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INTERNATIONAL BUSINESS

INDUSTRIAL ANALYSIS OF THE FARMED SALMON INDUSTRY

Case Study of Marine Harvest Group for Marel Industry Center Iceland

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Abstract

In recent years there has been a great consolidation of international food processors in the salmon farming industry in form of mergers and acquisitions (M&A). This development has not only been taking place between neighboring countries, but corporations have been investing in other continents. Marine Harvest Group (MHG) is the largest processor of farmed salmon in the world and has been the center of this development.

The practical elements of the research are to support Marel, a major player in the making and exportation of food processing equipment, in gaining further information about the current situation as well as future plans of MHG. The researcher seeks to find which driving forces of M&A have affected MHG and which ones are of the most significance in shaping the company's strategy.

The case study consists of both qualitative and quantitative research methods. First hand data was collected via telephone interviews with key members at the top level of the company's hierarchy. The interviewers address the M&A topic as well as the Group's decisions and strategy towards salmon processing solutions.

The study results that the Group is most active in vertical mergers. The most influential M&A driving forces are: (1) economics of scale (efficiency gains), (2) regulatory framework, (3) sustainability, (4) production, (5) productivity, and (6) market size. Decisions on investment choices and amounts are becoming more centralized at a business unit level. The conclusions highlight a list of factors that the interviewees gather as important elements of salmon processing solutions.

Key words: Mergers & acquisitions, M&A driving forces, Salmon farming, Marine Harvest Group, Economies of scale, Sustainable Business

Declaration of research work integrity

This work has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature of any degree. This thesis is the result of my own investigations, except where otherwise stated. Other sources are acknowledged by giving explicit references. A bibliography is appended.

By signing the present document I confirm and agree that I have read RU's ethics code of conduct and fully understand the consequences of violating these rules in regards of my thesis.

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Date and place Kennitala Signature

Preface

It has come to the end of an era. This shall be my largest research work yet and probably the last academic paper I submit at a university as a student. I consider myself fortunate to be rich of knowledge and experience which I have gathered during the course of my studies. My next working material will be on the practical side in the business environment.

The International Business Program has given me the opportunity to see the business world with a different perspective. Having to work with other students and teachers from all over the world has broadened my horizon and I feel better prepared to take on challenges in the increasing globalized world.

I would like to express my gratitude to my supervisor, Einar Svansson, for his countless advises through the career of my studies. As for this thesis, his great insight and experience to the industry has been of great help.

I also want to thank Sigurjón Elíasson, Sverrir Guðmundsson, and Stella B. Kristinsdóttir at Marel for their assistance during the preparation phase of the thesis. Special thanks to the interviewees who contributed their time and input to this work. Finally, I wish to thank my family and friends who have always supported me in the time of need.

"Education is the most powerful weapon you can use to change the world"
– Nelson Mandela

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1 Introduction

In recent years there has been an increased consolidation of international food processors in the protein industry in form of mergers and acquisitions (M&A). This development has not only been taking place between neighboring countries, but corporations have been investing in other continents.

The main purpose of this thesis is to perform an in-depth market analysis in a competitive business environment. The researcher will complete the analysis with a case study and present a solution to a practical problem introduced to him by a leading company in its field. The objective is to solve a real case scenario that exists by supporting it to relevant business theories.

This thesis involves a case study which consists of analyzing an important customer of Marel which is a leading company in the field of food processing. Marel categorizes their customers in terms of the volume of their business and the largest ones are gathered in a special elite customer base. This base is controlled with a special management strategy called Global Key Account Management (GKAM). The case company is Marine Harvest Group (MHG) and is a recent member of this program due to its operational scope in the food industry and previous business history with Marel. The theory and scope of GKAM however is not the focus in this thesis and will not be covered in detail.

This research is important because Marel is a major player in the making and exportation of food processing equipment. From the year 2008 Marel has been bringing in their largest customers to the GKAM project. To be eligible for this category of customers companies need to fulfill certain qualifications. Marine Harvest Group does so and is an important player in the industry for Marel's project and for that reason it has been chosen for this research. The goal is to support Marel in gaining further information about the current situation as well as future plans of MHG. The researcher will explore the development of mergers and acquisitions in the company from the year 2006, when the Group was created by the largest merger in the history of food companies, and predict a forecast for possible M&A activity in the nearest future. These tasks will be mapped in a chronological order and linked with M&A theory. Given that Marel is in the business of selling equipment and software in the protein industry, hence it would be useful get an insight into the future investment strategy of MHG in that area.

To enforce a practical element to the thesis, the researcher will study this aspect as a separate research problem.

The researcher will detect driving forces of M&A theory that have influenced the development of the company from 2006 till current date. All published data issued by the company since the large merger in 2006 in addition to information retrieved from the Norwegian stock exchange and third party sources will be supported. In order to predict future development, the researcher will perform a qualitative research in the form of telephone interviews. With the information gathered from top executive members within the organization the researcher will gain a further insight into the company. The interviews will assist in predicting what impact the driving forces of M&A will have on future development of the group and the investment strategy towards equipment and software in the salmon farming industry. Furthermore it will be pursued to answer the question; how can a large producer of equipment like Marel respond to and take advantage of this development?

The focus of this research is the farmed salmon operations of MHG. Salmon farming is amongst the most efficient ways of producing meat due to its feed conversion and protein retention ratios, which are significantly better than those found in other animals. To put things in perspective it takes around 1.2 kg of feed to produce 1.0 kg of salmon. Although not directly comparable, due to differences between feeds, it takes around 2.0 to 8.0 kg of feed to produce 1.0 kg of chicken, pork, or beef. This is because salmon is cold-blooded and therefore uses hardly any energy to maintain body temperature. Also in an aquatic environment less energy goes into physically supporting the animal than on land (Marine Harvest, 2011a, p. 5).

The reason why Marine Harvest Group was chosen as a case study for this thesis is because of recommendation and guidelines from executives at Marel's Industry Center. During face-to-face discussions with these contacts they described a main interest in this customer and the company's interests to gain further information in a certain area. They requested that a thorough research would be performed regarding the future development in mergers and acquisitions of this one company.

Given that MHG is a huge player in the market with operations in every field of the fish processing industry it was decided to focus on a special type of fish so the scope of this research would not be too excessive. After having explored all of the different

areas of fish types in the company's product range, it was decided to approach the farmed fish market with emphasis on the processing part of farmed salmon. The main interest of Marel in the farmed salmon life cycle is the scope between the slaughtering until the end of the value added processing part, this will be explained in more detail in later chapters. This is where MHG has a very extensive scope of operations and Marel would like to retain the researcher's perspective on the current and future prospects in that area.

Recent development in the food processing industry point out that the end-users are demanding food which consists of healthier nutrition, including high amount of protein and essential fatty acids; Omega-3, 6, and 9 (Marine Harvest, 2011a, p. 12). Because consumer behavior is constantly changing and world demand is increasing, Marine Harvest maintains a special sustainability strategy to keep up with recent market trends and meet these changes. The trend now is that larger corporations are merging with others and they are also expanding internally. It also connects to recent year development of the decrease in manual labor in the food industry.

1.1 Aims and objectives

The main purpose of this thesis is to perform a customer analysis of an important customer of Marel in the field of food processing. The aim is to gain an in-depth understanding of the current situation and future plans of Marine Harvest concerning farmed salmon production. The researcher will attempt to answer research questions in terms of mergers and acquisitions development in the company as well as investment perspectives towards salmon farming processing solutions. The researcher will seek to find which driving forces of M&A have affected MHG since it was created in the large merger in 2006 and which drivers are the most significant ones in shaping the company's strategy. The objective of researching the data is to gather recommendation for Marel on how they can exploit this information on MHG and exploit them to its own benefit. Hopefully it turns out to be useful and will lead to reaction towards future development in the salmon farming industry. The researcher will seek to answer the three following research questions during the course of this thesis;

1) *What driving forces of mergers and acquisitions have affected recent development of Marine Harvest Group in the farmed salmon industry, and what are the future predictions of M&A with the company?*

2) *What impact has the recent M&A development in the farmed salmon industry, had on the investment strategy of leading organizations like MHG towards processing solutions?*
3) *What influence will the scenario in the first two questions have on the market for salmon processing solutions and how can leading companies in that field like Marel respond to it?*

1.2 Research methods

The thesis covers an applied Type A research where the researcher will seek to solve a practical problem using relative business theories. The case study consists of both qualitative and quantitative research methods. Second hand data from various books, journal articles, internet websites and previous research reports to the subject were examined. The information on the M&A development were collected through the literature review and web search including all published data from MHG website and the Norwegian stock exchange on the company's operations in relation to M&A activity, mainly since 2006.

First hand data was collected via telephone interview with the chief financial officer of MHG and the general manager of MH Norway, the largest business unit of the Group. With their insights as top level executives they were able to identify the main driving forces of M&A development on MHG. The managers also reflected on the company's decisions and strategy towards salmon processing solutions. The reason why these research methods were chosen is because it is important to get the perspective of individuals who are well informed on the company's decision making and for this research that list is limited.

1.3 Thesis overview

Following the first chapter, introduction, the structure of the thesis is as follows:

2. Theoretical perspective

The theory of mergers and acquisitions will be covered in a historical context, followed by general driving forces of M&A and drivers detected in the protein industry. Drivers influencing future development of farmed salmon will then be reviewed where theories on economies of scale and scope, sustainability and globalization will be described.

3. Farmed salmon; industry profile

This chapter will begin with an introduction of the salmon farming industry to give the reader an insight to the subject material. Then a historical overview of consolidation in industry will be covered followed by the farmed salmon value chain and life cycle explained in detail with geographical descriptions. Next section will describe the company profile on Marel Industry Center and their emphasis in the value chain of the farmed salmon market, mostly connected with offerings of processing solutions. A company profile on Marine Harvest Group's operations will then be covered and their scope in the salmon farming business.

4. Methodological approach

This chapter will rationalize the methodological approach applied in the research followed by an outline of research questions. Research methods will be reviewed followed by a detailed coverage on the research interviews.

5. Case study: Marine Harvest Group

This chapter will cover the researcher's analysis on MHG where driving forces of M&A will be analyzed in a chronological order from 2006 till current date. Drivers recognized in the theoretical chapter will be connected with the case company along with investment strategy towards processing solutions. Secondary data will be supported along with primary data retrieved from interviews with top executives of the Group.

6. Final conclusions

The conclusions of the case study are described and the research questions answered. With the information gathered the researcher will summarize recommendation on how Marel can exploit the conclusions from the research to its own benefit.

7. Final words and further discussion

This chapter discusses the research findings with the researcher's perspective and final words will be given on further research on the thesis topic. The chapter will conclude with speculations on future prospects in the industry.

2 Theoretical perspective

To be able to support the research performed in the case study with a proper link to the academic field of this thesis; a few fundamental concepts need to be defined in some detail. This way a foundation for answering the research questions is set. The main theories which will be covered in this research are mergers & acquisitions and M&A driving forces. Other theories are globalization, industrial economics (economies of scale and scope), and sustainable business.

According to the UN's Food and Agricultural Organization (FAO), by the year 2050 the world's population will grow to 9 billion people. This growth will be accompanied by an increase in standards of living, with people demanding more protein-rich foods such as meat, eggs, milk and seafood. In continuance this is likely to result in a doubling of global demand for food by the year 2050. Fish farming will need to grow to meet the increasing demand in seafood (Marine Harvest, 2011a, p. 4). This is where sustainable business strategy applies.

Recent trends in globalization demonstrate that companies are investing in other continents because of the positive effect of economies of scale. One strategy to increase a firm's competitiveness is achieving economies of scale by expanding production. If increases in output lower average costs of food-processing firms, some of these benefits can be transferred to consumers thus improving efficiency in the entire supply chain (Gervais, Bonroy, & Couture, 2008, p. 538). The theory basically involves lowering of average production cost because of an increase in business. In that way the theory predicts the benefit of two companies merging in the same industry.

In terms of industrial economic theory, it distinguishes two types of motives for mergers and acquisitions; economic and managerial ones. M&A driven by economic motives are expected to outperform acquisitions undertaken for managerial reasons. It also has been argued that acquisitions with a stronger economic rationale are more likely to get completed and that factors indicative of such acquisitions are associated with higher likelihood of completion as their presence signals a 'good deal' (Muehlfeld, Weitzel, & van Witteloostuijn, 2011, p. 467).

2.1 Mergers & acquisitions

In the following paragraphs the main concepts of mergers and acquisitions will be defined. The literature often uses the terms; merger, acquisition, takeover, and M&A synonymously, though it is technically inaccurate. The examination of the nature of consolidation types is not the main focus of this thesis, therefore the term 'M&A' will be a synonym for these previously mentioned concepts. There are other types of strategic alliances, e.g. joint ventures, collaborations, and long term partnerships, which are often confused with M&A. These concepts and their scope within company chosen in the case study will not be explored in this thesis.

Consolidation: This term is preferred when it comes to describe the overall combination of two or more corporations in which a new corporation is formed succeeding to the assets and liabilities of the constituent corporation and none of the constituent survives as a distinct entity (Bainbridge, 2003, p. 15).

Mergers and acquisitions (M&A): When two or more companies are combined to achieve certain strategic and business objectives, are transactions of great significance, not only to the companies themselves but also to other stakeholders, such as workers, managers, competitors, communities and the economy (Sudarsanam, 2003, p. 4). M&A is a route by which some companies choose to grow and it involves getting together with another establishment. It is described using the following terms; amalgamation, absorption, fusion, integration, and agglomeration[1] (Moles & Terry, 1997, p. 350).

Merger: A scenario where corporations come together to combine and share their resources to achieve common objectives. The shareholders of the companies often remain as joint owners of the combined entity (Sudarsanam, 2003, p. 6). Moles & Terry (1997) describe this as a combination of two companies in which two companies are absorbed more or less as equals into a new entity (p. 350). Bainbridge (2003) defines it as the statutory combination of two or more corporations with one of the constituent entities surviving (p. 16). Technically it is described as a uniting of interest or an amalgamation, where two or more companies, of roughly equal significance, agree to transfer their capital to another company newly formed and the old company is

[1] Agglomeration: Uniting of interest

dissolved. For example, Firm A merges with Firm B to form Firm C (Moles & Terry, 1997, p. 351).

Acquisition resembles more of an arms-length deal, with one firm purchasing the assets or shares of another, and with the acquired shareholders ceasing to be owners of that firm. In a merger a new entity may be formed subsuming the merging firms, whereas in an acquisition the acquired firm becomes the subsidiary of the acquirer (Sudarsanam, 2003, p. 6). The name of the acquired firm does not need to change to the same as the acquirer; they are often kept separate for business purposes.

A takeover is similar to an acquisition and also implies that the acquirer is much larger than the acquired (Sudarsanam, 2003, p. 6). Technically defined as a scenario where there is a dominant firm and where the owners of the subordinate enterprise give up their interest in exchange for a consideration given by the other enterprise. For example, Firm A takes over Firm B to create an enlarged Firm A. Conventionally; Firm A would be the larger of the two, although when this is not the case there occurs what is termed a 'reverse takeover' (Moles & Terry, 1997, p. 351).

2.1.1 Four categories of M&A

Moles & Terry (1997) define M&A into four different categories; (a) horizontal, (b) vertical, (c) concentric, and (d) conglomerate.

(a) Horizontal merger; also known as a lateral integration under which the companies involved are in the same industry and could be regarded as competitors (Moles & Terry, 1997, p. 351). It is a combination of two companies that previously competed in the same industry sectors (Bainbridge, 2003, p. 16). Ross, Westerfield, Jaffe, & Jordan (2008) argue that economies of scale are the obvious benefits of horizontal mergers (p. 817).

(b) Vertical merger integration under which the firms involved are either suppliers (backward) or customers (forward) of each other (Moles & Terry, 1997, p. 351). It is a combination of two corporations that operate in different sectors of a product stream, such as a merger between a manufacturer and a retailer (Bainbridge, 2003, p. 16). The purpose of vertical mergers is to make coordination of closely related operating activities easier (Ross et al., 2008, p. 817).

(c) Concentric merger integration is where the firms involved share some common expertise that may possess mutually advantageous spin-offs. For example managerial or technological knowledge that may not be industry or product-based (Moles & Terry, 1997, p. 351).

(d) Conglomerate merger integration or diversification, is where the firms involved may be unrelated and comprise a holding company and a group of subsidiaries engaged in dissimilar activities. This type of transaction is often regarded as the corporate equivalent to portfolio diversification, such as when one activity is facing trading difficulties, the chances are that other activities are doing much better so as to produce a creditable performance overall (Moles & Terry, 1997, p. 351).

2.1.2 Foreign direct investment

In food processing 85% of foreign direct investment (FDI) stays within the developed world. Regmi & Gehlhar (2005) point out that the major path to growth for the large food companies in the world is by acquisition. If an acquisition is implemented abroad, as is often the case, FDI is involved. Such FDI is a popular growth path in the emerging and transition economies. Large food companies seek and find growth in foreign markets by engaging in FDI.

Looking at foreign direct investment as a broad category, it reveals that most FDI are in the form of cross-border M&A. Figure 1 demonstrates the distribution of different types of FDI where the percentages stand for total number of deals made for each level. M&A are 78% of all FDI, against 22% Greenfield investments.

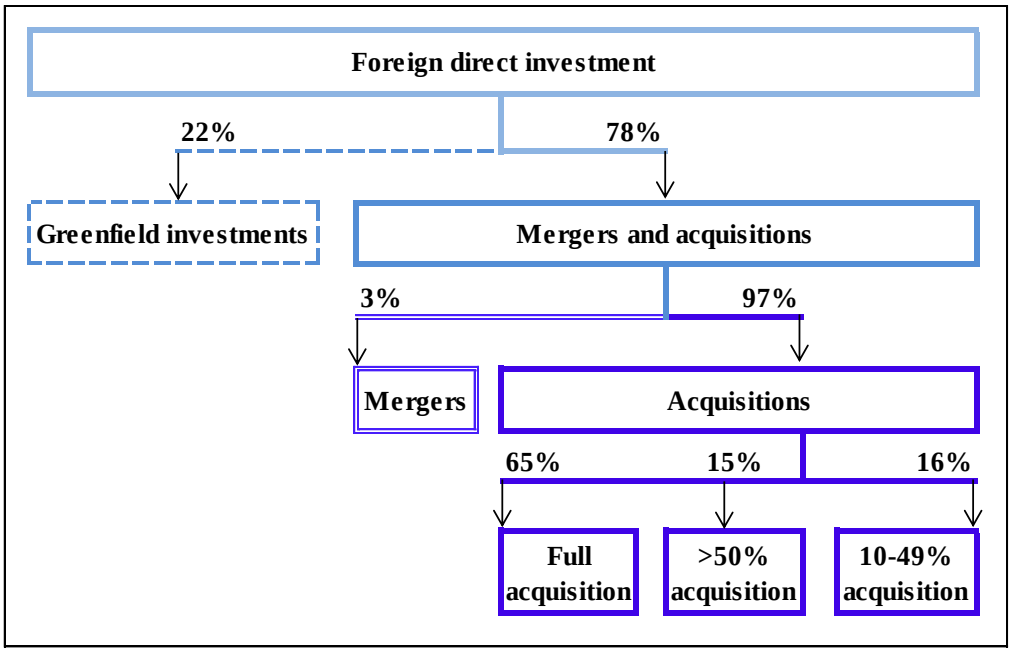


Figure 1. Distribution of different types of FDI. Researcher's presentation based on Brakman, Harry, & Charles, 2006, fig. 1.

A Greenfield investment is defined as the establishment of a new production facility in contrast to a cross-border M&A where a firm purchases shares of an existing foreign firm (Bertrand, Mucchielli, & Zituona, 2007, p. 182). The main difference between Greenfield investments and M&A is that in the latter the control of assets and operations is transferred from a local company to a foreign one, the local becoming an affiliate of the foreign one (UNCTAD, 2000, p. 99).

Most cross-border M&A belong to the category of market-seeking FDI. Taking one of your competitors out of the market reduces competition and increases profits (horizontal merger). Buying a company outside one's own sector might be motivated by an efficiency driver since it may be profitable to control a larger part of the value chain (vertical merger). From this information one can see that market-seeking motives play a dominant role in M&A.

With the increase in multiple M&A in recent years, there is a potential risk in this development. The intensified M&A activity at the industry level often implies a higher number of acquisitions that are primarily driven by mimetic forces; perceived pressures to imitate strategies of successful competitors (DiMaggio & Powell, 1983, p. 153) making them more vulnerable to failure, rather than following economic rationale. Additionally, a higher number of attempted acquisitions suggest, unless it coincides

with an equal rise in the number of entries into the industry, that each potential acquirer faces a relatively smaller number of potential targets. In that case it reduces the possibilities for quality partnership and leads to a greater probability of misfit among the transaction partners (Muehlfeld et al., 2011, p. 470).

2.1.3 Merger and acquisitions waves

Merger waves are positively correlated with increases in share prices, price/equity ratios and with the overall business cycle in general. However, the causality of the relation is not always clear. On the one hand an upswing of the business cycle increases share prices and high share prices reduce the cost of financing M&A. On the other hand the same upswing of the business cycle increases the profits of the target and increase takeover costs (Brakman et al., 2006, p. 9).

In 1986, food processing companies were involved in 196 attempted takeovers. By 2006, this number had risen to 983. Between 1986 and 2006, 13,911 M&A attempts in total were publicly announced in which food processing companies were involved. As the nature of consolidations has changed rapidly during recent years, so has the geographical distribution. "While the US accounted for about 80% of both the size and value of worldwide transactions in the beginning of the 1980s, it was down to 46% between 1997 and 2006. In the same period, Europe's market share rose from 10% to 30% (Cools, Gell, Kengelbach, & Roos, 2007, p. 10). Norway also experienced a significant growth in its M&A activity in the period, with a rise in total deal value of 1.1 mUSD in 1993 to 6.8 mUSD in 1997 (Amland & Line, 2010, p. 11). Since the change in the European market structure is rather recent in terms of M&A history, most research on M&A has focused on the US.

In a historical context there is a substantial variation of M&A, with periods of rapid increase followed by periods of rapid decline that have been identified over the course of the 20th century. Bodolica & Spraggon, (2009) identified six merger waves in the US market in the period 1897-2007, each characterized by different transaction trends. An overview of the characteristics of each merger wave can be seen in Figure 2. During the first wave (1897-1904), horizontal mergers dominated the market. The second wave (1905-1929) saw transactions that increased the vertical integration of merging companies. Conglomerate mergers characterized the third wave (1965-1969), but as many of these transactions failed, the fourth wave (1984-1989) took a turn

towards higher specialization, hostile takeovers and leveraged buyouts (Holmstrom & Kaplan, 2001, p. 130). In the fifth wave (1992-2001) mergers tended towards strategic deals and were dominated by the internet-bubble. The most striking features of the sixth wave (2004-2007) are the globalization effect on M&A, the record numbers of transactions and the size of the deals (Line & Amland, 2011, p. 11).

The researcher gathered data during the research period in order to reflect on the latest merger wave, i.e. after 2007 till current date in order to identify its characteristics. In 2008 the industry was shocked due to the effects of the ISA disease in Chile which led to a temporary slowdown of mergers. The situation remained challenging in 2009 when the influences of the economic recession started taking its toll coherently with the ISA virus, forcing large companies like MHG to lay off employees and focus on its core business regions. Strengthened regulatory framework became a priority with governments issuing fishing quotas making the players on the market compelled to answer by enforcing sustainability and hygiene strategies in their operations. Geographical distance started weighing more and globalization forces took effect since demand in some regions was now being answered from other countries. Driving factors that gained importance the most were; regulatory framework, sustainability, and globalization.

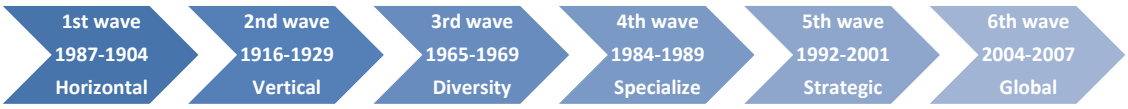


Figure 2. Characteristics of the six merger waves. (Bodolica & Spraggon, 2009)

Like previously covered, in the 1990's M&A activities started to increase significantly within the EU countries. These acts were stimulated by the European Commission (EC). The EC has undertaken considerable effort to adopt a level-playing field for European takeover activity by constructing a harmonized market. The general aim of these efforts was to create favorable conditions for the emergence of a European market for corporate control, including the creation of efficient takeover mechanisms, a common regulatory framework, and the strengthening of shareholder rights, especially of minority shareholders (European Commission, 2007, p. 94). With the emergence of the Economic and Monetary Union, followed by the introduction of the Euro in 1999, it presents a textbook example of a geopolitical change that reduced transactions costs of cross-border business (Muehlfeld et al., 2011).

2.1.4 General driving forces for M&A

Whatever the motivation, or route taken in the different types of mergers, the objective of companies engaging in such transactions is to improve growth, profits, and the quality of earnings. Holding other influential factors constant, it would be expected that such improvements in performance would lead to a reduction in the cost of capital and an increase in shareholder value (Moles & Terry, 1997, p. 354).

> Driving forces are key internal forces (such as knowledge and competence of management and workforce) and external forces (such as economy, competitors, and technology) that shape the future of an organization. The more the effects generated by one force in the context considered, the more it will influence other forces and will be considered very important for the specific sector. (Mora et al., 2011, p. 3)

According to Neary (2004) there are two motives to explain M&A; a strategic motive (reduce competition) and an efficiency motive (cost reductions). Selling to a foreign company is a form of contractual convergence similar to the decision to list a company in countries with better corporate governance and better-developed capital markets. Pagano, Röell, & Zechner, (2002) and Reese Jr. & Weisbach, (2002) state that companies from countries with weak legal protection for minority shareholders list abroad more frequently than companies from other countries. They reveal that companies in countries with weaker investor protection are often sold to buyers from countries with stronger investor protection. Reese Jr. & Weisbach (2002) draw the conclusion that better investor protection is correlated with a more active market for mergers and acquisitions. Investor protection can affect the volume of M&A because it affects the magnitude of frictions and inefficiencies in the target country (p.73).

Accounting standards measure the quality of the transparency of accounting information. This variable affects M&A activity because good disclosure is a necessary condition for identifying potential targets. Accounting standards also reflect corporate governance, because they reduce the scope for expropriation[2] by making corporate accounts more transparent (Rossi & Volpin, 2004, p. 278).

[2] Expropriation: To take property or money from somebody, either legally for public good or illegally by theft or fraud.

Table 1 demonstrates a summary of driving forces of M&A activity that have been identified according to the theory of mergers and acquisitions and will be covered in the upcoming chapters. Some of them have similar characteristics but will be kept separately since they are identified in different contexts by various researchers in different times.

Table 1.

Overview of M&A driving forces

1. General driving forces for M&A **1.1 Sector level variables:** (a) Market size (b) Labor cost (c) Productivity (d) Follower **1.2 Country level variables:** (a) Geographical distance (b) Cultural distance (c) Corporate tax (d) Market access (e) Market capitalization and privatization (f) Ownership structure (g) Legal rules (h) Financial openness	**2. M&A driving forces in the protein industry:** (a) Efficiency gains (b) Managerial motives (c) Monopolistic motives (d) Speculative gains **3. Driving forces influencing future development of farmed salmon:** (a) Production (b) Market (c) Public acceptance and consumption (d) Regulatory framework

Note. **The researcher's presentation based on the theoretical chapter.**

2.1.5 Sector level vs. country level variables

Bertrand et al. (2007) performed a study of M&A between multinational companies selling goods at a very large scale on the European market between the years 1990 to 1999 where joint-ventures were excluded. They identify several independent variables which they divide into two groups; sector level- and country level variables. These variables will be evaluated, along with others, in the case study of this thesis as influential driving factors to M&A activity. The variables will be listed and described in the following two sub-chapters.

2.1.5.1 Sector level variables

This chapter will describe the four variables that have been identified amongst large multinational companies within the sector of their operations. These variables are: *market size, labor cost, productivity,* and *follower.*

(a) *Market size:* this factor is expected to stimulate M&A activities where trade flows and production are often taken into consideration (Bertrand et al., 2007, p. 193).

(b) *Labor cost:* is an indication of company's production costs. In a scenario where production cost increases significantly then it generally discourages a company from taking over another company if all influential factors are maintained constant. This variable is also linked to the quality level of staff members since more educated and skilled staff normally leads to higher wage costs (Bertrand et al., 2007, p. 193).

(c) *Productivity:* is a large factor which is not measured with an exhaustive list of indicators. According to Bertrand et al. (2007) the technological stages within an industry of a country and management efficiency are the most common ones. The most common scenario involving technology factors is when the acquiring company brings its superior technology to the acquired one, leading to efficiency gains. When M&A occur it is known that the ownership of productive resources is transported from a less efficient company to a more efficient one (p. 194).

(d) *Follower:* this factor represents behaviors among multinational corporations in a strategic way to imitative other players. Corporations that are considered followers try to influence the market leaders and damage their competitive advantage by investing abroad. When two or more competitors merge together it generates an incentive for other companies to follow, meaning it may increase the odds of them merging as well to strengthen their market position. It is also known that managers of large companies may imitate activities of others to minimize their business risk (Bertrand et al., 2007, p. 194). Schenk (1996) argues that it turns out to be better for a manager to make the same mistake as their competitors, rather than being the only risk-taker making the right decision, even though the decision turns out to be the right one (p. 256).

2.1.5.2 Country level variables

This chapter will describe the eight variables that have been identified amongst large multinational companies within local country markets they are operating in. These

variables are: *(a) geographical distance, (b) cultural distance, (c) corporate tax, (d) market access, (e) market capitalization & privatization, (f) ownership structure, (g) legal rules,* and *(h) financial openness.*

(a) *Geographical distance:* this variable measures the geographical distance between the countries of the acquired and the acquirer's company. A long distance creates an incentive for companies to invest abroad instead of exporting to the host country. However coordination costs are likely to rise and information in foreign markets are more ambiguous, which may discourage the host country company to invest abroad (Bertrand et al., 2007, p. 195).

(b) *Cultural distance:* Geert Hofstede (1983) identifies four main cultural dimensions which are; power distance, uncertainty avoidance, individualism-collectivism and masculinity-femininity.[3] A high cultural distance in a business environment leads to an increase in operational costs of foreign subsidiaries and raises the risk associated with FDI. Furthermore, a high cultural distance makes organizational and technological skills more difficult to transfer between business units. This factor might as well increase integration costs during a merger of companies because of less cooperation between employees, therefore the costs may overcome the potential profits of cross-border mergers (Bertrand et al., 2007, p. 195).

(c) *Corporate tax:* This variable reveals the average tax a company pays of its income. A rise in corporate taxes generally reduces merging gains while holding other influential factors constant, therefore this factor should have a preventive effect on M&A activity (Bertrand et al., 2007, p. 195).

(d) *Market access:* This factor evaluates trade integration between two countries. Low tariff costs imply a better market access which motivates FDI, however if tariff costs are high the incentive to locate a company abroad increases to lower exporting trade costs. On the other hand, an increase in market access also means more competition (Bertrand et al., 2007, pp. 195–196).

(e) *Market capitalization and privatization:* The market capitalization of listed companies in stock markets provides data on M&A opportunities in a certain country. This variable also provides a measure of the size of financial markets where larger

[3] See further detail on Geert Hofstede's cultural dimensions in Appendix 3.

funds and easy access to local capital is generally appealing to foreign companies. *Privatization* is basically a measure of privatization activity within a given country. This factor is often connected to sales of state-owned resources which generally make it easier for foreign companies to enter the market by reducing the constraint on available domestic companies (Bertrand et al., 2007, p. 196)

(f) *Ownership structure:* measures the distribution of shareholders within a company. When ownership structure of shares is diverse, M&A is more important as a disciplining tool in directing managers' behaviors. Furthermore, a focused ownership structure is more likely to create a barrier for new investors to the company, when owners are determined to keep the same management in charge every year (Bertrand et al., 2007, p. 196).

(g) *Legal rules:* recognizes the legal origin of the commercial law i.e. common law versus civil law. La Porta, Lopez-de-Silanes, Schleifer, & Vishney (1998) argue that common law countries offer stronger legal protection for investors than civil law countries. Bertrand et al. (2007) state that the variable reveals some differences in corporate governance within a country, given that legal framework of a country shapes the corporate governance in companies (p. 197).

(h) *Financial openness*[4]*:* represents the share of stocks being held by foreign residents on the host country stock market. A rise in financial openness decreases barriers for foreign investors. Additionally, this variable is linked to better and more transparent information on investment opportunities and more confidence of foreign investors in the host country's economy(Bertrand et al., 2007, p. 197).

2.1.6 M&A driving forces in the protein industry

There are many motives that have been recognized in the theory of M&A. In this chapter the ones that have been identified in correlation with the protein industry will be covered.

Adams, Love, & Capps Jr. (1997) state that the majority of drivers for M&A fit into four categories; (a) efficiency gains, (b) managerial motives, (c) monopoly, and (d) speculative gains.

[4] Limitations of the study reveal that this variable was only available for 10 countries when the article was published in 2007 (Austria, Belgium, Finland, France, Germany, Italy, Netherland, Norway, Spain and Sweden).

> Mueller (1969) also recognizes these broad motives, he argues:
>
> If firms maximize profit, mergers will take place only when they produce some increase in market power, when they produce a technological or managerial economy of scale, or when the managers of the acquiring firm possess some special insight into the opportunities for profit in the acquired firm which neither its managers nor its stockholders possess (p. 643).

(a) *Efficiency gains:* Mergers allow companies to take advantage of economies of scale where existing companies in the industry are operating at levels below optimum capacity. Factors which contribute to economies of scale are; indivisibility of overhead, asset fixity, and labor specialization. Further cost reductions may be achieved by lowering administrative or transportation costs. Reductions in tax costs also may be achieved by taking advantage of unused tax credits or accumulated tax losses (Adams et al., 1997, p. 4). Synergy, the concept by which two companies combine and increase their value, may be achieved by these cost reductions. Efficiency gains also may be achieved by reducing transactions costs through a vertical merger. When an environment is complex or uncertain, the transaction costs of negotiating and enforcing contracts are high, leading to an incentive to merge. By merging, companies can reduce transaction costs, avoid opportunistic behavior and achieve more efficient governance by internalizing exchanges (Williamson, 1987, p. 131).

(b) *Managerial motives:* These ranges from profit to personal motives. Managers may want to maximize revenue or pursue growth maximization. Growth maximization may be achieved by acquiring new companies which are experiencing rapid growth (Beckenstein, 1979, p. 109). Managers also may find it cheaper to acquire growth rather than to develop new areas, especially when growth is desired in foreign markets. Mergers may also allow managers to reduce risk and increase returns through diversification (Adams et al., 1997, p. 4). Managerial self-interest is recognized as a potential key factor causing mergers. Achampong & Zemedkun (1995) found out that managers achieve similar benefits through either mergers or promotions. By gaining control of a larger corporation through a merger, managers increase their scope of influence as well as their salaries.

(c) *Monopolistic motives:* In context to this variable Goldberg (1983) defines profitability and dominant size to be merger motives. "If a sufficient number of companies in one industry merge, the resulting companies would face less competition and acquire additional market power" (Carlton & Perloff, 2008, p. 23). The high degree of correlation between increased market share and increased profits is widely accepted. According to Mueller (1969), this motive is common across all three types of mergers; horizontal, vertical, and conglomerate. Not only can companies gain market share but also they may be in a better position to prevent entry. If companies can increase market share through horizontal merger they may find collusion more effective. Connecting collusion with cost reductions may allow companies to raise barriers to entry. Vertical mergers can increase market power by providing a confined outlet for the products of a company one step forward or backward in the production chain. They may also allow the company to exercise third degree price discrimination[5], thereby raising profits (Perry, 1978, p. 210). Vertical mergers may also help to prevent entry by requiring a potential entrant to enter all markets in which a company operates to compete effectively. Conglomerate mergers can increase market power and deter entrants if they provide confined markets for each company's products (Adams et al., 1997, pp. 4–5).

(d) *Speculative gains:* Gort's (1969) theory of economic disturbance argues that forces which generate inconsistencies in valuation are decisive in determining variations in merger rates both among industries and over time. Golbe & White (1991) further state that "periods in which there are greater divergences in opinion about companies' future prospects are also periods in which the level of M&A activity is likely to be greater" (p. 272). These periods of uncertainty are traced back from the introduction of new technology or unexpected external shocks to an industry. A second speculative incentive, referred to as the bargain theory, states that mergers occur when potential purchasers believe that asset's current prices constitute 'bargains'. Merger activity should be greater when prices of existing firms are low relative to new asset prices. Melicher, Ledolter, & D'antonio (1983) also find speculative motives to be an important factor affecting merger activity. They find M&A activity increases with expectations of economic growth as measured by stock prices.

[5] Third degree discrimination: When a supplier of a product offers different prices between locations and customer groups but the cost of making the product is the same.

More specifically to the food industry, Connor & Geithman (1988) provided a qualitative review of motives for mergers and acquisitions. They cited profit maximization, gains in efficiency, reduced risk, increased market power, ease of financing, and managerial hubris as potential motives for mergers.

According to (Muehlfeld et al., 2011) there are two specific aspects of the institutional environment and may be particularly important in an M&A context. Those are; regulatory changes and shifts in transaction costs in response to geopolitical changes. (Mitchell & Muhlerin, 1996) also identify regulatory shocks as key drivers of M&A activity. Due to its critical role in society, the food industry is subject to particular regulatory examination, not only in terms of competition policy but also with respect to food quality and safety regulations (Muehlfeld et al., 2011, p. 468).

2.2 Driving forces influencing future development of farmed salmon

This chapter will cover the driving forces that have been detected in the salmon processing industry and are predicted to influence the sector in the nearest future.

A study published in early 2011 by Mora et al. revealed opinions of 204 experts from 89 companies all over the world on the driving forces leading to the future of the salmon industry and the introduction and effects of genetically modified salmon. A questionnaire that categorized these potential driving forces was sent to the 204 individuals for evaluation. The indicated drivers will be held parallel to the research performed in this thesis, given the similarities of the subjects within the same industry. Mora et al. (2011) grouped driving forces from the literature, which potentially can affect salmon in the food processing industry, into four major categories. The categories are: (a) production, (b) market, (c) public acceptance and consumption, and (d) regulatory framework. Each category includes its sub-drivers which will now be described with each variable.

(a) *Production* is influenced by four other forces; (i) productivity, (ii) production cost, (iii) profit, and (iv) producer's acceptance.

(i) Productivity: Farmed salmon grows faster than the one that is wildly caught due to the fact it is not dependent on seasonal breeding like the wild one. Positive factors are reduction in production costs which generates increased production

and consumption. Negative factors are potential environmental and animal welfare problems (Mora et al., 2011, p. 5).

(ii) Production cost: Cost components like feed, medic, and labor may be reduced, while others may increase like confined systems and new regulations (e.g. traceability and labeling).

(iii) Profit: profits depend on production costs, market price and property right legislation.

(iv) Producer's acceptance: potential profits may influence producers' acceptance (Mora et al., 2011, p. 5).

(b) *Market* involves three forces; (i) global supply, (ii) market structure, and (iii) market price.

(i) Global supply: this aspect is influenced by productivity, producers' acceptance and market price.

(ii) Market structure: this aspect is likely to cause the exit of small producers and the increase of market concentration and integration. Market price and production costs can modify market structure, which can influence the profit distribution along the production chain.

(iii) Market price: main influential factors here are production costs, supply level, market structure and chain integration. Prices, in turn, can as well influence the acceptance of producers and consumers (Mora et al., 2011, p. 6).

(c) *Public acceptance and consumption* are divided into four driving forces; (i) public acceptance, (ii) consumer's preferences, (iii) global consumption, and (iv) human health.

(i) Public acceptance: this factor depends on food safety, environmental and animal welfare aspects, and general salmon consumption.

(ii) Consumers' preferences: consumers' perception depends on public acceptance, consumers' preferences and market price.

(iii) Global consumption: this aspect is affected by public acceptance, consumers' preferences and market price.

(iv) Human health: health benefits from an improved nutrition (e.g. higher omega-3 fatty acid intake) may result from a higher consumption of fish, thanks to lower

market prices (Mora et al., 2011, p. 6; Smith, Asche, Guttormsen, & Weiner, 2010, p. 1052).

(d) *The Regulatory framework* includes four driving forces; (i) labeling and traceability, (ii) intellectual property rights, (iii) environmental impact and policy, and (iv) animal welfare.

(i) Labeling and traceability: the introduction of labeling and traceability schemes means higher production costs while, at the same time, improvement of public acceptance. These factors are more important when it comes to genetically modified salmon (GM) which has not reached the common market, at least not yet. The EU already have specific rules for GM operations, the US salmon industry requires the US Food and Drug Administration (FDA) to stick to current rules that prevent specific labeling for GM food (Mora et al., 2011, p. 6).

(ii) Intellectual property rights: this includes legislation aspects like licenses, trademarks and copyrights, which affect production costs.

(iii) Environmental impact and policy: the risk of salmon escaping from seawater pens during the on-growing period of the salmon farming cycle has been an environmental issue. The influence it will have for the wildlife stock of salmon is still unforeseen. Some governments take this risk seriously where the seafood farming industry is large (Mora et al., 2011, p. 6). The effects of GM salmon escaping to wild stocks have dominated the debate on environmental risk. This risk can be prevented by physical and biological containment. As noted by Smith et al. (2010), if each GM salmon substitutes for just one non-GM farmed salmon, then waste effluent and pressure on wild sources of fish meal and oil would decline because the GM salmon require less feed to grow. But if GM salmon introduction will expand the overall market enough to offset the input reduction, then environmental pressure will increase (Mora et al., 2011, p. 6).

(iv) Animal welfare: Disease has been an influential factor to the life stock of salmon and as well on consumer preference. The latest large case of disease outbreak in farmed salmon was detected in July 2007 in Chile and it was related to questionable environmental practices. The infectious disease of the Atlantic salmon was called Infectious Salmon Anemia (ISA) and credited to a lack of appropriate sanitary controls (Welle-Strand & Toje, 2009, p. 17). According to

Dr. Felipe Cabello "parasitic infections, viral infections, fungal infections are all disseminated when the fish are stressed and the centers are too close together" (Welle-Strand & Toje, 2009, p. 17). Animal welfare is certainly a fundamental factor when it comes to the quality of the product as well. If necessary precautions are not enforced then other negative effects can damage the salmon industry quite heavily.

2.2.1 Economies of scale

The general definition for economies of scale is "the cost advantages associated with large scale production" (Hill, 2003, p. 683; Ross et al., 2008, p. 816; Besanko, Dranove, Shanley, & Schaefer, 2009, p. 43) . Furthermore it connected to the scenario when a country specializes in producing a certain good in large quantities which derives to an expansion of the production output leading to an increased productivity and a reduction in unit cost (Hill, 2003, p. 156).

Technological changes in salmon farming, processing and retailing have replaced labor with capital equipment, increasing economies of scale and, in some stages, economies of scope (Mora et al., 2011, p. 4). One strategy to increase a firm's competitiveness is achieving economies of scale by expanding production. If increases in output lower average costs of food-processing firms, some of these benefits can be transferred to consumers and/or upstream producers, thus improving efficiency in the entire supply chain (Gervais et al., 2008, p. 538).

Salmon farming, like most other aquaculture industries, started as a small-scale industry, with locally owned small companies. However, as production and marketing became more advanced, there appeared to be economies of scale and economies of scope in several of the processes. In countries where there were no regulations on ownership, relatively large companies emerged early. For Marine Harvest Group this first occurred in Scotland, while from early on the degree of concentration was highest in the Chilean industry. In Norway the creation of larger firms was prevented by ownership regulations, which limited harvesting volumes to the maximum of 25% of the total market for a single corporation (Asche & Bjorndal, 2011, p. 39).

2.2.2 Economies of scope

Economies of scope exist if a company achieves to keep its production costs at a minimum level while increasing the variety of their produced outputs. In contrast to the economies of scale concept which is usually connected to the benefits of the declining average cost functions in two or more companies, economies of scope is defined in terms of the relative total cost of producing a variety of outputs in only one company (Besanko et al., 2009, p. 43). If an organization has under-utilized resources or capabilities it cannot effectively close or dispose of to other potential users, it may be efficient to exploit them by diversification into a new activity. This generally means that there are economies to be gained by extending the scope of company's activities (Johnson, Scholes, & Whittington, 2005, p. 282).

2.2.3 Sustainable business

This chapter will cover the seafood industry in connection to sustainability and the trend development towards more farmed and less wild catch. The development of sustainability in the farmed salmon sector has become a more popular term in recent times. However there does not seem to be one clear definition of the concept. One commonly used definition of sustainable development is stated by the World Commission on Environmental and Development which is: "development that meets the need of the present without compromising the ability of future generations to meet their own needs" (Stead & Laird, 2002, p. 442).

The general supply of seafood in the world is turning more to farmed seafood as the supply from wild catch is stagnating in several regions and for many important species. The same trend is seen in the supply of salmonids. 1999 was the first year that the total supply of salmon was dominated by farmed. Since then the share of farmed has increased and peaked at approximately 67% of the total supply in 2008. For all of those species the farmed Atlantic salmon is the only one which has seen a growth in supply every year (Marine Harvest, 2010a, p. 6).

In 2007 the UN Food and Agriculture Organization (FAO) estimated the global seafood supply to 140 million tons, whereof about 95 million tons was wild catch. FAO's estimates for the year 2030 a reduction in wild catch to about 90 million tons while farmed seafood will increase from 45 million tons to 85 million tons. Aquaculture

will then supply nearly 50% of all available seafood in the world. Most of the growth will come before 2015 (Marine Harvest, 2010a, p. 9).

Marine Harvest Group published its first sustainability report in 2008, a full year after the outbreak of the ISA virus in Chile. The report discloses, reportedly for the first time, detailed statistics on the company's antibiotics and energy use. The report reveals that, primarily as a result of salmon Chilean regulations, MHG could use 732 grams of antibiotics per ton of salmon produced in Chile in 2007 while using only 0.2 grams per ton in Norway (Marine Harvest, 2009b, p. 16; Barton & Floysand, 2010, p. 750).

There is a possible threat to the current sustainability strategy in the future. Feeding salmon with fish meal and oil may not be considered organic and thus not sustainable for the environment in the long term. Some opinion makers object to the possible organic certification of carnivorous fish such as salmon grown in ocean net pens that are fed fish meal and oil from wild harvested fisheries. Arguments against this form of aquaculture have spun from several non-governmental organizations (NGO's), well known to be critical of aquaculture, particularly of salmon farming (Lockwood, 2007, p. 29). MHG started to enforce a sustainable fisheries management strategy, the 2008 sustainable report stated that though that salmon farming represents an efficient utilization of marine raw materials, the use of these raw materials can be problematic when the sustainability of the different fish resources is contested (Marine Harvest, 2009a, p. 28).

The following critiques have been asserted; carnivorous fish cannot be organic, wild fish cannot be used in organic feeds, harvesting wild fish resources is not sustainable, there are dangerous health risks from contaminants in fish fed fish meal and oil, and environmental damage results from the use of marine net pens. Although fish meal and oil produced from seafood processing trimmings of landed fish from sustainable managed stocks are allowed in organic aquaculture in some parts of the world, this source of meal and oil is unacceptable by some (Lockwood, 2007, p. 29).

These critiques should however be taken with precaution since some of them address the issues of marine net pens and fish meal fed fish with unsupported broad generalities. A clear definition of true sustainability is lacking and an alternative to how organically grown fish should be maintained (Lockwood, 2007, p. 31). The exclusion of fish meal and oil from wild fisheries is a critical manner since almost all fish and shrimp

raised in aquaculture require significant amounts to support normal growth and maintain health. Therefore it is an important part of sustainability development to make sure the feed does not have a negative impact on salmon farming in the future.

2.2.4 Globalization

Globalization processes and technological innovations operate in a sequence. On the one hand, globalization could not have taken its current form and shape without modern information and communication technologies. On the other hand, without the large investments of the leading food companies in product innovations and marketing campaigns, the convergence of consumer preferences would have been less effective (van Witteloostuijn, 2010, p. 10).

> Globalization refers to worldwide processes that make the world, its economic systems, and its society more uniform, more integrated, and more interdependent. Globalization is the process of the economy becoming worldwide in scope (i.e., an expansion in the scope, scale, and velocity of international transactions). The globalization process is a useful way to explain the movement of people, goods, and ideas within and among various regions of the world and their cultural, political, and environmental systems. Globalization is a process that shrinks the world by reducing the transport and communication times and costs [between] places. (Stutz & Warf, 2007, pp. 9–10)

In principle, economic globalization implies the increased mobility of both key factors of production; capital and labor. Economic globalization is argued to have gained importance in the 1990s and 2000s due to market liberalization and technological progress. According to a study conducted by Arjen van Witteloostuijn in 2010, economic globalization in the food industry will increase both market concentration and density, due to worldwide consumer preference convergence and regional differentiation. As a result, the expectation is that large food companies will grow and the practical presence of small specialist food members and newcomers will increase.

Companies, societies, and individuals that were once unaffected by events and economic activity elsewhere share today a single economic world with other companies, societies, and workers (Stutz & Warf, 2007, p. 12). With the free movement of capital and labor, countries will specialize according to the logic of comparative advantage.

Large food companies will transmit such advantages by slicing up the value chain on a global scale, whereas small food companies will benefit from locational advantages. This implies an increase in both FDI and international trade. As a result, prices will get lower and innovations will be stimulated, leading to an increase in consumer surplus across the whole globalized world (van Witteloostuijn, 2010, p. 5).

3 Farmed salmon; industry profile

Salmon farming is the fastest growing sector in world aquaculture; aquaculture in turn is the fastest growing food industry in the world (McLeod, Grice, Campbell, & Herleth, 2006, p. 2). Worldwide fish demand is expected to increase dramatically in the upcoming years, not only due to population growth but also because of increasing disposable income. Fish farming is becoming increasingly important, especially for high value species, to satisfy the demand, and a rapid increase in aquaculture production has been observed (Mora, Menozzi, & Merigo, 2011, p. 2).

There are five main sources for animal protein; cattle, poultry, sheep, pork and seafood. The first four are farmed, while available seafood is also being farmed in increased measures. Salmon is a very efficient product for a number of reasons, e.g. it has a very low feed factor compared to other sources of meat, like chicken, pork and sheep. Most of the fish is edible while other sources of meat have a higher level of waste or non-edible parts. The combination of these two factors gives salmon a favorably high volume of edible meat per kg of feed fed. Regarding consumption of fresh water, fish does not need any during its life cycle. However to produce 1 kg of beef requires 14,000 liters of fresh water for consumption (Marine Harvest, 2010a, p. 11).

The development of salmon farming depends on many factors like market demand and competition, availability of environmental resources, technical development and transfer, infrastructures, investments, human resources and institutional system (Bostock et al., 2010, p. 2904). The rapid increase of salmon farming was possible thanks to the decline of production costs, better food conversion rate, the development of new fish vaccines, and new farming techniques. The increase of world salmon aquaculture and the relative decline of wild-caught fish contributed to the reduction of the seasonality of fish processing and consumption, as well as variability of quality and quantities processed (Mora et al., 2011, p. 4).

3.1 Industry consolidation historical summary

Today, the Norwegian farm industry is a world leader in the globalization of international seafood market (Liu, Olaussen, & Skonhoft, 2011, p. 415; Tveteras & Kvaloy, 2006, p. 428). The economic development has gone through a huge internal

growth making the industry a highly capitalized, vertically integrated and export-oriented market. It is owned and controlled by only a few multinational companies such as Marine Harvest Group, Cermaq, SalMar, Lerøy Seafood Group and Grieg Seafood (Liu et al., 2011, p. 415). According to statistics summarized by Liu, Y. et al. (2011) from the years 1994 to 2008 the number of companies in Norway has declined by 60% while the number of licenses has increased by 28%. In addition, Norwegian salmon companies have expanded abroad and established farming in other continents faster and greater than other countries (p. 415). The closest one to Norway is the United Kingdom. Norway has accounted for about half of the total European consumption, while the United Kingdom has accounted for about one-quarter of the European market (Mora et al., 2011, p. 5).

In 1986 the production of Atlantic salmon was 46 thousand tons and increased to 508 thousand tons in 2003. Similarly, for the same period the production of trout increased from 4.3 thousand tons, to 80.7 thousand tons. Historically it has turned out to be feasible to increase production substantially in most industrial sectors simply by putting more inputs into the production process. This has also been the case for the aquaculture sector. More areas have been set aside for aquaculture production. Influential factors like an increase in the amount of feed along with an increase in employment have correlated positively with increased production. On the other hand it is essential to consider the fact that these changes may not always have a direct effect on improved productivity (Tveteras & Kvaloy, 2006, p. 429).

In the years 2004-2006 several significant changes took place in the salmon farming industry. In 2004, when total salmon production was 1.58 million tons, the 10 largest companies produced 44% of total salmonid[6] production. In 2008, when total production increased to 1.94 million tons, their share increased to 54% (Asche & Bjorndal, 2011, p. 39).

Marine Harvest Group was at the center of this increase which started with its merger with Stolt Sea Farm, the third largest producer in 2004. This started a spree of mergers and the largest one was Panfish Norway's purchase of Marine Harvest and Fjord Seafood. The new company is the largest salmon producer in the world; even though Panfish's Scottish operation had to be sold off (Asche & Bjorndal, 2011, p. 39).

[6] Salmonid: a group of salmon species

During the last decade the salmon farming industry has been through a period of consolidation and the number of companies producing 80% of the Atlantic salmon has been reduced by 44% to 51 companies in 2009. In North America and the UK production is more consolidated than in other countries. It is estimated that in the UK more than 80% and in North America about 95% of the volume is produced by only five companies in each region. In Norway and Chile there are several more companies with a significant production volume of Atlantic salmon, but the consolidation trend is expected to continue (Marine Harvest, 2010a, p. 27).

As can be seen by comparing Tables 2 and 3, the takeovers and mergers of Marine Harvest, Stolt Sea Farm, Fjord Seafood and Panfish substantially changed the list of the world's leading salmon producers between the years 2004 to 2008. However, it is interesting to note that the number two and three producers were also substantially larger than they were before. The main reason for this is again mergers (Asche & Bjorndal, 2011, p. 40).

Table 2.

The world's largest salmonid producers in 2004

Rank	Group	Location of headquarters	Production (tons)
1	Marine Harvest	Netherlands	191.500
2	Aquachile	Chile	76.000
3	Stolt Sea Farm	Norway	74.800
4	Fjord Seafood	Norway	74.600
5	Cermaq	Norway	67.700
6	Panfish	Norway	62.200
7	Pesquera Camanchaga	Chile	43.000
8	Pesquera Los Fiordos	Chile	35.000
9	Cultivos Marinos Chiloe	Chile	35.000
10	Salmones Multiexport	Chile	34.000

Note. **(Asche & Bjorndal, 2011, p. 40).**

Table 3.

The world's largest salmonid producers in 2008

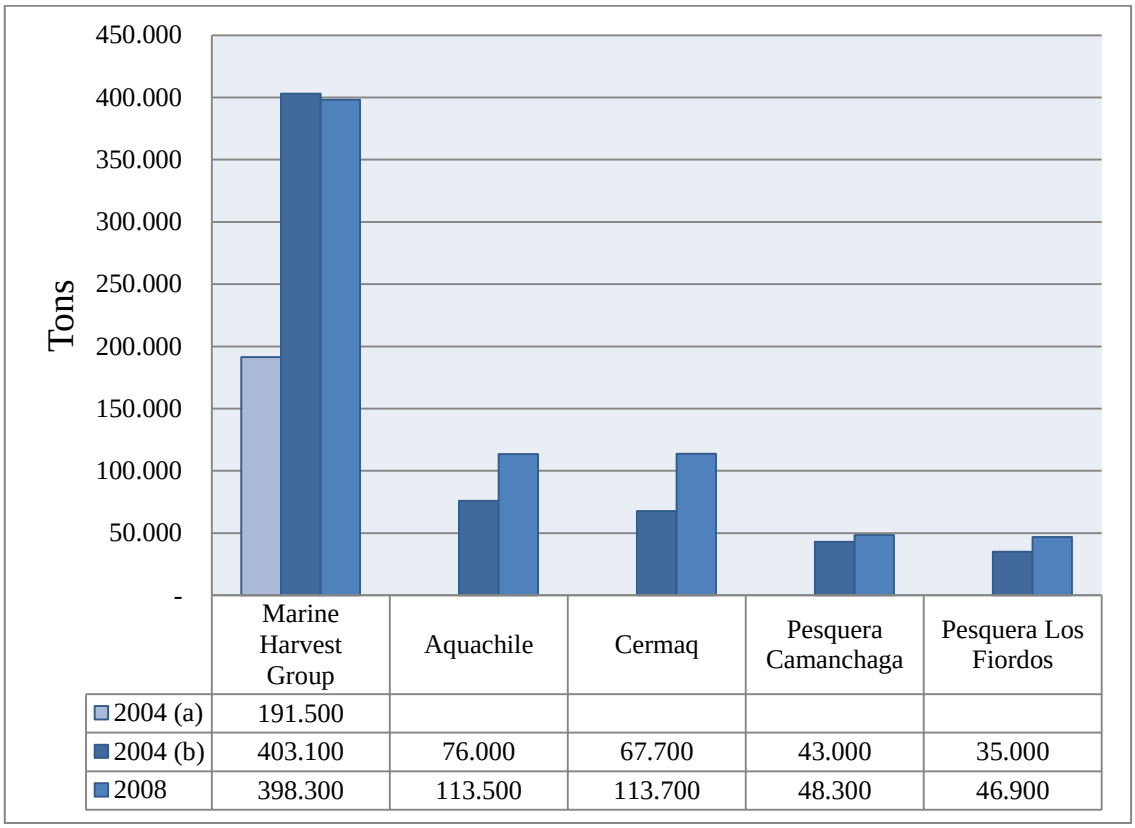
Rank	Group	Location of headquarters	Production (tons)
1	Marine Harvest	Norway	398.300
2	Cermaq	Norway	113.700
3	Aquachile	Chile	113.500
4	Leroy Seafood	Norway	103.000
5	Cook Aquaculture	Canada	78.000
6	Grieg Seafood	Norway	57.500
7	Norway Royal Salmon	Norway	54.000
8	Pesquera Camanchaga	Chile	48.300
9	Pesquera Los Fiordos	Chile	46.900
10	Salmones Antartica	Japan	33.300

Note. **(Asche & Bjorndal, 2011, p. 40).**

Despite the large merger of MHG the total production between 2004 and 2008 did not increase and this was before the ISA virus in Chile struck the industry. The main purpose of the merger was to gain the advantages of the economies of scope by being the largest player on the market. Number of production licenses is limited and the merger of MHG in 2006 has made it more difficult for other big players to merge. Figure 3 below displays a chart that the researcher put together to demonstrate the change in production of salmonids for MHG in 2004 before it joined the other three

companies (see 2004a in Figure 3 with production of 191.500 tons) and again in 2008 after the merger (see 2008 in Figure 3 with production of 398.300 tons). Figure 3 displays the total production of the four companies combined before the merger (see 2004b with production of 403.100 tons) for comparison of MHG production scope. The results reveal the huge increase that has taken place with the company.

It is however noticeable that the total combined production before and after the merger is similar. The other companies in the chart are those that were on the top 10 list in both of years. All of them have improved their production capacity in the period.



	Marine Harvest Group	Aquachile	Cermaq	Pesquera Camanchaga	Pesquera Los Fiordos
2004 (a)	191.500				
2004 (b)	403.100	76.000	67.700	43.000	35.000
2008	398.300	113.500	113.700	48.300	46.900

Figure 3. Largest producers of salmonids in tons between 2004 and 2008 (Researcher's presentation based on data from Table 2 and 3)

Another noticeable development is the location of corporate headquarters which is becoming less important as the size of the companies grows. This can be traced back to the 1990s, when an increasing number of the larger companies were being listed on stock exchanges, and share ownership started getting more international. For instance, although Marine Harvest was a part of the Nutreco group at the time and was listed as a Dutch company, Nutreco's international ownership made the company truly

international. When Marine Harvest merged with Panfish, the headquarters were moved to Norway. However, more than 80% of the shares were owned by international investors and less than 20% were Norwegian owned (Asche & Bjorndal, 2011, p. 41).

Since Marine Harvest Group is currently the largest seafood corporation in the world it will continue to be difficult to grow further via mergers and acquisitions in some market areas because it is sure to be scrutinized by competition authorities. However, it is likely that more mergers will occur between other companies in the industry. The difference is considerably large in size between MHG, with about 23% of global production, and Cermaq, the second largest with about 7%. While there will be opportunity for some small independent companies it seems likely that a substantial part of production will be carried out by large multinational companies, due to the qualities of the economies of scale and the demand of large supermarket chains for efficient logistics and traceability (Asche & Bjorndal, 2011, p. 41).

The salmon industry is often compared with the catfish industry, where four producers/processors account for more than 80% of the total supply. The industry seems to be following the same pattern, as the four largest producers have more than 90% of production in Canada and Scotland. The degree of concentration is much lower in the two largest producing countries, as the four largest companies have about 58% of production in Chile and just below 50% in Norway (Asche & Bjorndal, 2011, p. 41). The global industry is therefore not entirely dominated by a few multinational corporations due to regulatory framework and strict competition authorities. However the larger players do have a stronger financial support which makes them more capable of succeeding their goal of market dominance.

3.2 Farmed salmon value chain

There are special names for the salmon at each life stage. These different stages are demonstrated in Figure 4. The sequence is; broodstock, spawning, (A) viable eyed eggs, (B) alevins, (C) fry/parr, (D) smolt and adult.

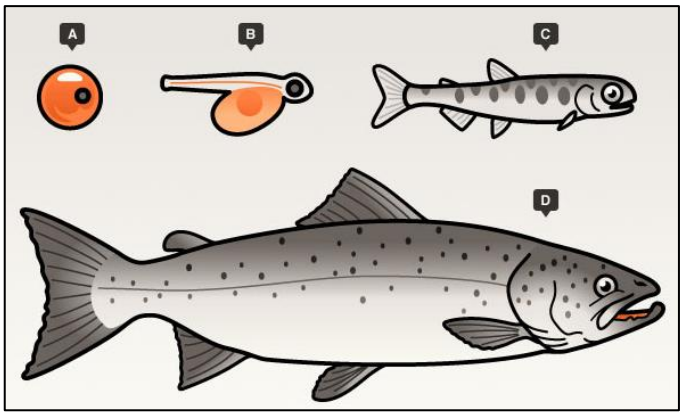


Figure 4. The different stages in MHG's seafood farming value chain (Marine Harvest, 2008c, para. 1)

The MHG seafood value chain contains five linked sections; freshwater, seawater, harvesting, processing, and finally distribution (Marine Harvest, 2008b, para. 3). The processing section divides into three stages; primary, secondary, and value added. Primary processing is the slaughtering and gutting part. This is the point in the value chain where standard price indexes for farmed salmon are related to. Secondary processing is head off, filleting, fillet trimming, portioning, different cuttings (e.g. chop-lets, smoking, making ready for meal or packing with modified atmosphere). The outputs that are secondary processed are called value-added products (VAP) (Marine Harvest, 2010a, p. 28). Marel operations start after the salmon has been slaughtered in the primary processing. They make software and machinery that serve the secondary and value added part of the value chain.

Every company has a collection of activities that are performed to design, produce, market, deliver, and support its value chain. The way it performs its individual activities are a reflection of its history, strategy, approach to implementing strategy, and the underlying economics of the activities themselves (Porter, 1998, p. 36). Tveteras & Kvaloy (2006) state that the value chain of aquaculture salmon production consists of six different stages. To get a holistic understanding of the whole process and where the companies in this thesis are operating, a short description of every stage is given:

1) *Initially there is the production of eggs that takes place at several licensed broodstock producers.*
2) *The eggs are then taken over by the juvenile producers. The stage at which the salmon will be able to move from fresh water to salt water is a difficult process because a high degree of survival is important for the biological and*

commercial success. This process takes place mainly on land and needs a steady supply of high quality fresh water to stimulate the environment of a running river.

3) *When the juvenile salmon reach a weight of 100-200 grams it is adapted for salt water and the important grow-out stage. At this stage the salmon will gain weight to about four to six kilograms depending on market demand. The salmon must be slaughtered before reaching sexual maturity. Licenses for salmon grow-out feeders are linked to a specific location. Licenses can be sold but not easily redistributed to another region.*
4) *After grow-out, the salmon will be slaughtered and transported either to the market as fresh round salmon, or processed and packaged in consumption-friendly packages. The number of facilities for slaughtering and packaging has been declining. Not all facilities are engaged in both slaughtering and packaging.*
5) *Transportation is part of the value chain. First, eggs are transported to the juvenile producers, after which follows the important and difficult transportation of juveniles to grow-out producers. This is done with specially designed boats. After slaughtering, most of the salmon is exported fresh to the European market, and transported on trucks designed for fresh fish transportation. Some salmon (and most of the trout) is frozen, and transported by boat, rail or truck to markets all over the world.*
6) *Finally there is the sales function which is taken care of by companies with licenses to export fish. Many of these companies are small and may act as trading agents working for commission. The largest sellers are producers themselves, selling their own fish and also fish from smaller producers without expertise in marketing abroad.* (Tveteras & Kvaloy, 2006, pp. 429–430)

3.2.1 The salmon aquaculture supply chain

A supply chain consists of all functions involved in receiving and fulfilling a customer need including all parties, directly or indirectly. It does not only include the manufacturer and suppliers, but also transporters, warehouses, retailers, and the customers themselves (Chopra & Meindl, 2009, p. 43). Figure 5 demonstrates a simplified model of the salmon aquaculture supply chain published by Phyne et al.

(2006). The researcher of this thesis has added colors to the Figure for easier understanding and the input of parenthesis, which are not a part of the original model. The red parenthesis displays the scope of MHG's operations within the farmed salmon value chain. The blue parenthesis displays the section from which part of MHG operations Marel is offering processing solutions; from the end of slaughtering till the end of the value-added part of salmon farming processing.

Figure 5 shows that salmon farming consists of a supply chain that includes input providers such as cage and feed manufacturers that are local and/or foreign. There are actors outside of the cluster such as national feed suppliers and EU retailers but the main focus is the connection inside the cluster directly linked to the production of farmed salmon (Phyne et al., 2006, p. 195).

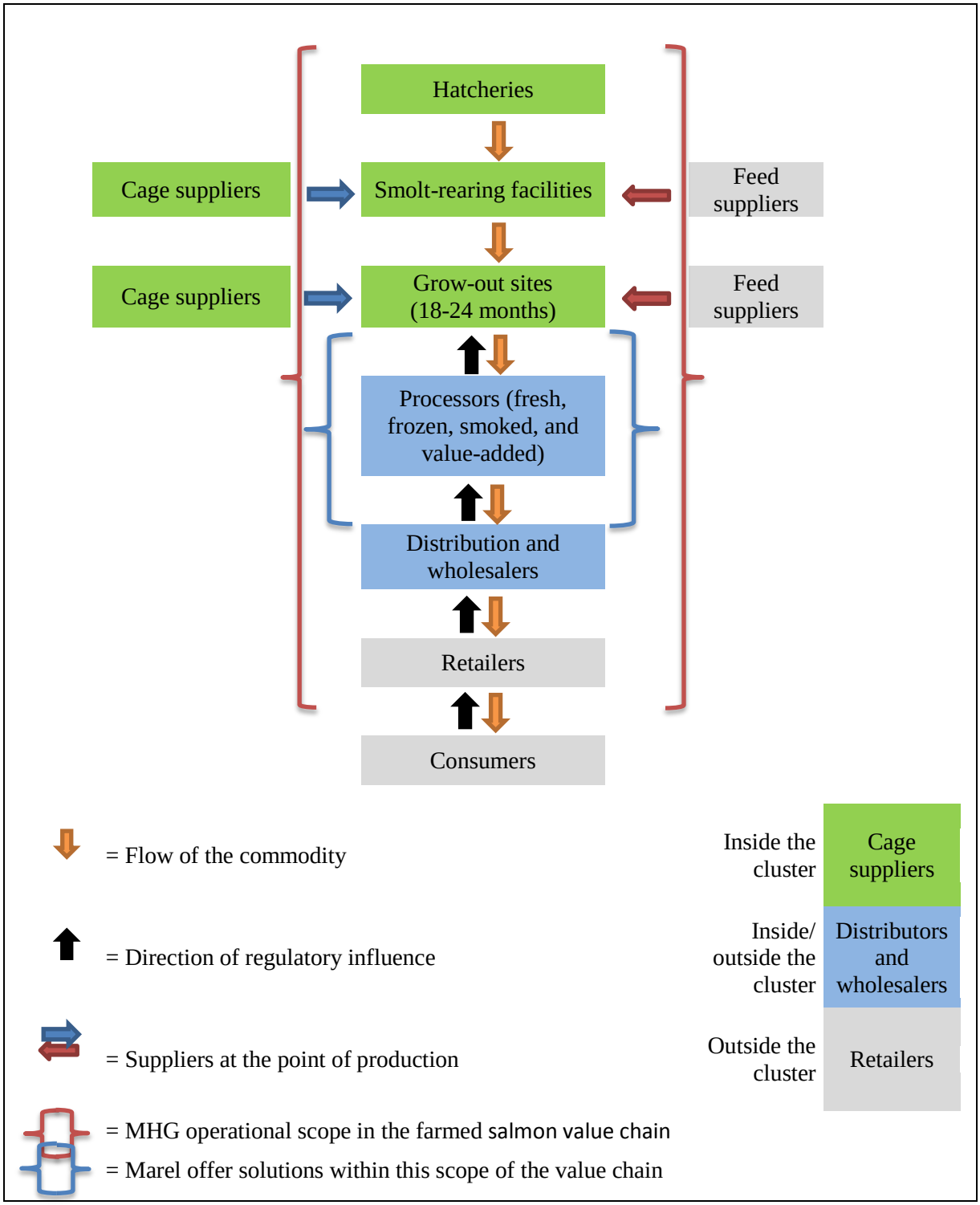


Figure 5. The salmon aquaculture supply chain. Researcher's presentation based on Figure from Phyne et al., 2006, p. 196.

3.2.2 The management cycle of fisheries

Figure 6 demonstrates the whole management cycle of fisheries and the origin of quotas decisions. MHG believes it is possible to influence the early stages of quotation decisions, even though the company has no direct influence. By using the purchasing power as the largest producer of farmed salmon and by working to achieve changes in the value chain, the company believes changes will be affected. Governments do not always follow the advice from research communities and as long as a quota is set, fish will be caught accordingly. MHG is dependent on sustainable fish stocks in order to secure its supply of marine feed raw materials in the long run. The company believes fish farming quotas must be set based on true sustainability principles. The fishmeal-, feed- and salmon producers have therefore initiated several initiatives in order to contribute to sustainable fisheries management (Marine Harvest, 2009a, p. 28).

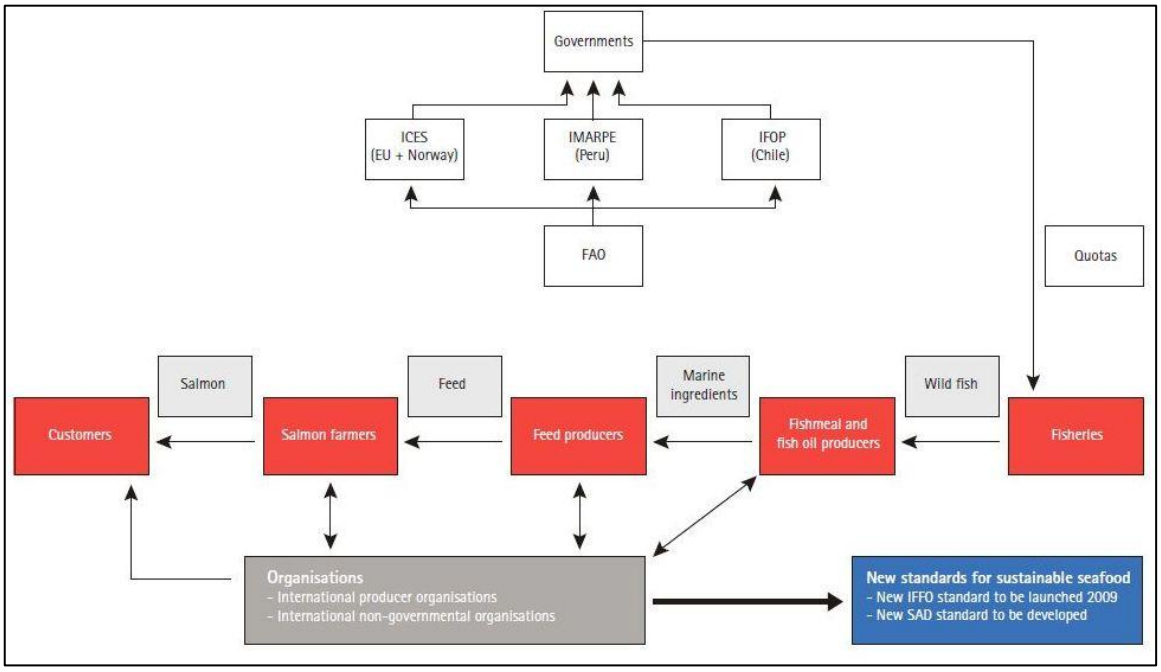


Figure 6. Sustainable fisheries management; the governments in each country enforce the legal fisheries management system and regulations. (Marine Harvest, 2009a, p. 28)

3.3 Farmed salmon life cycle

Fish farming is the principal form of aquaculture. It involves raising fish commercially in cages, ponds or tanks, usually for food, by regular release of juveniles (smolts), feeding and protection against predators etc. (Marine Harvest, 2010a, p. 33). While several salmon species are available both as wild catch and farmed, almost all

commercially available Atlantic salmon is farmed. Typically, salmon are anadromous which means they are born in fresh water, migrate to the ocean, and then return to fresh water to reproduce.

The total production cycle of Atlantic salmon takes approximately 10–16 months in freshwater and additional 14–22 months in sea water, total of 24–36 months. This is about the same in all regions except for Chile where the sea water temperatures are more optimal and average harvest weight is less, resulting in fewer months needed in sea water before harvested (Marine Harvest, 2010a, p. 34). About 60% of the world's salmon production is cultured. Cultivation takes place in large nets in sheltered quiet waters (fjords, bays) or in tanks on land. Most of the cultured salmon comes from Norway, Chile, Scotland and Canada (Marine Harvest, 2010a, p. 3).

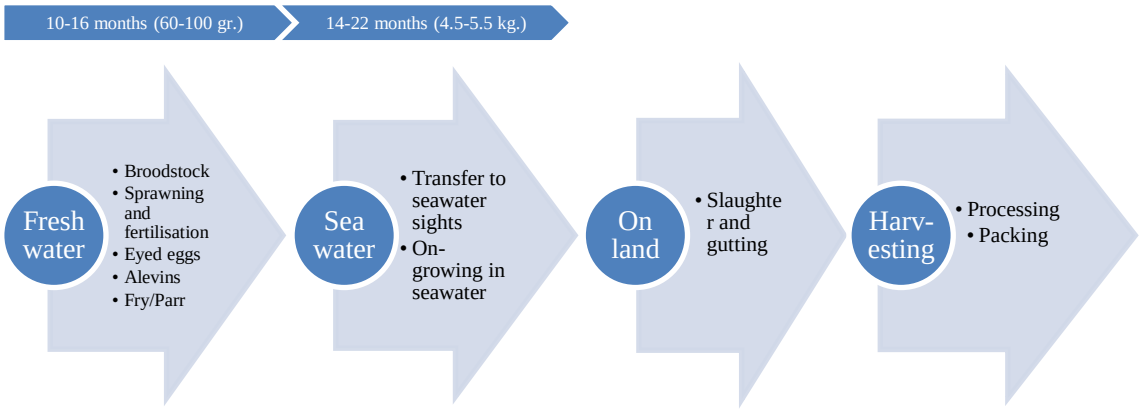


Figure 7. The salmon life cycle. The researcher's presentation based on (Marine Harvest, 2010b, p. 11)

The different stages of the salmon life cycle are demonstrated in Figure 7. The cycle begins with the 10–16 month freshwater period at the 'broodstock' stage where the salmon begins as fingerlings[7] in hatcheries (Phyne et al., 2006, p. 195) and is bred on selected characteristics such as growth, disease resistance, maturation and color. Next there is 'spawning and fertilization' where the eggs are stripped from females and mixed with milt. After 25–30 days 'eyed eggs' show their fertilization. The fertility development is dependent on temperature and normally there are around 5,000 eggs produced per liter. Next is the 'alevins' stage where the fish is still very small (less than 2.5 cm.). Yolk sack provides first stage nutrition which is absorbed by the fish. At the

[7] Fingerling: a small fish less than one year old, especially a salmon or trout

'fry/parr' stage the small fish starts to feed. By that time the temperature is set to 12–14°C where the fish are grown in the freshwater sites till they reach 60–100 gr. in weight, depending on market demand. At the end of this period, adaption to life in seawater (smoltification) begins (Marine Harvest, 2010b, p. 11).

Next is the 'transfer' to seawater sites by well-boats or trucks which is the beginning of 14–22 month (depending on temperature) seawater period. The 'on-growing' part (cultivation) is rather homogenous until the fish reaches 4.5–5.5 kg. before it is transported to packing stations (Marine Harvest, 2010b, p. 11).

Finally the salmon is taken out of the water and shipped by well boats to holding tanks near processing facilities and the 'harvesting' part begins. The salmon are starved to remove remaining medicinal residues before they are slaughtered, gutted, and packed(Phyne et al., 2006, p. 195; Marine Harvest, 2010b, p. 11). There is another stage not mentioned in the life cycle but is becoming increasingly more significant in the process, it is called 'pre rigor'. This is the stage between life and death just before the rotting begins, the gutting has been performed but the bones remain. The salmon is transferred in this condition to processors, often in other countries. This procedure maintains the best quality possible, like the salmon has just been caught from the water (S. Elíasson, personal communication, March 6, 2012).

The last step in the cycle is the three staged 'processing' part; the basic form in which the fish is sold to the first customer directly after it has been gutted. The initial processing step is the removal of the head (primary processing). Secondary processing takes the gutted fish and prepares products such as fillets, steaks and portions. This semi-processed salmon goes to retailers (in the case of fresh fillets) or processors in the EU who make a more finished product such as smoked salmon (Phyne et al., 2006, p. 195). At the final stage a range of different salmon products are prepared (value added products) with various handling methods depending on customer demand (Marine Harvest, 2010b, p. 11).

3.4 Marel; company profile

This chapter will cover a brief description on Marel's history, operational scope, main goals and missions. The goal is not to explore Marel's operations in-depth since it is not

the focus of the thesis. This coverage is meant to put the case study of Marine Harvest Group in perspective to the problems recognized in the research questions.

Marel is an Icelandic based company established in 1983 and is the leading global provider of advanced equipment, systems and services to the poultry, fish, meat and further processing industries (Marel, 2012a, p. 2) with around 15% market share. Marel Fish Industry Center (Iceland) focuses on the fish market segment, which is one of the four sub-divisions of the headquartered Marel in Gardabaer, Iceland. This division controls the sales management to the company's biggest clients of fish processing solutions, including the global key account management program where Marine Harvest Group is an important player (S. Elíasson, personal communication, March 6, 2012).

Marel offers a variety of products which consists of scaling and weighing equipment, batching and grading equipment, flow charts and software, maintenance and managerial software along with holistic solutions appealing to the most important areas of food processing. Marel's market areas are called the protein industry and is divided into three categories; fish, meat, and chicken. With more than 3,900 employees worldwide, offices and subsidiaries in over 30 countries and a global network of more than 100 agents and distributors, they work side-by-side with their customers to extend the boundaries of food processing performance (Marel, 2012b, para. 3).

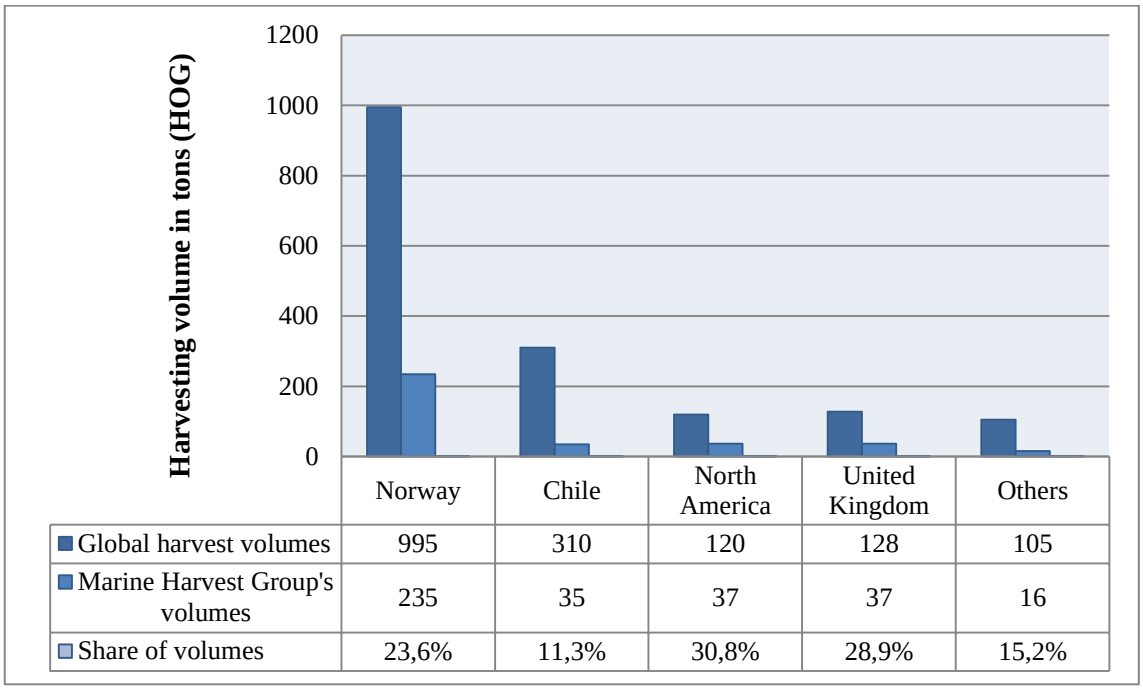
The main goal for Marel is to be the market leader in service solutions for the food processing industry worldwide, but not to be the largest player on the market. Their quantitative goal is to achieve 10-12% increase in sales annually (S. Elíasson, personal communication, October 22, 2010). In order to achieve that goal Marel is constantly exploring the market for new opportunities and to gain more knowledge about their current customers.

Their mission is to be positioned in the mind of their customers as the best company in the industry. That is what Marel's management team has been working on during the past years in terms of market positioning. In order to maintain a competitive advantage the company has been spending between five to seven percent of their total income on innovation for the past seven years which is amongst the highest percentage in the industry. This investment keeps Marel in front of their competitors in terms of

innovation development and it is one of the foundations of their competitive advantage in the market (Marel, 2012b, para. 6; Marel, 2012a, p. 2).

3.5 Marine Harvest Group; company profile

Marine Harvest Group employs around 5,000 people worldwide and operates in 21 countries. Their largest salmon farming and processing activities are in all major farming regions of the world; Norway, Chile, Scotland, Canada, Ireland and the Faroe Islands. Value-adding processing activities take place in the US, France, Belgium, the Netherlands, Poland, Japan and Chile. In addition they have sales offices located worldwide (Marine Harvest, 2011b, p. 4). Figure 8 demonstrates MHG's current harvesting volumes as a percentage of the global farming network. Noticeably, Norway is larger than all of the other markets combined.



	Norway	Chile	North America	United Kingdom	Others
Global harvest volumes	995	310	120	128	105
Marine Harvest Group's volumes	235	35	37	37	16
Share of volumes	23,6%	11,3%	30,8%	28,9%	15,2%

Figure 8. Marine Harvest's global farming network for 2011 in tons (Marine Harvest, 2012d, p. 3)

MHG is one of the largest food processing companies in the world offering farmed salmon and processed seafood to customers in more than 70 countries, making it the biggest producer of farmed salmon with one fifth of the global production. In addition to fresh and frozen salmon, they offer a wide range of value added products such as coated seafood, ready-to-eat meals, finger food, and smoked seafood. Though salmon is

their main farmed product, the company also farms trout and white halibut (Marine Harvest, 2012a, para. 1;5). Many small independent farms have been unable to compete in this tight market in recent years, and have been forced to either consolidate with larger farms or shut down altogether (Seafood Choices Alliance, 2007, p. 9). Because of the scope of MHG's business, Marel is looking to research their development more in-depth.

A brief description of MHG's mergers and acquisitions activity in their major market areas in the last decade demonstrates that the majority is connected with Norwegian companies. In Scotland the consolidation has also been strong, while in Chile there have been fewer large mergers as the number of players in the market was lower from the start. In Canada the industry has been extensively consolidated with a few large players and some small companies (Marine Harvest, 2010a, p. 60).

During the 1990s, the number of multinational companies increased in several countries leading to a higher degree of concentration in the salmon industry. Since the 1980s, Marine Harvest has been the largest company, although ownership of the company has changed several times. From its origin as a Scottish company it became the first multinational when it established a significant presence in Chile. In 1999, the owner of the company, at the time the Dutch company Nutreco, took over Hydro Seafood, the largest Norwegian company and merged them (Asche & Bjorndal, 2011, p. 39). This takeover took Marine Harvest's share of global salmon production to just above 10%. This was also the first time a merger in the salmon industry was investigated by competition authorities in different countries, and the enlarged Marine Harvest was not allowed to take over Hydro Seafood's Scottish operation. Hydro was the second largest producing company in Scotland after Marine Harvest, and the refusal led to the creation of a new company Scottish Seafarmers (Asche & Bjorndal, 2011, p. 39).

Before 2006 Marine Harvest Ltd, which later became a part of the Unilever Group, was generally recognized for establishing salmon farming in Scotland. As there were no restrictions on ownership in Scotland, Marine Harvest quickly became the largest salmon company in the world. The company still holds this position and has obtained a large number of locations in previously mentioned regions. In 2006 it was taken over by a Norwegian company, Panfish (which purchased Fjord in 2006),

although the merged company retained the name Marine Harvest (Asche & Bjorndal, 2011, pp. 26–27). This new alliance created the world's largest salmon farming company, supplying 30-40% of all farmed salmon, and over 40% of all Scottish farmed salmon (Seafood Choices Alliance, 2007, p. 9). Because of the non-restrictions on ownership, the Scottish industry has had a more diversified development than the Norwegian industry, with large and small firms developing side by side. Early on this allowed Marine Harvest to get to the point it is today, however it also led to heavy investments from abroad. MHG is today a Norwegian company, and more than two-thirds of Scottish salmon production is in foreign ownership (Asche & Bjorndal, 2011, p. 38).

Tables 4 – 7 below gathers some of the historic consolidations and investments of companies before they became a part of Marine Harvest Group and after they merged together in Norway, United Kingdom, Chile, and North America from 1989 to 2010. The data was retrieved from the Appendix in Marine Harvest (2010a) salmon farming industry handbook (p. 60).

In Norway there have been countless mergers between companies the last decade. The list below only shows some of the larger ones in transaction value. In Scotland the consolidation has also been very strong, while in Chile there have been fewer large mergers as the number of players was lower from the start. In Canada the industry has been extensively consolidated with a few large players and some small companies (Marine Harvest, 2010a, p. 60).

Table 4

Norway's consolidations and main corporate investments from 1999 to 2009

1999	Hydro Seafoods - Sold from Norsk Hydro to Nutreco Aquaculture
2001	Gjølaks - Sold to PanFish
2001	Vest Laks - Sold to Austevoll Havfiske
2001	Torris Products - Sold from Torris to Seafarm Invest
2001	Gjølanger Havbruk - Sold to Aqua Farms
2001	Alf Lone - Sold to Sjøtroll
2001	Sandvoll Havbruk - Sold to Nutreco Aquaculture
2001	Fosen Edelfisk - Sold to Salmar
2001	Langsteinfisk - Sold to Salmar
2001	Tveit Gård - Sold to Alsaker Fjordbruk
2001	Petter Laks - Sold to Senja Sjøfarm
2001	Kråkøyfisk - Sold to Salmar
2002	Amulaks - Sold to Follalaks
2002	Kvamsdal Fiskeoppdrett - Sold to Rong Laks
2002	Matland Fisk - Sold to Bolaks
2002	Sanden Fiskeoppdrett - Sold to Aqua Farms
2002	Ørsnes Fiskeoppdrett - Sold to Aqua Farms
2002	Toftøysund Laks - Sold to Alsaker Fjordbruk
2003	Nye Midnor - Sold from Sparebank1 MidtNorge to Lerøy Seafood Group
2003	Ishavslaks - Sold to Aurora to Volden Group
2003	Loden Laks - Sold to Grieg Seafood
2003	Finnmark Seafood - Sold to Follalaks
2003	Ullsfjord Fisk - Sold to Nordlaks
2003	Henningsværfisk - Sold to Nordlaks
2004	Flatanger Akva - Sold to Salmar
2004	Naustdal Fiskefarm/Bremanger Fiskefarm - Sold to Firda Sjøfarm
2004	Fjordfisk - Sold to Firda Sjøfarm
2004	Snekvik Salmon - Sold to Lerøy Seafood Group
2004	Aure Havbruk / M. Ulfsnes - Sold from Sjøfor to Salmar
2005	Follalaks - Sold to Cermaq
2005	Aqua Farms - Sold to PanFish
2005	Aurora Salmon (Part of company) - Sold from DNB Nor to Lerøy Seafood Group
2005	Marine Harvest Bolga - Sold to Seafarm Invest
2005	Aurora Salmon (Part of company) - Sold from DNB Nor to Polarlaks
2005	Sjølaks - Sold from Marine Farms to Northern Lights Salmon
2005	Bolstad Fjordbruk - Sold to Haugland Group
2005	Skjervøyfisk - Sold to Nordlaks
2006	Fossen AS - Sold to Lerøy Seafood Group
2006	Marine Harvest N.V. - Acquired by Pan Fish ASA
2006	Fjord Seafood ASA. - Acquired by Pan Fish ASA
2006	Marine Harvest Finnmark - Sold from Marine Harvest to Volden Group
2006	Troika Seafarms/North Salmon - Sold to Villa Gruppen
2006	Aakvik - Sold to Hydrotech
2006	Hydrotech - Sold to Lerøy Seafood Group
2006	Senja Sjøfarm - Sold to Salmar ASA
2006	Halsa Fiskeoppdrett - Sold to Salmar ASA
2006	Langfjordlaks - Sold to Mainstream
2006	Polarlaks - Sold to Mainstream
2007	Veststar - Sold to Lerøy Seafood Group
2007	Volden Group - Sold to Grieg Seafood
2007	Artic Seafood Troms - Sold to Salmar ASA
2007	Arctic Seafood - Sold to Mainstream
2007	Fiskekultur - Sold to Haugland Group
2007	UFO Laks - Sold to Haugland Group
2007	Anton Misund - Sold to Rauma Gruppen
2007	Mico Fiskeoppdrett - Sold to Rauma Gruppen
2008	Hamneidet - Sold to Eidsfjord Sjøfarm
2008	Misundfisk - Sold to Lerøy Seafood Group
2008	Henden Fiskeoppdrett - Sold to Salmar ASA
2008	AS Tri - Sold to Norway Royal Salmon (NRS)
2008	Feøy Fiskeopprett - Sold to Norway Royal Salmon
2008	Salmo Arctica - Sold to Norway Royal Salmon
2008	Åmøy Fiskeoppdrett - Sold to Norway Royal Salmon
2008	Nor Seafood - Sold to Norway Royal Salmon
2008	Altafjord Laks - Sold to Norway Royal Salmon
2008	Lerøy Seafood Group - Purchased by Austevoll Seafood
2009	Skjærgårdsfisk - Sold to Lingalaks
2009	Brilliant Fiskeoppdrett - Sold to Norway Royal Salmon
2009	Polarlaks II - Sold to Nova Sea
2009	Fjordfarm - Sold to Blom Fiskeoppdrett
2009	Fyllingsnes Fisk - Sold to Eide Fjordbruk
2009	Salaks merged with Rølaks

Note. **(Marine Harvest, 2010a, p. 60).**

Table 5

United Kingdom's consolidations and main corporate investments from 1996 to 2010

1996	Shetland Salmon products - Sold to HSF GSP
1996	Straithaird Salmon to MH 1996 Gigha, Mainland, Tayinlaoan, Mull Salmon - All sold to Aquascot
1997	Summer Isles Salmon - Sold to HSF GSP
1997	Atlantic West - Sold to West Minch
1998	Marine Harvest Scotland - Sold from BP Nutrition to Nutreco
1998	Gaelic Seafood UK - Sold to Stolt Seafarms
1998	Mainland Salmon - Sold to Aquascot
1999	Hydro Seafood GSP - Sold to Nutreco as part of Hydro Seafood deal
1999	Joseph Johnston & Sons - Sold to Loch Duart
2000	Aquascot Farming - Sold from Aquascot to Cermaq
2000	Shetland Norse - Sold to EWOS
2000	Hydro Seafood GSP - Sold to Norskott Havbruk (Salmar & Lerøy Seafood Group) from Nutreco
2001	Laschinger UK - Sold to Hjaltland
2001	Wisco - Sold to Fjord Seafood
2002	Wester Sound / Hoganess - Sold to Lakeland Marine
2004	Ardvar Salmon - Sold to Loch Duart
2004	Hennover Salmon - Sold to Johnson Seafarms Ltd.
2004	Bressay Salmon - Sold to Foraness Fish (from adm. Receivership)
2004	Johnson Seafarms sold to city investors
2005	Unst Salmon Company - Sold from Biomar to Marine Farms
2005	Kinloch Damph - Sold to Scottish Seafarms
2005	Murray Seafood Ltd. - Sold from Austevoll Havfiske to PanFish
2005	Corrie Mohr - Sold to PanFish
2006	Wester Ross Salmon - MBO
2006	Hjaltland Seafarm - Sold to Grieg Seafood ASA
2006	Orkney Seafarms - Sold to Scottish Seafarms
2007	Lighthouse Caledonia - Spin-off from Marine Harvest
2010	Northern Aquaculture Ltd - Sold to Grieg Seafood

Note. **(Marine Harvest, 2010a, p. 60).**

Table 6

Chile's consolidations and main corporate investments from 1999 to 2009

1999	Chisal - Sold to Salmones Multiexport
2000	Salmo America - Sold to Fjord Seafood
2000	Salmones Tecmar - Sold to Fjord Seafood
2000	Salmones Mainstream - Sold to Cermaq
2001	Pesquera Eicosal - Sold to Stolt Nielsen
2003	Marine Farms - Sold to Salmones Mainstream
2004	Salmones Andes - Sold to Salmones Mainstream
2004	Stolt Seafarm - Merged with Marine Harvest
2005	Aguas Claras - Sold to Acua Chile
2005	Salmones Chiloè - Sold to Aqua Chile
2005	Robinson Crusoe - Sold to Aqua Chile
2006	Merger Pan Fish - Marine Harvest - Fjord Seafood
2007	Pacific Star - Sold to Andrè Navarro
2007	Salmones Cupquelan - Sold to Cooke Aqua
2009	Patagonia Salmon Farm - Sold to Marine Farm GMT

Note. **(Marine Harvest, 2010a, p. 60).**

Table 7

North America's consolidations and main corporate investments from 1989 to 2008

1989	Cale Bay Hatchery - Sold to Kelly Cove Salmon
1994	Anchor Seafarms, Saga Seafarms, 387106 British Columbia Ltd. and United hatcheries merged into Omega Salmon Group (PanFish)
1997	ScanAm / NorAm - Sold to Pan Fish
2001	Scandic - Sold to Grieg Seafoods
2004	Stolt Sea Farm - merged with Marine Harvest
2004	Atlantic salmon of Maine (Fjord Seafood)- Sold to Cooke Aqua
2004	Golden Sea Products (Pan Fish) - Sold to Smokey Foods
2005	Heritage (East) - Sold to Cooke Aqua
2005	Heritage (West) - Sold to EWOS/Mainstream
2006	Marine Harvest - Sold to Pan Fish
2007	Target Marine - Sold to Grieg Seafoods
2008	Smokey Foods - Sold to Icicle Seafoods

Note. **(Marine Harvest, 2010a, p. 60).**

4 Methodological approach

The topic for this thesis requires applied research methods because it has a practice-oriented component, together with a theoretical foundation. The thesis has the form of type A applied research where the researcher will seek to solve the existing problem using relevant theories and proceed to determine how the problem can be resolved through the application of the theory. By following the theoretical recommendations, it will be possible to answer the research questions satisfactory.

Second hand data in the form of books, journal articles, internet websites and previous research reports to the subject are examined. Other case studies are held parallel to the one being performed by the researcher to distinguish a connection between the methods being used and support the case study academically. Malhotra, Birks, & Wills (2012) argue that in order to reveal a wide perspective of a case study it is encouraged to apply as many sources of information as possible.

The case study consists of both qualitative and quantitative research methods. The researcher seeks to solve the problem from data gathered through the conduct of a primary research via telephone interviews and all published data by the case company and the Norwegian stock exchange on the case company since 2006 till current date. Data published by third parties on the subject will also be taken into consideration. The interviewees will be top executives at Marine Harvest Group and Marine Harvest Norway.

The advantage of using interviews for gathering data is so the researcher can correct any misunderstanding of the interviewee and adjust the questions to every circumstance. Personal communication gives the researcher the chance to obtain more information than is generally gathered via other types of questionnaires (Lindlof & Taylor, 2010, p. 189). The main disadvantages however are that they can be difficult to execute. It can be time-consuming to schedule and conduct interviews with many people. Personal opinions of the researcher can also affect the outcome (McDaniel, McDaniel Jr., & Gates, 2009, pp. 104–105). They can also be expensive due to high costs of long distance telephone calls which may apply for this research. It must also be taken into account that the results from qualitative research are not easily generalized. The results are rather indicators of evidence that can be analyzed further (Blumberg, Cooper, & Schindler, 2008, pp. 132–133).

4.1 Research methods

The applied research for this thesis is partially in line with the methodology which was applied by Mora et al. (2011) in their extensive research on the driving forces leading to the future of the salmon industry and the introduction and effects of genetically modified salmon. In their research Mora et al. (2011) applied a methodological approach identified by Mietzner & Reger (2005) which is called a cross-impact analysis. This approach is a formalized method where the researcher has to assess, often with experts' help, the main variables and uncertainties surrounding the case study's sector.

The method applied for both researches include different steps; the first is to provide a detailed description of the current situation (referred to as the baseline scenario) on past and present trends. The information on the M&A development were collected through the literature review and web search including all published data from MHG website and the Norwegian stock exchange on the company's operations in relation to M&A activity, mainly since 2006. Secondly, key individuals within the organization were consulted via telephone interviews to identify the main driving forces of M&A development on MHG.

Qualitative research form is a way to gain in-depth understanding on a certain subject. By adopting this form the researcher seeks to gather experience and behavior of individuals and in that way data analyzed is based on words rather than numbers. The research methodology of this thesis is thus based on experience and opinions of individuals with excess knowledge on the research material (Taylor & Bogdan, 1998, p. 98).

4.1.1 Research questions

During the preparation phase of this research the research question was rather open and generalized which was later narrowed to a clearer focus after consultation meetings with the researcher's supervisor and contacts of Marel Industry Center. As a result the researcher set down two superior research questions (Q1 & Q2) and one subordinate research question (Q3), they are as follows:

Q1 "What driving forces of mergers and acquisitions have affected recent development of Marine Harvest Group in the farmed salmon industry, and what are the future predictions of M&A with the company?

Q2 "What impact has the recent M&A development in the farmed salmon industry, had on the investment strategy of leading organizations (Marine Harvest Group) towards processing solutions?"

Q3 "What influence will the scenario in Q1 and Q2 have on the market for salmon processing solutions and how can leading companies in that field like Marel respond to it?"

4.2 Interview details

Because the purpose of this study is to increase understanding on the subject a qualitative approach was used, where telephone interviews with top executives of a company were the main method used for gathering data. The method does not support statistical data or analysis which is a form of quantitative research, but focuses on the objective view and experiences of interviewees. The results are then interpreted by the researcher that values the information received through certain parameters of measure (Marshall & Gretchen, 2010, p. 32).

During the phase of the interviews the researcher began with a foundational frame of questions which will be referred in this research as a semi-conducted questionnaire. After the first interview with a manager from the headquarters the original questionnaire was altered in a way to address a manager on behalf of the largest business unit of the group, Norway. The questionnaires are in Appendixes 1 and 2.

Once the interview had commenced the researcher began by discussing about the thesis topic and research goals to enlighten the interviewees and make them feel comfortable. The first question was rather general but after that the researcher directed the questions in a way to gain more in-depth information on the topic. If some new information came up that were of interest and in relation to the topic, the researcher went off track from the formalized questionnaire and asked several other questions in continuance to gain additional information on the matter.

Interview information:

- The first telephone interview was conducted April 20, 2012. Interviewer was located at a private residence and the interviewee at Marine Harvest Group's headquarters in Norway. Interviewee was Jørgen K. Andersen, chief financial officer of Marine Harvest Group.
- The second telephone interview was conducted May 10, 2012. Interviewee was Ragnar Joensen, managing director of Marine Harvest Norway.

4.2.1 Interview design

The interviews were organized with semi-structured questionnaires which combined two forms of questions. The more dominating form is open-ended questions which give the interviewee an opportunity to answer the questions laid for them with their own words and no optional answers are given to them before-hand. The other form is closed-ended questions where all answering options are presented with the question. This gives the interviewee limited options of answers for each question and less space for free expression. The goal using the closed-ended question can be to retrieve information which was not obtained in second hand data which has already been collected by the researcher or previous interviews with an interviewee (Marshall & Gretchen, 2010, p. 125).

4.2.2 Interview tools

There were two questionnaires prepared for this research. The first one was for the CFO of the group which included questions involving the group as a whole. The second questionnaire was for the general manager of Marine Harvest Norway.

The questionnaire was assembled by the researcher and then criticized by the thesis supervisor before they were sent out to the interviewees. Before each interview took place the researcher sent the questionnaire via e-mail to the managers before they took place. The reason for this was to make the managers aware of what topics the researcher was covering in the questions. The goal was to create an incentive for them to do the interview. Knowing what they were going to be asked before-hand would make them feel comfortable and save time during the interviews because they would then already have given the questions some thoughts for preparation. Initially the e-mails were sent to a number of potential interviewees that were qualified to answer for the research

topic. The e-mails were standardized with the same text sent to all parties and the questionnaire attached. The e-mail is in Appendix 4.

It was the effort of the researcher not to give the interviewees too much information on the research topic in order to prevent influence on their opinions and answers. The interviewers were for example not given a detailed list of theoretical M&A driving forces, when asked on their significance within the organization. That way they were compelled to list up the drivers themselves.

The case study interviews were in the form of telephone interviews and they varied from 29 to 34 minutes each. Both of the interviews were spoken in English and every quote in this thesis is performed by the researcher. The interviews were recorded with the interviewee's permission on a digital recording dictaphone and later copied down word by word on a computer form for quotation purposes. During the interviews the managers were located at the office at their workplace. The interviewer was located at a private residence facility.

4.2.3 Interview selection and limitations

The topic for this research is rather specific in the way that not many can answer for it except managers at the top level of the company in question. This left a limited amount of individuals for the researcher to interview. Initially the communication director of MHG, Mr. Jorgen Christiansen, was contacted via e-mail to inquire who would be the best suitable participant for the interview. In that way the snowball sampling method identified by Merriam (1998) was applied. This is when the researcher asks people who are contacted to nominate other possible participants that are the most suitable to fit the requirements of the study. The intention of applying this method was to increase credibility of the interviews taken, avoid bias, save cost and time.

Mr. Christiansen nominated the CFO of the Group Mr. Jorgen Andersen to be the most qualified for the research topic. It was also the intention of the researcher to interview Mr. Henrik Heiberg, the vice president of finance and treasury. Mr. Heiberg had agreed to do an interview after being contacted via e-mail, but after the researcher had interviewed the CFO, Mr. Heiberg did not respond to further inquiries from the researcher. It did however hopefully not hurt the research to miss out of this interview because Mr. Heiberg was a subordinate of Mr. Andersen and thus an interview with a key member had already taken place.

Fortunately the managers who were most qualified for the research turned out to be positive towards the research when they were contacted. They were willing to provide information and contribute their knowledge.

After the first interview with Mr. Andersen the researcher did consider contacting more top executives of MHG to strengthen the research, and in that way enforce the snowball sampling method even further. However it reached an end when the Group's CFO advised that it would be a waste of time since his answers reflect the decisions of the Group and other managers who would be able to answer for the topics addressed in the questions are lower in the company hierarchy and answer to him.

Therefore the researcher perceived to get the perspective of the largest business unit of the group, Marine Harvest Norway, and contacted the top executive there directly. The general manager was interviewed with good results.

The second and the third largest business units, Canada and Scotland were contacted as well in order to get the perspective of their top hierarchy managers. The goal was to research the consistency of the strategy being implemented by the headquarters if it was in fact in line with the business unit's strategy. Unfortunately the general manager of the Canadian unit was unwilling to participate in the project since he evaluated the topic as sensitive and not being able to reveal top level information about the group, hence he referred the researcher to contact the company headquarters.

The Scottish business unit turned out to be the most difficult one to get in touch with the top executives. Unlike other units of the group, no contact information was accessible publicly to the top level managers and the closest the researcher got to the general manager was his secretary who never replied to the research inquiry.

5 Case study: Marine Harvest Group

To identify the influential factors that have shaped the company into the form it is today the company needs to be analyzed in detail. The following case study chapters are categorized to address each of the three research questions; chapter 5.1 (Q1), chapter 5.2 (Q2), and chapter 5.3 (Q3).

5.1 M&A driving forces analysis

To reach valid conclusions of the case study the researcher applied several different sources of data to reflect a holistic interpretation of the topic rather than a biased unilateral view. The researcher starts analyzing M&A drivers that have affected MHG from 2006 when Marine Harvest was created in a huge merger between Pan Fish ASA, Fjord Seafood ASA, and Marine Harvest N.V. The focus of this research is to explore the main merger activity of MHG in the last two to three years, however some M&A take years to develop and fully finish. Influential drivers may affect mergers years before they take place, therefore the researcher will explore all data published by MHG between 2006 till current date. The data will be covered to identify potential drivers that have affected MHG merger activity and compared to those that are recognized in the M&A theoretical chapter. Other research involving MHG published by third parties will also be taken into consideration for this analysis. In the following sub-chapters data will be analyzed in a chronological order.

The goal of this chapter 5.1 is to answer the research question number one; *"What driving forces of mergers and acquisitions have affected recent development of Marine Harvest Group in the farmed salmon industry, and what are the future predictions of M&A with the company?"*

5.1.1 MHG 2006 – 2008 development

Throughout 2006 Marine Harvest Group strengthened its operational basis substantially through takeovers and organic growth. The company was interested in raising capacity through takeovers where it supports or strengthens the company's basic vision of being an industry shaper (Marine Harvest, 2007, p. 47).

5.1.1.1 Efficiency gains; lowering production cost and optimizing operations

When MHG was created with the large merger of the three companies the expectation was to contribute to substantial cost reductions in the future (Marine Harvest, 2007, p. 40). Gains were also expected in this field from optimization between the different processing units (Marine Harvest, 2007, p. 42). Production costs dropped in all regions Marine Harvest was operating in. The falling costs were in part due to higher volumes and a result of better biological operations of plants and the synergetic effects that were attained from the large merger (Marine Harvest, 2007, p. 47).

Marine Harvest strengthened its position significantly when it came to further processing seafood. The takeovers introduced other species and types of processing to their product range. The range expanded to all types of seafood, including smoked and coated products, instant meals and catering products, filets and portion packages which were too expensive to offer in all of the markets before the merger in 2006 (Marine Harvest, 2007, p. 42).

5.1.1.2 Market size (increased market power)

In 2007, the new engine for growth in the salmon farming market was found in the emerging economies. New country markets such as Brazil, Russia, India and China were being discovered and they all had several factors in common. The most important one was the large population, with an expanding middle class that had increasing disposable incomes. Due to the large numbers of people living in these countries the growth of these markets for Atlantic salmon could more than compensate for any downswing in Europe and North America (Marine Harvest, 2008a, p. 2).

Economists observe that as income grows there is a shift in diet from carbohydrate to protein, and fish is regarded to be an important source of healthy protein. As it turned out, the market for Atlantic salmon in Brazil grew by 32% in 2007, the Russian by 38% while the neighboring country, Ukraine, saw a 45% growth. At that time, these trends were perceived to grow even further in Eastern Europe, South America, and in large part of Asia (Marine Harvest, 2008a, p. 2,4).

5.1.1.3 Monopolistic power

In 2007 MHG's board of directors stated that they believed consolidation in the salmon aquaculture industry was important to maintain a better balance between increase in

production and increase in demand. Their priority was to develop the Group's position further down the value chain to take more of the farmed fish and fish purchased through to the end products and in that way gain a greater share of the final price (Marine Harvest, 2008a, p. 3). They were stressing the efforts to gain a larger part of the value chain and being less dependent on outsiders, hence decreasing their production cost and gaining a larger share of the final price.

The fish processing industry at this time, especially in Europe, was highly fragmented and there are real opportunities to build positions. This was still the time when the sector was characterized by a large number of small players that could not match the negotiating power of large retailers (Marine Harvest, 2008a, p. 3).

These emphases continued in 2008 when the CEO at that time stated:

> To fully capitalize on the positive long term trend, Marine Harvest will have to move from being only the largest salmon farmer, to becoming the definite market leader in our industry. A true leader shapes the industry and sets standards for others to follow. (Marine Harvest, 2009b, p. 2)

5.1.1.4 Production, efficiency gains and sustainability

A key aspect in the sustainability of salmon aquaculture is the amount of wild fishmeal and fish oil contained within the feed supplies. In 1990, the wild fish-derived component of feeds could be as high as 60%. Nowadays, following extensive research in fish nutrition, commercial feeds can be produced with only 15% fishmeal, without negative effects on the health and growth of the fish. This decrease reduces the impact salmon aquaculture has on global fish stocks which are threatened by overfishing. Since 2004, volumes of farmed Atlantic salmon have increased significantly parallel with a great reduction in utilized volumes of fishmeal and fish oil. (Marine Harvest, 2010b, p. 42)

The marine raw materials, fishmeal and fish oil, are important ingredients of the feed. The aquaculture industry was facing competition for fishmeal from land farming. The cost, quality and sustainability of the feed utilized in farming of salmon were given further attention in 2008. Even though, in comparison with land animals, farmed salmon are the most efficient converters of feed into protein for human consumption (Marine

Harvest, 2008a, p. 5). In response to these challenges, MHG started working with feed suppliers, customers, research institutions and other stakeholders in the value chain to establish ways in which the sustainability of raw materials could be secured while continuing to provide the nutritional content and quality in farmed fish and fish products that consumers require (Marine Harvest, 2008a, p. 5).

In 2009 MHG placed emphasis on a better utilization of scarce resources, particularly the feed category in the salmon value chain. Global production of fishmeal has been stable during the last 30 to 40 years despite farmed Atlantic salmon production growing incrementally from zero to 1,400,000 tons. This dramatic increase in food produced from a stable level of scarce resources has been achieved because of the highly efficient use of fishmeal in salmon production as compared to other foods (Marine Harvest, 2010b, p. 43).

The key sustainability issue regarding feed is the sustainable management of wild fisheries. As well as encouraging a reduction in the wild fish content of feed, MHG increased its cooperation with feed suppliers to ensure that fish used in fishmeal and fish oil production was responsibly sourced. MHG was setting higher demands towards their suppliers. It became a requirement that the supplies come from fisheries subject to scientifically set quotas that complied with the key elements of the United Nations Food and Agriculture Organization (FAO) code of conduct for responsible fisheries (Marine Harvest, 2010b, p. 44).

5.1.1.5 Regulatory framework; disease outbreak in Chile

Marine Harvest was the leading producer of Atlantic salmon in Chile, which was at that time the second largest production country for Marine Harvest, after Norway. An outbreak of ISA (infectious salmon anemia) in Region 10 of Chile proved to be the greatest challenge of 2007. Region 10 is the main salmon production region in Chile. The disease persisted and spread to new areas including a number of Marine Harvest farms. After the ISA virus affected the Chilean salmon stock, MHG was forced to close down 14 of its 60 facilities and let go 1200 employees starting June 2008. Some of the industry representatives admit that the use of antibiotics in Chile was too intensive and that the placing of fish pens too close together has contributed to the problems (Welle-Strand & Toje, 2009, p. 17). The executive management team of MHG realized that the regulatory framework needed to be strengthened. When a period of fish diseases hit the

sector, research programs were financed by the government and the private sector, better husbandry and improved procedures for treatment of contagious fish were enforced (Tveteras & Kvaloy, 2006, p. 428).

The industry in Chile was criticized for its environmental footprint. The handling of waste, water treatment and the use of antibiotics to treat fish disease were controversial, especially in Chile, where technology to manage such was relatively new at that time. Antibiotics, pesticides and fungicides were often used to treat disease, instead of vaccines, resulting in the contamination of waters and the alteration of marine bacterial communities. Moreover, when farmed salmon escapes and possibly breeds with wild populations, it is to the disadvantage of the wild stocks, as diseases and parasites may get passed on (Welle-Strand & Toje, 2009, p. 17). To respond to these critiques MHG started publishing antibiotic use in their farming operations and comparing them between facilities. At first it was significantly high in Chile compared to other country markets, but started to decline every year after that. To generate credibility the Chilean unit started a partnership with government officials to perform the antibiotics testing. Mergers with official agencies are usually not possible therefore they enforced a partnership or a strategic cooperation platform with the officials and other small players in the industry to make Chile the large producer of salmon farming as it was before.

5.1.1.6 Regulatory framework, public acceptance & consumption

Marine Harvest developed a program called Qmarine to provide a global quality as guidance for the company to act in a responsible way towards society, the natural world, employees and shareholders. The global quality program was organized in six sections; food safety, food quality, fish welfare, environmental responsibility, social responsibility and quality assurance. Out of the six categories listed there are three that stress the product output. This is consistent with the public acceptance and consumption drivers that is has been identified in connection to future development of salmon production. Advertising publicly about the social responsibility acts publicly supports this indicator. In 2008 MHG entered into partnership with WWF-Norway with the goal of reducing the environmental impacts and ecological footprint of aquaculture (Marine Harvest, 2009a, p. 6). Similar partnerships were made in Canada, Scotland, and other European countries. No merger was recorded, given that the partnering institutions were all governmental agencies and thus not on the general market.

The Qmarine program is a strong indicator of MHG's focus on the regulatory framework M&A driver. The program highlights food safety issues and the development of food safety legislation. These issues are monitored continuously to ensure that MHG is aware of all known potential hazards and that its products are in compliance with food safety requirements (Marine Harvest, 2009a, p. 9).

The complexity of meeting the legal requirements of different regulatory authorities was demonstrated in 2008 when salmon from Marine Harvest in Chile were rejected by the FDA (the US Food and Drug Administration). Detention was based on FDA not approving the use of specific veterinary drugs registered for use in all other salmon farming regions. As a consequence Marine Harvest has changed its use of the medication to follow FDA regulations (Marine Harvest, 2009a, p. 11).

Furthermore, research by an independent laboratory was performed on MHG fish flesh to inspect the quantity of mercury, malachite green, and cadmium levels. The 2008 sustainability report summarizes the results that illustrate contents all well below the residue limits. This act clearly reveals MHG's goal to fulfill requirements of legal rules and regulatory framework of all their market areas. Despite the M&A drivers identified in this context, MHG has no record of a direct merger with another company in pursuing this goal. Given that most of regulatory associations are official agencies or non-profit organizations not making it possible for MHG to merge with them. Instead they build alliances and partnerships with these associations to achieve their goal. Yet another way is to co-fund research projects with universities that are studying topics that would benefit their operations directly. An example of this is when MHG co-fund a research project with the University of Bergen, Norway and a research institute in Belgium to identify the parameters by which to assess the welfare of the fish in the approach to slaughter. The goal was to find a way to minimizing stress at times of handling the fish for processes such as grading and vaccination (Marine Harvest, 2009a, p. 15).

5.1.1.7 Public acceptance and consumption continued

2008 was a dramatic year for MHG, in continuation of the ISA virus in Chile the company decided to sharpen their emphasis on environmental issues with sustainability concerns. In the same year they published their first sustainability report and have been doing it annually since then. Åse Aulie Michelet, the CEO at the time stressed that

"sustainability is commonly defined as meeting the needs of the present without compromising the ability of future generations to meet their own needs" (Marine Harvest, 2009a, p. 3). For the first time the company published detailed statistics on the use of antibiotics and energy in a special report. This was performed after the new and strict regulations, enacted by Chilean politicians, and the new cooperation between farmers to make Chile again become an important salmon farming region (Marine Harvest, 2009a, p. 3).

5.1.1.8 Cultural differences

An attempt to lower cultural differences between employees in various countries can be detected first in the 2008 sustainable business report. The goal is to adopt a combined strategy that all employees of the company can follow. That way, employee working methods are standardized between regions. The statement of Åse Aulie Michelet, CEO at the time, in the general address of 2008 sustainability report confirms the importance of focusing on the employees. MHG developed a statement of ethics which was designed to give structural guidance to all employees. It also shows external parties what they can expect from the company concerning behavior in situations that may be ambiguous, or where there are significant agency issues. A new code of conduct with expanded coverage was also being designed (Marine Harvest, 2009a, p. 5).

Geert Hofstede covers this aspect in his research on cultural dimensions. One of the dimensions is uncertainty avoidance index (UAI) which means that members of a society feel uncomfortable with uncertainty and ambiguity. Countries exhibiting strong UAI maintain strict codes of belief and behavior and are intolerant of unorthodox behavior and ideas. Weak UAI societies maintain a more relaxed attitude in which practice counts more than principles (Hofstede, n.d.-a, para. 4). Looking at the difference between Chile, Norway, and Canada which are MHG largest market areas there is a significant difference between the score in UAI. According to Figure 9 below Chile scores 86 out of 100 while Norway and Canada are at a similar level scoring 50 and 48.

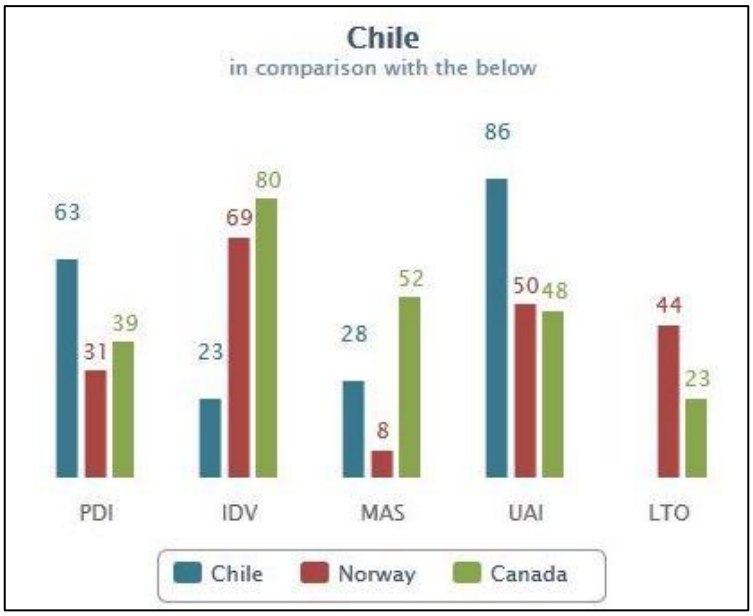


Figure 9. Uncertainty avoidance index (UAI) in Chile, Norway, and Canada (Hofstede, n.d.-b, para. 4).

This means that Chileans generally have a strong need for rules and elaborate legal systems in order to structure life. In line with its high UAI score and to some extent also fostered by its authoritarian past, there is great dependence on experts, the authorities, particularly among non-managerial employees (Hofstede, n.d.-b, para. 9–10).

5.1.2 MHG 2008 – 2010 development

MHG generated a substantial loss in the year 2008 due to the effects of the ISA disease in Chile. Even though Marine Harvest Norway is the largest business unit, Marine Harvest Chile was the second largest unit of the group before the disease outbreak, making it more influential to the whole organization than the others.

> …because we have a rather large operation in Chile and we got the disease outbreak there in 2008 and we lost 500 million Euros and we focused our management resources and our financial resources to repair the situation. So that is the main reason why we have not been active[8] in that part of the business. (J.K. Andersen, personal communication, April 20, 2012)

[8] In this context Mr. Andersen is referring to not being active in merging activity.

The ISA situation in Chile remained challenging in 2009 and more than 2,000 employees had to leave the organization during the year as part of the restructuring process. The downscaling of the operation resulted in restructuring costs and write-downs of assets and inventory, throughout the year (Marine Harvest, 2010c, p. 6). Later in 2009 the ISA situation was recovering well and the demand for salmon in key markets in Chile increased. The board of directors was confident of Chile's strong potential towards upcoming years as soon as the biological and regulatory situation was ready for a restoration (Marine Harvest, 2010c, p. 15).

Some parts of the operations were being influenced by the economic recession. Especially in the niche product offerings, end-customers such as those who go to restaurants decreased their visits substantially, leading to a decrease in sales to restaurant chains. Despite some outside influences the economic crisis did not affect MHG in a huge way. In 2009 the company improved significantly with a net profit of 1,302 NOK compared to a net loss of 2,852 NOK from the year before (Marine Harvest, 2010c, p. 2).

5.1.2.1 Regulatory system and production

In 2008 Marine Harvest Ireland invested significantly to obtain access to a greater number of sites, by acquiring another salmon farming company. The farms concerned were in the South West of Ireland, in the bays of Bantry and Kenmare. The company also brought a large full time well-boat charter to Ireland to assist in delousing and made this boat available to others in the local Irish industry. This act demonstrated its commitment to apply to the authorities' lice control targets by acquiring additional farms so as to raise following and year-class separation of the sea lice (Marine Harvest, 2009a, p. 31).

In 2009, the presence of sea lice attracted media attention in Norway as the number of lice per fish in some regions increased compared to previous years (Marine Harvest, 2010c, p. 6). Marine Harvest further strengthened its efforts against the sea lice problem in 2009 and started ballan wrasse farming in Øygarden outside Bergen, Norway. Ballan wrasse is a small fish which naturally feeds on parasites from other fish. It has proven to be an efficient tool to reduce the number of lice on farmed salmon. The small fish reduces the need for medicinal tools and therefore also the risk of resistant lice. However, it is uncertain how many ballan wrasse can be caught in the

wild without negatively affecting their population. In addition, the access to ballan wrasse varies depending on the time of the year and location (Marine Harvest, 2010b, p. 49).

Over the years, Marine Harvest has built up experience in using wrasse as a biological tool to control sea lice. Marine Harvest extended the use of ballan wrasse on its farming sites and started a special farming project. The project started with an eight million NOK in 2009 which has increased to 10 million NOK annually the next three years. In addition they created a special sea lice task force to follow the project (Marine Harvest, 2010b, pp. 24, 49).

During the second half of 2009, Marine Harvest Norway collaborated with three suppliers to test out a new approach for treating sea lice with hydrogen peroxide (interox paramove) in well-boats. Treatment with hydrogen peroxide in well-boats, which is considered more environmentally friendly, has been used in several Marine Harvest operations with good results in the past, especially in Marine Harvest Ireland. The joint initiative in Norway with Sølvtrans (a well-boat company), Solvay Interox (hydrogen peroxide producer) and AquaPharma (delivery specialist) aimed at testing the new system for drug delivery, distribution and oxygen control (Marine Harvest, 2010b, p. 52). There is however no merger noted in this context, only collaborations with suppliers.

Reducing the number of fish escapes is an important focus for MHG. Escapes from fish farms can happen in a number of ways including human error, equipment failure or predator attack. Farmed salmon may have a negative impact on local salmon stocks, as their behavior in breeding grounds could possibly impact wild salmon breeding. Local stocks have special local traits, like size and color, which may be diluted through interbreeding (Marine Harvest, 2011b, p. 11). This is why MHG chose to have a zero tolerance for fish escapes as it can turn out to be expensive for the company if large numbers of fish are involved. In connection to this Marine Harvest is participating in an EU project looking at farming sterile fish through triploidity (non-transgenic method). This method is hoped to eliminate any issues related to possible genetic mixing of farmed and wild stock (Marine Harvest, 2011a, p. 32). Additionally, the company generated collaboration with equipment suppliers to pursue new

technologies and improved specifications in netting material, pen, and mooring design (Marine Harvest, 2011b, pp. 11, 58).

5.1.2.2 Geographical distance

During 2009, two small processing/pin boning operations were opened in the US, one in Miami in May and one in Los Angeles in August. The purpose was to increase the geographical range of the logistics chain. These operations are supporting the Norwegian processing operations with the final trims and packaging for the customers. Both US plants are consolidated into business unit Marine Harvest Chile together with other US operating units (Marine Harvest, 2010b, p. 8).

Opening of new processing facilities in the US (Miami and Los Angeles), Japan, and Norway improved their global network. All of them are close to airports to ease the access to the product and improve flexibility for transport via truck, rail and air freight. This set-up will reduce delivery time from processing plants to the customers and will also reduce the total distribution costs going forward (Marine Harvest, 2010c, p. 8).

5.1.2.3 Geographical distance and globalization effect

The global market for Atlantic salmon saw a major shift during 2009 as the reduced supply from Chile to the US, EU and Asian markets was partly compensated by supply from other regions. This demonstrated the clear signs of a global market for salmon, both through rather quick shifts in supply patterns and changes to pricing between regions. Marine Harvest has been leading this development through investments in processing capacity in the US for pre-rigor fillets from Norway. The filleting capacity doubled in Norway with significant and positive effects on transport costs, carbon footprint and the ability to exploit trimmings via production of by-products (Marine Harvest, 2010c, p. 3).

Before the ISA disease hit Chile, farmed salmon was being transported to the US in large quantities. When the supply decreased from that source it was compensated by the operations in Europe, mostly Norway, and transferred to Miami. Later MHG opened a processing facility in Miami and the year after that another one in Los Angeles. Hence, these business units were united under the Marine Harvest Chile operations (Marine Harvest, 2010c, p. 8).

The market for salmon has increasingly been developing into a global market. This is a result of mainly two factors. The first one is the rapid growth of volumes in Chile making Chilean salmon a direct competitor to European salmon in all markets. The second is the consolidation in the industry, creating more companies producing and selling salmon from several regions (Marine Harvest, 2010a, p. 14).

Another new trend was formed when the Norwegian fresh salmon met more competition from Chilean frozen salmon in the European market. Together with strong competition between mainly Norwegian and Chilean salmon in the Japanese market, and the increase in export from Scotland and Norway to USA due to reduced supply from Chile, shows that the market is becoming increasingly globalized (Marine Harvest, 2010a, p. 14).

5.1.2.4 Productivity; technological development

In 2009, Marine Harvest concluded a larger technical development project for the development of a new type of harvest boat in Norway. Based on this project, the company was looking at the possibility for changes to the use of well boats and a possible introduction of harvest boats in all regions in Norway. A transition from use of open hatch well boats to use of harvest boats for transport and harvesting of fish, would be another tool in the war against sea lice spread and reduce other transport-related risks. In the same year MHG also increased its commitment and involvement in sea lice research and in areas of biotechnology, treatment optimization, biological control and resistance management (Marine Harvest, 2010c, p. 9).

5.1.2.5 Productivity

Over the history, production cost has been reduced and productivity has increased as new technology and new competence has been achieved. MHG has high beliefs that this trend will continue in the future as commercial aquaculture still is a young industry (Marine Harvest, 2010a, p. 43).

Productivity increases from better use of the inputs, in contrast to more use of inputs. For a sector that is expanding, both the use of more inputs, and better use of inputs may take place simultaneously. In the case of the salmon aquaculture sector, the parallel increase in use of inputs has taken place alongside improvement towards productivity. Labour productivity in the feeding stage of salmon aquaculture is an

example of this. In 1986 a man-year produced on average 33 tons of salmon. Fifteen years later, in 2001, the same person would have produced 304 tons. The quality of feed has increased and the quality of juveniles has improved due to systematic improvement in breeding programs (Tveteras & Kvaloy, 2006, p. 429).

In the beginning of 2010, Marine Harvest Norway embarked on a three year program to improve the freshwater operations. Through this program they invested in both new and current freshwater sites, with the aim of reducing smolt costs, improving smolt quality and securing larger smolt stocking flexibility by producing more diverse sizes of smolt (Marine Harvest, 2010c, p. 2). This is the most highlighted form of investment the Group covers in their annual report of 2009. Norway is the largest and most saturated market, so for MHG to improve they looked for strategic ways to promote the productivity level of their operations.

The Norwegian salmon farming industry has limited potential for growth with the current number of licenses and the regulatory framework for Maximum Allowable Biomass (MAB). Fortunately, Marine Harvest Norway has the potential to increase production within this framework. Hence, the Group decided to increase smolt stocking in Norway by 10% in the year 2010, to secure growth in 2011 and into 2012. This was also the beginning of the phase to explore the potential for increased production within MAB regulation by increasing the smolt size to reduce the grow-out time in sea-water, and hence increase output per license.

During the last part of 2009 and early 2010, the Chilean market saw significant improvement in the biological development, with low mortality and good growth. MHG was looking to invest further in Chile given the rapid turnarounds of the market. Permanent improvements in biological results and an improved regulatory framework are however prerequisites for new investments in Chile (Marine Harvest, 2010c, p. 2).

5.1.2.6 Efficiency gains and profit maximization

Early in 2010, Marine Harvest Norway boarded on a three year program to improve the freshwater operations. Throughout this program the company invested in both new and previously owned freshwater sites. The aim was to reduce smolt costs, improve smolt quality and secure larger smolt-stocking flexibility by producing more diverse sizes of smolt.

The Norwegian salmon farming industry has limited potential for growth with the current number of licenses and the regulatory framework for maximum allowable biomass (MAB). Fortunately, Marine Harvest Norway has the potential to increase production within this framework. Hence, they decided to increase smolt stocking by 7% in 2009, to secure growth in 2011 and into 2012. The Norway business unit also started to explore the potential for increased production within current MAB regulation by increasing the smolt size to reduce the growth time in seawater, and hence increase output per license (Marine Harvest, 2010b, p. 15).

In 2010, more attention was given to the development of the Company's portfolio. The downstream part of the operations, which delivered strong results in 2009, needed further streamlining while the upstream part was to be more focused and adjusted to a situation where the salmon markets are no longer regional but interlinked to one global market (Marine Harvest, 2010c, p. 15). This is still the current strategy of the Group according to the CFO.

> We are always looking into possibilities to grow bigger upstream in the farming business but also downstream in the processing business. We are continuously looking at what is available on the scene and consider our portfolio, this is something we consider a regular part of our business. (J.K. Andersen, personal communication, April 20, 2012)

5.1.3 MHG 2010 – 2012 development

According to numerous data published by MHG (Marine Harvest, 2007, 2008a, 2009a, 2010b) the company went through a quite heavy merger restructuring. Most of the M&A activity took place in the years 2006 and 2007, but decreased significantly after that. In the following years MHG has mostly entered into collaborations and partnerships with non-profit organizations, research facilities, and governmental agencies for special purposes. On the other hand the Group has been investing in companies in different parts of the world. Consolidations in terms of M&A have not been the focus of the corporate strategy.

> …here you are asking about M&A activity for the last two years. […] Well, that is rather limited, in this period we have grown more organic and we have very few

> acquisitions over the last couple of years. […] Yes, mergers were very limited, basically we have sold a small farm and we have purchased a small farm but other than that it has been very limited in the last 2-3 years, close to zero. Our focus has been in other areas. […] These farms are located in Norway and in Scotland. (J.K. Andersen, personal communication, April 20, 2012)

When the same question regarding the list of companies that have joined MH Norway via M&A in the last two to three years was addressed to the general manager he confirmed what the Group's CFO had said about its limited activity.

> Yes there is only one company, so it is a very short list. […] The name is Straume, a small Norwegian farming company that has been operating in West-Norway, close to our farming area. […] The production is limited in Norway due to concessions and Straume has two concessions[9]. (R. Joensen, personal communication, May 10, 2012)

However in the beginning of 2012 the Group's financial flexibility has gotten stronger. The Board of directors has stated their priority to further strengthen the group's financial position and look for organic expansion, particularly in the downstream area. The company will consider acquisitions on an opportunistic basis (Marine Harvest, 2012c, p. 13).

5.1.3.1 Regulatory framework

Afl-Helge Aarskog, the current CEO of MHG stated in the 2010 annual report that "with the current regulatory regime, we have limited potential for growth through acquisitions. We will however acquire smaller operations where the price is right and we can achieve improvements to bio-security in specific areas" (p.2). The CEO was referring to the saturated market in Norway and the Groups limited emphasis on mergers. In order to grow in the future the Group will however increase its participation to affect the strict regulatory situation. The restrictions are set up mainly to maintain good biological standards of the industry which are meant to reduce sensitivity or resistance to sea lice treatments. MHG is in favor of splitting the coast of Norway into zones with upper limits to production and measures to control lice and escapes. The

[9] Straume Fiskeoppdrett AS was merged with Marine Harvest Norway AS with effect from Jan 1, 2011. The company had two farming licenses at the time of acquisition (Marine Harvest, 2012b, p. 86).

purpose is to promote further consolidation in the industry. Currently there is an ownership limitation of 25% of total licensed biomass per company for salmon and trout farming set by Norwegian regulations. MHG holds the opinion that this regulation is in conflict with articles 31 and 40 in the EEA-agreement and has consequently filed a formal complaint with EFTA's surveillance authority (ESA) (Marine Harvest, 2011c, p. 7).

Norway is by far the largest part of MHG's operations, thus it is important for the company to maintain their competitive advantage and explore all growth potential in that area. From what has already been covered, the Norwegian market is relatively saturated making it difficult to increase operations due to limited issued farming licenses by the government officials. MHG's salmon farming operation is primarily based on perpetual licenses which have been granted by relevant authorities over time. In all jurisdictions, salmon farming operations are subject to a varying degree of regulations by the authorities, making these operations of the group increasingly more exposed to changes in regulatory frameworks (Marine Harvest, 2011c, p. 13).

According to the Group's CFO, the current goal to achieve growth in the future is to acquire more farming licenses and maintain the ones they have. The value of licenses acquired by the company is of great importance, especially the ones for farming of salmon. In Norway the licenses are considered indefinite, while for example licenses in Scotland and Canada are automatically renewed as long as operations are run with negligible impact to the environment. The licenses are considered indefinite and are not subject to amortization in financial terms, instead there is an impairment test performed annually (Marine Harvest, 2010c, p. 29).

> …Because there is a restriction in Norway when it comes to the size of the operations, we can only have 25% of the licenses and we are very close to that. We would like to grow more and grow with the industry if the number of licenses is agreed to increase by the authorities. But as we speak it is limited by the restrictions of the authorities. We are working to try to mend the regulations. […] We are trying to influence the authorities to expand or change the regulations yes. (J.K. Andersen, personal communication, April 20, 2012)

Therefore MHG is increasing its effort to influence the decision makers on publishing more permits and expand their scope. The Group seeks to uphold its position as a constructive and knowledge based contributor to the relevant authorities, in terms of developing regulatory frameworks and enforcement strategies with a view to decrease the level of biological risks (Marine Harvest, 2011c, p. 13). This will be covered more in-depth in the recapitulation chapter below.

5.1.3.2 Economies of scale

The main driving force for MHG to enter into a merger with another company "is to benefit from the economies of scale" (J.K. Andersen, personal communication, April 20, 2012). The group is focusing on larger operation units and that is why some units that are producing on a smaller scale have been sold.

> Subsidiaries being sold in the last two to four years have not been many to be honest. If they have been sold it is because they have been too small. The key for us is to focus more on bigger units to cover all costs. (J.K. Andersen, personal communication, April 20, 2012)

Regarding the few mergers the group has been involved in the last couple of years, they were all in the horizontal category. Their focus now is to expand geographically and increase their operational scope by investing in other companies and in that way minimizing the competition. Marine Harvest Group has not been seeking to merge with companies in other fields of the salmon industry (vertical mergers).

> No that is a part of an older plan for the group. It is the old side of the strategic scope of the business. We haven't tried to merge with research organizations, suppliers of eggs and smolts, transportation companies, or salmon retailers, that is a part of the old scope of the business. […] Has MHG been seeking to merge with companies that are considered competitors? The answer is yes. It is connected with the driving influences of the economics of scale. (J.K. Andersen, personal communication, April 20, 2012)

Mr. Joensen verifies that the Norwegian business unit is coherent with the Groups motives for engaging in mergers. The motives basically sum their emphasis on the economies of scale and scope:

> There are two main reasons for us wanting to enter into a merger with other companies. The first reason is that we want to have control over the farming areas. The second is to obtain large scale of quantities, connected to the economies of scale. […] Yes, it is horizontal we are aiming at, not vertical. We have quite much the whole chain within the farming production; we have the egg production, factories etc. […] This is the situation […] in Canada, Ireland, and Norway. […] Norway is the most sophisticated one in terms of the entire chain; we are also responsible for two thirds of the whole group's production. (R. Joensen, personal communication, May 10, 2012)

5.1.3.3 Sustainability as a driver

In the seafood industry, no single stakeholder defines sustainability, and regardless of size or resources, one company alone cannot solve all sustainability challenges. This is why communication must play a key role in the sustainable development of our industry (Marine Harvest, 2011a, p. 1). Sustainability was defined as a precondition for long-term value creation in the salmon farming industry. The industry must be socially and environmentally sustainable to be profitable over the long term and MHG needs attractive bottom line results to have the financial strength to drive a sustainable development of the operations (Marine Harvest, 2011c, p. 12). The sustainability report issued by MHG has been published annually since 2008 and every year the content and scope has increased. The latest report published in 2011 was issued in two separate copies demonstrating the large volume needed to cover the topic.

Fish farming activities may have negative impact on the environment and Marine Harvest is determined to reduce these effects to an acceptable level. The Group categorizes the impact into two areas; potential environmental impact, like pollution from water discharged into a municipal sewage system, and potential community impacts, like odor and noise (Marine Harvest, 2011c, p. 11).

Biomass survival is a key measure both for ensuring sustainable operations and low cost of operations. Disease mitigating actions are prioritized and good farming practices transferred between entities to improve survival. In connection with this the sea lice mitigation has been a high priority since 2009. Marine Harvest's global experiences are shared both within the company and with the industry in general. It

became the Group's ambition to be a driving force in this area both in the industry and towards the authorities. The sea lice level at the end of the third quarter in 2011 was generally under control, but to a significant effort and cost for the Group (Marine Harvest, 2011d, p. 9, 2012c, p. 9). MHG became an industry partner to the new Sea Lice Research Centre at the University of Bergen, which started its operations in the fourth quarter of 2011 (Marine Harvest, 2012c, p. 13).

Regarding wild-caught seafood sustainability labels, MHG is an active contributor to the topic. One way to support these initiatives is through the purchase of Marine Stewardship Council (MSC) certifications which is based on a healthy fish stock level, sustainable fishing methods and a professional fisheries management system. MG also invested in a sustainable Iceland concept for white fish species. The concept assures sustainable seafood products of high quality and it supports the certification approach of the Icelandic Government (Marine Harvest, 2011a, p. 9). These acts demonstrate that MHG was purchasing permits and investing in concepts to support sustainability. The potential environmental impacts of fish farming and how they are being dealt with by MHG is listed in the 2010 sustainability report revealing their stress on sustainability even further.

5.1.3.4 Followers

The researcher inspected all data published by MHG from the year 2006, information from the Norwegian stock exchange, and other research published by third parties looking for indicators of the 'follower' driver. As a result there were no clear signs of Marine Harvest Group strategically imitating other corporate behavior in the industry. To get further information the researcher asked the acting CFO of the group if there was any company that is in the business of processing farmed salmon that Marine Harvest follows closely to learn from or imitates in terms of strategic firm behavior. The processing part here meaning; after the killing part until the value added stage.

> We are trying to learn from the best but I would not say we are trying to imitate anyone in terms of strategic behavior. But of course there are some players that are rather good when it comes to the lowest costs and the best margins and of course we are trying to learn from them but not strategically. (J.K. Andersen, personal communication, April 20, 2012)

The general manager of the MH Norway argues that competition is tough in region and he describes they ways they are dealing with it and who their biggest competitors are in production and sales.

> We follow our competitors very closely, because we are spread all over Norway so our people on the sites they see if they are doing something else at another farm; that is a very clever thing to do. Then we follow their reviews when they present them on the stock market and how they are performing and we compare ourselves to them. And we are looking at peers always and a chance to stretch ourselves to be as good or better than the peers. At the moment we are presenting results that are the best in the industry. But it is changing, sometimes it is someone else, but we are looking at each other definitely yes. There is also a pressure from the owners to be looking at what others are doing, trying to put pressure on us; it is a part of the competition.
>
> [The biggest competitors of MH Norway] on producing fish it is probably Salmar and on the sales side it is Leroy. (R. Joensen, personal communication, May 10, 2012)

Since Marine Harvest Group was created in the merger in 2006, it is the largest salmon farming company in the world. Therefore it was interesting to get a confirmation from a senior executive at the headquarters if they consider themselves a trendsetter and set examples for others to follow.

> In some aspects of the business we are. When it comes to the ways of doing the farming, health issues, feed issues, we are working very close to the feed suppliers, and risk management issues. I think in all aspects as a responsible run business we are the front runner. (J.K. Andersen, personal communication, April 20, 2012)

5.1.3.5 Different emphasis between regions

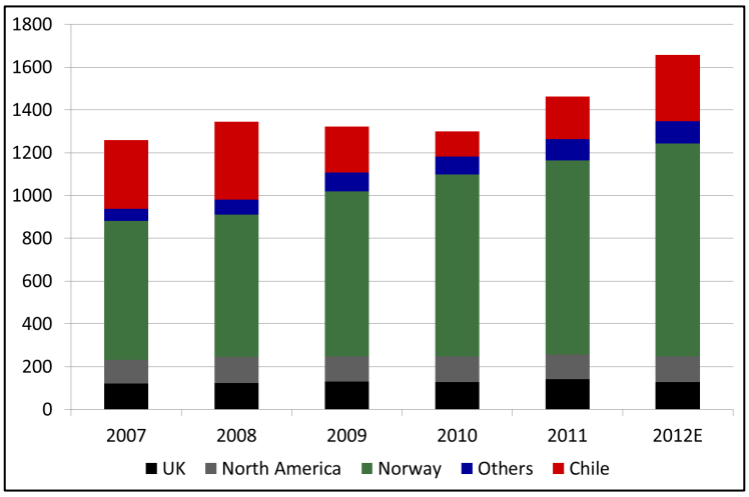


Figure 10. Global supply development of farmed Atlantic salmon between regions in thousands of tons 2007 – 2012 (estimated) (Marine Harvest, 2012d, p. 5)

The global supply of farmed Atlantic salmon suffered from a rather large downswing between 2008 and 2010 after the ISA virus incident in Chile leading to a decline of the total industry supply. The overall quantity does however rise again in 2011 by 13%, and an estimated increase in 2012 is 14% (Marine Harvest, 2011c, p. 7). Harvesting volume in Norway increased by 10.4% in 2010 from the year before and another 8.7% increase in 2011 as can be seen in Figure 10. The Norwegian salmon farming industry is approaching capacity under the current license structure and Norwegian authorities are not expected to review a capacity expansion until late 2012. As a consequence, growth in harvest volumes in Norway is expected to be modest in the coming years (Marine Harvest, 2011c, p. 7).

> The interest of companies is changing all the time. Sometimes Norway has been the most interesting to look into and sometimes Chile has been the most interesting. The driving forces are a mixture of the possibility to grow and margins, how well they perform, how the different regions are performing. Sometimes Chile is performing better than Norway, then the focus is in Chile and sometimes it's vice versa. Sometimes we are driven by very short term perspectives.
>
> […] The focus right now is on Chile but if you look at what is happening right now we want to diversify in the entire industry. If we are well distributed in Chile and

> in Norway then we are less affected by biological hazards in both places, those are the main production areas. (R. Joensen, personal communication, May 10, 2012)

In a regional perspective, MHG is currently focusing mostly on Norway regarding influencing the publishing of licenses, which will be explained in more detail in the case conclusion chapter. According to the Group's CFO the focus is also on Chile regarding the recovery of the ISA disease.

> In Chile it is most important to protect the strategic platform and get control of the areas. Because in Chile Marine Harvest has lost 25% of the Chilean industry capacity so we are using only a small fraction of it. We have a unique strategic platform there, one we would like to expand on and get the logical situation under control. (J.K. Andersen, personal communication, April 20, 2012)

According to both Mr. Andersen and Mr. Joensen the third largest business unit of the group, Scotland, is not expected to grow in production capacity in the nearest future.

> In Scotland the production is around 50-60 thousand pounds and we don't we have the capacity to grow more in that market and we expect that the Scottish operations will be at the capacity level around 60 thousand pounds now so our goal is to optimize in that market. (J.K. Andersen, personal communication, April 20, 2012)

> …Scotland, that is an area that is the third largest, but it's limited how much the industry can grow in Scotland. They have reached the limit of what they can produce; they have been placing around 150,000 tons for a long time. […] They will be able to grow in some way, like go into some areas, but they are not able to grow within the normal proximities, not like Norway and Chile. […] The limitation in Scotland is based on production; they cannot produce anymore because they don't have facilities available for further growth. That's why they went to more exposed sites, they can produce somewhat more but they also take higher risks when they go to the more exposed areas. (R. Joensen, personal communication, May 10, 2012)

Canada has also been hit by a disease infection which has lowered the production capacity of the market. Besides to being affected by bio-hazards, Mr. Joensen considers

the Canadian market to be relatively saturated in terms of production capacity like in Scotland. "It is the same for Canada; it is also limited for what is available today" (R. Joensen, personal communication, May 10, 2012). Mr. Andersen explained in a little more detail the current focus for the Canadian market.

> In Canada [the focus] is to improve the performance. We have been impacted there by disease in some areas and we are leaving those areas and consolidate our business and somewhat lower the harvest level than it has been before. Also some restructuring of the business going out and trying to improve the performance. The situation is not as serious as it was in Chile. In Canada we are cutting our business down by 25% in the period, we will consolidate and then start growing. It is more the question of cutting cost and optimizing the situation and getting rid of the disease in some areas. (J.K. Andersen, personal communication, April 20, 2012)

The Faroe Islands and Ireland are the remaining market areas that the researcher inquired in the interviews. The Group's CFO commented that these countries are being less focused on at this point given that they are smaller in scale. He further states that the main driver in these regions is on optimization.

> We are rather small in The Faroe Islands so the most important thing is to reach a critical mass, because these operations are small compared to other operating units of the group. The main driver there is to optimize the operation. […] In Ireland the issue is to improve the cost base. (J.K. Andersen, personal communication, April 20, 2012)

5.1.4 M&A development summary

There are drivers for M&A which are not identified specifically as driving forces for M&A in the theoretical chapter but are recognized in the case study as influential factors for M&A activity by Marine Harvest Group. The most highlighted driver is *sustainability*; it is connected to the long-term goal of being able to farm and process fish in the future while not leaving an ecological footprint damaging the environment. The sustainability strategy supports their efforts in being a leader in the industry and set an example for others to follow. It also supports their efforts in being an influential factor to the decision makers of salmon farming quotas. To be able to do that MHG has

to demonstrate economical operations in correlation with the environment, customers, employees and other stakeholders.

Globalization is another concept with high importance within MHG. It can be classified under the geographical distance driver due to the connection when MHG is encouraged to acquire a company in another country due to the geographical distance. However, because of the number of reoccurrences of the concept within the published data of the company, the researcher found it essential to make a special category for it within the case study.

MHG's mission is to be the dominant leader of salmon farming in the world; this has been their goal for several years now. The company does however watch other players and tries to learn from them when it comes to low costs and the best return of margins, but that is not something that is performed strategically. It is considered a natural part of running the business to watch the activities of other players in the industry. They are not trying to be a follower on the market but rather a pioneer making other players following their actions. They have minimized competition by engaging in horizontal mergers and according to the CFO of the Group they are still looking to expand by acquiring other salmon farming companies.

By expanding their scope of business on a global scale MHG wants to be so influential that they can affect decision makers of farming quotas in the salmon industry. This is clearly demonstrated in their 2009 sustainable business report where they reveal, in a graphical manner, the structure of the salmon life cycle from where the quantity decisions are made till the product reaches its end-user. This strategy is still very active as has been confirmed by the CFO.

After the large merger in 2006 when MHG was created, the merger activity was high until the ISA disease struck the industry leading to a downswing in mergers. All focus went to efficiency and productivity measures of the operations to maintain the business. This evolvement insured that regulatory framework was strengthened in the industry and sustainability became the priority driver for recovery of the business.

After 2006 the Group strengthened its position by getting involved in vertical mergers with suppliers and customers from both ends of their product's value chain. This vertical merger activity mainly took part between the years 2006 to 2008, but is no longer a part of the current corporate strategy. That way they could gain control of their

own operations and were able to outsource or expand their productions according to their own needs. The company wants to be as least dependent on others as possible and these actions supported less dependency on suppliers which generated lowered average production cost due to lower transaction costs. It is however inevitable that all business units of MHG will be dependent on regulatory frameworks of local governments and their decisions towards farming quotas which limits the processing amounts. Environmental impacts are also an influential factor which can affect a major part of the farmed salmon supply chain and limit operations in great amounts. The disease infection in Chile is the perfect example to demonstrate that.

According to the salmon aquaculture supply chain demonstrated in Figure 5, the salmon goes through six levels of the supply chain before reaching the end-consumer. The regulatory system affects all parties within and outside the value chain cluster making it the most influential factor on production volumes in the industry. Farming quotas are the main reason for which Marine Harvest has to limit their productions. It is the conclusion of the researcher that decision makers of MHG's have discovered that by demonstrating efforts to support sustainability in their operations, they can influence decision making on farming quotas. The scope of MHG's business makes them an indispensable member of the salmon industry. Therefore governments and other decision makers of fishing quotas are compelled to take MHG's operations into consideration for future aspects.

MHG has chosen the sustainability strategy to achieve their mission to offer the best salmon products available to the world. This approach reaches all aspects of the operations and supports the product's value chain. This is demonstrated in all of their actions towards making their production cycle more efficient by taking into consideration external influences on the environment their actions might have.

Proof of this is their active involvement in improving feed quality (e.g. the controversy of using wild fish to feed farmed fish and the dependency of fish oil in this context (derived from fishmeal)) by funding research projects and cooperate with other NGO's and NPO's to making the feed more efficient, and minimizing potential negative effects of the environmental footprint. Because their business reach is so extensive it is their benefit in the long run to take the initiative and address this issue directly instead of waiting for other players to act on the matter and follow them.

MHG is looking to improve its business by entering into partnerships and cooperation increasingly with non-profit organizations, laboratories, research centers, universities and other official agencies. By involving these independent parties the company generates credibility towards opinion makers. MHG first issued a sustainability report in 2008 and have been doing so annually ever since. Their latest report published in 2011 was issued in two volumes because of the quantity of the content. It touches on the social responsibility theory.

Marine Harvest's challenge is that the company cannot directly influence the quotas. Each fishing nation is responsible for managing its fish stocks in a sustainable way. Feed and salmon producers have little or no direct influence on governments with regards to the management of fisheries resources. Scientific organizations like the International Council for the Exploration of the Seas (ICES), IMARPE in Peru and IFOP in Chile give advice on fisheries management, but it is the governments in each country that enforce the legal fisheries management system and regulations (Marine Harvest, 2009a, p. 28).

5.2 MHG investment strategy analysis

This chapter is devoted to answer research question number two: *"What impact has the recent M&A development in the farmed salmon industry, had on the investment strategy of leading organizations (Marine Harvest Group) towards processing solutions?"*

The researcher addressed the interviewees with some questions on decision making, investment strategies, and influential factors when it comes to purchasing processing solutions. This chapter will reflect the general strategies of the Group but also the largest business unit, Norway, where the general manager Mr. Joensen will give insights to the investment strategies.

When it comes to evaluating the processing equipment being offered on the market today, MHG is quite selective of the machines features. The most important attributes are the capabilities to handle large loads and to operate 24 hours a day. The machines have to be mechanized as possible so it will require minimum amount of staff to make them function. Also they have to be easy to manage so the workers are not required to have an education in engineering or other similar educational background to be able to handle the machines and software. Reliability and hygiene are also stressed.

> The kind of machines we are using in the processing plants. Our strength here is the large volumes of our operation, so we need equipment that can handle large capacity of volume. During the peak periods we need equipment that can run 24 hours a day. […] It depends on the season [if the equipment can operate 24 hours a day] in crisis we can do that. The peak time is before Easter and before Christmas. And especially when you are in a situation where the salmon grows faster than expected, you have to take it out of the water and slaughter it, that puts high pressure on the processing part. Then we need to have a spare capacity that can run for 24 hours.
>
> […] They have to be as automotive as possible, that is very important. Also reliable, and to handle high scale loads. And of course reliability is very important for us because we have so big volumes. We are setting new records now every week because of big volumes so it is very important that the technical installation is reliable so we can be able to handle this entire load.
>
> […] There is another thing that is very important when it comes to machinery in processing plants and it connects to the disease risk and that is the sanitary issue. What is important here is the ability to clean all the equipment. We need to be able to clean them properly. […] According to our processing people this has been an issue. This is important because it connects to our processing capacity, we might lose capacity if this is an issue. And it also affects the health issue and can have very negative effects on the market; it can mean that the products will fail. (J.K. Andersen, personal communication, April 20, 2012)

At some level the decision making process of MHG is unclear when it comes to purchasing salmon processing solutions. For outsiders, e.g. Marel which is in the business of selling processing machines, it is uncertain to figure out how decisions are made and thus it is difficult to know which direction to look when it comes to approach the group in introducing their solution offerings. Are the decisions made by the headquarters, top management of each company, or within a business unit (divisional level)?

> This depends on the size of the investment. If it is a small scale thing than the decision is at a local level, if it is a heavier investment it is a headquarter issue. That is linked to how we manage the business, we have sector regulations internally on capital investment and how we manage the business. (J.K. Andersen, personal communication, April 20, 2012)

Also what influences the purchasing amounts for every unit within the group to spend each year on processing solutions is unclear. This is rather difficult topic to answer in detail since there are many factors that influence this decision Also because the managers might not be willing to reveal every fact of the matter because of the sensitivity of the topic.

> That really depends on the development of the group, we ask ourselves do we need capacity or not, so this is a capacity driven issue. But this is only one small part of the value chain and can't be valued alone; there are many other influential factors that decide this. (J.K. Andersen, personal communication, April 20, 2012)

According to Mr. Joensen of Norway the strategy towards processing solution is still under construction.

> We are discussing what our strategy is at this point. We have had the strategy that we shall have primary processing close to the farms everywhere. Then the secondary processing […] that is partly done at large factories in Norway and in smaller factories in Europe. (R. Joensen, personal communication, May 10, 2012)

5.2.1 The pre-rigor part

Regarding the pre-rigor part of the salmon processing, the researcher inquired about the development in that area on behalf of Marel. Is there a potential growth in that area and what are the demands from suppliers that produce solutions in this part of the value chain? To summarize on this matter it is likely that MHG will rise in Chile in that area once the industry there picks up. In Norway there is also potential for growth according to the general manager.

> The secondary processing starts after that, when we cut the fish into fillets. That part has more and more been moved up to Norway […]. This is where we are cutting the product in pre-rigor fillets, that is the product we have been producing in Norway. (R. Joensen, personal communication, May 10, 2012)

The perspectives of Mr. Andersen and Mr. Joensen are coherent when asked about the pre-rigor production in the Norwegian market. They have already purchased machinery for that part of the value chain for the next two to three years and are therefore not looking for further investment opportunities in that area.

> We did invest in that area[10] two years ago in Norway. Recently because of the Chile situation it did not produce much from there to the US market, so the Norwegians produced for the US market, including us. We increased exports of fillets to the US and that was based on pre-rigor. But the Chile operations are coming back, but that is not an issue we are focusing on right now exactly. (J.K. Andersen, personal communication, April 20, 2012)

However Mr. Joensen did state that production is expected to pick up in the future because of increased demand for pre-rigor fillets, thus opportunities may be open in a few years' time.

> Yes. The first part of the value added, the filleting, is planned to move to Norway. We have done it partly now, we are now about 25% of the production in the fillet cutting in Norway today. The goal is to increase that level in Norway, only the pre-rigor fillets. (R. Joensen, personal communication, May 10, 2012)

5.2.2 Investment strategy in Norway

This chapter will cover a more in-depth description of the investment strategy towards processing equipment and software in the Norwegian business unit. There were five questions that were addressed to the general manager on decision making, influential factors, and future predictions of this subject. In the interview Mr. Joensen stated that

[10] Referring to the pre-rigor part of the salmon processing.

decisions are now becoming more centralized at a business unit level, before they were taken at a regional level.

> We have divided the production in Norway in four regions and in each region there is one factory. Some of the decisions in the past have been taken only at the factory level but we have changed that now to a business-unit level. The business unit Norway decides which machinery to use, not the regions. (R. Joensen, personal communication, May 10, 2012)

At this time there is not much potential for solution providers to offer their machines to the Norwegian unit because they have recently invested in hard equipment for the next two to three years. There might be a possibility to introduce software solutions since Mr. Joensen admits to some problem in that area.

> When we make a decision to invest in equipment then we consider what the production will look like during, at least, the first part of the life-time of the investment. […] At the moment we have invested in filleting lines and can grow in the existing filleting lines for some years before we need to increase the capacity. […] We might add some equipment but we will not add extra equipment for filleting lines, we might change some, because we are also in the process when we try to synchronize old equipment we have, so they will all work together. […] We have invested in the hard equipment for the next two to three years, so we will not do any additional investment there. But for software, there might be some software changes. (R. Joensen, personal communication, May 10, 2012)

As for now, the Norwegian processing regions have a mix of old and new machinery thus it is important that they can function consistently with each other. There seems to be a problem with process management when it comes to communication between the sales department and the production sites. The solution they are looking for is that software can be consistent in all of the processing regions and to be managed centrally by the sales office.

In addition to what Mr. Andersen lists as requirements towards salmon processing machines Mr. Joensen argued that the most influential factor before investing in machinery is planning for the future production amounts of the business unit so the equipment will be able to handle the capacity. Increased yield is of course always a demand as well.

> …so it's not on the technical equipment itself but of course there are always wishes to improve yield and so on at each factory, but that is not the primary interest for us right now, it is more so the different equipment can work better together. […] We want our equipment to communicate better together so that, for example the sales department can have a full overview easily and each factory can also do adjustment quite easily. That is the main demand we are looking at the moment. […] Right now we have a little flexibility and sales departments can do very little with the software not being centralized. They need to go out to each of the factories to print for example the labels on the boxes, but we would like to have that centralized so we can have more flexibility in that area, that are the investment opportunities we are looking at. (R. Joensen, personal communication, May 10, 2012)

5.3 Future industry development analysis

This chapter is devoted to answer research question number three: *"What influence will the scenario in Q1 and Q2 have on the market for salmon processing solutions and how can leading companies in that field like Marel respond to it?"*

In the early years of the salmon farming industry, the R&D focus was on making it possible to farm salmon. The next development phase consisted of reducing costs and improving fish health while ensuring growth capacity (Marine Harvest, 2011a, p. 44). Given that the salmon farming industry has changed rapidly in the last decades it is difficult to predict a clear image of future development. However there are some development trends that are clear enough to give an indication of what to expect. This chapter will cover possibilities regarding future activities of MHG and the overall industry development.

5.3.1 Establishment of a new feed company

The trend towards reduced dependency on wild fish material for feed is expected to continue in the near future. Critique on the use of genetically modified feeds will be expected as land animal protein for feeds in fish farming may not be accepted in the same way as in agriculture. With new genetic technology, breeding towards specific traits is made possible. The goal of MHG is to breed salmon not only for growth and general health conditions but also for disease resistance. Fish welfare and new vaccine technology are also areas where improvements are to be expected (Marine Harvest, 2011a, p. 43).

At the end of March this year Marine Harvest Group announced their plans of establishing a salmon feed company. This is in accordance with identified M&A drivers within MHG; production, efficiency gains and sustainability. Feed costs at MHG constitute to approximately 50% of the total production costs in salmon farming and feed quality is an important driver for production cost, fish health and food quality. The group entered into agreements with Nofima, the largest European institute for applied research within fisheries, aquaculture and food and Felleskjøpet Rogaland Agder, the leading Norwegian agricultural feed producer. This agreement opens up the possibility for establishing a leading Norwegian salmon feed company with a yearly production capacity of up to 500.000 tons of salmon feed (Marine Harvest, 2012e, para. 2).

According to the statement of Mr. Alf-Helge Aarskog, CEO of Marine Harvest, the Group is planning to create a new establishment of salmon feed company in collaboration with experienced partners who are integrated with the world's largest producer of salmon. This could open up for a profitable expansion of the value chain and contribute to the improvement of the Group's profitability over time (Marine Harvest, 2012e, para. 5).

5.3.2 Genetically modified salmon

Marine Harvest Group is looking more into the trans-genetically modified salmon. This is being researched in increasing numbers with promising results. But before transgenic salmon can be implemented to MHG operations the use of genetically modified salmon (GMO) must be legally authorized, evaluated as ethically acceptable, and lastly the food must be in demand by the consumers (Marine Harvest, 2011a, p. 45). The Group is participating in an EU project looking at farming sterile fish through triploidity which is

a non-transgenic method. This method is expected to eliminate issues related to possible genetic mixing of farmed and wild stock in case of farmed fish escapes which the Group has a zero tolerance for. Mr. Joensen addresses this issue during the interview with the researcher.

> But it also depends on what you mean by genetically modified, because one area can come before, […] triploid salmon. That is a salmon, […] instead of a normal animal that have two chromosomes in each sex, one from the mother and one from the father, the triploid has three sexes of DNA. That means that it is not able to reproduce […]. If we produced triploid salmon then they will be sterilized. […] The problem right now is that we have seen to many misshaped animals of triploid salmon, but there is some work going on with that and if that problem is solved it may be triploid salmon produced. But this is not considered genetically modified salmon but it still has triploid genes in it. […] Yes, [this being performed in a research facility that MHG is in collaboration with] it is going on and we have produced some. (R. Joensen, personal communication, May 10, 2012)

In regards to the future of the industry the researcher questioned the manager on his estimate when or if the general public will accept the GMO salmon.

> In my opinion no, because humans are very reluctant and we don't think humans are prepared for genetically modified salmon so we will not be looking into that aspect. (J.K. Andersen, personal communication, April 20, 2012)

> Not in the near future no, I don't think so. […] Right now we don't use any GMO raw material in the feed production and the first decision we must take will be whether we will want that allowed in our diet or not. So that would be the first step and we are not ready at the moment to do that, but I think that will come in the near future. And it's a long way for us to hear about genetically modified salmon […] I don't know when but at least not within the next five years. (R. Joensen, personal communication, May 10, 2012)

5.3.3 Prospects in other areas

According to published data by MHG (Marine Harvest, 2011a), the proportion of the salmon life cycle spent in closed containment is likely to increase in the nearest future. Several business units are already planning new sites for rearing post smolts (up to 1.0 kg. fish) in closed tanks on land, and are looking into technology for floating closed containment for fish up to 1.0 kg. Harvesting methods are already undergoing changes, to avoid stress and enhance welfare. It appears impractical to harvest the full cycle in closed containment at the present since required energy input to currently available recirculating technology would be in conflict with the corporate sustainability objectives of the Group.

Investments in other companies are expected to pick up rather than mergers in order to decrease costs. In order to increase the biosecurity and reduce costs, MHG has joined an extensive fresh water investment program globally. This program encompasses investments in the fresh water area in all the major farming regions; Norway, Scotland, Chile and Canada. These projects will produce better smolt and contribute to significant cost reduction in the fresh water area (Marine Harvest, 2011e, p. 9).

In contrast to 2009, MHG started building up biomass in 2010 and increased investments in biological assets with approximately 900 million NOK. With a strong market for salmon in the Norwegian business unit, the aim has been to improve the price achievement and reduce the cost level. In 2010 the company started a three year investment program in freshwater capacity to improve smolt quality, reduce smolt cost and increase flexibility, to be able to produce larger smolt (Marine Harvest, 2011c, p. 2). This is part of the solution to reduce mortality and improve capacity utilization in sea water and is still a highlighted strategy of the Group.

6 Final conclusions and recommendations

This chapter will answer the research questions in a brief summation based on the data gathered in the case study and conclude with a list of recommendations.

6.1 Summary for research question one

Q1: "What driving forces of mergers and acquisitions have affected recent development of Marine Harvest Group in the farmed salmon industry, and what are the future predictions of M&A with the company?"

The most reoccurring and influential driving forces of M&A identified in the case study are the following; (1) economics of scale (efficiency gains), (2) regulatory framework, (3) sustainability, (4) production, (5) productivity, and (6) market size.

Most of the M&A activity took place in the years 2006 and 2007, but decreased significantly after that. In the following years MHG has mostly entered into collaborations and partnerships with non-profit organizations, research facilities, and governmental agencies for the purpose of increasing the development of sustainability. Consolidations in terms of M&A have not been the focus of the corporate strategy in recent years. The Group is acting in vertical mergers to gain the advantages of economies of scale. The only noted merger in the last two years was the takeover of Straume, a small Norwegian farming company.

6.2 Summary for research question two

Q2: "What impact has the recent M&A development in the farmed salmon industry, had on the investment strategy of leading organizations (Marine Harvest Group) towards processing solutions?"

The Group is becoming more organic. Decisions on investment choices and amounts are becoming more centralized at a business unit level, before they were taken at a regional level. The most influential factor before investing in machinery is planning for the future production amounts of the business unit so they will be able to handle the capacity. Production is expected to pick up in the future because of increased demand for pre-rigor fillets, thus opportunities may be open in a few years' time in that area.

The Norway business unit has purchased equipment for the next two to three years but they might purchase new software since some problems have occurred in that area. The Norwegian processing regions have a mix of old and new machinery thus it is important that they can function consistently with each other.

A brief summary of the factors that were highlighted as important elements of salmon farming processing solutions for MHG: Superior guarantees, Easy cleaning & maintenance, Hygiene operation cycle, Automatically driven, Low complexity machines, Non-stop 24 hour running, Efficient and sustainable.

6.3 Summary for research question three

Q3: "What influence will the scenario in Q1 and Q2 have on the market for salmon processing solutions and how can leading companies in that field like Marel respond to it?"

The trend towards reduced dependency on wild fish material for feed is expected to continue in the near future. Critique on the use of genetically modified feeds will be expected as land animal protein for feeds in fish farming may not be accepted in the same way as in agriculture. At the end of March this year the Group announced their plans of establishing a salmon feed company, this is a way of expanding the scope of their product's value chain. This is in accordance with identified M&A drivers within MHG; production, efficiency gains, and sustainability. MHG is looking more into the development of genetically modified salmon, this is still on a research phase and is not expected to be on the general market for at least the next five to ten years.

6.4 Recommendations for suppliers of solutions

This chapter will gather recommendation for Marel on how they can exploit the information that has been gathered during the course of this research.

According to the current CFO of MHG the group is looking for possibilities to merge (or invest in) salmon processing companies, which is in the downstream part of the business. This development is most likely to occur in Norway, given that it is the largest processing unit of the Group. They are also picking up this part of the business within Asia in Japan and China. This might be a potential opportunity to companies like

Marel since it can increase the number of processing facilities to present their processing solutions.

> In the upstream area it is Chile and Norway [Country areas most likely to grow with MHG in the nearest future]. And in the processing part, the downstream, it is the continental Europe and also in Asia. We are present in Japan and we like to pick up the business there. We are also increasing our activity in China. (J.K. Andersen, personal communication, April 20, 2012)

Following is a list of factors that the interviewees highlighted as important elements of salmon processing solutions for MHG.

a. **Superior guarantees.** If a company can offer machines and software with a guarantee for malfunctions that succeeds the offerings of their competitors, it will fulfill a strong requirement of MHG.
b. **Easy cleaning & maintenance.** If a company is able to demonstrate that their processing machines can be cleaned more easily and the general maintenance takes less time than their competitors.
c. **Hygiene operation cycle.** If the machines promote hygiene processing of the product and do not contaminate it in any way during the operation cycle, then it is of great value.
d. **Automatically driven.** If the machines are automatically driven and require the least amount of manual labor to operate.
e. **Low complexity machines.** Making the complexity level of the machines as low as possible so the employees do not need a high degree of education or specialized training skills for operation the units.
f. **Non-stop 24 hour running.** The machines need to be able to operate 24 hours a day non-stop. This is important especially in the case of larger business units of MHG since they are working with so large amounts at the high peak of seasons.
g. **Efficient and sustainable.** Finally the machines need to be efficient and sustainable to be coherent with the overall business strategy of the Group.

7 Final words and further discussion

The original goal for the researcher was to conduct a research work that would solve a practical problem in a real case scenario. This research has generated a great experience on a topic which has touched many aspects of business theories along the way. The exploration has led the researcher through an industry which is growing incrementally every year.

The aquaculture is taking on a new form towards farming which people did not foresee. Despite its dependency on Mother Nature hence being sensitive to natural disasters, the different continents of the world support one another in the time of need just like Marine Harvest Group has proved. This evolvement is creating a more self-sufficient industry.

If there is anything that the researcher would have liked to change during the course of this thesis, it is to have gathered more first-hand data. It would have been interesting to see if other managers in the highest level of the Group's hierarchy had supported what the interviewees of this research stated, or perhaps they had other perspectives. But given the sensitivity of the research topic it was expected that response level might be limited.

As has been covered in this thesis, farmed salmon has been criticized because it may have a negative impact on local salmon stock. The special traits (size, color etc.) and behavior of farmed salmon in breeding grounds may potentially impact wild salmon breeding, derived through interbreeding.

At present times the demand for salmon is still being answered with the available supply of farmed salmon, the need of genetically modified version is not considered a necessity. The largest players on the market will however continue to study ways to maximize efficiency through the entire salmon value chain; hence GMO salmon may be implemented in the future as a way of reducing cost.

It seems to be the common opinion of key players in the market that the general public is not ready to accept GMO salmon in their diet. Breeding of GMO salmon conflicts to what is considered organic and sustainable, which are current trends in the salmon farming industry.

The salmon industry is dependent and sensitive to environmental influences; hence natural disasters can affect the overall supply. Up till now, the most severe case to date was the ISA disease that lead to a decrease in supply from Chile which supplied the South American market and the United States. Due to the increasing globalized business world the situation was handled with increased production of pre-rigor fillets from Mid-Europe, mostly Norway. The farmed salmon may suffer a shock leading to a shortage of the product. Other influential factors of the value chain might also lead to a higher production cost. In that case the industry might be required to seek other options in maintaining production of salmon to keep up with demand. If this turns out to be the case then GMO salmon might be a viable option to keep the industry alive.

8 Bibliography

Achampong, F. K., & Zemedkun, W. (1995). An empirical and ethical analysis of factors motivating managers' merger decisions. *Journal of Business Ethics*, *14*(10), 855–865.

Adams, W. L., Love, H. A., & Capps Jr., O. (1997). Structural analysis of mergers and acquisitions in the food industry. *A&M University, department of agricultural economics*, Journal of food distribution research, 1–13.

Amland, A. H. H., & Line, M. (2010). *Optimal executive incentives for M&A* (Working paper). Norway: Norwegian University of Science and Technology.

Asche, F., & Bjorndal, T. (2011). *The economics of salmon aquaculture* (2nd ed.). Oxford, United Kingdom: Wiley-Blackwell.

Bainbridge, S. M. (2003). *Mergers and acquisitions*. New York, USA: Foundation Press.

Barton, J. R., & Floysand, A. (2010). Global Environmental Change - The political ecology of Chilean salmon aquaculture, 1982–2010: A trajectory from economic development to global sustainability. *Global environmental change*, 20th anniversary special issue, *20*(4), 739–752. doi:10.1016/j.gloenvcha.2010.04.001

Beckenstein, A. R. (1979). Merger activity and merger theories. *The Antitrust Bulletin*, *24*, 105–128.

Bertrand, O., Mucchielli, J.-L., & Zituona, H. (2007). Location choices of multinational firms. *Journal of economic integration*, *22*(1), 181–209.

Besanko, D., Dranove, D., Shanley, M., & Schaefer, S. (2009). *Economics of strategy* (5th ed.). John Wiley & sons.

Blumberg, B., Cooper, D. R., & Schindler, P. S. (2008). *Business research methods* (2nd ed.). USA: McGraw-Hill Higher Education.

Bodolica, V., & Spraggon, M. (2009). Merger and acquisition transactions and executive compensation. *The academy of management annals*, *3*(1), 109–181. doi:10.1080/19416520903047210

Bostock, J, McAndrew, B, Richards, R, Jauncey, K, Telfer, T, Lorenzen, K, Little, D, et al. (2010). Aquaculture: global status and trends. *Philisophical transactions of the royal society*, *365*(1554), 2897–2912. doi:10.1098/rstb.2010.0170

Brakman, S., Harry, G., & Charles, van M. (2006). *Cross-border mergers & acquisitions* (No. CESifo Working Paper No. 1823) (p. 37). The Netherlands. Retrieved from http://ssrn.com/abstract=940348

Carlton, D. W., & Perloff, J. M. (2008). *Modern industrial organization* (4th ed.).

Chopra, S., & Meindl, P. (2009). *Supply chain Management* (4th ed.). Upper Saddle River: Pearson Prentice Hall.

Connor, J. M., & Geithman, F. E. (1988). Mergers in the food industries. *Agribusin*, *4*(4), 331–346. doi:10.1002/1520-6297(198807)4:4<331::AID-AGR2720040404>3.0.CO;2-Y

Cools, K., Gell, J., Kengelbach, J., & Roos, A. (2007). *The brave new world of M&A* (p. 40). Boston, MA, USA: The Boston Consulting Group. Retrieved from http://www.bcg.com/documents/file15069.pdf

DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited. *American Sociological Review*, *48*, 147–160.

European Commission. (2007). *Report on the implementation of the directive on takeover bids* (Commission staff working document).

Gervais, J.-P., Bonroy, O., & Couture, S. (2008). A province-level analysis of economies of scale in Canadian food processing. *Agribusiness*, *24*(4), 538–556. doi:10.1002/agr.20178

Golbe, D. L., & White, L. J. (1991). Corporate takeovers. In A. J. Auerbach (Ed.), *Corporate takeovers* (p. 354). Chicago USA: University of Chicago Press.

Goldberg, W. (1983). *Mergers*. New York, USA: Nichols Publishers Company.

Gort, M. (1969). An economic disturbance theory of mergers. *The quarterly journal of economics*, *83*(4), 624–642.

Hill, C. W. L. (2003). *International business* (4th ed.). McGraw-Hill Higher Education.

Hofstede, G. (1983). The cultural relativity of organizational practices and theories. *Journal of international business studies*, *14*, 75–89.

Hofstede, G. (n.d.-a). Geert Hofstede dimensions. *Geert Hofstede's cultural dimensions*. Retrieved April 11, 2012, from http://geert-hofstede.com/dimensions.html

Hofstede, G. (n.d.-b). Geert Hofstede dimensions. *Geert Hofstede's cultural dimensions*. Retrieved April 11, 2012, from http://geert-hofstede.com/chile.html

Holmstrom, B., & Kaplan, S. N. (2001). Corporate governance and merger activity in the United States. *Journal of economic perspectives*, *15*(2), 121–144.

Johnson, G., Scholes, K., & Whittington, R. (2005). *Exploring corporate strategy* (7th ed.). Essex, England: Prentice Hall, Financial Times.

La Porta, R., Lopez-de-Silanes, F., Schleifer, A., & Vishney, R. W. (1998). Law and finance. *Journal of political economy*, *101*, 678–709.

Lindlof, T. R., & Taylor, B. C. (2010). *Qualitative communication research methods*. (D. McDaniel, Ed.) (3rd ed.). USA: SAGE Publications Inc.

Liu, Y., Olaussen, J.O., & Skonhoft, A. (2011). Wild and farmed salmon in Norway - a review. *Department of Economics, Norwegian University of Science and Technology (NTNU), Dragvoll University Campus, Trondheim Business School*, *35*(3), 412–418.

Lockwood, G. (2007). The evolution of aquaculture or is it a revolution? *Aquaculture magazine*, *33*(1), 26–32.

Malhotra, N., Birks, D., & Wills, P. (2012). *Marketing research* (4th ed.). USA: Pearson Education.

Marel. (2012a). *Annual report 2011*. Gardabaer, Iceland. Retrieved from http://www.marel.com/annual-reports/2011/?source=ads

Marel. (2012b). The Company. *About Marel*. Retrieved May 1, 2012, from http://www.marel.com/company/company/

Marine Harvest. (2007). *2006 Annual report*. Oslo, Norway. Retrieved from http://hugin.info/209/R/1133003/211963.pdf

Marine Harvest. (2008a). *2007 Annual report*. Oslo, Norway. Retrieved from http://hugin.info/209/R/1222038/257419.pdf

Marine Harvest. (2008b, February 8). Processing. *Marine Harvest*. Retrieved April 30, 2012, from http://marineharvest.com/en/Seafood-Value-Chain1/Processing/

Marine Harvest. (2008c, February 11). Seafood value chain. *Marine Harvest*. Retrieved April 30, 2012, from http://marineharvest.com/en/Seafood-Value-Chain1/

Marine Harvest. (2009a). *Marine Harvest Sustainability Report 2008*. Oslo, Norway. Retrieved from http://marineharvest.com/Documents/Marine%20Harvest%20-%20Sustainability%20Report%20-%202008.pdf

Marine Harvest. (2009b). *2008 Annual report*. Oslo, Norway. Retrieved from http://hugin.info/209/R/1310360/303078.pdf

Marine Harvest. (2010a). *Marine Harvest salmon farming industry handbook 2010*. Retrieved from http://marineharvest.com/PageFiles/1296/Handbook%202010.pdf

Marine Harvest. (2010b). *Marine Harvest Sustainability Report 2009*. Oslo, Norway. Retrieved from http://marineharvest.com/Global/Sustainability/Sustainability%20Report%202009%20Final.pdf

Marine Harvest. (2010c). *2009 Annual report*. Oslo, Norway. Retrieved from http://hugin.info/209/R/1410306/362844.pdf

Marine Harvest. (2011a). *Marine Harvest Sustainable Seafood 2010*. Oslo, Norway. Retrieved from http://marineharvest.com/PageFiles/1543/Marine%20Harvest%20-%20Sustainable%20Seafood%20-%20Our%20way.pdf

Marine Harvest. (2011b). *Update on progress*. Bergen, Norway. Retrieved from http://marineharvest.com/Global/Sustainability/UoP%20final%20LO.pdf

Marine Harvest. (2011c). *2010 Annual report*. Oslo, Norway. Retrieved from http://hugin.info/209/R/1507169/442027.pdf

Marine Harvest. (2011d). *Q3/2011 interim report*. Oslo, Norway. Retrieved from http://hugin.info/209/R/1558394/481441.pdf

Marine Harvest. (2011e). *Q2/2011 Interim report*. Oslo, Norway. Retrieved from http://hugin.info/209/R/1532154/466514.pdf

Marine Harvest. (2012a). Product range. *Products*. Retrieved May 1, 2012, from http://marineharvest.com/en/Products1/Product-range/

Marine Harvest. (2012b). *2011 Annual report*. Bergen, Norway. Retrieved from http://hugin.info/209/R/1608160/510268.pdf

Marine Harvest. (2012c). *Q4/2011 Interim report*. Oslo, Norway. Retrieved from http://hugin.info/209/R/1583507/495121.pdf

Marine Harvest. (2012d, February 14). *Intrafish seafood investment forum*. New York, USA.

Marine Harvest. (2012e, March 27). Marine Harvest considers establishing salmon feed company. *Marine Harvest*. Retrieved May 12, 2012, from http://marineharvest.com/en/Investor1/Press-releases/2012/Marine-Harvest-considers-establishing-salmon-feed-company/

Marshall, C., & Gretchen, R. B. (2010). *Designing qualitative research* (5th ed.). USA: SAGE Publications Inc.

McDaniel, C. D., McDaniel Jr., C., & Gates, R. (2009). *Marketing research essentials* (7th ed.). John Wiley & sons.

McLeod, C, Grice, J, Campbell, H, & Herleth, T. (2006). *Super Salmon: the industrialization of fish farming and the drive towards GM technologies in salmon production*. New Zealand: University of Otago.

Melicher, R. W., Ledolter, J., & D'antonio, L. J. (1983). A time series analysis of aggregate merger activity. *The review of economics and statistics*, *65*(3), 423–430.

Merriam, S. B. (1998). *Qualitative research and case study applications in education*. Jossey-Bass higher and adult education series (2nd ed.). USA: Jossey-Bass Publishers.

Mietzner, D., & Reger, G. (2005). Advantages and disadvantages of scenario approaches for strategic foresight. *International journal of technology intelligence and planning*, *1*(2), 220–239.

Mitchell, M. L., & Muhlerin, J. H. (1996). The impact of industry shocks on takeover and restructuring activity. *Journal of finacial economics*, *41*(2), 193–229. doi:http://dx.doi.org/10.1016/0304-405X(95)00860-H

Moles, P., & Terry, N. (1997). *The handbook of international financial terms*. Oxford, England: Oxford University Press.

Mora, C., Menozzi, D., & Merigo, A. (2011). *Exploring the potential competition in the salmon industry: a scenario analysis of genetically modified fish marketing*. Zurich, Switzerland: EAAE. Retrieved from http://ageconsearch.umn.edu/bitstream/114647/2/Mora_Cristina_220.pdf

Muehlfeld, K., Weitzel, U., & van Witteloostuijn, A. (2011). Mergers and acquisitions in the global food processing industry in 1986–2006. *Food Policy*, *36*(4), 466–479. doi:10.1016/j.foodpol.2011.05.002

Mueller, D. C. (1969). A theory of conglomerate mergers. *The quarterly journal of economics*, *83*(4), 643–659.

Neary, P. J. (2004). Monopolistic competition and international trade theory. In S. Brakman & B. J. Heijdra (Eds.), *The monopolistic competition revolution in retrospect* (Vol. 13, pp. 159–184). Cambridge, England: Cambridge university Press.

Pagano, M., Röell, A. A., & Zechner, J. (2002). The geography of equity listing. *The journal of finance*, *57*(6), 2651–2694. doi:10.1111/1540-6261.00509

Perry, M. K. (1978). Price discrimination and forward integration. *The Bell journal of economics, The Rand Corporation*, *9*(1), 209–217.

Phyne, J., Hovgaard, G., & Hansen, G. (2006). Norwegian salmon goes to market: The case of the Austevoll seafood cluster. Journal of rural studies, *22*(2), 190–204.

Porter, M. E. (1998). *Competitive advantage*. New York, USA: The free press.

Reese Jr., W. A., & Weisbach, M. S. (2002). Protection of minority shareholder interests, cross-listing in the United States, and subsequent equity offerings. *Journal of financial economics*, *66*(1), 65–104. doi:10.1016/S0304-405X(02)00151-4

Regmi, A., & Gehlhar, M. (2005). *New directions in global food markets* (Electronic Report from the Economic Research Service No. Agriculture Information Bulletin Number 794). USA: United States Department of Agriculture. Retrieved from http://faculty.arts.ubc.ca/nmalhotra/306/Global%20Food%20Market%20ERS%20USDA%20study.pdf

Ross, S. A., Westerfield, R. W., Jaffe, J., & Jordan, B. D. (2008). *Modern financial management* (8th ed.). New York, USA: McGraw-Hill/Irwin.

Rossi, S., & Volpin, P. F. (2004). Cross-country determinants of mergers and acquisitions. *Journal of finacial economics*, *74*(2), 277–304. doi:10.1016/j.jfineco.2003.10.001

Schenk, H. (1996). Bandwagon mergers, international competitiveness, and government policy. *Empirica*, *23*(3), 255–278. doi:10.1007/BF00924973

Seafood Choices Alliance. (2007). *The UK marketplace for sustainable seafood*. London, Great Britain. Retrieved from http://www.seafoodchoices.org/resources/documents/SCAUKMPReport.pdf

Smith, M. D., Asche, F., Guttormsen, A. G., & Weiner, J. B. (2010). Genetically modified salmon and full impact assessment. *Science Magazine*, Food safety, *330*(6007), 1052–1053. doi:10.1126/science.1197769

Stead, S. M., & Laird, L. M. (2002). *Handbook of salmon farming*. Birkhäuser.

Stutz, F. P., & Warf, B. (2007). *The world economy* (5th ed.). New Jersey, USA: Geosciences, Dan Kaveney.

Sudarsanam, P. S. (2003). *Creating value from mergers and acquisitions* (4th ed.). Edinburg: Pearson Education Limited.

Taylor, S. J., & Bogdan, R. (1998). *Introduction to qualitative research methods* (3rd ed.). USA: Wiley.

Tveteras, R., & Kvaloy, O. (2006). *Primary industries facing global markets*. (F. Asche, Ed.). Oslo, Norway: Copenhagen business school press DK.

UNCTAD. (2000). *World Investment Report*. Geneva, Switzerland: UNCTAD.

van Witteloostuijn, A. (2010). Globalization in the food industry: The impact on market structures and firm strategies. *The food economy: Global issues and challanges*, 23–42.

Vandenbos, G. R. (Ed.). (2010). *Publication manual of the American Psychological Association* (6th ed.). Washington, USA: American Psychological Association.

Welle-Strand, A., & Toje, A. (2009). *Creating value(s)?* (Occasional paper No. 3). Oslo, Norway: Norwegian School of Management BI, Centre for development studies and microfinance (MICRO). Retrieved from http://www.bi.no/OsloFiles/MICRO/2009/Publications/creatingvalues.MICRO.BI.pdf

Williamson, O. E. (1987). The economic institutions of capitalism. *Australian journal of management*, *12*(1), 125–143. doi:http://dx.doi.org/10.1177/031289628701200109

9 Appendixes

Appendix 1

Semi-structured questionnaire presented to Mr. Jörgen Andersen CFO of Marine Harvest Group.

Questions for Marine Harvest Group (MHG)

Questions are divided into three parts:
1) Mergers & acquisitions
2) Investment strategy
3) Salmon processing solutions and future predictions

Part 1; Mergers & acquisitions

1. Do you have a detailed list of those companies that have joined Marine Harvest Group (MHG) via merger or acquisition in the past 2 years (since January 2010)?
    a) Can you provide data on market size, turnover, and number of employees for these companies?

2. What are the main **driving forces** for MHG to enter into a merger/acquisition/takeover with companies:
    a) In the past 2-3 years?
    b) In the nearest future?

3. In your opinion, are there different reasons to increase operation and activities between different target countries? If the answer is yes, what are the specific **driving forces** for MHG to merge with companies in each of your main country markets;
    a) Norway
    b) The Faroe Islands
    c) Scotland
    d) Ireland
    e) Canada
    f) Chile

4. Are there any countries/regions that you are focusing on now more than others? If the answer is yes, then what are the reasons?

5. Has MHG been seeking to merge with companies that are in other fields of the salmon industry e.g. salmon research organizations, suppliers of eggs and smolts, transportation companies, or salmon retailers?
    (Mergers with companies that are a part of other operations in the products' value chain are referred to as a 'vertical merger'.)

6. Has MHG been seeking to merge with companies that are considered competitors?
   (This is referred to as a 'horizontal merger')

7. Is there any company that is in the business of processing farmed salmon that MHG follows closely to learn from or imitates in terms of strategic firm behavior (e.g. to minimize business risk)?

8. In the last 2-4 years there are a number of subsidiaries being sold, what are the main reasons for that?
   a) Are others to replace them?
   b) Not creating value in production or revenue?
   c) Not a part of the core business anymore?
   d) Other reasons?

9. What **countries** (companies) are planned to increase/grow (more mergers with MHG) in the nearest future?

Part 2; Investment strategy regarding salmon processing solutions

1. What is the **investment strategy** of MHG towards salmon processing solutions?
   (Solutions: machines and software)

2. Are decisions regarding salmon processing solutions made by the headquarters, top management of each company, or within a business unit (divisional level)?

3. What factors are the ones that influence **purchasing amounts on salmon processing solutions** for each company of MHG to spend every year? *(e.g. last years' turnover)*

4. What are the **future predictions** of MHG regarding investments towards salmon processing solutions?

5. If the above questions do not in your opinion cover important topics about the MHG investment strategy in processing solutions, then please describe or add to the description of the **decision making process** when purchasing new salmon processing solutions.

Part 3; Salmon processing solutions and future predictions

1. What are the most recent demands or technical requirements of MHG towards **solutions (equipment and software)** for salmon processing?

2. Regarding the **'pre rigor'** part of the salmon processing, is there a potential growth in that area?
    a) If YES, what are the demands from suppliers that produce solutions in this area?

3. How do you evaluate the **quality of salmon processing solutions** being offered on the market today?
    a) Is there anything in particular you feel lacking in machinery or software offerings?
    b) Do you have any suggestions for companies who produce solutions for salmon processing to improve their service to MHG?

4. Do you believe that genetically modified salmon will be the future development of salmon farming?

Appendix 2

Semi-structured questionnaire presented to Mr. Ragnar Joensen, the general manager of Marine Harvest Norway.

Questions for Marine Harvest Norway (MHN)

Questions are divided into three parts:
1) Mergers & acquisitions
2) Investment strategy
3) Salmon processing solutions and future predictions

Part 1; Mergers & acquisitions

1. Do you have a list of those companies that have joined MHN via merger or acquisition in the past 2 years (since January 2010)?

2. What are the main **driving forces** for MHN to enter into a merger/acquisition/takeover with other companies:
   a. In the past 2-3 years?
   b. In the nearest future?

3. In your opinion, are there different reasons for Marine Harvest Group to increase operation and activities between different target countries? If the answer is yes, what are the specific **driving forces** for MHG to merge with companies in each of the main country markets;
   g) Norway
   h) The Faroe Islands
   i) Scotland
   j) Ireland
   k) Canada
   l) Chile

4. Are there any countries/regions that the Group is focusing on now more than others? If the answer is yes, then what are the reasons?

5. Has MHN been seeking to merge with companies that are in other fields of the salmon industry e.g. salmon research organizations, suppliers of eggs and smolts, transportation companies, or salmon retailers etc.?
   (Mergers with companies that are a part of other operations in the products' value chain are referred to as a 'vertical merger'.)

6. Has MHN been seeking to merge with companies that are considered competitors?
   (This is referred to as a 'horizontal merger')

7. Is there any company that is in the business of processing farmed salmon that MHN follows closely to learn from or imitates in terms of strategic firm behavior (e.g. to minimize business risk)?

8. Are there any companies that are planned to merge with MHN in the nearest future, which can be revealed at this time?

Part 2; Investment strategy regarding salmon processing solutions [i]

(i) Solutions here meaning: machinery and software

1. What is the **investment strategy** of MHN towards salmon processing solutions?

2. Are decisions regarding salmon processing solutions made by the headquarters, top management of MHN, or within a business unit (divisional level)?

3. What factors are the ones that influence **purchasing amounts on salmon processing solutions** MHN to spend every year? *(e.g. last years' turnover)*

4. What are the **future predictions** of MHN regarding investments towards salmon processing solutions?

5. If the above questions do not in your opinion cover important topics about the MHN investment strategy in processing solutions, then please describe or add to the description of the **decision making process** when purchasing new salmon processing solutions.

Part 3; Salmon processing solutions and future predictions

1. What are the most recent demands or technical requirements of MHG towards **solutions** for salmon processing?

2. Regarding the **'pre rigor'** part of the salmon processing, is there a potential growth in that area?
    a. If yes, what are the demands from suppliers that produce solutions in this area?

3. How do you evaluate the **quality of salmon processing solutions** being offered on the market today?
    a. Is there anything in particular you feel lacking in machinery or software offerings?
    b. Do you have any suggestions for companies who produce solutions for salmon processing to improve their service to MHN?

4. Do you believe that genetically modified salmon will be the future development of salmon farming?

Appendix 3

Surveys performed by Geert Hofstede summarize data collected from 66 countries in the 1970's and published in The Journal of International Business Studies in 1983. They are still valid since culture remains relatively stable over several generations and are frequently quoted by researchers of modern times.

(i) ***Power distance*** *reflects the degree to which a culture believes how institutional power should be distributed (equally or unequally) and how the decisions should be viewed (accepted or not).*

(ii) ***Uncertainty avoidance*** *refers to the extent to which a culture feels threatened by uncertain and risky situations.*

(iii) ***Individualism-Collectivism*** *describes the degree to which a culture has allegiance to the group.*

(iv) ***Masculinity-Femininity*** *indicates the degree to which a culture values behaviors such as acquisition of wealth or e.g. caring for others.*

(Hofstede, 1983)

Appendix 4

Standardized e-mail sent to potential interviewees.

Dear Mr./Mrs. .....

My name is Arnar Sigurjónsson, a graduate student in International Business at Reykjavik University in Iceland.

I am currently working on my master thesis and the subject is an industrial analysis of the farmed salmon industry where Marine Harvest is a leading player on the market.

More specifically I am researching the driving forces and development for mergers and acquisitions of Marine Harvest in the field of salmon processing. What factors have affected the Group since it was created with the huge merger in 2006 and what predictions are for the nearest future in that field. I am also researching how this development has affected investments towards salmon processing solutions (machinery and software).

I would really appreciate it if you would grant me an interview via telephone or Skype to answer a few questions regarding this topic. I can send you the list of questions before hand to save time.

Sincere thanks and regards,
Arnar Sigurjónsson
M.Sc. International Business student
E-mail: .....
Tel: .....

Appendix 5

All parties interviewed during the course of the research:

Marel headquarters:

- Sigurjón Elíasson, regional manager business center
- Sverrir Guðmundsson, global key account manager
- Stella Björg Kristinsdóttir, marketing manager fish industry Iceland

During the preparation period for the thesis there was a face-to-face interview meeting at Marel headquarters in Gardabaer Iceland with three managers of Marel industry center. The managers defined their practical problems to the researcher at the meeting and later the researcher decided on the research topics in correlation with the managers.

Thesis instructor:

- Einar Svansson, assistant professor

Marine Harvest Group:

- Jørgen K. Andersen, chief financial officer

Marine Harvest Norway:

- Ragnar Joensen, managing director