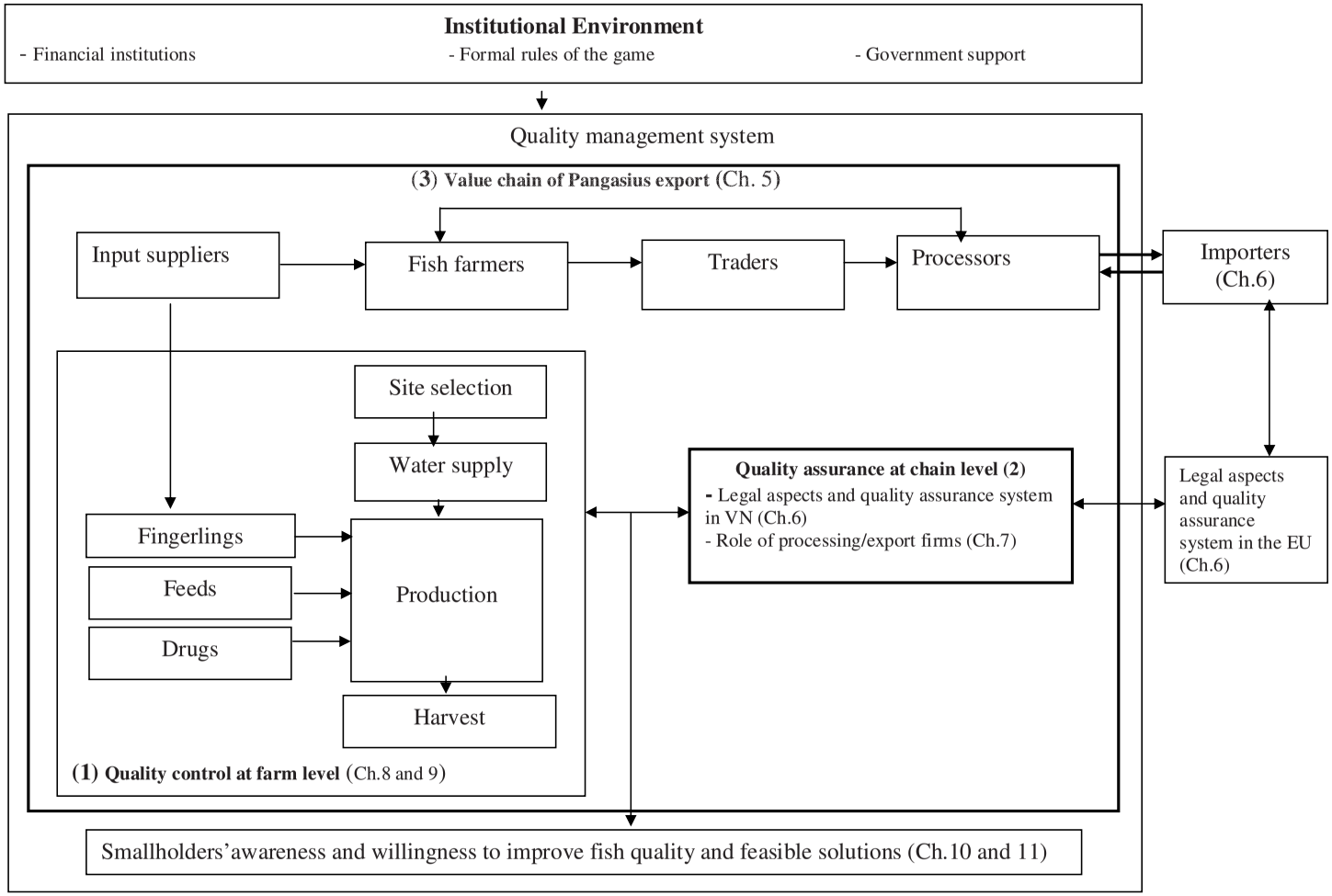
In this chapter, quality management is studied from a chain perspective. Several studies that address quality management at the chain level focus on governance structures and business relationships (Lazzarini, 2001; Hobbs, 2001; Han et al., 2006), while others focus on the use of proper technologies in primary processes and quality assurance (Henson and Loader 2001; Unnevehr, 2000; Dolan and Humphrey, 2000). Both approaches address relevant questions but may fail to address crucial aspects of channel design if these are beyond the scope of the chosen partial approach. For example, the quality standards in the export markets require the introduction of new technologies. However, to make these changes successful, the quality management system and the prevailing governance structures coordinating business relationships must be fine-tuned simultaneously. The conceptual framework is depicted in figure 4.1. The elements in the framework correspond with the chapters. The research focuses on the smallholders, but to understand their position, it is necessary to describe the way quality management is

executed in the chain. The dimensions of the research are quality control, quality assurance, and business relationships between the chain actors.

Chapter 5 gives a general description of the actors in the chain. Chapters 6 and 7 focus on quality assurance. Quality assurance refers to the procedures and organization necessary to ensure that the product fulfills customer expectations. It is important to understand the working of the quality assurance systems. The systems that are applied are described and investigated. The application of the different quality assurance tools is examined: Safety Quality Food (SQF), Hazard Assurance Critical Control Points (HACCP), and Better Management Practices (BMPs). The role of the processing firm in the quality management system is crucial–not only in ensuring the quality of the final product, but also in determining the requirements for fish suppliers. The small farmers and other actors in the chain must fulfill the quality requirements as they are formulated by the processing companies to make the chain operational. Chapter 6 describes the requirements of the European Union and the importers and the way NAVIQAVED deals with these requirements. Chapter 7 describes how the processing companies deal with these requirements and pays special attention to how these requirements affect the relationship with the farmers.

Chapters 8 and 9 focus on the actual practices with respect to technology and quality control at the farm level. This part of the study is based on case research and survey 1 (see section 4.3.3 for a more detailed description). In this part, we further study how the small farmers access and apply the required technologies for Pangasius quality control. The main primary activities must be controlled in each Pangasius production cycle. These activities include site selection, water supply, production (fingerlings and fingerling stocking, feeds and feeding, fish disease prevention and treatment), and harvesting (Reilly and Kaferstein, 1997). The discussion is organized around these elements of the Pangasius culture cycle. The role of the public and the private sector in disseminating proper technologies is taken care of. Financial requirements are also included, as financial constraints are expected to restrict access to proper technologies. Chapter 8 focuses on farming system practices of Pangasius production in general. Chapter 9 focuses on fish disease prevention and treatment for Pangasius production at the farm level. From the farming practices analyzed in chapters 8 and 9, chapter 10 presents research that investigates the feasibility of changes toward advanced farming practices. The research is based on another survey; survey 2 (see section 4.3.3 for a more detailed description). The research findings will help us to understand the possible role of collective action and vertical coordination in the relationship between small-scale farmers and other chain actors. They will also help us identify possible solutions through co-operation and supply contracts (chapter 11).

Figure 4.1 Conceptual framework for the study of fish quality management

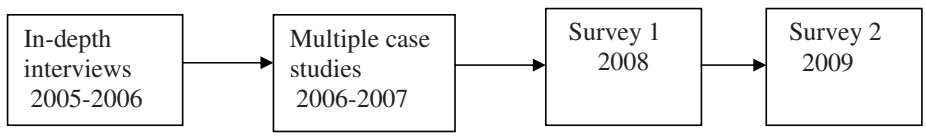


Source: Developed by the author

4.3 Research design

This section describes the research design that has been developed to answer the research questions regarding the involvement of smallholders in fish export supply chains in Vietnam. The research design is the framework for the study, providing useful guidelines for collection and analysis of data. Our research design is problem-solving in nature. To collect the necessary data, both qualitative (case study) and quantitative (survey) research methods were utilized. The research design is divided into four stages (figure 4.2)

Figure 4.2 Four stages of research design



Source: Developed by the author

The research began with a study (in-depth interviews) that included stakeholders in the Pangasius industry. The results of this study showed the general picture of the Pangasius value chain and provided us insight into the issues we should focus on later.

After having evaluated the study results, we developed the conceptual framework (see figure 4.1). The second stage of the project involved a multi-case study of smallholder fish farming systems. The multi-case study confirmed the conceptual framework. It led to deeper insight in the critical issues of smallholder practice in export supply chains. Next, the third stage of the research consisted of a survey that would acquire more quantitative results on these issues. This stage focused on fish disease prevention and disease treatment and fish quality management in general, at the farm level. The results of this survey showed the differences in farming practices between traditional and more advanced production systems. The results of the first three research stages allowed us to draw conclusions about the changes in smallholder practices required to sustain a position in export supply chains. This finding led to the fourth stage of research-the stage aimed at evaluating farmers' awareness of necessary changes and farmers' willingness to work on these changes.

4.3.1 In-depth interviews

The first stage of the study was devoted to a description and appraisal of the different stakeholders in the Pangasius industry (November 2005–January 2006). In-depth interviews with knowledgeable people and experts of the fish

industry were carried out to gather information about the major issues in the supply chain. The author interviewed actors in the Pangasius supply chain including hatcheries, fingerling traders, fish farmers, traders, retailers, processing/export companies, fishery associations, and researchers. Furthermore, institutions in Can Tho City, in the province of An Giang, and in the province of Dong Thap were approached as these regions supply the most cultured Pangasius in the MRD. In addition, many documents related to fish culture ranging from operations at primary production and processing to distribution, were studied.

These interviews were based on convenience sampling meaning that selected persons were likely to give useful information. We should clarify that the resulting sample should not be regarded as a representative cross section of the population. People working in the Pangasius sector on a daily basis were approached. Interviews were semi-structured and often involved group discussions that included fishery experts, local authorities in MRD, fish farmers, fishery associations and managers of fish companies. These discussions deliberately took place in public meeting places in the respective provinces or villages, giving them an open and accessible character. During these discussions, names of informants who played an important role in the Pangasius industry were suggested by other participants and extension agents. Hence, during the course of these visits, extensive discussions were held with all key individuals about the major problems, types of governance interventions, and the areas of focus in the Pangasius value chain. Consequently, we became acquainted with the Pangasius industry and the chain actors. In the process, we were also introduced to the community and the grassroots farmers. The stage resulted in a report describing the Pangasius value chain in Vietnam (Khoi, 2007). The report concluded that the involvement of small-scale farmers and the required quality assurance mechanisms are pressing issues for policy makers and processing firms. As a result of this pilot study, we decided to focus on these issues, in particular on the combination of primary processes, quality control and quality assurance, and business relationships at the farm level.

4.3.2 The multiple-case study

The purpose of the multiple-case study is to replicate findings across cases. It enables the researcher to explore differences within and between cases. Because comparisons are drawn, it is crucial that the cases are chosen carefully so that the researcher can predict similar results across cases, or predict contrasting results based on a theory (Yin, 2003). Case-study research is especially useful in investigating real-life situations and providing rich insights into a research object (Miles and Huberman, 1994). This method allowed us to “investigate a contemporary phenomenon within its real-life context, as the boundaries between the two were not clearly defined” (Yin, 2003). The case-study method

enabled us to gain access to various data sources, and to cope with an extensive variety of materials, such as documents, artefacts, transcripts from interviews, and observations. Moreover, case-study research is a suitable method for gaining insights into areas in which little research has been conducted. Our case studies focused on Pangasius quality control practices in different small-scale farms. The purpose of our case studies was to investigate to what extent the findings support the conjectured relationship of primary processes and quality control at the farm level, as well as quality assurance and business relationships.

The second stage was conducted between December 2006 and June 2007. We used multiple-case studies for Pangasius production at the farm level as our data collection strategy. A small group of six farmers was followed for a period of six months-the length of one production cycle. Every two weeks, the farmers were interviewed to discuss their primary activities at the farm. During this period, a larger group of 20 farmers was interviewed twice in order to cross-check the information. These farmers were living in An Giang, Dong Thap, or Cantho provinces with long experiences in the Pangasius industry. A structured questionnaire had been previously prepared (appendix 4.1), addressing primary activities, the technologies applied, and the business relationships with suppliers, buyers, and fish quality management. We regularly visited the specific farms (six farms) during the field research periods. Issues that emerged from observation during these visits were used to guide interviews and discussions with fish farmers. The case protocol was used to investigate the elements of the theoretical framework. Each interview lasted on average one hour. The transcripts of the digitally recorded interviews were analyzed for each farm.

The selection of case farms was conducted systematically on the basis of a number of criteria: the research objectives, accessibility of the farm, farming system, and farming experiences. One of the problems of case study research is obtaining access to information (Yin, 2003). To deal with this problem, the farms had to be willing to cooperate fully.

To cover diversity in farming systems, we tried to find at least one case for each of the three Pangasius culture systems. In addition, we intended to cover some of the diversities that exist in Pangasius farming. This effort resulted in a sample of six farms. Three different culture systems were represented: one pond case, applying the SQF 1000^{CM} model system (quality-control system at the farm level); one cage case; and one organic net-fence enclosure case. And three cases representing different organizational systems were used: one pond case with a vertically organized coordination (the owner is a member of APPU[9]), one pond

[9] APPU: Agifish Pure Pangasius Union

case with a horizontally organized coordination (the owner is a member of a fishery association), and one conventional pond case (the owner works independently, not belonging to any fisheries association). Moreover, we also interviewed 20 farmers who cultured Pangasius in the same area, allowing us to verify whether the information we received from the multiple cases covered all of the diversities that exist in Pangasius farming. These 20 farmers are classified into three types: pond (10), cage (5), and net-fence enclosure (5) farming (see details in section 5.2.3)

The multiple-case studies resulted in a paper describing the Pangasius farming system practices in the MRD (Khoi et al., 2008). These case studies revealed that fish disease treatment at the farm level constituted a major challenge for meeting the export quality standards. In particular, requirements regarding the use of chemicals and antibiotics are key. Some practices are controlled through testing; other practices or credence attributes[10] are difficult to control with current governance instruments.

4.3.3 Survey 1

The next stage (*third stage*) of this research involved a survey to confirm the results of the multiple-case studies.

The survey (survey 1) took place between April 2008 and July 2008 and was based on personal interviews. The multiple case-studies provided a wealth of information about the concepts used in this study. A major part of the questionnaire was designed to collect data on fish disease treatment and prevention, and quality management at the farm level. We preferred to conduct personal interviews for several reasons. First, we were planning to collect data on production technology, quality control, and business relations at the farm level. In total the questionnaire consisted of eight pages of questions (appendix 4.2), and it took about one to two hours to complete, so the telephone was not an appropriate means for collecting data. The Internet also held limitations due to the fact that farmers had limited access to computers. Second, farmers are not experienced with academic research. Thus, they are not accustomed to filling in questionnaires and would need some guidance-especially because Pangasius farmers have low education levels and may have trouble understanding the questionnaire correctly. Finally, personal interviews enabled us the possibility to collect data in a friendly manner and to guide the respondents in instances that required further explanation. The personal interviews ended with a small gift to thank participants for their efforts and enhance the possibility of revisiting later (to validate the results).

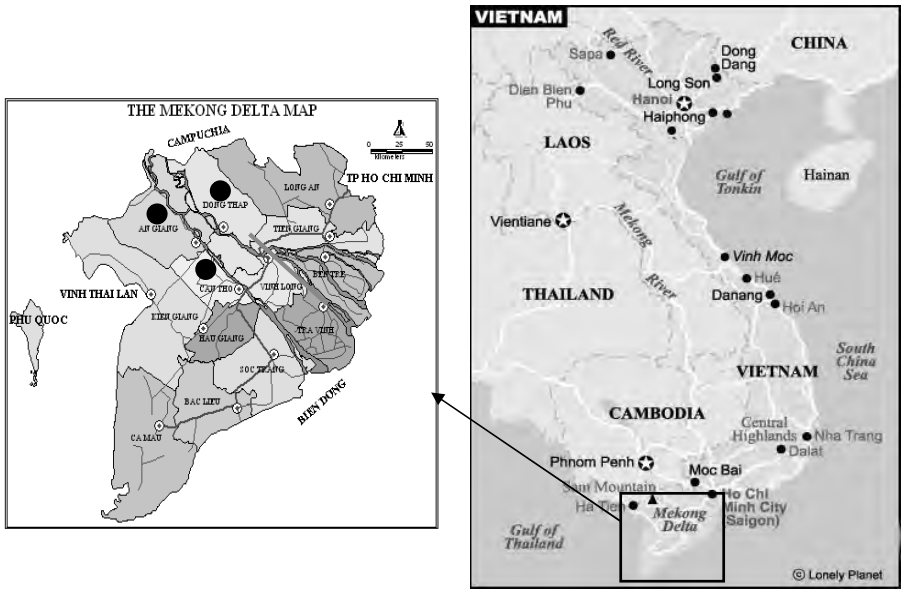
[10] Credence attributes are product characteristics that cannot be detected by the buyers under ordinary circumstances, neither before nor after the buying process

The questionnaire was designed based on the literature and the results of the multiple-case study. Most of the constructs are measured by multiple-item scales. Question construction and wording began with a review of the literature with special focus on generating a pool of items that tap the core elements (production techniques, quality assurance, and business relationships) in our conceptual framework (see figure 4.1). Two Vietnamese researchers who specialize in seafood business relationships assessed the content validity of the items. They checked the equivalence of the translation from the English version of the questionnaire to Vietnamese, especially the questions related to production technologies and fish diseases. Any differences that emerged were reconciled by the two researchers.

The questionnaire was first filled out by ten fish farmers as pre-test interviews. These interviewees were asked to complete the questionnaires and raise questions where problems and ambiguities arose with wording and questionnaire layout. This assessment yielded useful suggestions that improved the construct validity of the measurement instruments. Finalized questionnaires were used to conduct the survey for fish farmers in the research areas.

The quality of the data may be influenced by the interviewers' attitude and the understanding of the questions. To minimize this problem, we carefully trained our fieldwork assistants to ensure they understood the research purpose and the questions in the questionnaire. All interviews were conducted at the farm. The data were collected in the selected areas in the MRD: An Giang, Can Tho, and Dong Thap provinces, where the most cultured Pangasius from the MRD come from. A brief location of Pangasius farmers is shown in figure 4.3.

Figure 4.3: Map of MRD with three different studied locations in Vietnam



Source: Adapted picture from Lonely Planet

Within each province, we selected farmers who have different access to markets. In total, 200 Pangasius farmers in three provinces were interviewed. The interviewees were divided into three groups. Group 1 included individual pond farmers (100 respondents); group 2 contained fishery association farmers (70 respondents), and group 3 comprised APPU farmers (30 respondents) (see Table 4.1 for further details). APPU members are not small-scale farmers, but we used this measure as the benchmark system of fish quality management to compare with other groups. Because the survey focused on fish disease treatment and quality management at the farm level, the supporting services relating to fish disease treatment and quality issues needed to be covered as well. Therefore, we also consulted 33 key actors. These key actors were asked about their responsibilities and tasks in the Pangasius quality management practices as well about aspects in relation to fish diseases treatment and technological and managerial functions from support organizations and local departments. This information is described in detail in chapter 5.

Table 4.1 Interview schedule and tools

Time	Interviewee	No. of sample	Interview Method
Apr 7 – Apr 13, 2008	- An Giang fishery department - Dong Thap fishery department - Can Tho fishery department	3	Open questions and focus group discussion
Apr 21 - May 18, 2008	- NAFIQAVED (1) - VASEP (1) - District fishery departments (6)	8	Open questions
May 19 – June 15, 2008	- Hatchery/nursery farms (10) - Feed suppliers (2) - Veterinary drug suppliers (2) - Processing firms (5) - Fishery association (3) - Extension services (2)	22	Open questions
June 16 – July 13, 2008	- Individual pond farmers (100 samples include: An Giang (40), Dong Thap (30) and Cantho (30) - Fishery association farmers (70) - APPU farmers (30)	200	Structured questionnaire

Source: Developed by the author

This data collection stage involved individual interviews, focus group interviews, on-site observation, and causal discussions with farmers. During the time of field work, I attended some conferences that related to the Pangasius industry organized in the MRD, enabling me to meet with many Pangasius chain actors and related institutions. Hence, it was a great opportunity for me to get updates on issues related to the research and to get opportunities for post-interview meetings with some of the respondents at the workshops or at occasional gatherings.

4.3.4 Survey 2

The results of the first three research stages enabled us to draw conclusions on changes in smallholder practices that are required to have a sustainable position in export supply chains. These findings led to the fourth stage of research, which aims at evaluating farmers' awareness of necessary changes, and farmers' willingness to work on these changes. This *fourth stage* of the research was also a quantitative study. The survey (survey 2) was conducted between August 2009 and October 2009. A major part of the questionnaire was designed to collect data on the farmers' awareness and willingness to improve their farming practices toward the advanced production system. The survey questions are found in appendix 4.3. The chosen farmers were not contacted in advance, so upon arriving at the site, we asked permission to conduct the survey and, once

granted, we sat with the farmer for the following one-and-a-half to two hours asking the questions, clarifying answers, and recording answers.
For the fourth stage of this research, the data collection involved conducting a survey of 100 farmers (50 independent farmers and 50 FA members). The Chau Phu district of An Giang province was selected for performing research for several reasons. First, Chau Phu district was one of the early adopters of Pangasius pond aquaculture. Hence, this district has a large number of Pangasius ponds, many of which have been in use for over 15 years. Choosing an established area like Chau Phu gave us an opportunity to evaluate potentially more established and stabilized farming practices. Second, Chau Phu was chosen because of the high percentage of small farmers in the area. Smallholder farmers are a major focus of this investigation. In the Chau Phu district, Vinh Thanh Trung and Thanh My Tay communes, which house both traditional farmers and FA members, were selected.
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Being a Vietnamese national acquainted with the Vietnamese environment and culture was an advantage during data collection. In this position it was easier for me to approach the various authorities and firms than it would have been if I had chosen another country. Moreover, as I am a native speaker of the local language, it was easy for me to communicate with the interviewees and translate the interview questions. I conducted the interviews myself in the local language, as did my colleagues. This language advantage helped minimize the social desirability bias and to avoid any misunderstanding and misinterpretation of the concepts used in the interview questionnaire.

4.4 Conclusion

The main objective of this chapter is to present the conceptual framework and research methodology of this thesis. It begins with the discussion of conceptual framework. This framework explains the position of the smallholders in the value chain and consists of three key dimensions namely quality control at the farm level, quality assurance at the chain level, and business relationships between farmers and their chain partners. Subsequently, the chapter is related to research design. The research design comprises a case study followed by survey method. The data collection procedure includes an in-depth interview with knowledgeable people, preparation of an open-ended questionnaire, and reference to secondary data.