Chapter 4

Supply Chain Quality Management Framework

This chapter presents the supply chain quality management framework. It includes seafood quality management measures in primary production and in SFC. The basis for developing the supply chain quality management framework is the structure that is already used in Chapter 3 to describe the problems. What is important here is the distinction between intra-SFC activities and chain activities. Because of the close link with the manufacturing management, we include the distribution stage in the intra-SFC part of the framework. The description structure of Chapter 3 is presented in Figures 3.4-3.7. Figures 3.4 and 3.5 show the problems in and between hatcheries and farms. Figures 3.6 and 3.7 show the problems in manufacturing and distribution.

In addition, the literature is used to help formulate the relevant quality improvement aspects in the various links of the chain and in the intra-SFC processes. The results of the survey help us to be more concrete here. The structured description of the problems also leads to the formulation of measures to improve quality – in primary production, within the SFCs (processing stage), and in the distribution stage. The role of the government as well as the support of the local government, the fisheries industry, VASEP and NAIFIQAVED is crucial to the quality and safety of seafood throughout the chain. Therefore, this role has to be taken into account in the framework.

Also, developing the framework is based on the techno-managerial approach, which works interactively from both a technological and managerial viewpoint (Figure 2.1). The reason for using this approach is that at each stage of the chain, especially in the SFC, restrictions presently faced are of a technological and a managerial nature. At the SFC level, the adequate development and application of an HACCP system is crucial. This is covered in detail, as are management, technology and organizational behaviour in the two case studies of Chapter 5.
In the present chapter, the SCQM framework will be explained. Figure 1 gives a total picture of the framework. Section 4.1 considers the quality and safety assurance in primary production. Section 4.2 discusses quality management in the SFCs (the processing stage) and at the distribution stage. During the processing stage the emphasis is on HACCP. Measures for improvement – within the SFC and its chain – are considered in Chapter 6.

4.1 Shrimp quality and safety in primary production

Chain stakeholders in shrimp primary production in Vietnam in general and in the MD in particular include hatcheries, farms, collectors, and wholesale buyers. They produce and supply shrimp materials to the SFCs. In order to ensure product quality and safety, HACCP and prerequisite programs must be applied to all SFCs. HACCP and these prerequisite programs deal with the preparation, processing, handling, packaging, and transport and/or trade in shrimp products. Although HACCP is also suitable for primary production, it is not yet applied in the MD due to financial, technological and managerial circumstances. The description structure of Chapter 3, presented in Figures 3.4 and 3.5, helps to show and discuss the problems. The structure includes the role of hatcheries, farms, collectors, and wholesale buyers. The results of the survey of Chapter 3 show that supplier quality management and partnerships with suppliers are required to show improvement. Given the role of government institutes and support organizations, it is also important to establish an adequate relationship with these organizations under the main role of NAFIQAVED.
Figure 4.1 Seafood Supply Chain Quality Management Framework

Seafood Supply Chain Quality Management
(techno-managerial approach)

The role of local government, Fisheries Industry, VASEP, and NAFIGAVED

In primary production
- Supplier quality management
- Partnerships

In seafood companies
- Quality management implementation
- GMP and SSOP
- HACCP
- ISO
- HACCP application
- Distribution regarding transportation equipment and storage conditions

The diagnosis phase

The improvement phase
The seafood quality improvement process in SFC and chain quality improvement measures
4.1.1 The role of government institutes, industry and support organizations

The MD’s shrimp chain characteristics during primary production are different from those of other products like fish, vegetables and animals. On the one hand, shrimp is cultured in very large quantities throughout the whole region and it is consequently easy for disease to spread throughout the entire stock of shrimp. On the other hand, it is difficult to impart knowledge of quality control to the farmers because they have a low level of education and they lack the capital and the equipment to control the hazards. Therefore, in order to improve the product quality of primary producers in both hatchery and farm, a combination of management by the State and greater responsibility by the hatcheries and farms is vital. The government needs not only to issue policies and regulations in terms of shrimp seed quality control, environmental and fishery hygiene and safety, but also needs to plan large hatcheries and farms for effective management and control objectives. So far, the Vietnamese government has issued a great many policies/decrees and has established national programs to protect the environment. Such programs include the control of pesticide residues, veterinary drugs and other antibiotics to ensure the safety of seafood products. However, the implementation of policies/decrees and control programs are not carried out synchronously among industries, provinces and food producers. As a result, the effectiveness of the implementation is at a low level and hazard infection still exists (Loc, 2002).

Regarding decentralized management, again the government is represented by the Ministry of Fisheries, which has issued fishery safety and quality control regulations directly to the local governments, farmers, SFCs, and the offshore fishing community. Besides, the authority and the liability of NAFIQAVED are nowadays enhanced in terms of the issuing, the management, and inspecting of fishery quality control policies and regulations. NAFIQAVED is responsible for implementing quality management throughout the local government, provincial agricultural departments, seafood companies and other relevant institutions and organizations – both in primary production and at other stages of the chain.

The reality is that there is little coordination between these institutions and organizations. Therefore, local governments need to train primary producers and to establish regulatory control programs to ensure food safety and wholesomeness at the primary production level. To do this effectively, provincial extension centres and departments of agriculture and aquaculture are important support channels for training, for the implementation of instructions, and for inspection. A link is needed between the observation and inspection by technicians and extension staff, and the farmer’s implementation of quality control measures. This means that the SFCs should join forces with local departments to assist farmers in producing good quality shrimp materials.
4.1.2 The role of seafood companies

In primary production, SFCs can use the tools of supplier quality management and partnerships to achieve quality control and safety objectives. In general, SFCs are not able to use these tools to manage and control product quality and safety at all stages of primary production due to managerial and technological conditions. However, SFCs are able to participate with government institutes and NAIFIQAVID in managing and controlling shrimp quality and safety at the level of the collectors and wholesale buyers.

4.1.2.1 Supplier quality management

Supplier quality management includes (1) partnership with suppliers (chain partnership); (2) supplier selection criteria; (3) participation in supplier business; (4) supplier performance evaluation; (5) supplier quality audit; (6) supplier quality improvement projects; and (7) supplier communication. Figure 4.2 shows that SFCs are able to buy their shrimp materials from farms, wholesale buyers and offshore fishing communities – either directly or indirectly. More specifically, farmers sell their shrimp either directly (16.7%) to the SFCs or indirectly through collectors/wholesale buyers (61.8%). In addition, the SFCs in the MD buy shrimp materials from farmers in which these companies have made financial and technical investments (21.5%). Regarding shrimp quality and safety at the collector/wholesale buyer stage (SFC’s suppliers), SFCs can make official contracts that specify requirements for shrimp material quality and that introduce attractive policies (support of capital, equipment, training, and price information). The indicators of quality need to be clear to the suppliers (i.e. varieties of shrimp size, grading, colour, even allowing sampling or 100% inspection). In contrast, SFCs need to guarantee stable business for the suppliers in order to convince them to provide good shrimp material on a long-term basis. Moreover, the evaluation of suppliers and their feedback to the SFCs every three to six months is crucial to the supplier improvement process. However, companies are not eager to participate in collector’s activities (content 3) because it is time-consuming, and the cost is high.

4.1.2.2 Partnerships

Within the supply chain, every company conducts several specific activities to transform raw materials into final consumer products. This concept has been made more explicit by Porter’s (1985) concepts of “value-added chain” and the “value system”. Every company is part of a value system, and by cooperation the entire performance of the value system can be improved. For those companies operating in agribusiness and the food industry it is important to establish value-added partnerships (VAP). The basic idea is to cooperate with partners that fit best with the company’s own competencies in order to create synergetic effects. VAP partnerships are defined as cooperation among companies to achieve common objectives and to meet customer needs at a maximum of added value and a minimum of costs. The success of a partnership
becomes apparent in aspects such as higher quality products, increased market access, and more efficient processes. In other words, partnerships will only last if they meet the key factors of successful partnerships. If common objectives are divided and coordinating actors lose their influence, the partnership may well deteriorate. SFCs in the MD need to cooperate by establishing common quality criteria and pricing policies when buying shrimp materials from their suppliers. These agreements between SFCs should to prevent the purchase of low quality shrimp materials. The farmers or collector/wholesale buyers ought to be responsible for improving the quality of their products. This ensures both a high price and a high rate of SFC acceptance of their products. Therefore, partnerships between SFCs make a highly necessary contribution to the improvement of shrimp quality and safety in primary production.

![Diagram](image)

**Figure 4.2** Tools for supplier quality management

Another relationship that has to be established for quality and safety assurance of shrimp materials is with local agricultural departments, SFCs, and NAFIQAVED. The common quality criteria set up by SFC partnerships are not only sent to their suppliers, but also to agricultural departments and NAFIQAVED. All organizations involved receive the decrees and regulations regarding fishery quality and safety from the Ministry of Fisheries. On the one hand, they are responsible for distributing these documents to their functional units in primary production. On the other hand, just like the SFCs they need to
cooperate to meet SFC quality objectives and play a role of inspector/auditor in production, maintenance, and transportation of shrimp materials.

4.2 Measures for shrimp quality management and improvement in SFCs

4.2.1 Quality control problems at the company level
According to the survey results (detailed in Figure 3.6), there are five main factors that affect the quality of final shrimp products for SFCs in the MD. These factors are: (1) the lack of test equipment; (2) processing techniques; (3) the limitation of quality control management; (4) the backward technology; and (5) inadequate storage. These problems relate to product quality control management and implementation of the HACCP system for product safety and quality assurance, and they fit in with the more general set of problems mentioned by Luning et al. (2002):

- A low level of education makes it more difficult to involve operators and employees in problem-solving activities.
- The production circumstances such as noise, bad smell, high humidity, etc., are often a problem. These conditions can be dissatisfying and demotivating if they are not reduced to an acceptable level.
- As a consequence of the functional organization structure, most knowledge is centralized in specialized departments. This implies that the responsibility for improvement is assessed by specialists that come from those departments. On the other hand, operators have a lot of experience and knowledge, but they are often not involved in improvement activities.
- Equipment is often quite difficult to improve. The knowledge lies with the supplier of the equipment, who also carries out modifications. The user of the equipment often cannot make requests for a particular type of equipment to meet certain needs. He has to choose from the type of equipment that is offered by the (few) suppliers.
- Poor information feedback concerning quality performance results. At the lowest level in the organization, operators are either ill-informed or they are indirectly informed about quality results. This is not very stimulating.
- Improvement activities are usually not rewarded. More specifically, the top management does not show that much appreciation and support.
- Organization methods are not very common in the food sector. In general, the culture is more solution-oriented and proactive, and less time is spent on discussing and analysing.

4.2.2 Quality management in SFCs
According to the revised document of NACMCF (1998), an HACCP system should be built on a solid foundation of prerequisite programs, because these programs provide the basic environment and operating conditions that are necessary to produce safe and hygienic food. Prerequisite programs include
facilities, cleaning and sanitation programs, training, traceability and recall, and pest control. All of these programs must be documented and audited on a regular basis. In fact, 100% of the SFCs in the MD have performed these prerequisite programs (GMP, SSOP) to various extents, depending on each company’s conditions for applying HACCP. So far, the SFCs in the MD have not yet successfully implemented the HACCP and prerequisite programs because they lack (i) the financial means to improve and invest in modern technology and equipment, (ii) quality specialists, (iii) managerial knowledge and skills, and (iv) organizational behaviour on quality. Therefore, to maintain safety standards in shrimp production, it is expected that improvements in the HACCP system will be a priority. The successful implementation of an HACCP system is also an important condition if the SFCs want to achieve an ISO standard (higher level for the management of product quality and safety).

Luning et al. (2002) note that the principles of GMP, HACCP and ISO 9000 series are combined in quality assurance (QA) systems. It is expected that this system will be extended to an internationally acknowledged QA system as it ranges from a focus on establishment of procedures to a focus on quality improvement. With respect to the first focus, comprehensive procedures are made for all types of handling in order to control and assure quality. Concerning the second, attention is focused on improvement, and procedures are only implemented where control is essential for realizing quality. In the latter case a more finely tuned system is achieved: one that aims to control and improve critical points with respect to quality. As in each control process, the quality assurance process also consists of three basic steps: measurement, evaluation, and corrective action.

**Measurement** involves an evaluation of the system, which can be carried out by auditing. An audit is a means by which management can determine whether people in the organization are doing what they should be doing and whether the organization is effective in meeting its goals.

**Evaluation** includes the comparison with established standards. These standards can be derived from the company’s quality policy and/or be provided by external standards such as HACCP, ISO and BRC. Quality assurance is primarily aimed at giving both management and stakeholders guarantees concerning quality and quality systems. Quality assurance therefore has two faces – towards the company it initiates corrective actions, and to external stakeholders it provides confidence and ensures credibility (Van den Berg & Delsing, 1999; J. Andres Vasconcellos, 2003; Inteaz Alli, 2003).

**Corrective actions** include measures to improve and change the quality system in order to meet quality requirements in the future. Note that external pressure can force change processes when companies feel obliged to meet external standards, such as ISO, within a relatively short period of time. Choosing an
adequate change strategy is very important if one wants to get these processes under control.

Almost all quality control departments of SFCs in the MD are responsible for quality assurance. They gather knowledge of actual standards, organize audits, report evaluation results, organize corrective actions, and communicate with external stakeholders, but only to a limited extent. Quality assurance is the main task of the quality department of each SFC. It is often called the Quality Assurance Department or the Quality Control Department, and it is positioned just below the top management. The Quality Control Department communicates intensively with departments within the organization, which also have other assurance responsibilities such as environmental care, work conditions, and personal welfare of employees. Many companies try to integrate these assurance tasks into one care/assurance system.

4.2.3 Measures to improve the HACCP system

Regarding the quality and safety of SFC products in the MD, one of the main tools of the assurance system is HACCP improvement in terms of technology and management.

4.2.3.1 Technological improvement

In the application of HACCP principles, different interpretations have been noted in practice. Luning et al. (2002) report that some companies have allocated many Critical Control Points (CCPs) to be sure that the safety of their products is ensured. Others are of the opinion that too many CCPs reflect the poor condition of equipment and machines. They feel that technological innovations should be introduced to improve safety and thus reduce the number of CCPs. In addition, many requirements are set by government, industry and customers. The types of requirements that have been set up not only differ, they also change regularly to meet customer needs and expectations.

From the techno-managerial perspective, QA systems should be developed through a profound technical and technological analysis of product process conditions used in assessing CCPs. Within the company consensus must be reached on the selection of CCPs. To this end, the company should do predictive modelling which can be used to identify potential hazards and crucial quality parameters. The Taguchi principles can be applied to determine socially acceptable tolerance. In addition, the application of HACCP principles and risk assessment support the selection of technological CCPs, which have a scientific underpinning. At the same time these principles and risk assessment also provide a scientific basis for the non-critical points. It is important that identification of these critical points is done together with the people that are involved in the processes. The restriction to critical points enables the development of a QA system, which serves as a tool for the people involved instead of being an enforced system. Such a QA system consists of a hard core
based on crucial control points (one principle of HACCP), and modules, which can be easily modified or extended, depending on customer demands. For this approach, a singular focus on procedures is not advisable because it has its limitations in directing human behaviour (Luning et al., 2002).

4.2.3.2 Managerial improvement

From a techno-managerial perspective, Luning et al. (2002) indicate that managerial issues are very important in quality improvement processes. First, one managerial condition for improvement is the use of appropriate measurements and information systems. This information should include the critical quality and safety points that are related to the technological core competences. Furthermore, information must be easily accessible. Statistical tools, such as Pareto analysis, standard deviation, etc., should then be used to analyse the information. Such analysis enables both the people involved and the management to make the right decisions. Second, another essential management activity with respect to improvement is training. The training of operators and employees must be aimed at developing relevant technological and managerial knowledge for the specific quality control points for which they are responsible. Moreover, a training in simple statistical techniques is required in order for people to be able to organize and process data effectively and to use it for analysis and argumentation. Finally, team-building is another important management task, although this cannot be forced and requires good leadership capacities. Managers should not just install teams, but they should facilitate team-building in such a way that teams can grow spontaneously.

A techno-managerial approach would choose management activities that are focused on major points in the process that can be influenced technically. Regarding the implementation of HACCP, the basic idea is that only a restricted number of control points determine the quality that is requested by consumers. In other words, control measures should focus on those points that influence the quality of the final product. An advantage to this approach is that control activities can be reduced, and the attention of employees and operators can be focused only on those points in the process that are relevant for quality (sensory properties, safety, etc.). For instance, the HACCP principles and procedures enable a company to perform a profound analysis of the process and to assess points that are critical with respect to safety and quality. The use of the “tool” should be combined with management actions such as decentralization and training. This combination creates opportunities to control and take corrective actions when required.

4.2.3.3 Organizational behaviour concerning quality

As mentioned in previous sections, technological problems of SFCs that need to be improved are on the one hand investing in new technologies to process high quality products, testing for hazards, and ensuring storage conditions. On the other hand, managerial aspects focus on how to use these technologies
efficiently and effectively. Both aspects require a certain kind of organizational behaviour towards the basis of the “continuous improvement philosophy” (Krajewski & Ritzman, 1999) in order to achieve quality improvement in terms of (1) training and education; (2) management and leadership; (3) motivation; (4) organization; (5) human resources; and (6) information systems.

Training and education of both managers and employees is an important success of the HACCP. Therefore, education and training on the importance of HACCP, the role of people in producing safe foods, and how to control food-borne hazards in all production stages are required (Barendsz, 1994; Codex Alimentarius, 1997; and NACMCF, 1998).

In Vietnam, the Ministry of Fisheries and relevant industries have focused on training and education courses related to quality management. They have organized – free of charge – many training courses on the prerequisite programs, on HACCP principles, and on procedures for SFC leaders. Moreover, the VASEP and the NAFIQAVED, which cooperate with foreign quality control organizations, are responsible for organizing and helping the SFCs train their managers, especially quality controllers, as much time as they need on the HACCP program. However, the SFC employees are not supported in this quality control training by these organizations. The SFCs themselves retrain their employees or pay for them to be trained. According to the survey results, employees have limited understanding and awareness of HACCP and other quality standards. Education and training programs related to quality assurance are extremely important for people who are involved in the activities of the entire chain – from primary producers to distributors in Vietnam and in the MD (Loc, 2002).

A quality improvement process cannot do without management and leadership. Management is a broad concept that encompasses such activities as planning and control, organizing and leading. Leadership, however, focuses almost exclusively on the “people” who have to get a job done. This means inspiring, motivating, directing, and gaining commitment for organizational activities and goals. Leadership accompanies and complements other management functions, but it is more concerned with coping with the dynamic, ever-changing marketplace, rapid technological innovation, increased foreign competition and other fluctuating market forces. In short, management influences the brain, while leadership influences the heart and the spirit (Gatewood, 1995).

Activities of management and leadership are difficult to distinguish in an SFC organization. Top managers decide on all issues – not only on the ones that are related to management but also on those related to leadership. They structure what has to be planned and who implements and controls what within the
organization. Top managers also play a role in market observation of the competition in order to implement changes to meet customer needs. For instance, how to buy high quality shrimp materials in order to produce safe shrimp products to meet market requirements and expectations requires specific activities of the management and leadership; however, top managers cannot do this by themselves or simply force their workforce to do so without providing an explanation.

Motivation is the inner state that causes an individual to behave in a way that ensures that a certain goal is accomplished. In other words, motivation explains why people act like they do. The better the manager understands the behaviour of the members of the organization, the more able he/she will be to influence members’ behaviour and to make it more consistent with accomplishing organizational objectives. Since performance is the result of the behaviour of the organization’s members, motivating them is a key to reaching organizational goals in general. This means that members of the organization should be loyal and act responsibly, in particular towards the company’s quality assurance objectives.

Motivation is necessary for SFCs in the MD. At all levels, SFC managers have to be loyal and responsible for organizational quality objectives. They have to believe in what they do in order to gain organizational success. Moreover, their employees should be motivated as well and encouraged during the processing time because organizational quality responsibility, as conceived by workers, is very restricted. The SFC workforce frequently changes, mostly per season. Therefore, SFCs are faced with difficulties if they do not motivate their employees.

Organization is the process of positioning people and other resources in such a way that they can work together in order to accomplish a goal. Organizing involves creating a division of labour for tasks to be performed and then coordinating the results to achieve the common purpose (Schermerhorn, 1999). An organization is a collection of people that work together to achieve a common purpose. People take action once they have decided on their objectives and they have certain ways to accomplish these objectives. Organizing involves creating conditions for these decision-making processes in terms of:

- People: this includes attracting, developing and maintaining a quality workforce;
- Information systems: these involve ensuring that information gets at the right time and in the right place, and providing resources for collecting, organizing and distributing data to support the decision-making process;
- Organizational structure: this includes defining tasks, responsibilities and authorities, rules and procedures.
Organizational structure is a formal system of relationships that both separates and integrates tasks. A separation of duties makes it clear who should do what. Integration of duties tells people how they should work together. Members of functional departments share technical expertise, interests and responsibilities. Major advantages of a functional structure include the efficient use of functional resources and a high-quality technical problem-solving capacity. On the other hand, a functional structure can be characterized by a lack of communication and coordination between different functions and the loss of the complete picture.

The SFC organizational structure in Vietnam is a functional structure. Members of each functional department work together very well. Still, people in different functional departments do not communicate and coordinate easily when trying to achieve common goals. For instance, in order to achieve product quality by applying HACCP, the company needs an HACCP team that should include members from different functional departments. However, according to the survey most of the HACCP team members are from the Quality Control Department.

To conclude, SFCs in the MD follow a top-down management system (Loc, 2002). They do not get any feedback from the system to improve the organization. Bottom-up changes are required to achieve this. Bottom-up change means that initiatives for changes come from persons throughout the entire organization, supported by the efforts of the middle and lower management. Bottom-up change is essential for organizational innovation and is very useful in terms of adapting operations and technologies in order to change the requirements of work. Empowerment, involvement and participation enable this bottom-up change. In addition, quality improvement requires facilitating structures, such as the means of communication, procedures and reward systems, the identification of changes in the internal and external business environment and avoidance of routine and rigid structures in the company (Dean & Evans, 1994).

*Human resources* in quality management are very important: for instance, the way in which the company enables employees to develop and utilize their full potential to achieve the company's objectives. In human resource management a lot of attention is paid to work systems, education, training and development, and the well-being and satisfaction of the employees.

The research by Gerats (1990) provides an insight into the role of the various quality behaviour factors (disposition and ability to ensure quality). The research results of Gerats indicate that to improve hygienic working behaviour, the first sphere of action should be enlarged. It shows that 60% of the workers did not comply with the conditions concerning disposition and ability. It was also concluded that the activity area (ability) for hygienic working behaviour was mainly restricted by shortcomings in management, by low hygiene standards...
among workers, by low hygiene standards of first-line supervisors, and by shortcomings in hygiene facilities at the workplace. A disposition towards working hygienically was mainly caused by the limited knowledge of bacteriological contamination mechanisms, by restricted social support from colleagues, by the fact that the supervisors’ were hardly interested in working hygienically, and by the restricted possibilities to work hygienically. Furthermore, Ivancevich (1994) added a third factor, namely quality focus. In his view, commitment to quality includes three ingredients:

- Quality intelligence: employees must be aware of acceptable quality standards and of how these standards can be met;
- Quality skills: employees must have the skills and ability to achieve quality standards set by the management; and
- Quality focus: from top management to operating employees, everyone must sincerely believe that quality of all outputs is the accepted practice.

In fact, the findings of our survey related to quality behaviour at SFCs in the MD are similar to Gerats’ research. Hygienic working behaviour has not been sufficiently taken care of. For instance, the SFCs have not paid sufficient attention to factors such as personal quality standards, quality of knowledge, observed standards of knowledge, observed standards of leaders, observed opportunities or skills and competence, availability of time, support from colleagues, support by the supervisor, and support from the company. Therefore, factors regarding human resources are conditions for quality behaviour.

Information is a critical enabler for quality management. More and more successful companies agree that information technology and information systems are keys to their (quality) success. Three categories of information are mentioned as being crucial to quality management: (1) operational information with an emphasis on process management, action plans and performance improvement; (2) comparative information related to comparative position and best practices, both having an operational and strategic value; and (3) information that relates process management to business performance by providing an insight into cause/effect relationships (Ross, 1999). Information technology has many effects, including the improvement of performance and the affection of organizational structure. It helps firms to retrieve information faster and more conveniently, and this enhances decision-making.

Information technology and systems for management in general and quality management in particular are limited in SFCs in the MD. On the one hand, these SFCs manage files in the form of paper documents rather than by computer. On the other hand, limited knowledge of computers and statistics leads to little effectiveness of inputting, saving and analysing data for process management, business performance as well as performance improvement.
4.2.4 Shrimp quality and safety at SFC distribution

Distribution control involves the management of materials flow from the manufacturer directly to the customers/consumers and from the warehouses to the retailers. It also includes storage and transportation of products. Quality control in distribution management concerns decisions on transportation, storage of products, and measuring the whole process, including consumer usage of the products. The steps in distribution control include product and resource decisions, such as selling and receiving orders, transportation and storage, buying and consumer usage, complaints and market information, and analysis. However, based on the practical situation of the SFCs in the MD, shrimp quality and safety improvement in the distribution stage focus only on transportation and storage (details in Figure 3.7). Most of the SFCs in the MD sell their products by FOB (Free On Board). This means that most of the SFCs in the MD contract deliver their products to the Saigon harbour in Ho Chi Minh City, which is a long distance from the MD. Other activities at the harbour are out of the SFCs’ control. Therefore, transportation and the time to maintain quality assurance conditions for the products from the company to the harbour are very important. Moreover, the SFCs do not have sufficient means, so they have to hire transportation. They cannot always be sure of the quality of the means of transport, because the transport is not managed by the SFCs. With respect to storage, almost none of the SFCs have enough warehouses to store products, especially during the shrimp season. The same as with transport, the SFCs have to rent warehouses – not only to store shrimp materials in the region, but also for the final products in the harbour in order to meet contract requirements. These warehouses are controlled by individuals or other companies in Ho Chi Minh City or other places. To summarize, SFCs cannot manage and do not control storage conditions to meet quality assurance objectives. According to the interviewees, the factors that affect product quality in the distribution process are the means of transport (34.4%), the transportation time (21.9%), storage conditions (31.3%), and inventory time (53.1%).

In food distribution, transportation and storage can be a complex process, part of a long supply chain. Product control during transportation and storage involves the quality of the products by monitoring the product and taking corrective actions when necessary. Resource control involves transportation of equipment, distributor organization, and storage conditions. In the food industry, temperature and humidity together with hygiene are very important control parameters. To achieve this, partnerships between SFCs and individuals or companies are necessary to ensure quality during transportation and storage.
Chapter 4

4.3 Summary

Chapter 4 demonstrates the basis for developing a seafood supply chain quality management framework. By using the techno-managerial approach, the framework aims to ensure and improve seafood in general, and shrimp quality and safety in particular in the MD. It consists of measures for seafood quality control management in primary production, in the company, and at the distribution stage. At the company level, quality assurance by means of the HACCP tool is discussed. The measures to improve the HACCP system in terms of management, technology and organizational behaviour are described in detail. These issues will also be taken up in two case studies in the next chapter, i.e. Chapter 5.

The framework also includes the role of the government through local fishery departments (Department of Fisheries, and the Extension Centre, FRDP) and the role of industry in establishing quality assurance in primary production but also in the entire chain. In addition, the supporting roles of VASEP and NAFIQAVED in seafood hygiene and safety, quality knowledge training, hazard inspection of final products before export are also discussed in the framework’s explanation. In the chapter on improvement (Chapter 6), these roles will be discussed in more detail.