Quality management in the Pangasius export supply chain in Vietnam

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1 Introduction

1.1 Exploration of the Problem

Aqua-cultured fish is one of the dominant export products in Vietnam. Total aquaculture production in Vietnam covered one million tonnes in 2003 and allegedly will reach over two million tonnes by 2010 (Ministry of Fisheries-MOFI, 2003). The total aquaculture production has increased already to 2.2 million tonnes in 2009 (MOFI, 2009). The development of this sector is a major source of foreign currency and employment. The success of the sector encourages both local and foreign investment. In Vietnam, the Mekong River Delta (MRD) is the main producer being responsible for over 80 percent of the total Vietnamese production (Vietnam Association of Fish Exporters and Producers-VASEP, 2004). The freshwater Pangasius is the most commonly cultured edible fish species in this region. Pangasius has emerged as one of the key aqua-culture species by value and volume in Vietnam. Total production of Pangasius increased steadily, from 45,000 tonnes in 1997 to 1,200,000 tonnes in 2009 (VASEP, 2009). The MRD supplies most of the Pangasius production in Vietnam. In 2006 the European Union (EU) became the largest Pangasius export market for Vietnam and around 60 percent of the total value of Vietnamese exports to the EU concerns fish– mostly Pangasius from the MRD (MOFI, 2006).

However, almost all of the Pangasius processing/export companies in the MRD face challenges in the export markets for different reasons. The most important reason is the impossibility to guarantee quality and safety (Khoi, 2007). The Pangasius products were infected by antibiotics, microbiology and other contaminants. Many Pangasius containers were sent back or destroyed as a result of the strict import quality controls in the EU and the United States (US) (VASEP, 2005). There are three major reasons for these quality problems (Khoi, 2007): (1) new and more stringent rules concerning fish quality and safety of import markets; (2) lack of adequate production technology at farm level; and (3) lack of business relations at the chain level.

Increased export market access for high quality food products is an important avenue for diversification of Vietnam's agricultural sector. It is also essential for sustainable rural economic growth and a reduction of poverty (World Bank, 2006 and 2008). This assertion is especially true for the sectors with high degrees of smallholder involvement. Aquaculture production in many countries in Asia is from small-scale family-owned smallholders (Silva et al., 2009).

Smallholders are defined as "owners or operators of small farms with primary reliance on family labor who are at or below the poverty line". They can be subsistence or commercial farms, or something in between[1]. According to Mantingh and Dung (2008), Pangasius smallholders exploit farming areas less than 1 ha and use one to two family laborers, but they are above the poverty line (see section 2.2)[2]. Smallholders in developing countries and in particular in Vietnam face a number of technical and managerial constraints such as production technology knowledge, market information, economies of scale, access to credits, and business relations; additionally, they operate in a policy environment that limits their participation in an export-oriented supply chain (Narayanan and Gulati, 2002; Page and Slater, 2003; Torero and Gulati, 2004; Henson and Jaffee, 2006; Van der Meer, 2006; Henson et al., 2008; Francesconi, 2009). The inclusion of smallholders in international markets requires not only stable supply and quality and safety standards, but also preferred business relationships to realize economies of scale and mutual benefits (Boselie et al., 2003; Ruben et al. 2007). Improved organizations (specialized producer associations, cooperatives, and other organizational forms) are a base for the involvement of small-scale farmers into coordinated supply chains that provide access to export markets (World Bank, 2007).

The international markets require that exporters of fishery products assure hygiene and safety for consumers. The need for more stringent quality assurance resulted in a shift towards company-owned farms and vertical coordination (Khoi, 2007). However, the involvement of smallholders are potentially an important policy instrument for poverty reduction, as fish production in Vietnam is relatively widespread among smallholders, and many of them cater for export markets (Loc et al., 2007; Sinh, 2007; Khoi, 2007). Therefore, the objective of this research is to design an effective export-oriented Pangasius supply chain based on small-scale farming systems. Put differently, this research explores how small-scale farmers can benefit from the emerging opportunities in the Vietnamese fish industry.

The success of Pangasius export chains is highly dependent on the elimination of the hazards of primary production (Suwanrangsi, 2000). Proper raw material production is crucial for fish quality, as deficient treatment cannot be corrected later. Inadequate quality management during primary production causes hazardous infection in raw materials. The key question in this research is how to involve these small farmers in developing adequate quality management through the entire export-oriented supply chain.

[1] http://www.interacademycouncil.net/CMS/Reports/AfricanAgriculture/7545.aspx?PrinterFriendly=true

[2] According to the Vietnamese Prime Minister's Decision No. 170/2005/QD-TTg since July 2005, the Ministry of Labour Invalids and Social Affairs (MOLISA) has adopted a poverty line as an income of less than VND 200,000 per person per month.

1.2 Focus of this study

This research studies how quality export requirements in the Vietnamese Pangasius industry can be met by smallholder fish farmers. It examines the importance of coordinating the activities in a supply chain to improve quality. Quality management includes quality control and quality assurance (Luning et al., 2006). According to Luning, quality management includes both biological management of the produce as well as human management of activities and procedures. All parties involved must apply quality assurance measures for their processes in order to control all aspects that may influence product quality. Hence, a chain-wide approach is needed.

This research has three focal areas:

(1) Quality control at farm level refers to the primary activities aiming at fulfilling quality requirements. In this section, we look into how the small farmers access and apply the required technologies for fish quality and safety (quality control). The main primary activities include pond set up; design and construction; preparation and cleaning; fingerlings and fingerling stocking; feed and feeding management; water supply management; fish health management; and harvesting. Specifically, this section is related to the production technologies applied by small farmers. The technological dimension concerns available technologies and technological standards that guide primary production processes.

(2) Quality assurance at chain level refers to the applied procedures and the distribution of responsibilities ensuring the fulfilment of customer expectations. This section addresses how the quality management system is designed within the fish supply chain. HACCP is a quality management system in consumer-oriented agro-food chains. This approach shows that quality management must be considered at the chain level and includes all actors in the chain. In these chains, the processing firms are generally the most powerful actors, playing a leading role in organizing chain quality management. The role of the processing firms 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 upper part of the chain must fulfil these quality requirements in order to make the chain operational.

(3) *The business relationships at farm level* refer to the governance structure between small-scale fish farmers and their partners in the chains who affect quality performance. To be able to guarantee the quality standards, vertical co-ordination between small-scale farmers and their chain actors is crucial (Ziggers,

1999; Hobbs, 2000; Boger, 2001; Schulze et al., 2006). As independent firms are involved in the chains, proper governance structures are key for success. This area addresses the incentive structure needed to reduce opportunistic behavior in the chain and to assure quality and safety requirements in market transactions.

These relationships tend to reinforce horizontal and vertical coordination based on collective action, information exchange and reputation. These forms of coordination are expected to reduce transaction costs and influence quality performance.

1.3 Research objective

General objective
Assurance of safety and quality standards in the export supply chain of small-scale fish farming in Vietnam: Which are the major challenges for the present quality management system?

More specifically, we refer to the following research sub-questions:

1. Do small-scale farmers, involved in export supply chains, have access to proper production technologies?
2. How to improve fish quality at the chain level through a proper participation of smallholders in advanced quality management?
3. What kind of business relations, between small farmers and their partners in the chain, are needed to make the quality management system operational?

1.4 Limitations of the scope of the study

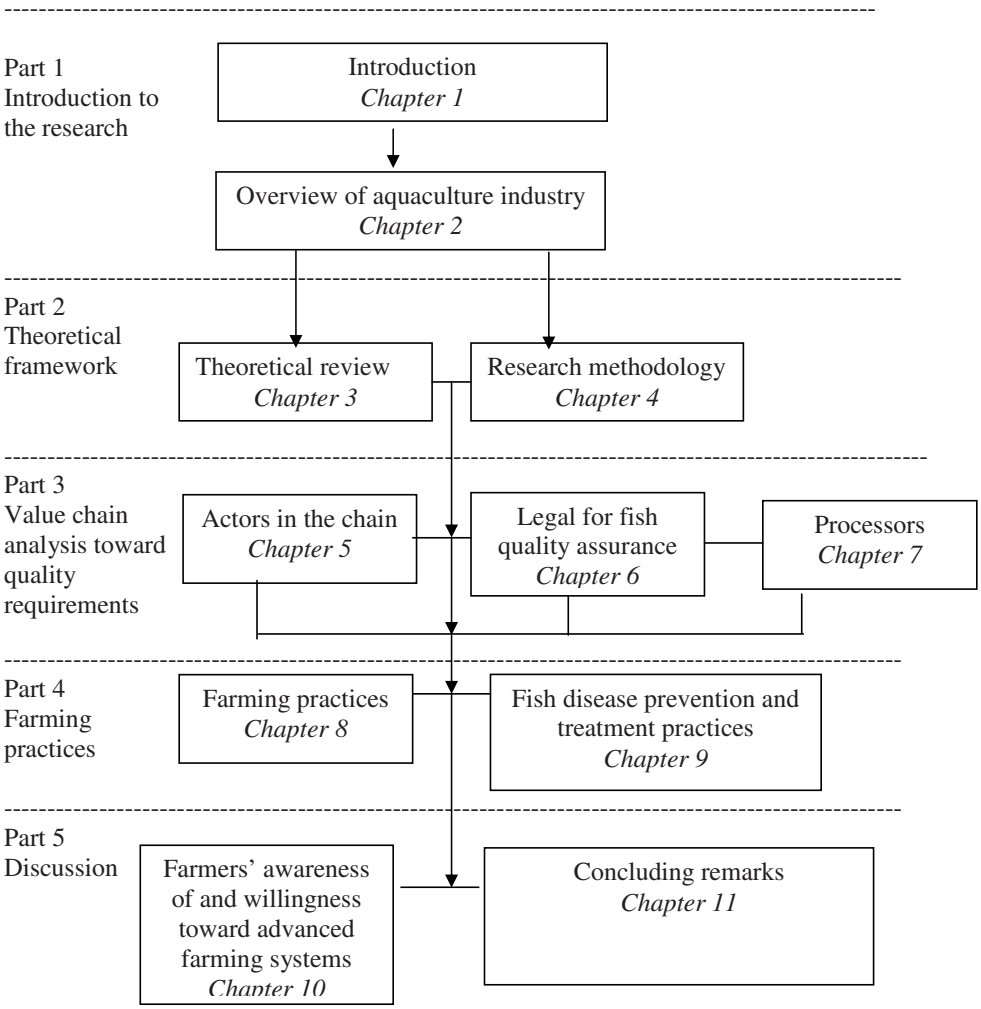
This study is limited to the export Pangasius value chain in Vietnam and does not deal with other issues such as aquacultural research on fish habitat, biodiversity, or aquacultural resource management. The main objective of this study is to analyze how the export requirements for quality in the Vietnamese Pangasius industry can be met by smallholder fish farmers.

The field research was conducted mainly between December 2005 and August 2009 in the south of Vietnam, the Mekong River Delta. The study is limited to several provinces in the Mekong River Delta; however, these regions dominate the Pangasius production in Vietnam. Most of the smallholders do not have a written track record of their daily activities. Hence, the answers to most of the questions were based on estimates and the memories of the respondents.

1.5 Outline of the thesis

This thesis is divided into 11 chapters (figure 1.1). After this introductory chapter, chapter 2 provides an overview of the development of the Vietnamese

Figure 1.1 Structure of the thesis



Source: Developed by the author.

aquaculture. Chapter 3 looks at the main theoretical and empirical literature related to the involvement of smallholders in fish export supply chains. The chapter further presents a review of empirical literature on food quality management and theories of inter-organizational co-operation. Chapter 4 explains the conceptual framework and research methodology. Chapter 5 describes the actors in the Pangasius value chain, identifying the primary and supporting actors. Chapter 6 presents the legal issues for fish quality assurance at the chain level. This is a crucial issue for the export chain as many requirements are specified by EU legislations. It specifically evaluates the

quality assurance systems practiced. Chapter 7 examines the quality control and quality assurance system at the processing firm level. It focuses on quality control of raw materials and processing operations. Chapter 8 analyzes the farming system practices by using the multi-case study and survey results. Based on these findings, chapter 9 discusses fish disease prevention and treatment. Chapter 10 analyzes the farmers' awareness of and willingness toward advanced farming systems. Conclusions on the main findings are presented in chapter 11. Figure 1.1 shows the structure of the thesis.