PONTIFICIA UNIVERSIDAD CATÓLICA DE CHILE

ESCUELA DE INGENIERÍA

SELECTED ISSUES OF THE CHILEAN FOOD EXPORT BUSINESS.

CEDRIC LITTLE

Thesis submitted to the Office of Research and Graduate Studies in partial fulfillment of the requirements for the Doctorate Degree in Engineering Sciences.

Advisor:

JOSÉ MIGUEL AGUILERA

Santiago de Chile, (June, 2015)

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FOOD EXPORT BUSINESS

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ABSTRACT

The Chilean food export industry has sustainedly grown for the last decades and is now the second main industrial activity after mining. Because of this growth rate, this nation sees a solid and sustainable path towards development in this industry. However, the Chilean food industry has not grown at the high rates observed in other nations comparable in geography and resources, especially the ones that decided to build and develop a world-class food industry a few decades ago such as New Zealand.

The main hypothesis of this thesis proposes that the development of the Chilean food export industry may be improved by establishing and using innovation and development platforms specifically dedicated to this industry, with special care from the managerial class on achieving sustainability, and that the government must provide a robust and top-notch regulatory institution that enforces and provides guidance.

The main objective of this thesis is to understand of the Chilean food export industry and its executive sector, with special attention to the exporting firms already focusing on new

food product development, sustainability, and business strategies regarding marketing, management, research and development, positioning, and market reentry.

A secondary objective of this thesis is to obtain in-depth answers to the following questions:

Why do Chilean managers prefer to produce commodities instead of added value products?

How do Chilean food producers choose the component profile design of their products?

How do Chilean food industry managers choose and develop strategies to enter or recover foreign target markets?

How do Chilean producing firms coordinate in order to avoid a Tragedy of the Commons?

With the purpose to develop tools for value creation through the design of new food products, innovators must have a comprehensive understanding of applied methods and models that are able to determine the importance and economic value of food product components (like size, processing, packaging, etc.) and help determine an appropriate new food product profile to a target market.

Literature on new food product development agrees on the importance of gaining knowledge about consumer tastes and preferences as a key subject for increasing the success of new products. However, the failure rate of new food product introductions continues to be high. In economies with highly developed retail markets, food chains, markets chain stores, and other market players, an information and communication barrier is created between the producer and the consumer. As a result, the development of new products becomes difficult with such conditions, since information misalignments between producers and consumers are more likely to occur. To investigate this issue, we interviewed producers of Chilean companies in the blueberry, plum, and wine industries, and concluded that their product design was based on assumptions about consumers' preferences and on the observed market response to competitors' products. To test if these assumptions were

correct, we compared them to consumer preferences performing a Conjoint Analysis as well as Kano Tests on 3 producers and also on 300 consumers while inside retail stores. Results showed that some producers' assumptions about consumer preferences differ significantly from actual consumers' preferences.

Some industries present operation and product development conditions where space is limited, resources are shared, and where there is a high level of interference between operations. In these cases it is frequent to observe what Garret Hardin in 1968 named as the *Tragedy of the Commons*, a situation in which the actors deplete common resources and, henceforth, the industry business is deteriorated or even ended. In these cases, *free riders* and aggressive firms are the starters of a destructive oversized operation that forces the rest of the actors to follow and repeat, accelerating the destructive process.

The Chilean salmon farming industry presents many shared resources; their sea operations are interconnected, allowing pests, contaminants, and other threats to spread and communicate, therefore deteriorating sea farming conditions in the long term. After years of constant over-exploitation and sustained growth, the industry had a devastating sanitary crisis in 2007. The spread of the infectious salmon anemia virus (ISA) began the crisis, mainly because of unsustainable and extremely unhealthy conditions in the ocean after years of bad management, which overcrowded the farming pens. Moreover, a careless fishmeal feed caused the water to become polluted by chemicals and pests, which resulted in conditions that were unbearable and contributed to the debilitation of the fish's health. The results were catastrophic: production halted, over 17,000 became unemployed, and an important part of the biomass was lost, leading to a large financial crisis.

In order to understand the executive managerial processes in this *Tragedy of the Commons* situation, this Thesis reviews and explores the management dynamics in the food industry, specifically in the salmon farming industry in light of environmental responsibility, moral

reengagement, and restorative justice. Strategic information was collected performing in-depth interviews with CEOs and other key senior executives.

The results suggest a shift in the management behavior of firms and also a change in government roles on setting industry standards and enforcing them. Environmentally responsible management (ERM) reached through moral reengagement and restorative justice behavior is the key for the Chilean salmon farming industry in order to increase its international competitiveness and sustainability. Therefore, a new order must be established and enforced in order to avert *free riders* that impose low-level sanitation as common industry standards. The chapter concludes with lessons for managers and policy makers.

During the above-mentioned salmon-farming crisis, Chilean producers were not able to supply the U.S., its most important target market, letting Norwegian and Canadian producers enter and conquer it. Chilean producers reestablished their production and were challenged to recover their lost position. Recent literature on international strategy related to market reentry and repositioning focuses on developed nations exporting into developing economies, not the opposite. This study reviews and explores the international strategy for market reentry in an emerging economy context. Strategic information was collected performing in-depth interviews with CEOs and other key senior executives from the salmon farming industry cluster in Chile in order to analyze the export reentry into developed markets. Results suggest that the key factors for the reentry success of Chilean salmon suppliers in the target markets were price and availability.

Most Chilean food industry firms do not have or use a scientific and technological platform as support for its R&D needs, as similar firms from developed economies do. However, this is not because of a lack of resources or capital, but because of the strategic decisions of Chilean managers. Consequently, innovation is slower than expected. In order to solve this problem, cluster firm associations or the government must supply a low-cost and highly

accessible research and development platform available to any firm size and specifically designed for innovative firms. Each industry must have ad-hoc authorities to regulate and enforce and, at this moment, it is imperative for the Chilean salmon industry.

As a summary, food producers determine the characteristics and component profile of their products based on their own assumptions about consumers' preferences and on the observed market response to competitors' products.

Chilean managers prefer to produce commodities instead of added value products because they lack a trade platform capable of distributing their products in many different formats for target markets. They prefer "*the simpler, the better"*, to increase profits by their output rather than by adding value.

Chilean food industry managers choose and develop strategies to enter or recover foreign target markets repeating the strategy and positioning. Chilean production firms will not tend to coordinate under a *Tragedy of the Commons* situation; therefore, a producer association backed by the government must establish a set of rules and norms whilst also enforcing them. Otherwise, another sanitary crisis and a related disastrous economic scenario will reappear.

Therefore, the Chilean food export industry should benefit from the establishment of innovation and development platforms specifically dedicated to food development, concern and effective actions from the managerial class towards sustainability, and a government robust and top-notch regulatory institution that enforces and provides guidance.

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PONTIFICIA UNIVERSIDAD CATÓLICA DE CHILE

ESCUELA DE INGENIERÍA

PROBLEMAS SELECCIONADOS DEL NEGOCIO ALIMENTARIO EXPORTADOR CHILENO.

Tesis enviada a la Dirección de Investigación y Postgrado en cumplimiento parcial de los requisitos para el grado de Doctor en Ciencias de la Ingeniería.

CEDRIC LITTLE

RESUMEN

La industria alimentaria chilena ha crecido de manera importante y sostenida en las últimas 3 décadas llegando a ser el segundo factor exportador del país luego de la industria minera. Debido a esto, se ve a la industria alimentaria como una vía sustentable y sólida para lograr el desarrollo del país.

Sin embargo, Chile no ha crecido en las últimas 3 décadas a ritmo similar al de países que han decidido desarrollar su industria alimentaria y han logrado obtener tasas de crecimiento notablemente mayores a la de Chile, debido principalmente a la disponibilidad para la planta productiva de plataformas científicas y tecnológicas de categoría mundial; lo que se cumple incluso en países comparables en geografía y recursos naturales como es el caso de Nueva Zelanda.

La principal hipótesis de esta Tesis propone que el desarrollo de la industria alimentaria exportadora de Chile puede ser potenciado al establecer y utilizar plataformas serias de

innovación y desarrollo en el área alimentaria, con cuidado de su clase ejecutiva por brindarle sustentabilidad, en conjunto a una robusta, instruida y capaz institución reguladora por parte del gobierno.

El objetivo principal de esta Tesis es la comprensión del negocio exportador de alimentos Chileno y de su sector ejecutivo, en sus aspectos de diseño y creación de nuevos productos, gestión y desarrollo de estrategias para la sustentabilidad de esta industria y de su plataforma exportadora.

Como objetivo secundario se busca respuesta de parte de la planta ejecutiva de la industria alimentaria acerca de las siguientes preguntas:

¿Por qué los exportadores chilenos prefieren producir commodities en vez de productos con alto valor agregado?

¿Cómo es que los productores de alimentos definen el perfil de características que determinan sus productos?

¿Cómo, los ejecutivos de la industria alimentaria, desarrollan estrategias para entrar o recobrar mercados objetivos?

¿Cómo se pueden coordinar las firmas chilenas para evitar entrar en una situación de la Tragedia de los Comunes?

Se presenta como necesario el lograr desarrollar e implementar herramientas que ayuden en la creación de valor en los productos de la industria alimentaria, donde el diseño de nuevos productos requieren de un modelo y metodologías aplicadas para determinar el valor económico e importancia de los atributos que están presentes (por ejemplo: tamaño, elaboración, envase, etc.) y ayudan a definir, de modo apropiado, un producto de la industria alimentaria que capture el valor generado en el precio final del bien.

La literatura sobre el desarrollo de nuevos productos alimentarios concuerda con la importancia de obtener conocimiento de los gustos y preferencias de los consumidores como un tema clave para lograr una mayor tasa de éxito de los nuevos productos que se lanzan al mercado. Sin embargo, la tasa de fracaso en la introducción al mercado de nuevos productos alimentarios sigue siendo alta.

En economías con una plataforma desarrollada de grandes cadenas de tiendas de venta o *retail chain stores* (como ocurre en Chile) se ha creado una barrera de comunicación entre los productores y los consumidores finales. Consecuentemente, el desarrollo de nuevos productos presenta dificultades en estas condiciones debido a que existirán diferencias de información y retroalimentación entre productores y los consumidores.

Para investigar este problema, se buscó establecer si los diseñadores de nuevos productos alimentarios valorizan los atributos del producto de modo similar con respecto al valor que le es otorgado efectivamente por el mercado. El desafío se abordó en 2 etapas, en la primera se entrevistó a 3 productores y exportadores de vino, 3 de ciruelas secas y 3 de arándanos frescos y se determinó el perfil de atributos de productos que ellos consideraban relevantes de integrar en sus productos. En una segunda etapa el trabajo desarrollado correspondió a la ejecución de encuestas basadas en las metodologías de Análisis Conjunto y de Kano, se realizaron encuestas a los productores y a 300 consumidores. El contraste de los resultados de ambas partes indicó las visiones coincidentes y diferentes para cada uno de los atributos de los productos que entran al mercado.

Los resultados mostraron que algunas de las suposiciones de los productores acerca de los gustos y preferencias de los consumidores podían ser bastante distintas de las reales entregadas por los consumidores.

Algunas industrias presentan una estructura de desarrollo y operación en las que el espacio

disponible para el ejercicio es limitada, algunos recursos son compartidos entre actores, y existe un alto nivel de interferencia en las operaciones. En estos casos es frecuente observar que está presente una situación de *Tragedia de los comunes,* caracterizada por Garret Hardin en 1968, una situación en la que los actores agotan los recursos en común y así la industria se ve afectada negativamente y, en algunos casos, terminada. En estos casos, actores que actúan como *free riders* son los que inician la destructiva operación de sobre-explotar los recursos disponibles, lo cual fuerza al resto de los actores a imitar este comportamiento.

La *Industria del Salmón en Chile* presenta muchos recursos que son compartidos; las operaciones en el mar son interconectadas lo que permite que se dispersen y propaguen pestes y otras amenazas y, de este modo, se deterioran las condiciones de cultivo en el mar. En el año 2007, tras varios años de una sobre-explotación constante y un crecimiento sostenido, esta industria vivió una crisis sanitaria devastadora y sus resultados fueron catastróficos: la producción se detuvo, decenas de miles de personas fueron despedidas, una importante parte de la biomasa se perdió y comenzó una gran crisis financiera.

Para poder entender los procesos de los ejecutivos en una situación de los *Comunes,* este estudio revisó y exploró las dinámicas de la gestión de firmas de la industria alimentaria, específicamente en la *Industria del Salmón en Chile* bajo la mirada de responsabilidad ambiental, una vuelta al re-compromiso moral (*moral reengagement) y* justicia reparadora. Se obtuvo y recopiló información estratégica clave por medio de entrevistas en profundidad (*in-depth*) con la gerencia y ejecutivos claves de esta industria para así analizar el comportamiento gerencial en cuanto a los temas ambientales y de compromiso moral con estándares de producción de la industria.

Los resultados sugieren un cambio en el comportamiento gerencial de las firmas y también un cambio en el rol del gobierno en establecer los estándares de la industria y hacerlos

cumplir. La gestión ambiental responsable (ERM) alcanzada a través de una vuelta al compromiso moral y un comportamiento de justicia reparadora es la clave para que la industria del salmón en Chile pueda aumentar su competitividad internacional y así su sustentabilidad; A partir de esto, se debe establecer y hacer cumplir un nuevo orden que no permita la aparición de *free riders* que imponen estándares de un bajo nivel sanitario. Se presentan lecciones para gerentes y entidades regulatorias.

Durante la crisis de la industria del salmón en Chile mencionada anteriormente, los productores de firmas Chilenas no fueron capaces de continuar abasteciendo los Estados Unidos de América, su mercado más importante, permitiendo así que productores Noruegos y Canadienses tomaran su lugar durante algunos años. Finalmente, los productores Chilenos pudieron recuperar y restablecer su capacidad productiva, teniendo que enfrentar el desafío de recuperar sus mercados perdidos. Literatura reciente en estrategia internacional relacionada a la re-entrada a un mercado (*market reentry*) y el reposicionamiento de productos (*repositioning*) se enfoca en naciones exportadoras desarrolladas que intentan volver a entrar en mercados en desarrollo o subdesarrolladas, y no en sentido contrario.

Este estudio revisa y explora la estrategia internacional de re-entrada a un mercado en un contexto de una nación emergente exportadora. Información estratégica fue obtenida por medio de entrevistas en profundidad realizadas a la gerencia y ejecutivos claves de la industria del salmón en Chile con el propósito de estudiar y comprender la re-entrada de exportaciones en economías desarrolladas. Los resultados indican que los factores claves en el éxito de la re-entrada de productores chilenos de salmón en sus mercados objetivos son el precio y la disponibilidad. Se presentan conclusiones para ejecutivos y entes reguladores.

Las empresas chilenas de la industria alimentaria actualmente no cuentan ni utilizan apoyo científico y tecnológico para sus necesidades de investigación y desarrollo (R&D) de modo

comparable a empresas similares en tamaño y rubro presentes en otras potencias alimentarias y esto no se debe a una falta de recursos de capital sino que por la decisión y estrategia de desarrollo de los empresarios; para suplir esta carencia y necesidad es que asociaciones gremiales o el estado deben proveer una plataforma de investigación y desarrollo de bajo costo y fácil acceso, en especial para empresas de perfil innovador, independiente del tamaño de éstas. Así también se debe contar con organizaciones de regulación y fiscalización ad-hoc para cada industria y priorizando de modo urgente la industria del salmón cultivado.

Como resumen, los productores deciden el perfil de los nuevos productos que lanzan al mercado en base a suposiciones sobre las preferencias de los consumidores y a la observación del comportamiento comercial de productos similares en el mercado. La gerencia chilena prefiere producir productos básicos (*commodities*) en vez de productos de mayor valor agregado debido a que carecen de una plataforma comercial exportadora que permita destinar exitosamente la gran diversidad de productos que se podrían crear, declarando que "*mientras más simple, mejor*." Los ejecutivos de la industria alimentaria exportadora escogen y desarrollan estrategias para entrar y recuperar mercados repitiendo su estrategia y posicionamiento. Las firmas productoras chilenas no se coordinarán ante una situación de *Tragedia de los Comunes*; entonces, una asociación de productores en conjunto al respaldo de una autoridad gubernamental debe establecer un conjunto de leyes y normas, y hacerlas cumplir para evitar que las crisis sanitarias y sus devastadoras consecuencias vuelvan a aparecer.

Dado lo anterior, la industria Chilena alimentaria de exportación debiera de beneficiarse con el establecimiento de plataformas especialmente dedicadas al desarrollo de alimentos, con una clase ejecutiva pendiente y activa en el camino hacia la sustentabilidad, y con una robusta y seria plataforma gubernamental que fiscalice y sea una guía para la industria.

Miembros del Comité de Tesis Doctoral

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Santiago, Junio de 2015

LIST OF CONTENTS

LIST OF PAPERS

This thesis is based on the following papers, referred in the text by their respective chapters:

CHAPTER 2. Little, C; Aqueveque, C; Aguilera, J.M. (2012) **Producer-Consumer Misalignment as a Possible Cause for New Food Failure: Empirical Evidence from Chile.** *Journal of International Food and Agribusiness Marketing*, Accepted.

CHAPTER 3. Little, C.; Felzensztein, C.; Gimmon, E. and Muñoz, P. (2014) **The business management of the Chilean salmon farming industry.** *Marine Policy*, Volume 54, April 2015, Pages 108–117.

CHAPTER 4. Little, C.; Felzensztein, C. and Gimmon, E. (2014) **Re-entry Strategy for Export Oriented Clusters: Insights from Chile.** *International Business Review*. Submitted.

Proceedings

Parts of the work have also been presented at three international congresses under the following references:

- Little, C; Aqueveque, C. and Aguilera, J.M. (2012) **Consumer Misalignment as a Possible Cause for New Food Failure: Empirical Evidence from Chile.** International Food Marketing Research Symposium, Philadelphia, USA.

- Little, C. and Felzensztein, C. (2012) **Export Oriented Clusters and Market Re-Entry: Insights from Latin America.** BALAS 2012. Rio de Janeiro, Brazil.

<div align="center">

1. Introduction

Innovation as a path for Chilean development.

</div>

1.1 Development, competitiveness and innovation.

The development level of a nation is commonly defined by a set of factors summarized by its current economic and quality of life indexes that consider its entire population; organizations like the United Nations, World Bank, World Economic Forum, and others of this kind focus their work on developing strategies for achieving a "higher" level of development for all nations. As an example, the *United Nations Development Programme* (UNDP) was founded in 1966 and stated that "*partners with people at all levels of society to help build nations that can withstand crisis, and drive and sustain the kind of growth that improves the quality of life for everyone.*" (UNDP, 2013)

The development process of a country involves a progressive transformation of the economy and society; therefore, economic growth is frequently established as the main national objective with political watchfulness regarding human rights, health, education, environment, safety, and security, with the final goal of diminishing the number of low-income families. Developing countries like Chile base their economy on the stability and growth of their main industries, the creation of wealth from new industries, and an increase in efficiency of the existent productive platform.

As stated by the World Economic Forum in its 2012 Insight Report, The Global Competitiveness Report defines competitiveness as "*the set of factors, policies and institutions that determine the level of productivity of a country taking into account its level of development*" (Schwab and Sala-i-Martín, 2012). Many factors drive productivity and competitiveness. Understanding the factors behind the productivity matrix present in a country may help to properly design strategies aimed to increase the economy and lead to a

higher level of development. This process has engaged the minds of economists for hundreds of years, generating theoretical models with various propositions regarding specialization and the division of labor, emphasis on investment in physical capital and infrastructure, education and training, technological progress, macroeconomic stability, good governance, firm sophistication, and market efficiency, among others. (Soubbotina, 2004)

Schwab and Sala-i-Martín (2012) proposed the Global Competitiveness Index (GCI) based on a weighted average of key factors that are considered important for competitiveness and growth. The factors are grouped into 12 pillars of competitiveness, and these pillars are clustered in 3 *subindexes*: whether they are key for a factor-driven economy, an efficiency-driven economy, or an innovation-driven economy. (Figure 1.1):

GLOBAL COMPETITIVENESS INDEX

Basic requirements subindex

Pillar 1. Institutions

Pillar 2. Infrastructure

Pillar 3. Macroeconomic environment

Pillar 4. Health and primary education

Efficiency enhancers subindex

Pillar 5. Higher education and training

Pillar 6. Goods market efficiency

Pillar 7. Labor market efficiency

Pillar 8. Financial market development

Pillar 9. Technological readiness

Pillar 10. Market size

Innovation and sophistication factors subindex

Pillar 11. Business sophistication

Pillar 12. Innovation

Key for **factor-driven** economies

Key for **efficiency-driven** economies

Key for **innovation-driven** economies

Figure 1.1: The Global Competitiveness Index framework (Schwab and Sala-i-Martín, 2012)

These *subindexes* are composed first by the Gross domestic product (GDP) per capita and then by the weights of the factors, organized into 5 groups (columns) depending on the stage of development, as shown in Table 1.1.

	Stage 1: Factor-driven	Transition from stage 1 to stage 2	Stage 2: Efficiency-driven	Transition from stage 2 to stage 3	Stage 3: Innovation-driven
GDP per capita (USD) thresholds	<2,000	2,000–2,999	3,000–8,999	9,000–17,000	>17,000
Weight for basic requirements *subindex*	60%	40–60%	40%	20–40%	20%
Weight for efficiency enhancers *subindex*	35%	35–50%	50%	50%	50%
Weight for innovation and sophistication factors	5%	5–10%	10%	10–30%	30%

Table 1.1: *Subindex* **weights and GDP thresholds for development stages (Schwab and Sala-i-Martín, 2012)**

With these criteria, 144 world countries were classified into 5 groups shown in Table 1.2, where Chile is enclosed in the "*transition from stage 2 to stage 3*" cluster along with 20 other economies. The importance of this result is the meaning of the current stage of Chile, which is the development path it may follow in order to increase its economy and get into the innovation-driven economies group. Therefore, it is time to grow and use formulas already proven successful by other countries.

Stage 1: Factor-driven (38 economies)	Transition from stage 1 to stage 2 (17 economies)	Stage 2: Efficiency-driven (33 economies)	Transition from stage 2 to stage 3 (21 economies)	Stage 3: Innovation-driven (35 economies)
Bangladesh	Algeria	Albania	Argentina	Australia
Benin	Azerbaijan	Armenia	Bahrain	Austria
Burkina	Bolivia	Bosnia and H.	Barbados	Belgium
Faso	Botswana	Bulgaria	Brazil	Canada
Burundi	Brunei D.	Cape Verde	**Chile**	Cyprus
Cambodia	Egypt	China	Croatia	Czech Republic
Cameroon	Gabon Honduras	Colombia	Estonia	Denmark
Chad	Iran, Kuwait	Costa Rica	Hungary	Finland
Co͎te d'Ivoire	Libya	Dominican Rep.	Kazakhstan	France
Ethiopia	Mongolia	Ecuador	Latvia	Germany
Gambia, The	Philippines	El Salvador	Lebanon	Greece
Ghana	Qatar	Georgia	Lithuania	Hong Kong SAR
Guinea	Saudi Arabia	Guatemala	Malaysia	Iceland
Haiti	Sri Lanka	Guyana	Mexico	Ireland
India	Venezuela	Indonesia	Oman	Israel
Kenya		Jamaica	Poland	Italy
Kyrgyz Republic		Jordan	Russian Fed.	Japan
Lesotho		Macedonia, FYR	Seychelles	Korea, Rep.
Liberia		Mauritius	Trinidad and Tob.	Luxembourg
Madagascar		Montenegro	Turkey	Malta
Malawi		Morocco	Uruguay	Netherlands
Mali		Namibia		New Zealand
Mauritania		Panama		Norway
Moldova		Paraguay		Portugal
Mozambique		Peru		Puerto Rico
Nepal		Romania		Singapore
Nicaragua		Serbia		Slovak Republic
Nigeria		South Africa		Slovenia
Pakistan		Suriname		Spain
Rwanda		Swaziland		Sweden
Senegal		Thailand		Switzerland
Sierra		Timor-Leste		Taiwan, China
Leone		Ukraine		United Arab Em.
Tajikistan				United Kingdom
Tanzania				United States
Uganda				
Vietnam				
Yemen				
Zambia				
Zimbabwe				

Table 1.2: Nations and development stages (Schwab and Sala-i-Martín, 2012)

Innovation is shown to be the key for further development and *innovation-driven* proves to be the current state of maximum development for the most advanced countries. There are many definitions for innovation, but it is commonly defined as the ability to successfully get new products and services into the market. Higher added value is obtained from efforts geared towards innovation rather than from being a commodity supplier or being more efficient as in the previous stages.

The GCI report presents Chile in the 33rd place, showing a stable performance as the most competitive economy in Latin America. It praises its solid macroeconomic framework with a government budget in surplus and very low levels of public debt, providing Chile with a solid foundation on which to build and maintain its competitiveness and leadership in the region.

But Chile also presents a number of challenges and particularly needs to strengthen its national research and innovation system. The GCI report finally states that "*As the economy steadily moves toward a higher stage of development, many economic activities will require higher levels of skills and innovation in order to increase their competitiveness potential.*" (Schwab and Sala-i-Martín, 2012)

The Global Innovation Index (GII) is co-published by Cornell University, INSEAD, and the World Intellectual Property Organization (WIPO, a specialized agency of the United Nations), and "*recognizes the key role of innovation as a driver of economic growth and prosperity, and adopts an inclusive, horizontal vision of innovation applicable to both developed and emerging economies.*" It is considered a valuable benchmarking tool in assisting a public-private dialogue. (Dutta and Lanvin, 2013)

As depicted in figure 1.2, the GII is built considering a framework of several factors mostly categorized as inputs or outputs of innovation, and from them a ratio of innovation

efficiency is calculated and the average determines the resulting GII.
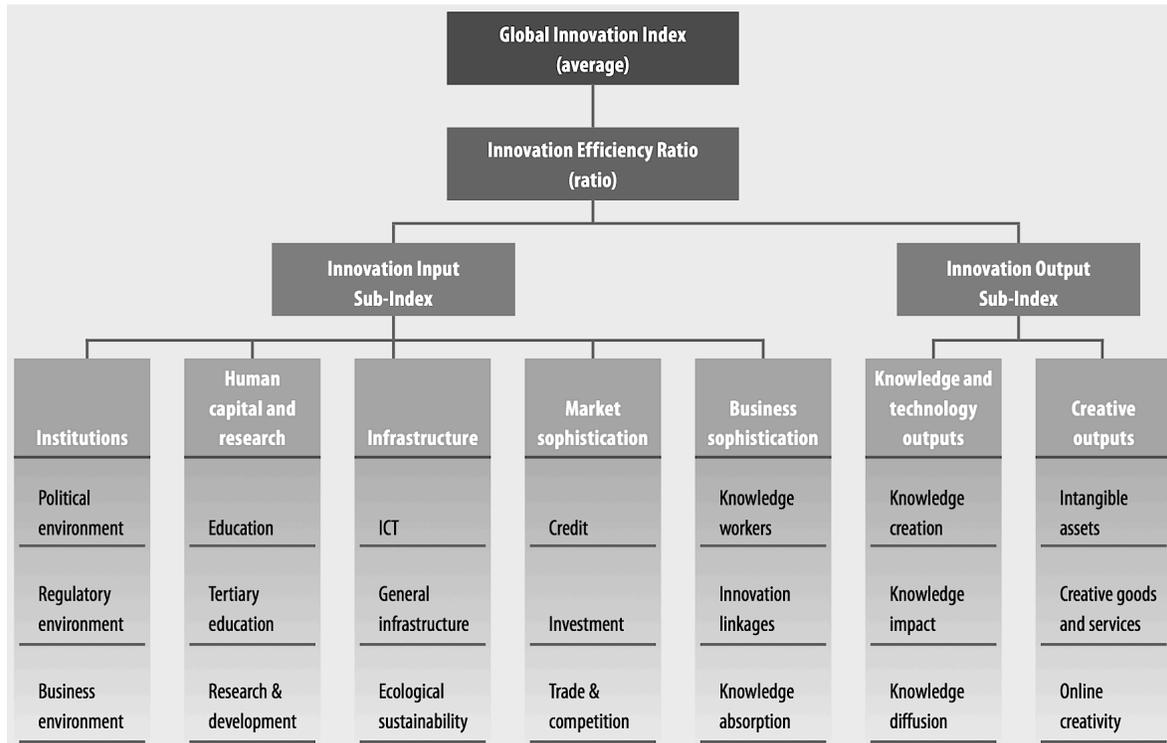
Figure 1.2: Framework of the Global Innovation Index 2013 (Dutta and Lanvin, 2013)

The most important factors are institutions, human capital and research, infrastructure, market sophistication, business sophistication, knowledge and technology outputs, and creative outputs. These factors are key in addressing the current national situation and looking for strengths and weaknesses, from which development strategies and objectives can be made. Extensive analysis is given in this report for all countries of the world during recent years and Chile stands as decreasing its once favorable position. Some recommendations have been made but a strategy is not easy to implement, especially when it involves public policies and the private sector. The report proposes that Chile is an inefficient innovator, located in a middle point between being a learner and an underperformer regarding its GDP, and not too far from being a leader. For Latin America, however, it is currently considered a leader.

It is expected that Chile will fulfill some of the requirements in order to get on track as an innovation-driven economy; innovation could be accomplished from the inside in large companies, but also from entrepreneurships. The World Economic Forum in 2013 published their "*Entrepreneurial ecosystems around the globe and company growth dynamics*" which states that "e*ntrepreneurs are key drivers of economic and social progress. Rapidly growing entrepreneurial enterprises are often viewed as important sources of innovation, productivity growth and employment (small and medium- sized enterprises account for 97% of all jobs in emerging economies).* Creating jobs is one of the main goals that governments have and for Chile is actually one of its main concerns. It is considered as the fundamental tool for raising the salaries and lowering inequality; thus there are many programs to actively promote entrepreneurship through several support systems.

1.2 The Chilean food export business.

The Chilean food export business as a whole is second in size after the mining business and is seen as key towards reaching national development. Chile has many natural conditions that could enable the country to become a world-class food producer. For example, because of its long shape from North to South, and diversity from the seacoast (west) to the mountains (east), it has numerous climate zones including one of the few Mediterranean zones in the world. Being located in the southern hemisphere gives Chile a seasonal displacement of half a year with the northern hemisphere, allowing for it to produce, harvest and offer fresh food products in the most important markets, like that of the USA, Europe, Asia, and the Middle East. It has excellent phytosanitary protection because it is geographically isolated from its neighbors thanks to the Atacama Desert (north), the world's most arid zone, the Pacific Ocean (west), the Andes Mountains (east) and the cold sea near Antarctica (south). (ProChile, 2014)

As depicted in Figure 1.3, in 2013, the most important Chilean food exports were fresh fruit, salmon, wine, and meat.

Chilean Food Exports (2013)
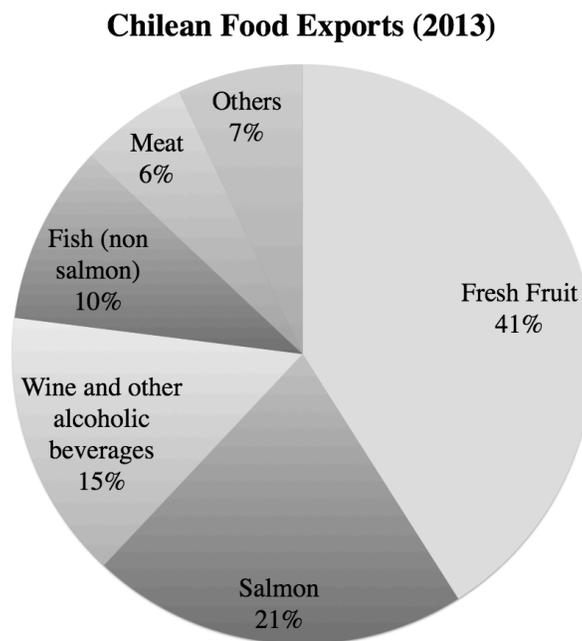
Figure 1.3: Chilean food exports composition 2013 (Chilean customs, 2014)

Chile excels as world leader in fresh fruit production and exports (DiMartino, 2013) and is also a leader in understanding how to produce fresh products specifically for export. This is reflected in its position 1 for the global ranking for avocado, 2 for kiwi fruit and blueberry, 5 for plum, 7 for grape and 10 for apple, nuts, and cherry. Despite many threats and problems, such as black frosts, earthquakes, floods, pests, heavy rains, and drought, (Mauritz, 2013), Chile has been steadily growing its total production since 2009, as seen in figure 1.4.

Fresh Fruit Exports, FOB
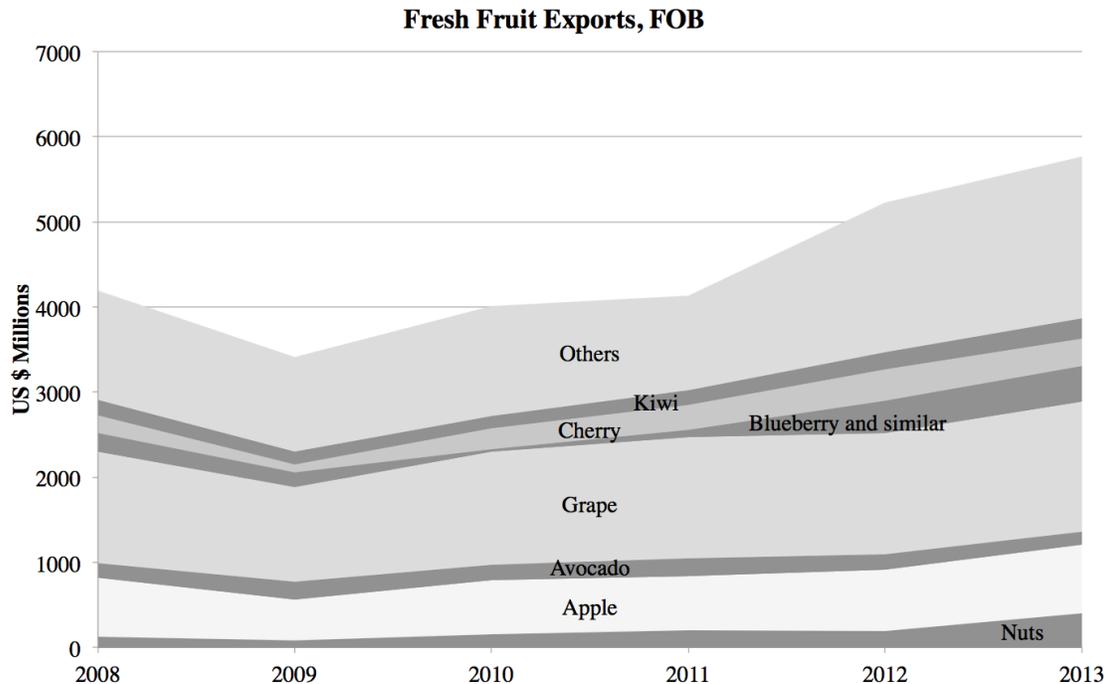
Figure 1.4: Chilean fresh fruit exports (ODEPA, 2014)

The Chilean wine industry has undergone deep transformations over the last few decades. These include a complete technological renovation during the 1980s, the export boom of the 1990s, and the new terroir developments during the 2000 decade, resulting in world class wines of unique character and personality with a steady increase in production, see Figure 1.5. Chile is the world's eighth largest wine producer, the fifth largest exporter, and exports 70 percent of its wine production, making it the world's most globalized wine industry (Felzensztein, 2011).

With over 150 target countries and 1.5 billion consumers per year, the key for Chile's target markets is not to price its wines too high or too low. What Chile does best is mid-pricing, which translates into good quality wines that don't cost a fortune (Dowling, 2012).

Chilean Wine Exports, FOB
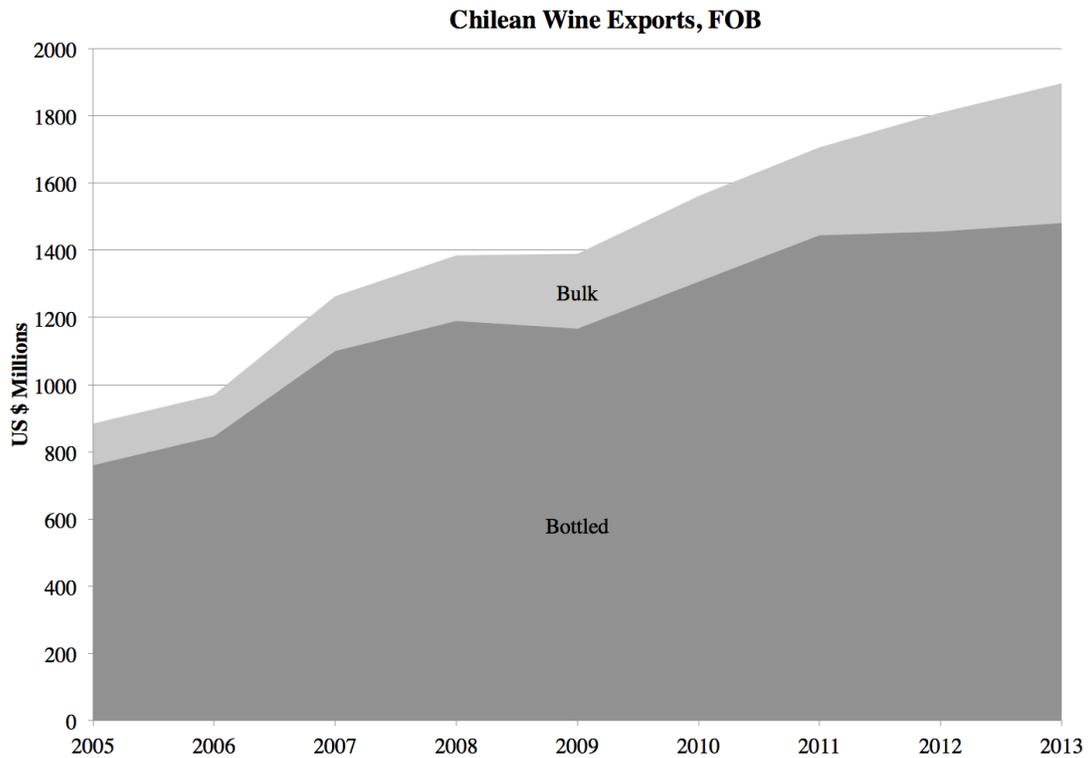
Figure 1.5: Chilean wine exports (ODEPA, 2014)

The Chilean fish industry (excluding salmon) has been an important productive and export sector for decades, with 92 percent of the extracted marine resources being fish, five percent being algae or kelp, and the remaining three percent being shellfish. The fish product portfolio consists on fish from extractive fishing, which includes shellfish, canned fish, hake, fish oil, and fishmeal, on which the shellfish, hake, and fishmeal are the most important, as shown in Figure 1.6, where it displays that shellfish exports are growing. It also shows that despite the fact that fishmeal and fish oil are decreasing its production in volume, the increasing prices stabilize the export value (ODEPA, 2014).

Fish is an overexploited renewable resource that is showing economic signs of this stress: decreasing catch volumes, rising prices, and public and private sectors in constant debate over fishing zones and quotas. For the past few years it has been a concern that overfishing

is a global issue that plagues roughly 85 percent of global fisheries, and Chilean production has been affected. Experts agree that the vicious cycle of overfishing will undoubtedly result in the collapse of ecosystems and that the most heavily exploited and highly profitable fisheries may never have the opportunity to recover before they vanish permanently. The fisheries crisis has worsened in the last 10 years because of a capacity model that allowed for the setting of catch quotas to be higher than scientific recommendations (Jarroud, 2012).

Chilean Fish Exports, FOB
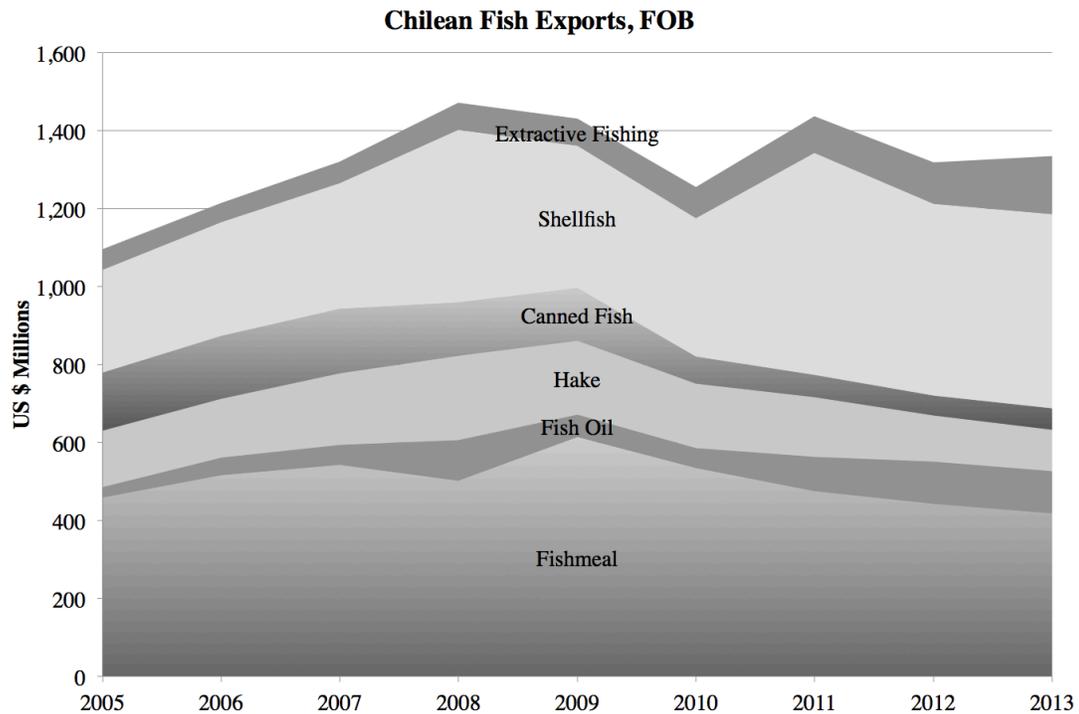
Figure 1.6: Chilean fish (excluding salmon) exports (ODEPA, 2014)

Since the start of the salmon farming industry, Norwegian producers have dominated global production and the market. However, during the last decade, the Chilean salmon industry has become the second main producer and exporter in the world, almost equaling Norway in 2007; but in that year a sanitary surge with high mortality appeared in the Chilean

salmon farms, ending in a devastating productivity crisis that led to financial, social, labor, political, and industrial turmoil. This crisis affected local and foreign companies that operate and produce in Chile (Lizuka and Katz, 2011). Figure 1.7 depicts the economic impact of the 2007 crisis, affecting 2009 and 2010 exports due to the depletion of the stored frozen stock that was sold out in 2008.

As a result, Chilean salmon production and exports were severely affected, diminishing its presence in the target markets, especially in the U.S. Subsequently, Norwegian producers expanded their sales to the resulting available markets, receiving the benefits from a huge increase in their sales volume at a greater price (FAO, 2012; FAO globefish, 2011). After that period, Chile reestablished its production and recovered its target markets.

The most important Chilean salmon and trout markets are Japan and United States; followed by Europe and Latin America. Chile supplies the vast majority of Japan's salmon imports, mostly rainbow trout and coho (Pacific Salmon) species, which are not affected by the ISA virus. Since the early 2000s, Chile was the most important supplier of Atlantic salmon for United States and Europe, a species affected by the ISA virus. In 2007, because of the ISA crisis, there was a huge fall in export volume, which allowed for Canadian and Norwegian firms to enter the American market. In 2013, Chile recovered its production and reestablished itself as the main exporter to the United States (Kontali, 2014).

This industry grew very fast and was mostly under a managerial direction focused on production and efficiency, disregarding a scientific biological watchfulness of the production processes. Therefore, production was faster and cheaper but very vulnerable and unstable. Consequently, the ecosystem where production occurred was under constant threat of a pest crisis. The main cause was that overexploiting sea farms led to a pollution problem that diminished the health strength of the cultivated salmon, letting various pests like the SRS, RTFS, and ISA Viruses affect the fish and weaken the production volume.

Firms as well as the government are making a constant effort to develop, install and enforce new industry regulations in order to improve the sanitary and productive standards. It is a difficult challenge that must be faced and solved in order to be successful or at least survive.

Chilean Salmon Exports, FOB
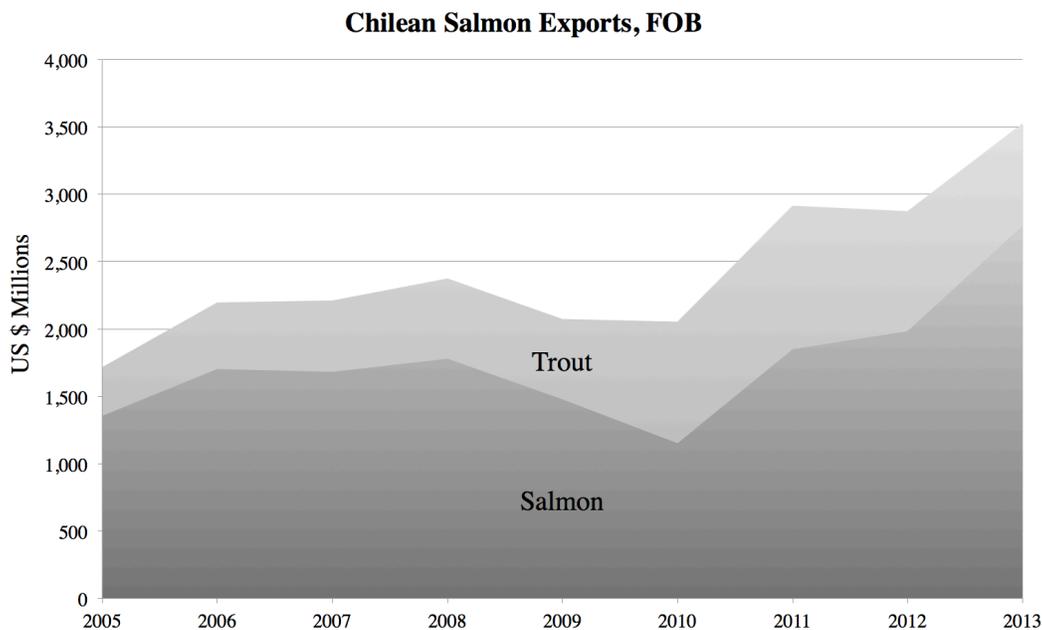
Figure 1.7: Chilean farmed salmon exports (Central Bank of Chile, 2014)

From this review of the Chilean food export industry, it may be noted that this emerging country managed to develop a productive platform of high quality fresh products and also successfully developed specialized productive and exporting platforms in order to achieve the high standards of the targeted markets like United States, Europe and Japan (DiMartino, 2013).

Many direct and indirect chemical, thermic, and mechanical treatments are applied to the food productive chains during its harvest and processing, which controls the pressure as well as the components atmosphere (low oxygen, higher nitrogen, etc.) during storage and

transport. Despite this, there is an increasing value in further developed food products. Food firm managers often prefer not to perform further processing but rather just achieve and offer a fresh food solution as their final product. This is seen as a loss of opportunity, because there is a lot of value in more processed and specialized foods. But, managers defend this strategy based on the argument that it is a huge step to develop a platform of added value and that it requires a complicated distribution platform to which they do not have access at the moment. They see this product industry category of added value as another kind of business they do not want or do not plan to evolve at this moment in time.

1.3 Innovation, added value, and management.

The food industry is actually one of the most competitive and dynamic industries. Research in the field strongly suggests that two modes of conduct are currently performed by this industry: the intensity of advertising and new product introduction, where both are influenced by industry structure and have an important impact on industry performance (Zellner, 1989). Therefore, new food and beverage product introductions in retail outlets have followed an upward trend during the last two decades. For instance, in the U.S., the introduction of new products increased from nearly ten thousand new products in 1992 to about twenty thousand in 2009, and a similar trend can be seen in Europe (Gallo, 1995; USDA, 2012).

However, this trend is shadowed by the high failure rate on new product introduction. Despite the large amount of research published in the new food development field, the majority of new food products (72-88%) continue to fail (Stewart-Knox and Mitchell, 2003). Various reports and industry magazines suggest that 5 out of every 6 new food products fail within one year of introduction (Fuller, 1994; Morley, 1999). Therefore, it is possible to conclude that new food product development (NFPD) is a challenge for the food industry.

This high failure rate may be caused by a misalignment between producers' perceptions about consumer preferences and actual consumers' preferences, due to the separation between producers and consumers caused by retail chain stores.

Chilean salmon farming presents many shared resources; its sea operations are interconnected, which results in sharing pests and other threats and, therefore, deteriorating sea-farming conditions. After many years of constant over-exploitation and sustained growth without any actual sanitary control from the authorities, this industry had a devastating sanitary crisis in 2007 and the results were catastrophic: production halted and an important part of the biomass was lost, resulting in a large financial crisis. This situation was characterized as a *Tragedy of the Commons*; this comes from an American ecologist, Garrett Hardin, who published an article in 1968. He argued that "*when a resource is held jointly, it is in individuals' self-interest to deplete it, so people will tend to undermine their collective long-term interest by over-exploiting rather than protecting that asset*." As stated by The Economist in its article *Governing the oceans, the tragedy of the high seas*, such a tragedy is currently unfolding, causing serious damage to the common resource that is the sea.

As 2007 saw the start of the Chilean ISA sanitary crisis, there was a subsequent forced harvest and storage, which allowed for the high export volumes of 2008, as shown in figure 1.8. From then on, Chilean farmers could not produce enough salmon to fulfill the supply volumes required by the main markets, especially the U.S. The Chilean main markets maintained their demand and imports; the Norwegian and Canadian producers provided the fish that filled the void left by Chile (Seafood Business, 2010). The U.S. Atlantic salmon market was dominated mainly by three players: Canada, Norway and Chile, with Canada dominating 44% of all the market and most of their supply being fresh whole salmon, Norway dominating 22% of the market supplying preferably fresh and frozen fillets, and Chilean exports mainly consisting of fresh fillets.
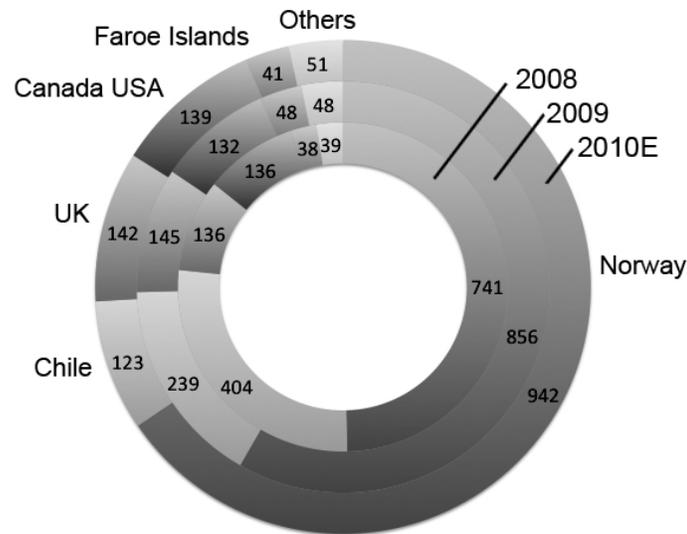
Figure 1.8: Country production of salmon in thousands of whole fish equivalent tons.

Source: SalmonChile

The deficiency of Chilean supply contributed to an increase in global prices, especially Atlantic salmon; as a result, Norway took the opportunity to sell large volumes at prices higher than expected. Before the ISA crisis, Norway was seen as the lead producer but not as an aggressive competitor. This is because Chilean exports were not mainly competing with Norwegian target markets, which historically were mainly focused on the European and Asian (excluding Japanese) markets. But with the late Norwegian entrance into the U.S. market, some Chilean producers saw Norway as a real competitor.

Markets of Chilean Salmonids
2008 (Thousand of tons WFE)

Others, 34

Asia w/o Japan, 52

USA, 108

UE, 43

Japan, 162

Exports by Salmonid Species
2008 (Thousand of tons WFE)

Others, 5

Rainbow Trout, 122

Atlantic Salmon, 227

Coho Salmon, 90
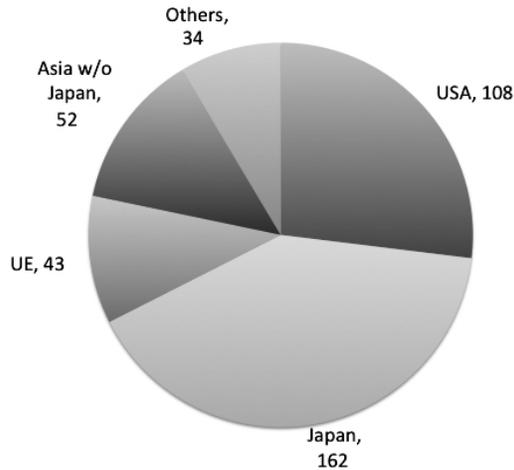
Figure 1.9a: Destination markets of all Chilean salmonids during 2008, in thousands of whole fish equivalent tons.

Source: SalmonChile
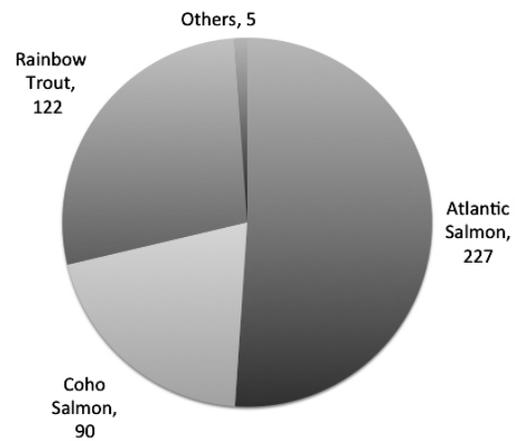
Figure 1.9b: Export volume of all Chilean salmonids by species during 2008, in thousands of whole fish equivalent tons.

Source: SalmonChile

From 2008 until mid-2011, markets were highly variable in price and volumes due to an increase in the supplies from Norway and North America as well as catastrophic events such as the Chilean ISA crisis, earthquakes, and tsunamis in both Chile and Japan. The main markets for Chilean exports of all salmonids for the year 2008 are given in figure 1.9a, where Japan's great importance can be seen as well as the US's secondary role and Latin America's minimal participation as part of the "others" category. Figure 1.9b shows the composition of these exports in salmon species where Atlantic salmon declined as the main exported species.

The salmon farming industry is not new to recognizing its situation as a *Tragedy of the Commons* productive system. Therefore, there are trends in the Chilean salmon producer association (SalmonChile A.G.) to avoid this situation. As presented by The Economist in

its article *Governing the high seas*, *In deep water*, according to Elinor Ostrom (Nobel prize for economics in 2009), avoiding a *Tragedy of the Commons* requires "*giving everyone entitled to use them a say in running them; setting clear boundaries to keep out those who are not entitled; appointing monitors who are trusted by users; and having straightforward mechanisms to resolve conflicts*". Hence, there is an opportunity to control and change this *Tragedy of the Commons* challenge in the Chilean salmon farming industry.

As described above, during the ISA salmon-farming crisis, Chilean producers were not able to supply the U.S., its most important target market, letting Norwegian and Canadian producers enter and conquer this market. Chilean producers reestablished their production and were challenged to recover their lost markets. Most literature on international strategy related to market reentry and repositioning focuses on developed nations exporting into developing economies, not the opposite. Hence, the study of the international strategy of market reentry in an emerging economy context is required.

1.4 Hypothesis and objectives of the Thesis

The main hypothesis of this Thesis proposes that Chile requires establishing and using innovation and development platforms dedicated to the food industry, and that the government must provide a robust and top-notch regulatory institution that establishes and enforces a new order to guide and therefore protect this industry as well as allow for it to be sustained.

In accordance, the main objective of this thesis is the understanding of the Chilean food industry, with special attention to the exporting firms, focusing on new product design processes and business management of a new exporting industry.

To achieve this goal, the thesis was divided into the following specific objectives:

. i)   To analyze the design process of 3 new food products based separately on plums, wine, and blueberries, and to test if producers' assumptions about consumer preferences are correct.

. ii)   To study management dynamics in the food exports industry, specifically in the salmon farming industry in light of environmental responsibility, moral reengagement, and restorative justice.

. iii) To determine how the Chilean salmon farming industry achieved an environmentally responsible management structure in order to increase its international competitiveness and sustainability.

. iv)   To determine the proper market reentry strategy necessary for the Chilean salmon farming to recover the lost target markets, especially that of the U.S.

. v)   To design a new model for market reentry from emerging markets.

1.5 Outline of the Thesis

The central theme of this Thesis is to understand and evaluate some unsolved challenges for the Chilean Food Export industry regarding new product design and business management on current scenarios.

Chapter 2 presents a review of the new product development process in the food industry and presents the application of 3 cases (plum, wine and blueberry) of two marketing methods (Kano and Conjoint Analysis) to help this process.

Chapter 3 contains a study of business management dynamics in the case of the Chilean salmon farming industry, unveiling the executive decision profile and its consequences. The ISA crisis is presented as a *Tragedy of the Commons* case, and a theoretical model for the business management behavior is presented considering moral disengagement and the

establishment of an *Environmentally Responsible Management* platform in order to restore the performance of this export oriented cluster with the appearance of executive moral reengagement and reparative justice.

Chapter 4 presents the market consequences of the ISA Crisis for Chilean salmon exports and a theoretical model is proposed for market reentry from emerging markets.

Finally, in Chapter 5, our most important findings and future perspectives are discussed.

A summary of the contents of Chapters 2 to 4 is schematically presented in Figure1.7, showing the relationship between the different Chapters of the thesis.

Chapter 1
What is the problem?
There are still unsolved challenges in the Chilean food exports industry.

Solution and hypothesis:

The use of marketing tools and a managerial approach may help solve the challenges of the Chilean food export industry.

General Objective:

Unveil the current scenery that Chilean Food companies face regarding added value, new food product development, environmentally responsible management, product positioning, and export strategies.

Food industry scenery:

Food product profile offer

Industry profile
Target markets
Entry and reentry export strategy
Price strategy

Chapter 2
Methods for new food product development

Chilean food companies must develop their new products by obtaining the required criteria through marketing methodology tools and by not assuming a consumers' preferences profile.

Chapter 3
Does environmentally responsible management affect the performance of export-oriented clusters?

This industry makes key decisions regarding markets, products profile and distribution based on a short-term decision pattern.

Chilean salmon farming industry is a highly competitive environment ruled by a *Tragedy of the Commons* scenery.

Chapter 4
Food industry scenery:
Chilean salmon farming

An increase in international competitiveness and a strategy based on price and reliability may favor market re-entry for the Chilean salmon farming industry

Figure 1.7: Organization of the studies comprising this Thesis.

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2. Producer-consumer misalignment as a possible Cause for new food product failure: Empirical evidence from Chile.

2.1 Introduction

The food industry is actually one of the most competitive and dynamic industries. Results from research in the field strongly suggest that two modes of conduct are currently performed by this industry in all markets: the intensity of advertising and new product introduction, where both are influenced by industry structure and have an important influence on industry performance (Zellner, 1989). The oligopolistic structure of the Food and Beverage Industry and the increasing buying power of food retailers have put pressure on new product introduction as a way to achieve differentiation. For the main manufacturers of branded products, innovation strategies should be an integral component of any action to keep ahead of the retailers' own label developments (Martinez and Briz, 2000). Therefore, during the last decades, new food and beverage product introductions in retail outlets have followed an upward trend. For instance, in the U.S., the introduction of new products increased from nearly ten thousand new products in 1992 to about twenty thousand in 2009, and a similar trend happened in Europe (Gallo, 1995; USDA, 2012).

However, this trend is shadowed by the high failure rate of new product introduction. Despite the large amount of research in the new food development field, the majority of new food products (72-88%) continue to fail (Stewart-Knox and Mitchell, 2003). For the US Food and Beverage Industry, Fuller (1994) reports that for each product going into the test market, another 13 have been developed at the lab level or gone through a preliminary production viability assessment before being rejected. Fuller (1994) also suggests that more than 90% of new food products fail within one year of introduction. According to a research by Information Resources, which followed the fortunes of 2,250 introductions between 1997 and 1998, only one in six new products succeeded (Morley, 1999). Therefore, it is possible to conclude that new food product development (NFPD) is a

challenge for food producers all around the world. Thus, this Thesis chapter proposes that one of the sources for this high failure rate is caused by a misalignment between producers' perceptions about consumer preferences and actual consumers' preferences.

2.1.1 Food product development and design

Food product development and design is a complex process that involves the study and selection of various characteristics and qualities of the food product, mostly represented by packaging design, the food content profile and market targeting. An Ernst & Young study (1999) on new product introductions in the European consumer goods industry revealed that out of the 5,561 new products introduced by the Spanish food industry in 1997 (in 31 product categories), only 4% of these products could be classified as real new products while 96% of new introductions were replicas of existing products. Therefore, most current NFPD activities are focused on minor modifications, revivals, or expanding the brand and product line into new categories, with many new food product introductions failing because they do not offer any apparent consumer-relevant advantages. In this context, it is widely recognized that the design of a product or service must be accomplished taking into account the potential customer needs that probably will be attempted to satisfy. However, and according to Martinez and Britz (2000), food and beverage companies tend to see consumers as a dummy 'target audience' instead of obtaining their actual requirements and preferences, reducing the odds to offer the adequate value for the consumer and contradicting the widely accepted 'market orientation' perspective (Day and Wensley, 1988; Kohli and Jaworski, 1990; Narver and Slater, 1990; Day, 1994; Slater and Narver, 1994a; 1994b; 1995; Jenkins, 1996).

2.1.2 Added value

The added value concept has been approached for a specific product or service where all definitions pertain in some way to increasing its sales value (Siebert et al., 1997). In contrast to commodity products, finished products due addition of work, quality, or new attributes offer an opportunity to create uniqueness, and through such differentiation shield their producers from a damaging price competition. Therefore, the use of the 'added value' concept has been extensively promoted as a strategy for achieving a competitive advantage in an increasingly hostile commercial environment, and guidance has been provided for the organizational processes involved in creating customer value (e.g. Band, 1991; Gale, 1994; Naumann, 1995). More recently, the role of added value has been advocated as securing competitive advantage (e.g. Normann and Ramírez, 1994; Naumann, 1995) and long-term success (de Chernatony and McDonald, 1998; Naumann, 1995). The basis of this approach can be found in Lancaster's theory of demand, which proposes that consumers value the quantity of product attributes at their disposal through the purchase of a commodity (Lancaster, 1971). Thus, the main purpose of the product designer is to increase the value of their products through the addition of components or features that make them more attractive to consumers. On one hand, the added value of a component of a food product is assigned by the market through consumers' own preference and value assignment, which somehow has developed and uses its own personal method to determine it, and is finally expressed by the purchasing actor by declining to buy. On the other hand, if a firm identifies the key components or requirements a customer expects from a product or service, it can achieve a higher degree of customer satisfaction. Therefore, a substantial alignment between consumer preferences and producer product design seems to be an obvious necessary condition for new food product development success.

2.1.3 Retailer importance and producer-consumer misalignment

Market conditions and structure can create circumstances in which the alignment between consumer preferences and producer product design is not easy to achieve. One of these conditions is related with the role and market importance gained by retail during the last decades, which creates an information and communication barrier between the producer and the consumer, causing food companies to design their products with low feedback information from target markets and consumers.

This communication barrier normally occurs when a powerful retail group is established and the concentration is important. This condition is more common in developed economies, and it is the reason why some European food companies work on involving retailers and suppliers in their product development processes (Costa and Jongen, 2006). However, this situation is also present in some emerging economies. As an example, the Latin America and East Asia retailing (outside of China) has moved from 10–20% of the retail sector in 1990 to 50–60% in 2000 (Reardon and Berdegué, 2002). Compared to the 70–80% share that supermarkets have in food retail in the U.S., UK, or France, one can see a process of convergence (Reardon, Berdegué and Timmer, 2005). The case of Chile is astonishing. In this emerging economy, market sales of hypermarket, supermarket, and discounters retail accounted for an 85.6% share of food and groceries in 2009 (Datamonitor, 2011). The Chilean retail food sector reached 18.8 Billion USD in 2008, distributed in hypermarkets and supermarkets (60%), Convenience Stores and Gas Marts (20%), and Traditional Stores (20%) turning Chile into a concentrated market similar to developed nations like the U.S., U.K. and France (USDA, 2009). This makes Chile a suitable concentrated market to investigate the misinformation between food and beverage consumers and producers.

2.2 Methodology

The main objective of this study is to evaluate if food product design, performed by food producers, aligns well with consumers, with regards to preferences and value assignment of the most relevant components of their products. Hence, it is very important to determine which components or requirements bring more satisfaction than others (Tontini, 2003). For simplicity purposes, this potential customer profile of needs will be referred to as *"customer requirements"* (Tontini, 2003). There are published and reviewed methods that exist that unveil and investigate the characteristics and profile of customer's requirements. Therefore, we will perform tests and analyses to determine the importance given by producers and consumers to the main attributes of common food and beverage products.

A series of well-known tests already exist for the testing consumer preferences, such as the Analysis of Variance Technique (ANOVA), Asymmetry Analysis, Kano Method, Key driver Analysis, Self-Explicated Method, and Conjoint Analysis, featuring a decomposition or compositional approach to consumer preferences.

Since our priority is to resemble as much as possible the purchasing process performed by customers, it was defined that a market store, such as a supermarket or a convenience store, is the most adequate place to perform the survey because the surveyed consumer will already be in a purchasing mood. The placement restrictions allowed for us to define a proper format for this placement, such as printed material and the display of real sample food products. Additionally, and based on conversations with retail managers, it was determined that a time around 10 to 12 minutes was the available and appropriate maximum interview duration per subject. Therefore, and considering all these restrictions, we used Conjoint Analysis and the Kano Test to evaluate if consumers' product attribute preferences differ significantly from producers' attribute of a profile design.

Conjoint analysis is a multivariate technique used specifically to understand how respondents develop preferences for products or services. It is based on the simple premise that consumers evaluate the value of a product or service by combining the separate amounts of value provided by each attribute (Hair et al., 1998). Conjoint analysis is a technique for measuring trade-offs concerning preferences and intentions to purchase, and is a method for simulating and forecasting how consumers might react to changes in current products or to new products introduced into the market. This technique exudes the importance of all considered attributes and the utilities for each attribute level surveyed[1]. We will use Conjoint Analysis to determine the differences in the attribute preference profile between consumers and producers.

The Kano model of satisfaction (Kano et al., 1984) was also selected for this study. This method can determine which requirements of a product or service bring more than proportional satisfaction to customers. It also determines which features do not bring satisfaction when present but bring dissatisfaction when they are not present or when the feature expected requirements are not achieved (Tontini, 2003). In short, the Kano model captures the relationship between product performance and customer satisfaction (Risdiyono and Koomsap, 2011). Kano et al. (1984) presents three types of product requirements that influence customer satisfaction in different ways when met: Must-be requirements, One-dimensional requirements, and Attractive requirements. The Kano output is interpreted in many ways, the first being that customers usually do not explicitly demand must-be requirements and usually explicitly demand one-dimensional requirements. Attractive requirements are neither explicitly expressed nor expected by the customer. The Kano method helps unveil and recognize them[2].

[1]For a detailed explanation of Conjoint Analysis, see Green et al., 2001

[2]For a detailed explanation of Kano Method, see Berger et al.,1993.

Kano category values also help to understand the extent of consumer satisfaction and dissatisfaction performed by a product feature. To determine the average impact of a product feature or requirements for the satisfaction of customers, we use the Customer Satisfaction coefficient (CS-coefficient) as an indicator of how strongly a product may affect customer satisfaction or dissatisfaction. This coefficient moves form cero to one, and it was calculated using the counted Kano category values obtained in the survey (A=Attractive, O=One dimensional, M=Must be, I=Indifferent) as follows:

- Satisfaction, also referred to as "better" = (A+O)/(A+O+M+I)
- Dissatisfaction, also referred to as "worse" = (O+M)/(A+O+M+I)

The correct interpretation the values obtained for the CS-coefficient states whether meeting the product requirements can increase satisfaction or whether fulfilling these product requirements merely prevents the customer from being dissatisfied (Berger et al. 1993). Figure 2.1 illustrates how to interpret the coordinates obtained. Each dot plotted on this graph shows by its coordinates how a feature performs regarding customer satisfaction/dissatisfaction. On the vertical axis, also named the "better" dimension for the CS graph, if it is located on the upper side, it gives satisfaction whereas the lower side shows low satisfaction. On the horizontal axis, also named the "worse" dimension, a mark located on the left side indicates little dissatisfaction if the feature is not present whereas the right side indicates great dissatisfaction. One-dimensional products are the ones that perform equally between satisfaction and dissatisfaction levels, and they are located on the diagonal from the lower-left to the upper-right. Figure 1 is composed of four main areas. The upper left is for the features that make the products attractive and that allow for one to differentiate them from the competition, and the lower right is for the features that must be fulfilled to avoid customer frustration. The lower-left is for the indifferent features that do not give satisfaction, fulfillment, or great dissatisfaction and therefore may be omitted from

the design, especially if it is expensive, and the upper-right is for the features that are expected to perform and fulfill the consumer requirements well and must be included in the real product.

Kano CS-Coefficient classifier diagram for Kano categories
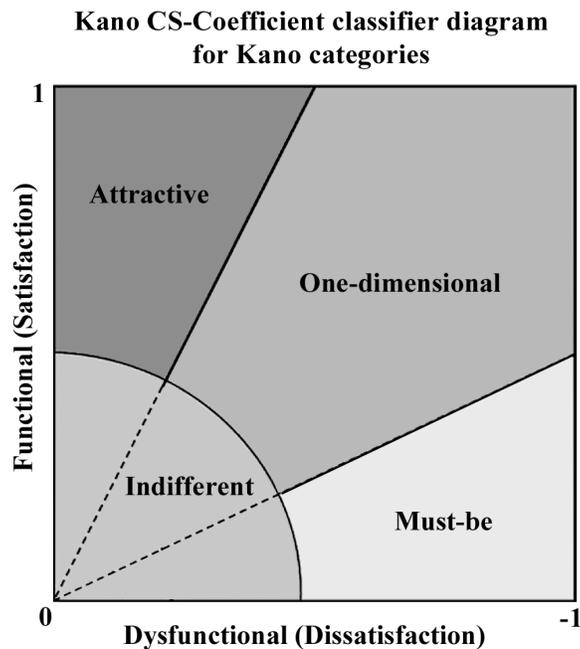
Figure 2.1. Kano CS-Coefficient classifier diagram for Kano categories (Xu et al., 2009).

2.2.1 Materials

The main objective of the tests is to evaluate the potential misalignment between producers' perceptions about consumer preferences and actual consumers' preferences. Therefore, we need to compare the beliefs of producers or food product designers about consumer preferences with those obtained from actual consumers. In order to obtain relevant data for these purposes, we chose three common Chilean food and beverage products: blueberries, dried plums, and wine, which are produced in Chile for the local market and also important exports to developed countries. Chile is the 1st world exporter of plums and the 5th world exporter of wine and ranks as the lead exporter of apples, peaches,

nectarines, blueberries, raisins, nuts, prunes, and almonds in the southern hemisphere (USDA, 2009).

These products (wine, blueberry and plum) were also chosen because of practical matters: they are easily handled, very recognizable, and have low variability on their feature characteristics. As an example of discarded products, salmon was initially considered but discarded due sanitary and regulatory reasons because the surveyors were not able to display fresh fish and let people manipulate it. Avocado was also discarded because of the variability of the key features of a regular sample, including changes in color, size, and stiffness in a few days.

For each one of these products, three producers were chosen, contacted, and accepted to participate. The nine producers told us that they did not use special marketing tools or studies to design the product or define the target audience; their methodology for determining a new food product profile was based on their own experience and personal beliefs about consumer preferences, aided by observing the market, new product entrance, and the profiles of the current products available in the market.

As explained before, Conjoint Analysis and Kano tests were chosen. For these two methods, it is crucial to determine the real key features that are important enough to be included and evaluated. According to Griffin and Hauser (1993), only 20 to 30 customer interviews in homogenous segments are required to determine about 90 - 95% of all possible product requirements. For the design and detail on factors of the Conjoint and Kano tests, we followed the standard procedures. First, and in order to determine the initial list of product attributes, we interviewed producers, firm owners, and general managers. These interviews were used to get their opinion on what they considered to be the most relevant components of value of their products as well as the level of their attributes. They provided a long list. Second, we performed an additional interview and survey to producers

with the intention of determining and previewing their preference scenarios, reducing the myriad of alternatives of attributes and levels that were listed at first, and obtaining a narrower spectrum of alternatives to study. Third, this initial set of features was evaluated with a quick survey given to 100 consumers on a stand inside of a convenience store and supermarket. The results of this pretest revealed that many dimensions and levels of attributes initially considered by producers were estimated as unimportant and considered with the less or non-existent value by a clear majority of consumers, and therefore were excluded in the main survey. Most of the features were independent from one another, so it was possible to include or exclude any of these features in the final product design. Finally, a matrix of product features and levels was obtained and presented back to the producers. It is interesting to note that some of the producers noticed some features or levels that they did initially consider themselves but rather were proposed by other producers. For the Conjoint Analysis, the final levels of the attributes are presented in Table 2.1

Table 2.1. Product attributes and levels for Conjoint Analysis

Attributes	Blueberry	Plum	Wine
Food Properties	Organic - Yes - No	Fruit Size / grain caliber - Medium - Large	Selection Quality - Normal - Reserve
		Without seed - Yes (seedless) - No	Wine Strain - Cabernet Sauvignon, red. - Carmenere, red. - Chardonnay, white.
Package Properties	Product presentation - Ready To Eat - Bulk	Packaging - Box/Tin - Plastic Bag/Ziploc - Bulk	Bottle shoulder shape - Shoulders - Without shoulders
	"Nutrition Facts" information sheet - Yes - No	Nutritional profile - Organic - Basic - Vitamins and minerals reinforced	Bottle cap - Wood cork - Plastic cork - Twist off
			Region and wine information - Yes - No
Shopping Location	Market store type - Supermarket/retail - Agricultural fair - Specialty store		
Price Value	Price Value - CH\$ 1900 - CH\$ 2100 - CH\$ 2300	Price Value - CH\$ 1900 - CH\$ 2100 - CH\$ 2300	Price Value - CH\$ 1900 - CH\$ 2100 - CH\$ 2300

The Kano questionnaires were composed of questions considering the importance of a feature regarding the level of satisfaction it gives when fulfilling the needs of the consumer and the level of dissatisfaction when it is not present or fails to provide the expected results. Characteristics considered for this method are presented in Table 2.2

Table 2.2. Characteristics for Kano Method

Characteristics	Blueberry	Plum	Wine
Food	Fruit Size	Organically produced	Wine variety/strain
	Ready to Eat	Functional properties	Aged in wood barrels
	Vitamin and Mineral Fortified	Fruit Size	Organically produced
	Preserver use	Vitamin and Mineral Fortified	Resembling Wine tasting review experience
	Frozen	Plum Drying Process ("green" instead of fuel)	Aged in stainless steel barrels
	Organic production certified	Seedless or not	
	Large Fruit Size		
	Functional properties		
Package	Hard Packaging - Box/Tin	Hard Packaging - Box/Tin	Glass bottle
	Transparent package (viewable content)	Transparent package (viewable content)	Wine tasting review info sheet
	Nutrition Information Sheet	Sold in Ziploc bags	Cork instead of plastic closure
	Origin Information	Nutrition Information Sheet	Volume of 750cc
	Nutritional decay information	Origin Information	Glass bottle without shoulders
	Nutritional benefits information	Cooking Recipe included	Label role in purchase decision
	Reusable packaging	Organically certified	Origin Information
	Producer certification information	Sold as Bulk in market fair	Volume of 375cc
	Fruit size labeling	Nutritional benefits information	Nutritional benefits information
	Bulk	Sold in plastic bags	Twist off cap
		Information on exposure to agrochemicals	Prize and awards information on label
Price			Price versus taste experience
			Price
Store	Gourmet/delicatessen Store	Available on supermarkets/retail	Available in Specialized wine store
	Available on supermarkets/retail	Available on market fair	Available on supermarkets/retail
		Available on Gourmet stores	

2.2.2 Data collection

To collect consumer preferences, three hundred personal interviews were conducted during one month at a convenience store and inside a supermarket. The interviews lasted about 15 minutes on average, and respondents were males and females within the ages of 20 to 65. The responses to one hundred Kano questionnaires and one hundred Conjoint Cards records of sorted sets were gathered per product. The sample was representative with regard to age and sex within the common Chilean consumers thought of as the target segment by the producers that participated in this survey. The convenience stores and supermarkets were located in Santiago, the capital of Chile. Surveyors were placed in the interior of the retail stores in a bar-like setting: product samples and questionnaires were spread out over a tall table. Samples of real dried plums of different sizes and of fresh blueberries were presented and sometimes taken by the consumers; package samples were also shown so as to give a direct idea of the products on the cards. Bottles of wine are well known by

consumers, so they were not presented in order to avoid distraction from the direct and non-branded questions and to avoid creating a biased opinion due to a possible preference for a specific brand.

Conjoint Analysis. For each product (blueberries, dried plums and wine), a set of conjoint cards was generated. Each food product has a number of features that are important for the consumer, and each feature has a number of possible levels, values, or states, resulting in several possible specifications, configurations, and profiles for a product design. Depending on the number of attributes and attribute levels, a full scenario (all cases) or partial factorial (a reduced and balanced sample of the combinations) may be performed. Various authors stated in literature that respondents would not rank more than a number of around 30 cards. Due the little time a surveyed subject will give us for this test, and based on the attributes and levels presented in Table 1, a 16 card set was defined. The 16 variants were split into various lists featuring different sequences of cards to avoid any boredom or bias from the respondents (Pearmain et al., 1991). The cards were first presented to respondents, and then they were asked to place them in descending order from the most preferred card to the most disliked card, resembling a real purchasing process.

Kano Method. Kano questionnaires were created with the contents of table 2, following the standard and well-documented procedures. In the same place of the Conjoint cards sorting tests, the Kano questionnaires were performed as an oral interview, where the surveyor wrote down the results. The list of possible answers for the Kano interviews were the same for all of the questions and were printed and presented so that the respondent could answer continuously and coherently. The producers' surveys followed the same procedure, and were performed in the firms' managerial offices. The number of surveyed producers was 3 for each product. Responses were gathered from 3 Kano questionnaires and 3 Conjoint Card records of sorted sets per product.

Both surveys, Kano and Conjoint Analysis, had 100% response rates. In order to be traceable, the information about the surveyed people contains only their name, email, and phone numbers. The focus was to question people in a purchasing mood in a real supermarket or grocery store; the only requirement was to be over 18 years old because of the wine-based survey.

2.3 Results

Many tests are available to analyze the results of the Conjoint and Kano surveys. Considering that this study focuses on the differences between the surveyed groups, we determined that the proper tools and indicators are those related to utility and importance for Conjoint Analysis and Kano Category scores as well as the Consumer Satisfaction coefficient for the Kano Analysis.

Conjoint Results for Utilities and level of Importance. Results for the Conjoint Cards sorting survey were processed using standard software and presented as a table containing the utility output values per product and per dimension or level of attributes. It is important to notice that although the values given by producers and consumers may not be coherent in their magnitudes, the attention must be drawn to their biased trends; the grayed out cells outline the utilities values where the opinions between consumers and producers do not coincide and therefore are reversed. The bar graph to the right depicts the importance for each attribute for consumers (gray, left) and producers (white, right). To test the misalignment between these two distributions, a chi-squared test was performed for each product.

Table 2.3. Conjoint Analysis utilities results for blueberry

| Utilities			
Blueberry		consumer	producer
package	RTE	0.08	2.50
	bulk	-0.08	-2.50
organic	yes	-0.20	-0.58
	no	0.20	0.58
nutrition	no	-0.08	-0.67
	basic	-0.14	-1.58
	complete	0.22	2.25
store	fair	-0.24	-1.00
	retail	0.40	0.50
	specialty_store	**-0.15**	**0.50**
price	$ 1900	**1.34**	**-14.11**
	$ 2100	**1.48**	**-15.59**
	$ 2300	**1.62**	**-17.08**
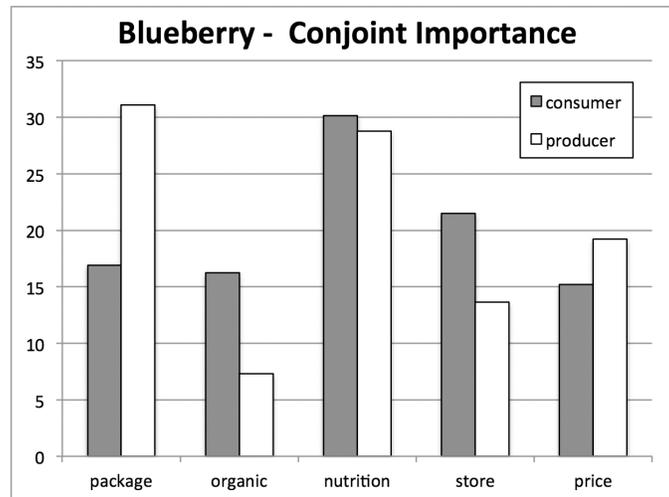
Figure 2.2. Conjoint Analysis importance for blueberry

Blueberry. As shown in table 2.3, utility values obtained for blueberry features do not reveal any great differences between producers and consumers; the only feature they differ is the specialty store, where the producers' preferences are not shared with consumers. Producers and consumers prefer a Ready to Eat package, do not find utility in an organic blueberry product, prefer complete nutrition content, and prefer to buy in retail stores. Price reversal and negative utility values are explained because the SPSS software algorithms from producers' sorted cards implied a reversal preference and utility. In this case, for the price feature we will only consider the importance obtained. The results for the chi-squared test show a significant overall difference in the importance of attributes between consumers and producers ($\chi^2 = 9.847$; df = 4; p<0.05). Figure 2.2 shows that they mostly disagree on the importance of features; producers think that the package and price is the most important whereas consumers think that the organic factor and the store type are more important. The nutrition profile is very important for both.

Table 2.4. Conjoint Analysis utilities results for plum

Utilities			
Plum		consumer	producer
package	box/tin	-0.37	-3.11
	bag	0.06	2.81
	bulk	0.31	0.31
seedless	yes	0.43	0.88
	no	-0.43	-0.88
nutrition	basic	-0.97	-0.61
	organic	0.87	0.51
	reinforced	0.10	0.10
caliber	medium	1.38	2.67
	large	2.75	5.33
price	1900	**-7.93**	**1.15**
	2100	**-8.76**	**1.27**
	2300	**-9.60**	**1.39**
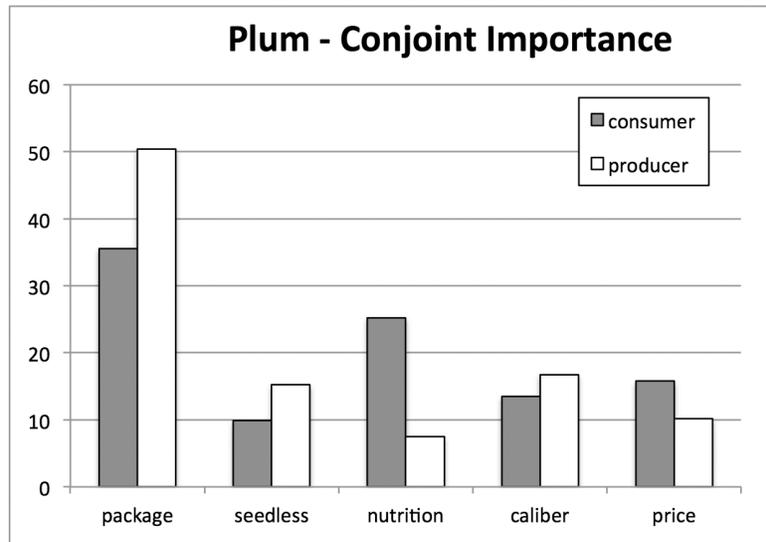
Figure 2.3. Conjoint Analysis importance for plum

<u>*Plum.*</u> As described in Table 2.4, dried plum producers coincide in their utilities with consumers. There were no features with utility reversals. As in the Blueberry case, a price reversal appears and negative utility values are determined for consumer-sorted cards. For price feature, we will only consider the importance obtained. Producers and consumers prefer the following: to buy in a packaged bag or in bulk, a seedless plum, an organic product, and a large fruit caliber. Results for the chi-squared test show a significant overall difference in the importance of attributes between consumers and producers (χ^2 = 14.929; df = 4; p<0.01). Figure 2.3 depicts that the consumer and producer misalignment is mainly associated with *Package* format and *Nutrition*.

Table 2.5. Conjoint Analysis utilities results for wine

Utilities

Wine		consumer	producer
bottle	yes	**0.27**	**-1.33**
	no	**-0.27**	**1.33**
cap	wood_cork	1.10	3.83
	plastic_cork	0.08	-3.13
	twist	-1.19	-0.71
selection	normal	**-0.53**	**0.46**
	reserve	**0.53**	**-0.46**
strain	cabernet_sauvignon_red	**0.02**	**-1.44**
	carmenere_red	**0.01**	**-0.78**
	chardonnay_white	**-0.03**	**2.22**
information	yes	0.01	0.25
	no	-0.01	-0.25
price	$ 1900	**-6.28**	**5.18**
	$ 2100	**-6.94**	**5.73**
	$ 2300	**-7.60**	**6.27**
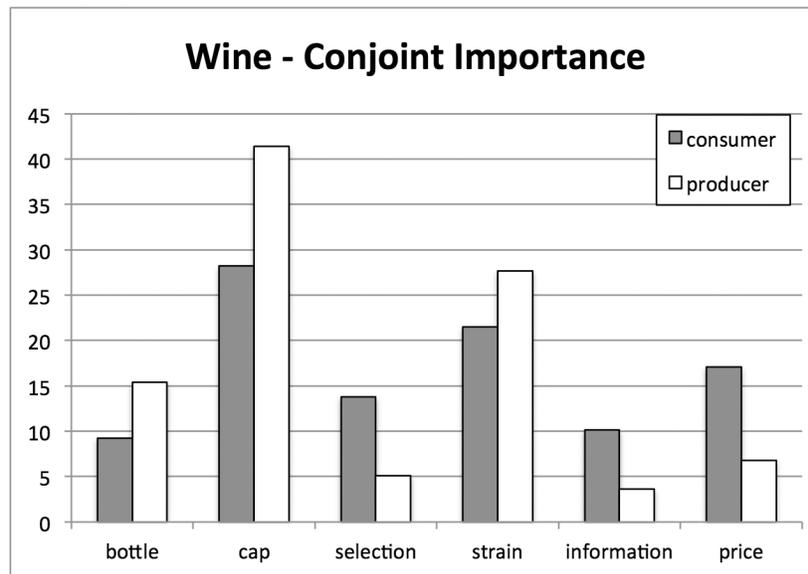
Figure 2.4. Conjoint Analysis importance for wine

Wine. As described in Table 2.5, the results for wine products are interesting because the producers and consumers only coincide in the *Information* feature and some levels of the cap. A Price reversal appears and negative utility values are determined for consumer-sorted cards. Consumers see utility in a bottle with shoulders and producers prefer them without; consumers slightly prefer a plastic cork but producers strongly agree that it has no utility; producers and consumers value a wood cork and do not like a twist cap. Consumers value a reserve selection but producers prefer a normal selection. Consumers value most of the Carmenere and Cabernet Sauvignon red wines and do not value white wine while producers clearly prefer white over red wine. The results for the chi-squared test show a significant overall difference in the importance of attributes between consumers and producers ($\chi^2 = 16.326$; df = 5; p<0.01). Figure 2.4 depicts that misalignment between consumers' and producers' preferences is present in all features. For consumers, the Selection, Information, and Price are more important than for the producers. Producers consider the shape of the bottle, the cap, and the strain as more important than consumers do.

Kano Method Results for Categories and Level of Importance. Kano survey results are commonly presented in tables that categorize and summarize the answers of each functional and dysfunctional question using the Kano evaluation table (Kano et al., 1984), which classifies the results into six categories: A for Attractive, O for One-dimensional, M for Must-be, I for Indifferent, R for Reverse and Q for Questionable. These tables are presented depicting the difference between the consumer and producer results, obtaining a positive value when the consumer is the larger value and a negative value when the producer is the larger value. We use "asymmetrical" or "misaligned" when consumers and producers do not coincide in their opinions or preferences on a certain feature (a significant difference in percentage), and "symmetrical" and "aligned" when they do agree (a small difference in percentage).

There were small values for the R (less than 4%) and Q (less than 3%) categories. Therefore, factors such as whether or not questions were phrased incorrectly or whether respondents misunderstood the question or crossed out a wrong answer by mistake were not considered. These small values also reflect these are not cases where customers do not want products with those features or where they expect the reverse (Matzler et al, 1996). Hence, those values are not displayed in the tables. We also present the difference in how the customers and producers rank the level of importance of the same Kano individual questions regarding product features. This level difference helps determine the relative importance of the individual product criteria. This may be understood based on the idea that if the producer estimates that a feature is more valuable than the actual consumer preference (showing a negative value), then there is a chance this feature is receiving more of the resources it deserves. If the consumer estimates a feature that is more important than the producer does (showing a positive value), it may be possible that this feature is receiving less attention and resources than it deserves.

We present the following tables with Kano study results for the cases of blueberry, plum, and wine products.

Blueberry

Blueberry	difference				level
	A	O	M	I	diff
Fruit Size	-31%	52%	1%	-22%	17%
Ready to Eat	9%	-28%	1%	18%	-20%
Vitamin and Mineral Fortified	3%	20%	2%	-26%	-16%
Preserver use	6%	27%	2%	-35%	25%
Frozen	4%	-72%	0%	67%	20%
Organic production certified	13%	32%	1%	-46%	5%
Large Fruit Size	2%	33%	0%	-35%	30%
Functional properties	5%	48%	2%	-55%	4%
Hard Packaging - Box/Tin	-30%	-28%	0%	58%	-11%
Transparent package	6%	-46%	0%	40%	31%
Nutrition Information Sheet	5%	-1%	1%	-7%	-4%
Origin Information	7%	-9%	0%	2%	52%
Nutritional decay information	5%	30%	0%	-36%	1%
Nutritional benefits information	5%	36%	0%	-41%	-3%
Reusable packaging	5%	24%	2%	-33%	13%
Producer certification information	7%	30%	0%	-37%	-2%
Fruit size labeling	3%	37%	0%	-40%	13%
Bulk	4%	24%	0%	-30%	-16%
Gourmet/delicatessen Store	10%	-8%	1%	-3%	13%
Available on supermarkets/retail	7%	-31%	1%	22%	33%

Plum

Plum	difference				level
	A	O	M	I	diff
Organically produced	5%	33%	4%	-44%	36%
Functional properties	5%	1%	2%	-9%	41%
Fruit Size	6%	-72%	3%	62%	-15%
Vitamin and Mineral Fortified	5%	23%	2%	-29%	-21%
Plum Drying Process	7%	-42%	5%	31%	-23%
Seedless or not	7%	-13%	0%	6%	21%
Hard Packaging - Box/Tin	4%	24%	3%	-31%	48%
Transparent package	5%	-39%	3%	30%	7%
Sold in Ziploc bags	4%	8%	2%	-18%	-22%
Nutrition Information Sheet	1%	28%	2%	-34%	-5%
Origin Information	-24%	-7%	3%	28%	16%
Cooking Recipe included	1%	10%	2%	-14%	15%
Organically certified	3%	15%	4%	-23%	15%
Sold as Bulk in market fair	2%	11%	1%	-17%	39%
Nutritional benefits information	1%	-8%	8%	-1%	8%
Sold in plastic bags	4%	12%	4%	-23%	11%
Info. on exposure to agrochemicals	5%	30%	5%	-41%	-10%
Available on supermarkets/retail	8%	-73%	5%	60%	17%
Available on market fair	8%	-22%	4%	9%	-8%
Available on Gourmet stores	6%	-47%	5%	37%	13%

Wine

Wine	difference				level
	A	O	M	I	diff
Wine variety/strain	11%	37%	3%	-51%	3%
Aged in wood barrels	3%	8%	4%	-17%	-34%
Organically produced	8%	-49%	1%	38%	-16%
Resembling Wine tasting review exp.	9%	-73%	10%	51%	38%
Aged in stainless steel barrels	9%	-51%	4%	36%	-6%
Glass bottle	6%	53%	5%	-65%	25%
Wine tasting review info sheet	7%	-15%	3%	4%	-17%
Cork instead of plastic closure	9%	-42%	6%	25%	39%
Volume of 750cc	6%	25%	1%	-32%	65%
Glass bottle without shoulders	-20%	-28%	2%	44%	33%
Label role in purchase decision	9%	-17%	4%	3%	11%
Origin Information	12%	12%	4%	-29%	4%
Volume of 375cc	4%	4%	4%	-13%	-18%
Nutritional benefits information	4%	-22%	8%	9%	40%
Twist off cap	6%	12%	10%	-31%	59%
Prize and awards information on label	6%	21%	2%	-30%	42%
Price versus taste experience	8%	20%	4%	-33%	47%
Price	7%	18%	6%	-31%	27%
Available in Specialized wine store	8%	-82%	5%	69%	29%
Available on supermarkets/retail	9%	-14%	7%	-4%	46%

Table 2.6. Kano results for blueberry, plum and wine.

Blueberry. The results in Table 2.6 left show that producers consider many of the features as *Indifferent*. They also show that some (60% app.) of the surveyed consumers agree but that around 30% differ and find those features as One-Dimensional. The most asymmetrical features (absolute difference near or over 80%) are Fruit Size, Frozen, Functional Properties, hard packaging box/tin and transparent package. The most aligned features (less than 20% of total difference) are Nutritional information sheet, Origin information and Gourmet/delicatessen store.

Regarding the level of Importance, producers did not consider any feature significantly (less than 20%) more important than consumer opinion. On the other hand, consumers considered the following features as more important: Origin Information (45%), Available in supermarket and retail (28%), transparent package (26%) and Large Fruit Size (25%).

Plum. Table 2.6 center presents a pattern of behavior similar to the blueberry case, indicating that producers consider most of the features presented as Indifferent whereas around 30% of consumers disagree and establish them as One-Dimensional. The most asymmetrical features are Organically Produced, Fruit Size, Plum-drying process, Transparent Package, Information on exposure to agrochemicals, Available on supermarket/retail, and Available on gourmet stores. It is clear that Fruit size was considered as 100% One-Dimensional by producers, but consumers did not respond that way despite the fact that they had the opportunity to see and test real samples of these plum products during the survey. The most aligned features are Functional Properties, Seedless or not, Cooking recipe included, and Nutritional benefits information. Regarding the level of importance of plum product features, producers differed on nearly half of the cases, considering the following features as more important than the consumer did: Vitamins and Minerals fortified (18%), Plum drying process, "green" instead of "fuel" (20%), and Sold in Ziploc bags (19%). On the other hand, consumers considered the following features as more important than the producer indicated: Organically produced (31%), Functional properties (35%), Hard package, box/tin (41%), and Sold as bulk in market fair (35%).

Wine. Table 2.6 right depicts a different scenario from the preceding food products. Consumers spread their opinions into the A, O, and M categories more with this product than with the other products, indicating they are less Indifferent. Producers keep considering most of the features presented as Indifferent. The most asymmetrical features are Wine Variety/strain, Organically produced, Resembling wine tasting review experience, Aged in stainless steel barrels, Glass bottle, Cork instead of plastic closure, Glass bottle without shoulders, and Available in Specialized wine store. It is noticeable that Available in specialized wine store was considered as 100% One-Dimensional by producers, but consumers did not respond that way. This bias may be due to the fact that the survey was not performed in a specialized store and mostly indicates the retail store opinion.

The most aligned features scores almost double from one another and therefore are less aligned than the cases of blueberry and dried plums. These features correspond to Aged in wood barrels, Wine tasting review info sheet, label role in purchase decision, volume of 375cc, and Available on supermarket/retail.

Regarding the level of importance, producers and consumers differ in most of the cases, only coinciding in Wine variety strain and Origin information. The only feature considered by producers as significantly more important than consumers is aged in wood barrels (29%). Consumers considered the following features as more important than the producer indicated: Resembling wine tasting review experience (33%), Cork instead of plastic enclosure, (33%), volume of 750 cc (56%), Nutritional benefits information (34%), Twist off cap (50%), Prize awards and information on label (36%), Price versus taste experience (41%), and Available on supermarkets/retail (39%).

Kano Method Results for the Consumer Satisfaction (CS) Coefficient. Kano categories values were also used to obtain the satisfaction and dissatisfaction coefficients (Berger et

al., 1993). The results for blueberry, plum, and wine are depicted in Figure 2.5 according to the formatting of the CS-coefficient graphs presented in Figure 1. Values are shown for each product feature of the consumer (o) and the producer (x).

Figure 1 depicts how to interpret and understand the CS-coefficient graphs; as depicted in figure 5, most of the consumers' scores (o) are located in a linear trend that goes from indifferent to entering the one-dimensional zone. Producers' scores (x) mostly resemble this trend (near -0.3,0.3) but there are some features that they consider as perfectly indifferent (location 0,0), a bit attractive (near -0.3,0.7), and strongly one-dimensional (near -1,1). Based on the great number of features and on the fact that most of the consumers' scores are clustered, we decided to label some but not all of the producers' scores that were separated from the large group.
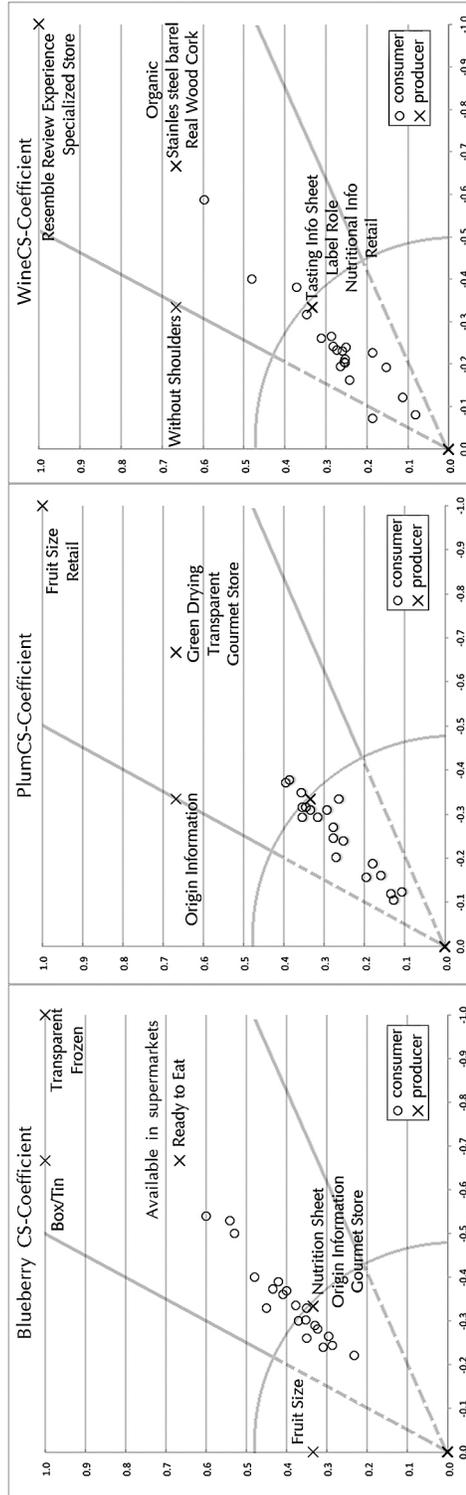
Figure 2.5. Consumer satisfaction coefficient diagrams for blueberry, plum, and wine.

For Blueberry (left graph), the most aligned features are Nutrition information sheet, Origin Information, and Gourmet/delicatessen store. The least aligned are Frozen, Functional properties, Hard packaging (box/tin), and Transparent package.

For Plum (center graph), the most aligned features are Functional properties, Seedless or not, Sold in Ziploc bags, Cooking recipe included, and Nutritional benefits information. The least aligned are Fruit Size and Available in supermarkets/retail.

For Wine (right graph), the most aligned features are Aged in wood barrels, Wine tasting review info sheet, Label role in purchase decision, Volume of 375cc, and Available on supermarkets/retail. The least aligned are Resembling wine tasting review experience, Glass bottle, and Available in Specialized wine store.

Blueberry	different category	distance
Fruit Size	yes	40%
Ready to Eat	no	23%
Vitamin and Mineral Fortified	no	23%
Preserver use	no	31%
Frozen	yes	70%
Organic production certified	yes	40%
Large Fruit Size	yes	34%
Functional properties	yes	52%
Hard Packaging - Box/Tin	no	46%
Transparent package (viewable content)	no	43%
Nutrition Information Sheet	yes	3%
Origin Information	no	7%
Nutritional decay information	no	33%
Nutritional benefits information	yes	39%
Reusable packaging	no	28%
Producer certification information	yes	34%
Fruit size labeling	yes	39%
Bulk	no	27%
Gourmet/delicatessen Store	no	5%
Available on supermarkets/retail	no	27%

Plum	different category	distance
Organically produced	yes	38%
Functional properties	yes	5%
Fruit Size	yes	67%
Vitamin and Mineral Fortified	no	26%
Plum Drying Process ("green" instead of fuel)	yes	36%
Seedless or not	no	10%
Hard Packaging - Box/Tin	no	27%
Transparent package (viewable content)	yes	35%
Sold in Ziploc bags	no	12%
Nutrition Information Sheet	no	30%
Origin Information	yes	22%
Cooking Recipe included	no	12%
Organically certified	no	18%
Sold as Bulk in market fair	no	13%
Nutritional benefits information	no	5%
Sold in plastic bags	no	16%
Information on exposure to agrochemicals	yes	35%
Available on supermarkets/retail	yes	67%
Available on market fair	no	16%
Available on Gourmet stores	yes	42%

Wine	different category	distance
Wine variety/strain	yes	44%
Aged in wood barrels	no	12%
Organically produced	yes	44%
Resembling Wine tasting review experience	no	63%
Aged in stainless steel barrels	yes	44%
Glass bottle	yes	59%
Wine tasting review info sheet	no	10%
Cork instead of plastic closure	yes	34%
Volume of 750cc	no	29%
Glass bottle without shoulders	yes	39%
Label role in purchase decision	no	11%
Origin Information	no	21%
Volume of 375cc	no	8%
Nutritional benefits information	no	16%
Twist off cap	no	21%
Prize and awards information on label	no	25%
Price versus taste experience	no	26%
Price	no	25%
Available in Specialized wine store	yes	76%
Available on supermarkets/retail	no	6%

Table 2.7. CS-Coefficient relative distance for blueberry, plum, and wine.

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Table 2.7 shows the CS-Coefficient misalignment values for blueberry, plum, and wine. The column "different category" is positive if the Kano categories between the consumer and the producer differ, and the column labeled as "distance" reveals the separation in the graph between the consumer and producer score of a same feature, where zero percent is considered as perfect alignment. Therefore, as the distance increases, the misalignment may increase up to 100%.

2.4 Discussion and conclusions

2.4.1 Discussion

In order to investigate whether and to what extent the producers' subjective and objective knowledge about the consumers' preferences on the main characteristics of food products is correct, a series of surveys has been developed and tested based on Conjoint Analysis and Kano methods.

For successful introduction of innovation, food product development needs to be based on consumers' needs and wishes in order to be successful. Factors that have become relevant are mass-individualization, globalization, and an altered interpretation of the food quality concept by consumers (Linnemann et al., 2006). Therefore, NPD producers must take into account the fact that firms usually have a dominant product, process or market orientation that determines company culture, the types of innovation granted as most important, and the way in which innovations are organized and developed (Traill and Meulenberg, 2002). As consumers are moving away from commodities toward distinctive products (Higgins, 2007), the understanding and knowledge of the components of the added value of food products is continuously gaining more relevance in NPD.

As rating and rankings of food attributes are assessed quite similarly by people from different countries (Herk and van de Velden, 2007), we performed these tests in Chile, an emerging economy that is a world renowned food producer and exporter, where consumers are constantly receiving new food products, and where the local market structure is similar to developed nations.

The choice experiment on consumer preferences for fresh blueberry, dried plum, and wine in Chile revealed varied perceptions on various features of domestically produced food products. Our results compel us propose that producers assign efforts on the different components of added value of a food product in a way that is not well correlated with the consumer preference nor the requirements for new food products, and therefore NPD introductions usually fail to survive in the market.

The main purpose of this study was to determine if the current producers' NPD design methods were actually properly revealing the consumer preferences profile, and the results showed that there were some correct predictions and some failures. We state that it is not sufficient or wise to rely only on producers' intuition and that they must help themselves with marketing tools. Each of the Conjoint analysis and Kano surveys gave a special profile of information, and their use and utility clearly depends on the purpose and the profile of the producers regarding consumers' preferences and food product profiles. Consumer driven new food product design initiatives such as those suggested in this study are expected to generate better consumer responsiveness and develop loyalty.

Although some valuable marketing information on three food products was obtained, the detail on their specific features was not the intention of this study; the real purpose was to analyze how perceptions and preferences behave and to compare market actors' alignment or symmetry in these issues. Therefore, it must be acknowledged that recommendations provided based on the present results may not be appropriate for every consumer's scenery.

As stated before, this study is not targeted as a specific food product strategy plan, and additional research is required to validate the presented findings and values.

We also acknowledge that considering the nature of the sample, it is possible that significant differences exist across the general population. We recommend validating these findings not only by using more diverse samples but also by analyzing a broader characterization of consumer segments. Practitioners seeking to classify and segment consumers based on their preferences on attributes and their levels may need to consider the dynamic nature of the market demand and profile preferences, since relevant food component values may be subject to change over time.

Determining the influence of misalignment between the consumer and producer preferences profile of food product requirements and obtaining descriptive measures of the impact on the NPD food market may provide better insight into the NPD design process and its relation with the producer perception of and preference for food and beverage components.

Regarding the firms, we agree with Kühne et al. (2010) in that incorporating the opinion of customers and consumers supports the awareness of competitive advantage innovation implementation in the food market and will lead to a better rate of success in the NPD process and food product introductions. Therefore, the goal of efficient consumer response is to develop a more responsive, consumer-driven system in which distributors and manufacturers work together as business partners, not only allowing but enhancing the customer information flow from retail to the NPD process, so as to maximize consumer satisfaction and minimize costs (Hoban, 1998).

There may be limitations to this study considering the fact that the survey campaign was only local and not foreign. The retail markets chosen were mainstream nor were they specialized into categories such as organic products or specialized wine or vegetable

products (eg: USA's Natural Foods Grocer supermarkets such as *Whole Foods*, *Jimbo's,* and others alike). Furthermore, the number of producers surveyed and assessed was only 3 per product. Hence, it is suggested to consider these factors and improve the tests.

2.4.2 Conclusions

Our study revealed the contradictory visions of market actors about features of well-known food products. Our study confirmed previously reported results (Witell et al, 2011) regarding the importance of the use of marketing tools to unveil these contradictory visions. Although respondents' heterogeneity, survey place, and other concerns about the data gathering process exist, the results properly revealed the existence of misalignment between producers' perceptions about consumer preferences and actual consumer preferences.

A tool for helping achieve differentiation through a better NPD program has been presented in the context of proving that producers' perceptions of consumers' preferences may not be accurate or significantly real, and must be integrated as a component of any action to keep ahead of the competition, especially from retailers' own label developments. From a managerial perspective, these tools help reveal the importance of involving consumers into new product development, by engaging buyers to cooperate and participate in the design with their opinions and preferences of existing attributes and to help in incorporating new features.

Recommendations for marketing practitioners include the importance of organizing and participating in marketing survey events, which may be used to develop consumer awareness of new products, new attributes and features, and the innovation and differentiated spirit of the firm/brand. This type of study should be considered as a double check standard procedure before entering a market with a new product, so as to achieve and

properly implement a production and marketing strategy driven by customer needs and perceptions.

Special care must be taken with regards to performing the tests and surveys with the appropriate target market individuals, especially by avoiding local tests when aiming towards foreign markets and by performing them in the target regions.

2.4.5 Further research

The results shown are indicators of misalignments in producers' assumptions of consumers' perceptions about certain features and preferences, but they were not extreme opinions or trends. We suspect and may suggest that this occurs because of the fact that these firms are already survivors in the real market, so the differences in their presumed and the actual consumer interests may not be large enough to make their products fail and disappear.

We propose, as a next step of research, to compare these findings with a group of producers about to introduce a new product into the market, to perform these tests before their first entrance into the market, and afterwards to compare their actual market results; we estimate that the research would span over several years but consider that it is worth it in order to unveil further relations between producers' perceptions and the real market.

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3. The business management of the Chilean salmon farming industry

3.1 Introduction

The Chilean salmon farming industry experienced a dramatic downturn in 2007 while firms were seeking profit maximization through the overexploitation of natural resources; the increase of fish density in the cultivation ponds deteriorated the water quality and welfare of farmed fish (Lizuka and Katz, 2011). Significant associations were found between management factors and salmon mortality (Valdes-Donoso et al., 2013). Also, areas were identified in which good management practices were associated with a reduced disease risk. Lizuka and Katz (2011) inferred that the long-term decay in industry performance had been the outcome of a complex process of gradual productivity deterioration that started in the middle of a sustained rise in world prices for salmon. The expansion of global demand for salmon products triggered a production boom but the absence of adequate environmental responsibility was disastrous, far outweighing short-term economic gains. Misguided management has resulted in higher costs and diminishing market reliability, weakening the international competitive advantages that firms operating in Chile used to have.

Other countries have experienced similar problems in the past involving mistaken management behaviors in the salmon industry. After suffering from many pests that resulted in production losses, Norway raised its sanitary operational standards, accomplishing environmentally responsible milestones such as low antibiotic usage, a high food conversion rate, and a smaller egg-to-salmon survival rate. Later, Canada followed in that same direction (Burridge et al., 2010). Therefore, following these examples, environmental responsible management (ERM) for salmon farming firms in Chile can be seen as the way to solve these problems and achieve higher standards in international competitiveness.

The environmental crisis experienced by this industry was triggered by low sanitary production standards catalyzed by managers who experienced moral disengagement due to a *Tragedy of the Commons* situation (Shepherd, 2013), where self-regulation and detrimental conduct was the result of a dynamic interplay of personal and environmental influences (Bandura, 1996). In the aftermath, the entire industry suffered a financial debacle that was followed by moral reengagement and the search of restorative justice. This change and the establishment of a new order are considered a key opportunity for achieving better industry standards and competitiveness (Newbert, 2011).

The aim of this chapter is to explore and discuss the processes of moral disengagement observed in the managers of this industry, the moral reengagement that followed, and the search for restorative justice in the Chilean salmon industry.

Following this introduction, chapter 3.2 focuses on a literature review of restorative justice, moral disengagement, moral reengagement, and environmentally responsible management. Chapter 3.3 introduces the industry settings. Chapter 3.4 describes the research methods. Chapter 3.5 presents the key findings, followed by chapter 3.6, with discussion and conclusions. Finally, managerial implications as well as proposed further research are presented.

3.2 Theoretical perspectives

Learning and knowledge accumulation is the base for the proper development of an international strategy, a process aimed towards developing skills in foreign markets and the internationalization processes of a firm in several ways (Brouthers et al., 2009; Petersen et al. 2008). An international firm shares knowledge flows with other firms, enabling early and rapid internationalization; the processes of absorptive capacity and open innovation are

crucial for international firms to succeed in the international markets. Hence, internal knowledge sharing is also critical for multinational corporations in order to achieve successful strategies (Buckley and Ghauri, 2004; Michailova and Minbaeva, 2012).

Internationalization of an industry depends on many factors, but the recent crisis of the Chilean salmon industry unveiled serious concerns in the managerial aspects of *moral disengagement, restorative justice and moral reengagement*, and the role of the establishment of *environmentally responsible management* in an industry with *international competitiveness*. These subjects will be presented and discussed in this chapter.

3.2.1 Restorative justice, moral disengagement, and reengagement

Moral disengagement in business is discussed in literature regarding the observed behavior of firm managers and key executives when ethical or psychological concerns lead them to perform managerial decisions that are not considered good practice. Rest (1986) states that moral awareness is an important feature of moral reasoning and moral decision-making and, therefore, will end in managerial strategic planning. Moral issues are common in entrepreneurial situations in which different behavioral norms and interests conflict because of scarce resources, constant competitive pressures, and the time when firms choose between pursuing self-interest and maintaining normative business ethics (Bryant, 2009).

Business ethics researchers have tried to study and understand business malpractice and organizational corruption by examining its key factors and proposing models on executives' moral reasoning processes. For instance, Rest's multi-stage ethical decision-making model (Rest, 1986) proposes a sequential process composed of decisional factors such as moral awareness, moral judgment, moral motivation, and moral behavior. Bandura (1986)

proposes a model that depicts the mechanisms through which self-sanctions are selectively activated and disengaged from detrimental conduct at different points in the self-regulatory process. Bryant (2009) presents a model of self-regulation and moral awareness among entrepreneurs. Barsky (2011) presents a theoretical model of the relationship between mechanisms of moral disengagement, participation, and unethical behavior. O'Fallon and Butterfield (2005) and Trevino et al. (2006) present comprehensive reviews of business ethics literature.

In this chapter, *Moral Reengagement* is defined in business terms as the internal process and consequent conduct performed by firm managers when they return to moral, ethical, and self-regulated work behavior from a former period of moral disengagement. The accompanying *Restorative Justice* is defined in business terms as the strategy repairing the harm caused by wrongful management, a sort of new order aimed at reorienting business operations and performance that is accomplished through cooperative practices that may include all stakeholders.

This chapter proposes that managers go through a series of internal processes that guide their final decisions. As observed and obtained from interviews, managers endeavored to increase salmon production to its limits and were able to do so recklessly due to specific conditions in this industry regarding low or non-existent control from government agencies on breeding, farming, production, labor, sanitary, and other regulatory matters. As stated by Bandura (1996), self-regulation and detrimental conduct is the result of a dynamic interplay of personal and environmental influences and, in this crisis, managers were forced to face these two behaviors, responding to different personal and environmental situations.

3.2.2 Environmentally responsible management and international competitiveness.

A mix of competitiveness indicators can be used to estimate international competitiveness for the exports of the Chilean salmon industry, but technical considerations often arise and different evaluation procedures may give different results (Durand and Giorno, 1987). When productive problems appear, costs will increase, and that will give an advantage to international rival producers like Norway or Canada.

Nowadays, many industries are implementing *Environmental Responsible Management* (ERM) to gain a competitive advantage (Daily and Huang, 2001), as operational efficiencies require long-term strategic and sustainable methodologies. However, this is not the only reason why ERM is important for internationalization processes. Many countries are offering environmental product policy instruments like taxes and charges, producer responsibilities, eco-labeling (ISO Type I) programs, and environmentally responsible public procurement (Li and Geiserb, 2005; Erwann, 2009). It is expected that ERM will be an enforced requirement if firms want to enter these markets.

International organizations have also been part of these new tendencies that enforce new development paradigms, which are reflected in the UN Millennium Development Goals. In this sense, Dunning and Fortanier (2007) asserted that in order to ensure environmental sustainability, a development strategy should be consistent with the natural environment in which it is embedded. However, it should be noted that there is no consensus regarding the extent of environmental preservation. Some scholars (Siegel, 2009) argue that this should be practiced only if such activities complement firm strategies and enhance business profitability. Other scholars preach in favor of 'green management' for various reasons, including moral or normative perspectives, while people expect managers to use resources wisely and responsibly regardless of whether it pays or not (Hart 1995; Marcus and

Fremeth, 2009). In summary, previous research suggests that industry competitiveness and investment attractiveness need not to be pursued at the expense of preserving the natural environment.

Also, academic theories of internationalization are incorporating ERM. In light of the Resource-Based View, Hart (1995) stated that for some kinds of firms, environmental social responsibility could constitute a resource or capability that leads to a sustained competitive advantage. In addition, regarding solutions for environmental issues, business managers require analysis of the actors involved in the business operations. Hence, approaches such as the Stakeholder Engagement, that give importance to the identification and interests of all actors affected by the activities of the industry, have become critical to enhance ERM (Onkila, 2011; Barton and Fløysand, 2010).

Developing a set of good management tools in the international network standards allows interaction and easy flow through compliance between manufacturers and distant buyers. With regards to this, the implementation of privately led standards can be disadvantageous for developing countries because of their limited influence on their self-determination (Clapp, 1998). Madsen (2009) suggested that although governments in developing countries face a clear trade-off between attracting investments and protecting local environments, their policy should not be setting lax environmental policies causing degradation of local environments. In this case, a certain level of marine pollution may in fact be economically efficient even considering main externalities and, therefore, in an optimal social balance (Garrod and Whitmarsh, 1995). Policy objectives for economic development through investment should not be set at the expense of environmental preservation. Murphy (2004) proposes that tolerant regulatory standards lead to more environmental degradation which encourage governments to set regulatory standards.

Therefore, a special strategy must be developed to appropriately manage this ecosystem, which may lead to sustainable development (Van Hook, 1993; Schatzberg, 2002).

Despite these new tendencies in management, most of the firms operating after the ISA crisis in Chile were not eager to perform ERM in order to increase their international competitiveness. Rather, it may be considered that most of them are in a *survival mode* and, therefore, thinking about short-term effects such as acquisition by another firm or just obtaining revenues to withstand another period.

3.2.3 Research propositions

Based on the theoretical perspectives stated above and on previous research, this chapter of the Thesis presents the following propositions:

P1: In a Tragedy of the Commons situation that affected the environment and, therefore, produced a production collapse and financial debacle of firms, as with the case of the Chilean salmon industry, moral reengagement should occur and manifest in the industry's managerial context.

P2: In the search for restorative justice, a new order for the Chilean salmon industry productive platform must be established in which the participation of the industry's key actors and the government are important for the implementation of the change needed.

P3: The Chilean government and salmon farming firms must adopt ERM to enhance and improve their international competitiveness.

P4: Foreign firms' advanced environmental capabilities were not accounted for by Chilean ERM practices and regulations.

3.3 Methodology

To analyze the theoretical model, field research using a multiple case study approach was conducted and then expanded using inductive reasoning (Yin, 2009). The selected country is Chile, the world's second largest producer and exporter of farmed salmon. Although the use of a case study approach can raise concerns about the validity of the results beyond the borders of Chile, this approach has many advantages, particularly for exploratory research, and is seen as the best fit for this research.

The study was based on a sample of 14 firms, from medium in size to large, operating in two regions of southern Chile, and representing more than 80% of Chilean salmon production. The analysis was based on interviews with key CEOs and marketing directors. Commercial confidentiality prevents disclosure of the companies' names. The respondent companies were mainly located in Puerto Montt and Chiloe. The high density of productive processing and supply companies located in the same region suggests that they are part of a regional cluster (Felzensztein et al., 2010b). Each in-depth interview was performed during mid-2010 to mid-2013. The interviews were audio recorded and a transcript was written; their contents were subsequently organized into the various sections of this chapter.

Many of these companies are or were private firms and there are no public reports regarding sensible financial information, which is also maintained as confidential. The interviews gathered data regarding strategies about pricing, costs, production positioning, target markets, partnering, programming, distribution, industry settings, collaboration and specific questions on events during the crisis considering the managerial behavior, financial strategy, firm property, and labor policies. The purposes of these interviews were to unveil and provide context to the events and reasoning behind the observed decisions taken before,

during, and after the ISA crisis. All of the interviewed managers completed the entire survey but did not disclose most of their financial information.

3.4 Analysis of the salmon industry and the Chilean ISA crisis

3.4.1 Farming in the salmon industry

Over the past thirty years, aquaculture has become the fastest growing sector of the global food market. About 60% of the world's salmon production is farmed; the main type of farmed salmonid is the Atlantic salmon with a total world supply of 1.46 million tons in 2011. Growth in global supply of Atlantic salmon is estimated to be at 119% in the period of 2000-2012, varying between -2% and 13% annually with a compound annual growth rate of 7% (Marine Harvest, 2012).

Salmon farming started on an experimental level in the 1960s and became an industry in Norway in the 1980s, with Chile starting in the 1990s (GSI, 2014). Therefore, the emergence of salmon farming since the 1970's has changed the rules of the sea-farming sector and, as depicted in Figure 3.1, Norway and Chile have been the main producers and exporters since 1997 (Liu, 2011).
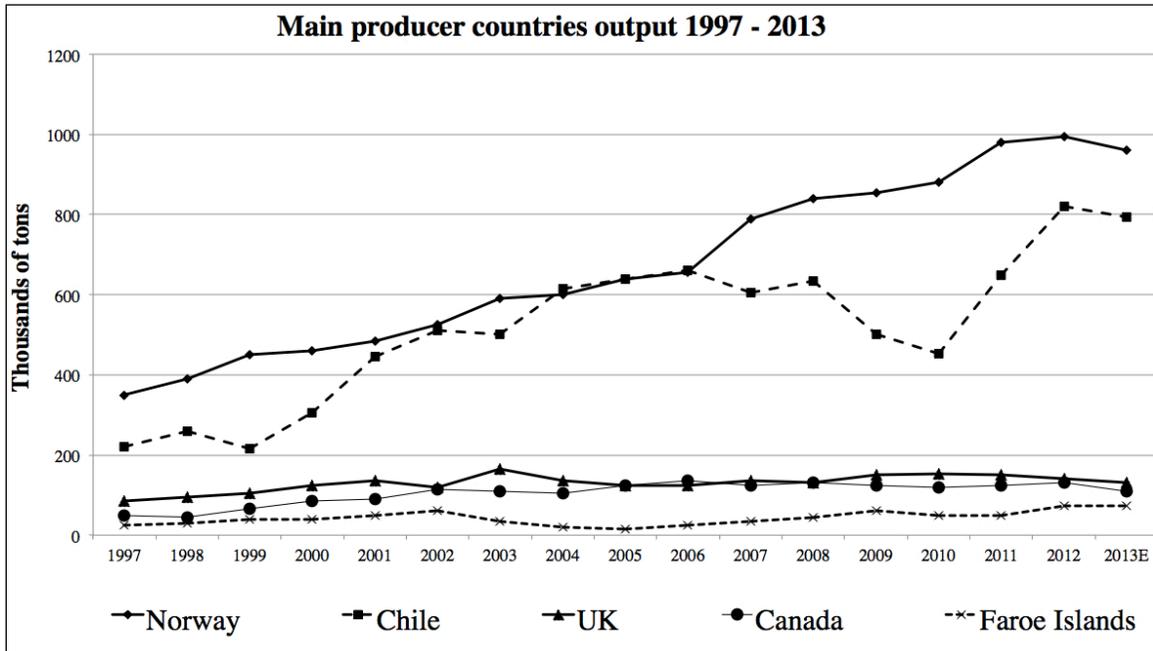
Figure 3.1: Thousands tons of farmed salmon in the main producer countries for the 1997 – 2013 (*Estimated*) period (Source: SalmonChile, 2014; FAO Globefish, 2014; Kontali, 2014)

3.4.2 The Chilean salmon industry and the ISA crisis

Chilean salmon is one of the most important local commodity exports (Central Bank of Chile, 2014). The industry is composed of both local and foreign companies, the latter mainly from Norway, Scotland, and Canada (Felzensztein et al., 2010a). There are two local trade associations: SalmonChile, composed by large and medium-sized companies with the role of discovering and opening markets, and AcoTruch, the Chilean coho salmon and trout farmers association where most of its members are small to medium-size producers. The Chilean government bases the regulation and governance of the fishing and aquaculture practices and resources with Sernapesca, an agency that depends on the Ministry of Economy.

Salmon farming companies that operate in Chile are typically vertically integrated. The industry is so extensive that, in cases, it may start on one end by sharing ownership with a fishing company also associated with fishmeal plants, various suppliers, egg suppliers, hatcheries, processing plants, and even export companies. Firm managers indicated that each one of those vertically linked companies was treated as a separate entity, and the only advantage was to provide lower risks associated to variability in quality, price, and supply volumes.

The Chilean salmon industry as a system has three main problems. First, the structure is criticized, as salmon farming is considered an important industry and should have a higher authority in charge. In this sense, Buschmann et al., (2009) proposes that the regulatory structure in Chile is outdated and based on insufficient science.

Second, the Chilean salmon industry is dominated and managed with an engineering, financial, and commercial view; its executives are mostly civil engineers rather than aquaculture biologists. Hence, this industry is tremendously efficient in processing fish, developing new products, and creating new markets, but very inefficient in the breeding and sanitary aspects. This situation has led to the overexploitation of farming pens, overcrowding the environment with smolts, salmon, fishmeal, vaccines, and antibiotics, and the resulting degradation of the sanitary conditions of the area. This has allowed for pests to appear and let the sea currents infect distant farming centers of the same or other firms.

Third, the Chilean farming system is different from the other systems used by the farming industry in other countries. In Scotland, Norway, and Canada, due to mergers or strategic decisions, some large firms perform their operations on vast geographic zones isolated from other firms, determining a *one company per zone use* and thus enabling these firms to self-

determine their own operating sanitary conditions and risk level. In contrast, in Chile there are several players sharing zones, with the result that none of them have an incentive to do things correctly nor to care for the common good within their respective zones (Hardin, 1968; Lizuka and Katz, 2011).

The major sanitary threats present in the Chilean salmon industry include bacteria and virus related diseases, such as the Infectious Salmon Anemia (ISA), Furunculosis (*Aeromonas salmonicida*), Pancreas Disease (PD), Salmon Rickettsial Syndrome (SRS), Caligus (*Caligidae sea lice*), and many others. These threats became a reality when, in 2007, an ISA disease crisis emerged in Chile and had catastrophic effects on the entire productive platform, killing almost all fish and leading to a financial debacle that stopped most of the production until 2010. Almost all firms in this industry, including salmon firms and suppliers, ended in great debt, owing banks a total of 4 billion USD, with some individual farming companies indebted in amounts up to 380 million USD (Murias, 2009). The resulting fall in exports incurred between 2007 and 2010 is easily noticeable in Figure 3.1. It is important to note that the high export levels of 2008 were made possible because of the frozen stored forced harvest from 2007.

3.4.3 The new order

To understand and control this type of crisis, an ecosystem management system that includes all ecological and productive variables such as sea conditions, species involved, and industry operations influence must be established. Therefore, a special strategy must be developed to appropriately manage this ecosystem (Van Hook, 1993; Schatzberg, 2002). However, creating an ecosystem with these characteristics is difficult. Open sea farming operations are exposed to one other despite long distances (Pringle, 2001), which makes a sea farm plant in good sanitary conditions vulnerable to distant threats, especially from *free*

rider firms that neglect basic sanitary measures in order to produce more fish. Identifying a firm's contribution to the degradation of the marine ecosystem as well as which firms either directly or indirectly suffer from the pollution is a near-impossible task (Garrod and Whitmarsh, 1995). Hence, cases of pests spreading in the open sea and in channels will normally result in infecting the fish centers and consequently spread to other centers due to an infection cascading effect. Thus, the *free rider* problem may prevent the implementation of a reliable pollution control system (Garrod and Whitmarsh, 1995).

A key factor for creating an Ecosystem management system that includes all ecological and productive variables is setting the appropriate standards. With regards to the salmon industry in Chile, Lizuka (2009) reported of firms having difficulties in complying with global standards. However, Lizuka (2009) also assessed that most firms in this industry strive to follow the required global standards, evolving them into local standards, which can be considered as an early stage of the creation of a proper ecosystem management scheme.

In 2009, a new set of laws and norms to regulate aquaculture production was proposed. It dictates new sanitary, productive, and communications laws, norms, protocols, and standards. These new regulations, all salmon-related, are continuously being complemented and reinforced with new articles and norms, for example, establishing a maximum number of fish per pen, depending on factors such as average harvest fish weight, trying to comply with minimum mortality rates as well as survival rates of 85%. Other values for these parameters are being established for Rainbow trout and Coho. Some managers propose that the problem with this new regulation is that the maximum values are fixed regardless of currents, water quality, water renewal, depth, or other key factors, all of which have a bearing on the maximum level that the pen should be able to stand. Prior to these regulations, each center decided on how much fish should fit in its pens on the basis of the factors affecting that particular center.

During the restart of production in 2009, producers were very cautious about the health of the smolt. One of the weakest moments for the smolt is when it is moved from a sweet water environment to a salty open-sea pen, where mortality rises if the smolt is too immature or small. Therefore, many decided to delay this transfer until the smolt's weight reached about 140 grams, which led to high survival rate of the smolts. At that moment, it was publicly divulged that a company with 7 centers in operation and which had just finished its first harvest after the ISA virus had achieved the lowest mortality rate of all time in this industry, with the seeding having been performed with the number of smolt fixed by law. However, by the end of 2010, the smolt weight at the time of its transition to salt water had lowered down to 110-120 grams. Additionally, from the successful and historical productivity rates obtained, many companies started seeding more smolt again, a decision that was not technical, but rather one that managers stated as having emanated from the board of directors.

The Integrated Management System is a management tool that was launched in August 2003 by SalmonChile A.G. for the purpose of assuring compliance with national and international regulations and good practices in terms of fish health, food safety, quality, environmental management, as well as worker health and safety. Its role has been increasingly relevant and encourages the constant improvement of companies through the application of benchmarking and certification by independent companies. (SalmonChile, 2014)

Figure 3.2a: South of Chile, Chilean Salmon Farming Macrozones, consists of a cluster of neighborhoods.

Figure 3.2b: South of Chile, Chilean Salmon Farming Neighborhood, zones for sea concessions.

Figure 3.2c: Chilean Salmon Farming neighborhoods and the actual farming centers.

Source: Information System for Sustainable Aquaculture. (SIAS), GeoAustralis online interactive system.

One of the main changes encouraged by this new order has been the definition of exploitation neighborhoods. These are defined zones, each one constituted by a small group of adjacent sea concessions, neighborhoods that were determined by the government as the new way to control sanitary conditions by controlling the productive operations inside each zone. Figure 3.2 depicts the defined Salmon Farming Macrozones, where each one hosts a neighborhood, and each one of the neighborhoods hosts a group of sea concessions and farming centers. The new regulations state that a neighborhood must operate their centers in synchronization, which means doing their productive biological cycle simultaneously.

This simple rule has its problems, as one manager stated: *"Imagine that there is a firm which has all its centers in one neighborhood and works only Salar: the new zone regulations will force them to work the centers synchronously, all have to be seeded, farmed and harvested simultaneously. Therefore, they will have long periods without processing and selling, about 6 months every 2 years when they would have been able to sell and supply salmon."*

This statement shows that the situation can become critical, as farmers need to supply their clients continuously throughout the year. So, a small firm that has only a few centers in the same zone will have to migrate to other zones in order to have a constant production, which means renting new sea concessions and tackling many other costs, a situation that does not seem viable. Many farmers suggest that in such a scenario, these small firms will likely disappear.

Additionally, some larger companies have such a great number of sea farming rights that it appears unlikely that all of them would be able to work. So, there are many concessions that, as they are reserved for a given firm that could be deeply in debt and close to

bankruptcy, are not being exploited, even though there are newcomers with fresh money who are eager to do so. Some managers state that it is urgent to solve this situation by implementing things such as setting a period within which to begin operation at a given concession or else relinquish it.

Furthermore, some managers did not like the way zones were determined. One of the managers declared that "*the regulations that determine neighborhoods are a complete disaster, an example of incompetence. Exclusive zones for groups of farmers were determined without considering many key factors, such as currents, or geographical conditions. Looking at the map with zone knowledge, one would think that this distribution was closely related to business and negotiating, rather than to an experience-based decision aimed at seeking biological threat isolation between farming clusters.*"

By mid-2011, many of these measures, standards, and new protocols were implemented and applied. The common opinion of the interviewed managers was, despite that at the moment of the crisis they were not directly benefited with the role and decisions of SalmonChile -some of them were even quite disgusted-, they now state that SalmonChile did the right thing for the industry. They regard the institution as the main source responsible for the new order and now recognize that the survival of the industry was the real purpose of their work, knowing that many sacrifices and hard decisions needed to be taken.

3.4.4. Uncertainty for the future success of the industry

Despite having good productive and sanitary results based on a cautious, controlled, and small number of fish in water in 2010, there were reports during late 2010 and early 2011 that producers were already seeding a large number of fish. The estimated number of fish

seeded in Chile's industry in 2010 was around 20 million, about 400% higher than in 2009, whereas the number estimated by suppliers for 2011 was about 120 million. However, the opinion of experimented managers with a biology background is that there are no strong biological, sanitary, or operational reasons to support the belief that the new set of farming regulations should guarantee a successful harvest with no mortality.

As it has been stated publicly, by 2012, many producers considered the Infectious Salmon Anemia virus (ISA) threat as solved, even though they were aware of the reappearance of infection in some centers during late 2010 and early 2011. In the last months of the first semester of 2011, there were no reports of ISA infected centers. But as of July 1st, 2011, the Chilean Authority, the National Fisheries Service (Sernapesca), maintained a list of 15 centers considered to be in a *"suspicious"* state of being infected by ISA. Afterwards, ISA reappeared in almost every center, and now the industry is trying to cope with this threat as a constant challenge and not a transitory one.

One operation manager with a biological background stated that the results of an oceanographic model indicated an increased resulting vulnerability based on the spreading of pests. The effect of an increase in the number of fish would be similar to that of shortening the distance between centers. Hence, with the current volume of fish in the water, all the centers are considered interconnected, and any center could become the starting point of a new pandemic. It is proposed that the Authority should determine the neighborhood zones on the basis of the total number of fish in each zone, and this could force the closing down or relocation of some plants, which is currently very unlikely to happen in Chile.

Besides the opposite views held by managers and biologists, in 2010 there were doubts that all companies would be able to re-engage in high production rates. Most companies did not have the kind of money that would be required, and it was unlikely that banks would be willing to lend them more money. It would have been cheaper for them to kill their eggs or smolt before moving them to the sea pens. Additionally, in late 2010, some centers were found infected with ISA, so at that moment, it was doubtful that there could be any interest in investing again. Nonetheless, firms obtained funds from banks and IPOs are currently dealing with ISA infected but controlled salmon pens.

3.5 Research Findings

3.5.1 Firm structure

The Chilean salmon industry cluster consists of large farming companies and a greater number of Small and Medium Enterprises (SMEs) that support the entire industry cluster's needs. Regarding the number of large companies, Chile is following the current global trends in mergers and acquisitions (see Table 3.1) but in the crisis period of 2006 to 2009, the number of companies increased. This may be explained by all of the crisis and instability. In 2012, the merging trend started again. However, interviewed managers think that there is too much to grow and expand so as to be near a final industry size or mature level of development, as observed in Norway and other farming regions.

Table 3.1. Number of players responsible for the 80% of production

	Norway	Chile	Scotland	Canada
1997	70	35	12	-
2000	55	18	8	-
2003	45	15	7	8
2006	31	**10**	5	3
2009	25	**18**	5	3
2012	24	**16**	4	3

Source: Kontali 2014

Most of the largest salmon farming companies started directly as an aquaculture production center, but there are middle-sized firms that added salmon farming as an expansion to their business. As the manager of a salmon farming company (A3) stated, *"we have always been a fishery firm, and when we decided to start with aquaculture, we defined salmon, trout, and Coho as products, trying not to impact or distort the market by price or volume. Our original clients of white fish forced us to supply them with red flesh fish, warning us that if we didn't abide, they would no longer buy any fish from us. That is the reason of the creation of our aquaculture branch…"*

Firms producing in Chile (local and foreign based) can be categorized according to their origin, size and financial status; from each of these categories, 2 or 3 companies were surveyed (see Table 3.2).

Table 3.2. Sample firm and groups' characteristics

Group	Company Size	Debt	Comments	Responsible Management	Surveyed Companies
A	Small	Suffered high losses, financially supported by group.	Normally associated with a fishing company/group that has assets to be shared	Low commitment to environmental measures.	A1, A2, A3
B	Medium	Highly in debt	They require fresh money from banks or others in order to obtain biomass. Banks already own part of the company and some of their assets.	Low commitment to environmental measures.	B1, B2, B3
C	Medium	Suffered high losses, financially supported by group.	With access to resources from Chilean groups that could finance them. They possess attractive assets.	Medium Commitment to environmental measures.	C1, C2, C3
D	Large	High debt over their equity.	Exclusively dedicated to fish farming. They require fresh money from banks or others in order to obtain biomass. Banks are already holding some of their assets.	Medium Commitment to environmental measures.	D1, D2
E	Large	Suffered high losses, financially supported by group.	Companies owned by international groups, mostly Norwegian and Canadian	Low commitment to environmental measures.	E1, E2, E3

Table 3.2 shows that most interviewees expressed low commitment to ERM. The industry was focused on achieving the highest product output growth possible. Therefore, they grew at an extremely high rate from year to year, which was reflected in the fact that some of the companies invested more money than their accumulated historical revenues.

One of the reasons for this low commitment can be found in the expertise of the labor force of the industry. An interviewed manager of a **B2** firm shared that "*In Chile, general managers are and have been Engineers that seek to maximize production and develop commercial links, and they have accomplished this very well. On the other hand, in Norway, there are and have been people that came from the Biology world.*" and added that the "*Chilean Industry has been efficient in processing fish, inventing new products, and creating new markets, but very weak and performed poorly on the biological side.*"

Salmon farming is an emerging industry that has been developing in Chile during the last 30 years, governed mostly by entrepreneurs (Amoros et al., 2011; Felzensztein et al 2012). The common lack of biological support for the operational and sanitary decisions from the entrepreneurs and the authorities is seen as a threat to the whole local industry (Felzensztein et al., 2010b). As a C1 firm manager said, "*we had little experience when we had to face the ISA crisis and decide as a company what strategy to follow. First we had to acknowledge that we were not experts and that we lacked experience and knowledge. We did not know about genetics, nutrition, oceanography, pests, or diseases. That is what we are, as an industry and firm.*"

3.5.2 Products and Markets

The format of the product depends mostly on the cuts performed to the fish, if it is fresh or frozen, or if it is subject to further processing like smoking. In all the cluster firms, the definition of the product format and volumes to be produced is mainly in the hands of a salmon farming firm manager. It is preferred to produce a higher volume of simple products in order to process the easiest and fastest profile of produce, declaring that "*the simpler, the better for selling*", with products such as those that are fresh and gutted; as most of the managers stated, "*we can sell all and everything we are able to produce.*" As an example, for fresh fish, the procedure for the complete process of fresh fish was described as "*very simple: after killing and washing it, in 5 minutes it is chilled on ice. At 5 PM it is departing by truck to Brazil, arriving a couple of days after. Or, it may depart to the US, where in a couple of days it arrives to Miami, and in 2 more days becomes available to the retail market, where it remains fresh and for sale for 18 days.*"

The Chilean ISA sanitary crisis started on 2007, bringing high mortality to the salmon farms and leading to financial, political, and industrial turmoil (Lizuka and Katz, 2011). During the following years, the Chilean firms had not been able to continue supplying its markets, especially to the U.S. Therefore, Norwegian and Canadian producers expanded their sales to the resulting available markets (Seafood, 2010), receiving the benefits from a huge increase in their sales volume and at a greater price (FAO, 2012). From 2008 till mid-2011, markets were variable in price and volumes given the output increase of Norway and North America and the catastrophic events in other areas such as Chile's ISA crisis and earthquakes and tsunamis in both Chile and Japan, diminishing Coho production.

Chilean production started its recovery at the end of 2010 and exports resumed in 2011. Since then, former target markets have been partially recovered; consequently, global

prices dropped and since 2012 the global market has had a continued growth drive and a positive price trajectory. In late 2013, Chile re-established its position as the prime supplier to the US market (FAO Globefish, 2014). In addition, the Latin American market started to significantly rise its demand for salmon, especially Brazil. The Brazilian market currently represents three quarters of the Latin American demand for Chilean salmon (Murias, 2011).

3.5.3 Moral disengagement

The observed behavior allows one to believe that the salmon industry management sector made short term decisions, blinded by the overall production success and therefore creating a vicious business and production cycle that led to the process of complete *moral disengagement*. And, even though they already knew or at least had been seriously warned that this industry would reach a production limit level that may bring severe consequences, the *Tragedy of Commons* prevailed and moral disengagement was widely adopted and embraced. Statements given by managers were eloquent. One **A3** firm manager stated that "t*he Chilean system collapsed because of the greediness, avarice, lack of scheduling, and the narrow-mindedness of the people in charge*." An **E2** firm manager complemented this by stating that "*the Chilean entrepreneur is problematic: they do not perform well in their work, have a low knowledge and understanding of the business, low knowledge in the labor related matters, etc.*"

Hence, moral disengagement has been found to play a key role in a wide range of unethical actions and decisions, and as proposed by Shepherd (2013), the disengagement of pro-environmental management demonstrated by entrepreneurs' values was greater when the perceived industry munificence was low as it was in this crisis. Correspondingly, once the actors fully understand all their options, as well as all of the consequences of their actions, they will use more resources as fast as they can (Simmons et al. 1996). Regarding this

position, the industry was also constituted by executives that were eager to amplify this reaction. As a **C1** manager stated, "*this industry has a profile of owners and managers that are haughty, proud, and greedy enough to not collaborate, just to be free riders and aggressive. This business is not a warm climate and a nice neighborhood.*" Some individuals abuse their liberty to act, not considering the detriment of the community and society; implicit is the deeper fear that they are approaching a dangerous threshold (Hertzke, 1998). Accordingly, a **C1** firm manager made a proposal by saying "*for me, the crisis was a Chronicle of a Death Foretold. Everybody knew that we were sitting on a time bomb, and no one wanted to lead the change because it meant an increase in costs.*" When confronted with the predictable claim that a single actor's impact was minimal, more biology-biased producers adduced that the effect-harm threshold comes from the cumulative interaction of many pollutants (Hertzke, 1998).

3.5.4 Basis for moral disengagement

The moral disengagement behavior in the salmon industry finds its theoretical basis in the *Tragedy of the Commons* problem, which occurs when the natural domain of a resource is coincident with or intersects the rights domains of two or more resource users. Since a resource's domain is the extent of the area in which it moves to fulfill its natural function, the resource may clearly still be considered common because the resource itself moves through the rights domains of both users (Giordano, 1998). With regards to this subject, a C1 firm executive stated that "*the big mistake of this industry is that the owners think that the sea is an inextinguishable source of resources and an infinite and unbreakable system; when they realize that the ocean, resources, pests, industrial presence, and natural cycles are connected, a great step into sustainability will be born.*"

On the other hand, the common technical explanation for this over-exploitation is that, due to lower scientific and technical know-hows, Chilean producers face fish mortality all along their smolt breeding and farming productive processes. The strategy used to solve this loss is by supplying and loading the system at its beginning with more salmon eggs and not by research and applying measures towards diminishing the deaths. As sustained by an **A3** firm manager, "*there are no R&D departments in most of the Chilean salmon companies; some international companies have their innovation, research, and development departments.*" Consequently, this situation was noticed in the operational and production figures. The firm manager added that "*when we started on 2000, we did some research on the productive chain, the value chain, and the commercial network. We found that there were some indicators that showed us that something was wrong, that in Chile we lacked something; the first example was that for producing one smolt, Norway required 1.4 eggs and in Chile we used 4.5, as clear as that.*" It was widely acknowledged and accepted that this strategy brought the expected output despite the existing loss; production suffered more losses and lowered quality, but the output was increased. As stated by a **C1** firm manager, "*there were no incentives to talk and coordinate. It was more effective to seed more eggs and harvest more since the farms are exposed to a neighbor that may affect my production despite being prepared with measures based on vaccines and clean and proper practices.*"

The main implication of this behavior is that an industry ethic has not been established to manage its natural resources. This may partly be due to the fact that ethical systems alone are not strong enough to deter *free riders* (Kay, 1997). As stated by a **C2** firm manager, "*this industry needs to control the companies in the hands of greedy profit-oriented investors that are thinking of staying in this industry just for a profitable season and then migrating to another industry. They are the ones that first trespass the limits and bring risk and uncertainty to the whole industry.*"

3.5.5 Moral re-engagement

After the production crisis and countless losses, there was a period of halt, a stopped production stage for almost all producers. This was a time for retrospection. Analysis and planning were performed by this industry and, finally, policies with concern for the environment were proposed, developed and implemented. As proposed in this section, this change to a pro-environment bias was based on economic moral re-engagement and restorative justice. As proposed by a **C1** firm manager, this acknowledgement process did happen. He stated that "*the key factor to survive the crisis was to humbly acknowledge our failures and all of the areas where we lack knowledge and experience. With that start point we have survived the crisis and at the same time improved a lot. Almost every productive step has increased its knowledge and efficiency and lowered mortality*".

The environment-oriented care actions related to moral-reengagement were mainly forced by sanitary conditions, financial problems, and low production. Sanitary conditions depleted production naturally because it was impossible to continue salmon cultivation, as the environment was no longer supporting salmon life in their pens. Afterwards, financial problems occurred due to the death and loss of the biomass; most of the value of this industry is invested and resides in biomass and not in machinery or facilities and, hence, capital was lost and the performed strategy from years of over-investing resulted in a devastating financial crisis caused by a domino effect that impacted all of the cluster firms. The crisis was severe; losses were much larger and beyond what one would expect in other industries. As stated by a **B2** firm manager, *"everything we advanced and progressed in 20 years was lost in this crisis, the money lost in this 2 years crisis was larger than the equity generated in the previous 20 years."* Therefore, low or even zero rates of production was performed henceforward. Consequently, the oceans had time to naturally cleanse and pests' threats were finally diminished. This was corroborated by a **D2** firm manager: "*there are firms looking for an exit, but banks already realized that without fish production, every*

asset loses its value: pens, plants, equipment, and the only asset with value is the land"; he also stated that the "ISA disappeared not because of biosecurity measures but due to the farming halt and the absence of cultivated fish in seawater."

After the crisis, it was widely acknowledged by industry managerial executives that moral disengagement was something awfully wrong, turning the whole industry ecosystem of fjords, channels, and open sea spaces into a non-productive salmon farming platform, and causing the fall of the industry. Therefore, moral reengagement with pro-environmental values naturally appeared and flourished in the industry. This view also needed to be widely accepted and adopted because the government would not have approved the aid program of half a billion US dollars and investors nor would it have reappeared to help recover the industry. This goes in line with Rawls's theory of justice, which indicates that the public administration by extension of the obligation of the noblesse and the principle of participation must participate and directly seek for measures to establish equity between actors; in this case, it should be to solve the conflict caused by industry *free riders* (Esquith, 1997).

The mechanisms of moral disengagement propose to unveil the variables and to understand how disengaging one's moral controls may influence one's propensity to act unethically. The findings related to the impact of moral disengagement show that unethical behavior has important implications for understanding why an actor might engage in an egregious act, and where an organization seeking to reduce such acts may target an intervention (Barsky, 2011).

3.5.6 A new order on restorative justice

In terms of restorative justice, industry leaders developed a plan to establish a new order in the salmon farming industry. It was known that if the same rules of the game previous to the *ISA crisis* were still the setting, then managers would morally disengage again and be back on an over-exploitation strategy. As stated by a **B2** firm manager, "*there is a cultural background that explains why this crisis happened. It is how we have structured this industry. If this structure remains, this kind of crisis will happen again.*"

Therefore, a new order determined by a set of regulations was required to force the industry to change, because it was expected that some executives were ready to restart business with the same destructive production practices. As an **A3** firm manager confirmed at that time, "*my experience talking with other producers is that many of them consider the ISA threat as solved, despite that they knew about the reappearance of infection in some centers.*" Hence, the challenge of recovering the industry was hard and complex; it had to be a plan that successfully monitored and controlled how these firms operate and produce. As a **C1** manager stated, "*in Chile they are not good with coordinating nor with trust; the entrepreneurs profile is such that they cannot agree and follow a common business and production behavior*", so they have to be forced to behave accordingly. The current Association regulations were not able to avoid the crisis. As told by a **B2** firm manager, "*the associations exist to supervise, monitor, limit, and control the industry free riders, and I see this did not happen in the salmon industry*".

This new plan mainly determined a new order in most of the production activities, from the designation of geographical productive zones, production synchronization, feeding, and other productive matters that involved techniques, new labor and sanitary regulations, quality standards, and improvements on law enforcement. It was seen as a good start for a

rebirth of the industry. This plan was finally approved, backed, and adopted by different actors of the industry.

Nonetheless, the plan was strongly criticized by some firms because it lacked scientific robustness and real power for law enforcement. But, nonetheless, it was approved, backed, and adopted. The criticism was harsh about the proposal to enforce the law, with the idea that "*all of the problems are amplified by Sernapesca, a Chilean National Fishing Agency, and a weak and incompetent authority; we cry for a 'Maritime' SAG (Agriculture and Cattle service, another public authority), a solid and demanding agency to control this industry. Sernapesca has no boss. It is incompetent, weak, and not empowered. It depends on the Ministry of Economy, which does not understand the salmon business.*"

3.6. Discussion

3.6.1 Discussion

Regarding proposition 1, the Chilean salmon-farming cluster behaved as a *Tragedy of Commons* environment due to many reasons exposed in the previous section (shared resources, diffusion of pollutants, etc.). And after the cluster production had collapsed, resulting in a financial debacle, the only feasible way out for most of the firms in this industry was to ask for help to the government and to investors. These are not going to help again if the same *Commons* situation reappears. Naturally, given this new industry setting and managerial context, the change came as *Moral Reengagement* to executives and directors.

The most interested actors in restoring the industry were the owners and managers with a biological background and expertise. This may be because they know that farming

processes can be done properly and also because they did not have any interest in leaving the industry. On the contrary, some investors from other areas just withdrew when the crisis arrived. Based on these reasons, proposition 1 is accepted.

The search for Restorative Justice found its way on a new order for the Chilean salmon industry. This was required by government and investors to support the industry but formulated by members of the industry, not a government centralized authority. This new set of regulations and norms reformulated the Chilean salmon farming productive platform and allowed the income of fresh fluxes from government aid (USD 450 Million) and private investors. The implementation and complying of this new broad set of standards allowed for the rebirth of this industry, and the first signs of reactivation came with successful harvests showing excellent sanitary and survival indicators. However, producers started to overexploit, and soon, pests, the ISA virus, and deaths reappeared. Entrepreneurs may be left alone in some areas, but they must be controlled in order to avoid a new crisis. Therefore, this established new order must be backed by an enforcement of the industry and the government. Hence, proposition 2 is accepted.

With regards to propositions 3 and 4, after the crisis, the leaders of the few but large firms with biological backgrounds spoke and took the lead to install ERM in each firm, covering the whole industry. They were listened to by all industry actors and carefully followed, starting a low level and careful productive operation. The result was excellent production and very low death rates, earning a historical record for productivity figures. And with that news, producers restarted their operations, and a few months after, egg supply firms started reporting huge increases in orders. However, it was a matter of a few months that the ISA virus reappeared.

It was the main Chilean salmon farming firms that really pushed to establish a new sanitary order in the industry. Foreign firms' advanced environmental capabilities were observed and considered but were not the channel for this new standard of Chilean ERM practices and regulations. Therefore, it is concluded that Chilean salmon companies are not focusing on ERM but that they should do so if they want to get more internationally competitive in emerging markets. Chilean Government and firms are prone to adopting ERM to enhance and improve their international competitiveness and survive, but only under the threat that their production might be destroyed. Hence, propositions 3 and 4 are partially accepted.

Regarding limitations, this study was performed surveying Chilean employees (mostly managers) of Chilean and foreign firms and not managers from international firms with a branch operating in Chile (eg: Norwegian, Canadian, etc.). Therefore, some managerial and strategic views regarding the salmon farming business may have been neglected. Another concern is the important changes performed (or suffered) by the Chilean salmon farming industry during this 4-year study; the downfall and rebirth of the industry and the temporary stress may have led to strong biases in managers.

3.6.2 Research implications

A positive relationship has been observed between self-regulation and moral awareness and the impact that these factors might have on moral reasoning among entrepreneurs (Bryant, 2009). Therefore, it is strongly suggested that tools for engaging salmon farming entrepreneurs with moral awareness must be developed and enforced. It seems particularly relevant that the ecosystem built for the salmon industry follows new emerging approaches in sustainability. A psychological approach has been proposed for developing key strategies in order to avert the *Tragedy of Commons* and protect the environment. It focuses on interventions in different levels such as information for understanding, identity for

belonging, institutions for trusting, and incentives for self-enhancing. Some of these elements are found in the current new order established for this industry (Van Vugt, 2009).

The Rawlsian justice perspective is plausible, illuminating, and potentially useful when applied to the entrepreneurial context in the Chilean salmon industry and, as proposed by Newbert (2011), entrepreneurs enjoy a unique opportunity to shape their organizations in ways that encourage not only their success but also their ethical flourishing. As stated by an **E2** firm manager, "*what must be changed is the entrepreneur. He must change his priorities and considerations when managing a biological system. It is the general manager and the board that must establish the regulations and protocols to be followed.*" However, it is not proposed that the entrepreneur is required to be changed, but he must be prevented from forcing the company to go as far as overexploiting. It seems clear that there must be an authority that enforces a regulated framework that enhances the entrepreneur's ethical behavior.

In summary, it is proposed that countries trying to escape the *Tragedy of the Commons* must face three forces which will determine success or failure in resource management: the regulators' enforcement power, the extent of harvesting capacity, and the ability of the resource to generate competitive returns without being extinguished (Copeland and Taylor, 2009). Therefore, the new order in the Chilean salmon industry must take care in properly achieving the government of these three forces. As stated by a **C1** firm manager, "*SalmonChile A.G. performed a role that the authority did not do: they called it a crisis, dictated the measures to seek for a restart, and forced the actors to follow them. At the end of the crisis, they prevailed in this role but now we need a regulatory entity that enforces the law and also has a scientific background to support the measures.*"

Besides the importance of the government as a central actor, the Chilean salmon industry should focus on achieving high sanitary standards for the open sea where they operate. This strategy will improve their international competitiveness and the resulting benefits of a decrease in production losses along with lower costs and higher market value. However, in this industry, *free riders* impose their low level sanitation as the industry standard. Therefore, this effort must be enforced with new regulations followed by an active role of governmental agencies enforcing the law. An implication of this strategy is that firms should not compete through low pricing; managers should rather apply standards of high quality and pursue differentiation. Because the Norwegian salmon industry is a strong competitor in the American market, both should follow different product positioning strategies (Thomadsen, 2007).

The findings of this study suggest that Chilean salmon farming firms are not keen to invest in environmental preservation in spite of the recommended common practice (Madsen 2009; Dunning and Fortanier, 2007) and that corporate investment and preserving local environmental quality need not to be opposing policy objectives. As concluded by Garrod and Whitmarsh (1995), it is suggested that the government must support the environmental interests of the whole industry, and a system of appropriate incentive structures is required to change the industry in the direction of ERM.

This section proposes that, in the long term, Chile must develop an Innovation and New Product Development platform, accompanied by an exporter platform with the ability to properly distribute its products to various target markets as other foreign competitive suppliers already do. This will aid in focusing on more controlled and small production with higher added value and higher utilities.

3.7 Conclusion

The Chilean salmon farming sanitary crisis revealed that the previous high industry growth rate was based on an aggressive and careless production operation, conceived and performed by industry firm managers due their moral disengagement on proper practices and sustainability.

The deep financial crisis and extended stop in production that followed let moral reengagement appear naturally. It was instrumental for firms to be perceived as renewed in order to receive help from the government and convince the market of their IPOs. At that moment, due the government's lack of technical strength and capacity to reestablish order, the industry firms association was forced to propose themselves a new regulatory standard. A new order was established as a method of restorative justice.

But this new order seems to be unsatisfactory. Until appropriate new industry standards and its regulatory administration are actually enforced, this industry will remain on the verge of a crisis.

The Chilean government must reinforce and enhance their salmon farming Authority in order to achieve sustainability; it must eradicate free riders, eliminate current conditions that bring the *Commons*, and effectively enforce laws and regulations.

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4. Re-entry strategy for export-oriented clusters: Insights from Chile

4.1 Introduction

Developed nations constitute the biggest market in the world, importing hundreds of billions of dollars in goods. Despite this, market reentry and repositioning are mostly reviewed from the perspective of a company or industry from a developed country that reenters a developing country (Johansson and Leigh, 2011). Market reentry with regards to firms with several subsequent exits and reentries have received little attention in previous research (Vissak and Francioni, 2013). At the same time, most of the literature (e.g. Javalgi et al., 2011) conducted in repositioning and market reentry concentrates on an industry that abandoned a foreign developed market due to a past commercial failure (an unsuccessful and unprofitable experience in the target market)

In our study we try to gain a nuanced contextualized understanding of emerging market firms venturing into advanced economies through a comparative international management perspective (Luo et al., 2011). Therefore, we contribute with thought-provoking research on contexts and on emerging market firms venturing into advanced economies. To contrast the existing body of knowledge, we explore the reentry and repositioning strategy of an industry from an emerging economy perspective, analyzing a key export-oriented industry: salmon farming.

Since the start of the salmon farming industry, Norwegian producers have dominated global production and the market. As shown in Figure 3.1, during the last decade, the Chilean salmon industry has become the second main producer and exporter in the world, almost equaling Norway in 2007. In that year, a sanitary surge with high mortality appeared in the Chilean salmon farms, ending in a devastating productivity crisis that led to financial,

political, and industrial turmoil. This crisis affected local and foreign companies that operate and produce in this southern region of the Latin American continent (Lizuka and Katz, 2011). As a result, Chilean salmon production and exports were severely affected; furthermore, Norwegian producers expanded their sales to the resulting available markets (Seafood Business, 2010), receiving the benefits from a huge increase in their sales volume at a higher price (FAO, 2012). At the end of 2010, Chilean production started its recovery. In 2011, exports resumed and former target markets were partially recovered. In 2012, international prices dropped and the global market had a continued driving growth followed by a positive price trajectory. In the late 2013, Chile re-established its position as the prime supplier to the US market (FAO Globefish, 2014).

Our objective is to explore a reentry and repositioning strategy of an emerging economy industry back into a developed-nations market. A case study methodology is used (Yin, 2009) to get useful insight for our research, based on facts and views obtained from the press, literature, and in-depth interviews with key CEOs of this industry cluster.

Following this introduction, chapter 4.2 focuses on a literature review. Chapter 4.3 introduces the industry settings. Chapter 4.4 describes the research methods. Chapter 4.5 presents the key findings, followed by the discussion and conclusions. Finally, managerial implications as well as proposed further research are presented.

4.2 Theoretical perspectives

4.2.1 International strategy from emerging economies

The international strategy is enhanced by the organization's ability to learn. From this perspective, internationalization is viewed as a process of learning and knowledge accumulation (Brouthers et al., 2009), where learning alters the manner in which firms see and interpret the world and identify knowledge gaps in foreign markets. Knowledge and learning play a central role in the internationalization processes of the firm in a different number of ways (Petersen et al., 2008). Furthermore, the international firm needs to learn and use knowledge on the different international markets it operates in, and knowledge acquisition is one of the key factors behind a firm's international behavior in terms of the selection of foreign target markets, entry modes, and the speed of the process. Different markets imply different consumer needs and wants and, consequently, learning is essential for product adaptation as well as for achieving product innovation successfully (Kafouros et al., 2008). As a common feature, international firms tend to have an outstanding innovative capability that they exploit in several markets (Pla-Barber and Alegre, 2007; Brenes et al. 2014).

International firms also have to deal with knowledge flows from other firms, so the transferability of technological knowledge across borders enables early and rapid internationalization. Absorptive capacity and open innovation are also decisive processes through which international firms can integrate external knowledge and launch attractive new products to the international markets (Wu et al., 2013; Garriga et al. 2013). Finally, internal knowledge sharing is also an essential issue for multinational corporations in order to achieve effective coordination (Buckley and Ghauri, 2004; Michailova and Minbaeva, 2012). Organizational routines and structures are better integrated for internationalization when firms develop and retain abilities to learn and share knowledge.

The subject of emerging market firms venturing into advanced economies has received increasing attention from both academics and practitioners (Atsmon et al., 2012; Luo and Tung, 2007). Artopoulos et al. (2013) explored four differentiated-good sectors in Argentina and found that regular exporters to developed countries adopted a set of business practices that differ from those in their domestic market. The exporters possessed knowledge about evolving trends in the types of products demanded by consumers in the target developed countries and knew how to work with their distributors in those markets. They concluded that the export of differentiated products that require continual changes seem to offer middle-income developing countries like Argentina the ability to resist the downward pressure on wages associated with the global value chains and the production of commodities.

Existing research has examined various aspects of the important phenomenon of firms from emerging economies venturing into advanced economies, such as the role of government (Luo et al., 2010), ownership and entry mode choice (Cui and Jiang, 2012), absorptive capacity, and overseas acquisitions (Deng, 2010; Liu and Woywode, 2013). Yet there is a need to unpack contextual factors and to explore how context can influence business leaders' decision making and managerial practices amid the venturing abroad phenomenon by emerging market enterprises.

Context matters a great deal for international business research and practices such as the multiple installments of multinational enterprises and local contexts (Meyer et al., 2011). Cultural difference has an important bearing for emerging market firms venturing abroad. For instance, favors are a medium of exchange for social capital and prevalent in business

in emerging markets (Teagarden and Schotter, 2013). However, such business practices might not be available in advanced economies, which might become obstacles for emerging markets firms or induce misunderstanding and confusion for Western managers. Despite being under the same umbrella concept of emerging economies (Hoskisson et al., 2013), emerging markets can vary on the most significant dimensions—institutionally, economically, culturally, socially, and technologically (Teagarden, 2013). Hence, there is a need to delineate and specify the contextual factors and boundary conditions with respect to emerging market firms venturing into advanced economies. Furthermore, marketing practices in emerging markets are radically different from the traditional industrialized society and may challenge the assumptions of a received body of knowledge, obliging the rethinking of the core assumptions of marketing (Sheth, 2011).

The international marketing strategy of emerging market firms might pursue a different strategy against conventional wisdom (Vrontis, 2003; Vrontis et al., 2009). Mergers and Acquisitions (M&A) is a complex and sophisticated international management topic, which involves multi-faceted challenges for managers in both emerging and developed markets (Weber et al., 2014). M&A was identified as one primary market entry mode for emerging markets firms venturing abroad (Deng, 2012; Gomes et al., 2013). One recent study shows that Chinese firms adopted an innovative post- acquisition integration approach largely due to the influence of contextual factors (Liu and Woywode, 2013). In addition, the ambidexterity perspective might largely advance our understanding of multinational enterprises from emerging economies (Chebbi et al., 2014; Luo and Rui, 2009).

4.2.2 Repositioning and market re-entry.

Internationalization, market entry, and positioning have been deeply studied by a large list of authors who review various factors like market entry mode theories, conceptual

frameworks (Anderson, 1997), and their implications with internationalization (Malhotra et al., 2003) or market entry mode regarding specific features like the impact of ownership, location, and internalization factors (Agarwal and Ramaswami, 1992). Buckley and Casson (2009) presented a broad and long review on research in the internationalization theory of the multinational enterprise of a research agenda of 30 years. There is also research regarding market entry strategy selection, such as the one presented by Chung and Enderwick (2001) regarding export versus foreign direct investment modes, and global market advantage framework concerns on the role of global market knowledge competencies. (Yeniyurt, et al., 2005).

However, the case of a firm that abandons a market and afterwards reenters it is often neglected. Recently Javalgi et al., (2011) presented a comprehensive study of the reentry strategy for international business, where the characterization of initial market entry and reentry displayed very different features and behaviors. They also presented a two-staged model for market reentry that first considers a framework for reentering international markets followed by an international market reentry matrix that helps determine the host country attractiveness, risk, as well as required firm resources and capabilities so as to determine a proper and suitable strategy.

Regarding the actor's importance in the agro-food chain, during the last decades, power has shifted down from feed giants to retailers. Just 15 to 20 years ago, feed companies were powerful leaders. However, ten years ago, growers evolved, overpowering feed companies, which now operate with small and lowered margins. This forward empowerment continued, and nowadays the power in the chain lies in the supermarkets (Phynea et al., 2006). Knight (2007a,b) studied the main factors that influence gatekeepers (buyers that supply supermarket chains) in the food distribution channel when deciding which countries are

adequate to buy and source food products from. The results revealed that the major causes were the confidence and trust in production systems, the integrity of regulatory systems, and the integrity of suppliers. Therefore, we can expect that positioning will be highly dependable on how those industrial and retail relationships evolve.

Aulakh (2000) examines export strategies of firms from emerging economies and their performance in foreign markets. Hypotheses were tested on a sample of firms from Brazil, Chile, and Mexico. Results indicate that cost-based strategies improve exports in developed country markets, and differentiation strategies enhance performance in other developing countries. It also concludes that adapting marketing mix variables to the specific requirements and tastes of a developed country market increases exports.

Additionally, there is well-documented evidence on the persistent effect on the perceived quality and its market share of an early-entry brand (Felzensztein et al., 2004). There is also extensive research on product positioning focusing on whether and how firms should differentiate their products by using the *country of origin effect* (Felzensztein et al, 2005). Neven and Thisse (1990) and Irmen and Thisse (1998) propose models of competition on multiple product attributes. It is concluded that firms will differentiate themselves for one product attribute -horizontal or vertical- and that the firms will choose the optimal product positioning for the other attributes. Regarding these issues, Thomadsen (2007) discusses the effects of asymmetry regarding company size, equilibrium, price, and other factors related to firm positioning. Equilibrium market behavior depends mainly on company presence and market size, and especially the role of price competition on product positioning.

In a global marketplace, the competitive strategic position of firms is established by the interaction of many factors such as the number of competing brands, their acceptance by customers, and a strategic orientation (Samiee, 1994; Efrat and Shoham, 2013 and Freeman et al., 2013). Globalization tends to generate a proliferation of foreign brand products that are commonly designed in the home country of the company and manufactured, assembled and marketed in other nations (Samiee, 1994). Food and aquaculture products are normally produced, processed, and packaged in their country of origin, with some exceptions of further processing in the target market country done by distributors or local retail providers. Many foreign salmon farming product brands have achieved an enviable market position in the U.S. However, the marketing of such a large number of foreign brands leads to the question of whether customers are sensitive to and concerned about the origin and manufacture of products and/or brands, as there are many Norwegian brands (in the case of the salmon industry) that also produce and export from Chilean territory by subsidiaries of MNEs (Felzensztein et al., 2010a). These products may be considered Norwegian by the end consumer.

4.2.3 Market re-entry model

A firm's resources and capabilities as well as the host country's attractiveness and risk may summarize the main factors intervening in a market reentry situation. Javalgi et al. (2011) stated that reentry is the right decision for a company based on a good profile on the criteria composed by foreign market knowledge, relationships (e.g. customers, suppliers), resources, host country environment (economic, political) and culture, sunk costs, company reputation, and risk aversion. These researchers proposed a framework, which is presented in figure 4.1, where *global environmental drivers* and the *host-country environment* establishes the *knowledge utilization* to help define the *reentry objectives* and the *reentry decisions* that determine the *host country market attractiveness and risk*.
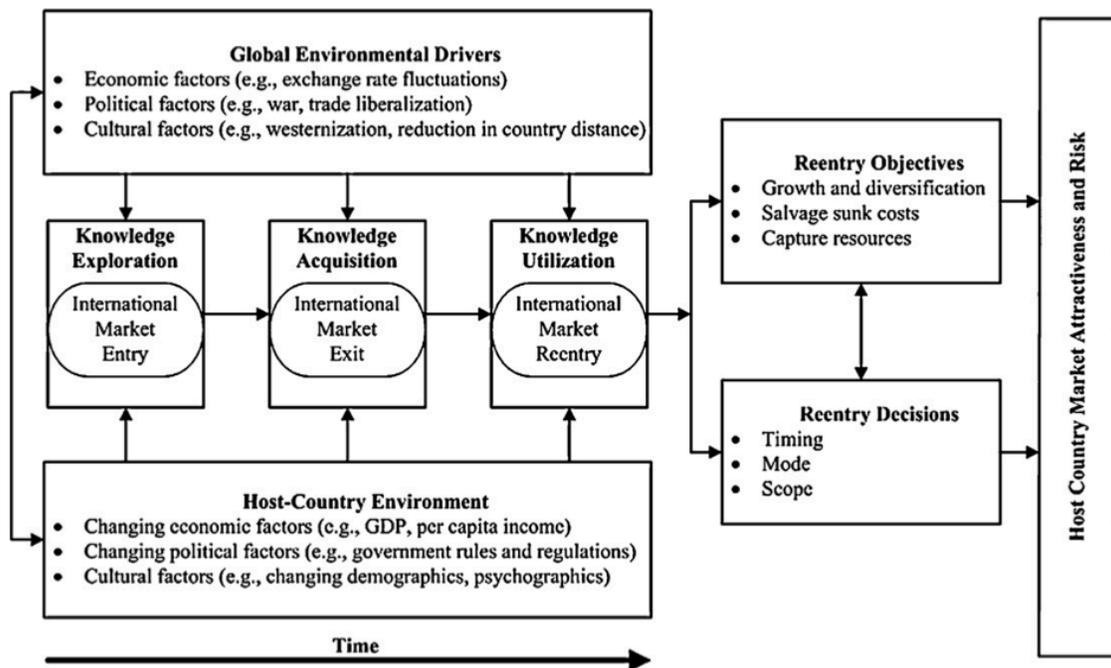
Figure 4.1: A Framework for reentering international markets. (Javalgi et al., 2011)

Javalgi et al. (2013) proposed that a firm's international market decisions tend to depend on the host country market attractiveness and risks as well as firm resources and capabilities. For this, they developed a three-dimensional market reentry matrix presented in Figure 4.2, where there are three levels for each dimension. Finally, only five cells are discussed. The rest can be obtained by interpolation.
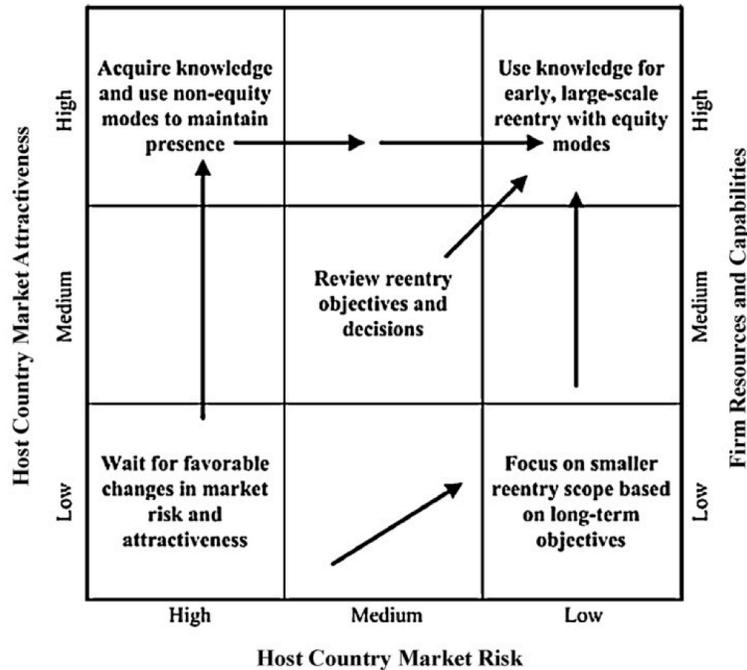
Figure 4.2: An international market reentry matrix: Host country attractiveness, risk, and firm resources and capabilities (Javalgi et al., 2011, p. 386)

The matrix can be interpreted as follows: the upper right cell is the most favorable situation for market reentry while the lower left corner is the least favorable. The middle cases are seen as favorable but, as depicted in the cells, require a strategic study to determine the best reentry mode.

Vissak and Francioni, (2013) argued that market reentry as well as de- and re-internationalization are normal for manufacturing firms, especially if their domestic markets are small and exit/re-entry costs are low. Based on a panel data set of Chinese firms, Yi and Wang (2012) found that sunk costs, productivity, firm size, foreign ownership,

industry competition, and spatial concentration are positively associated with the decision to export while state ownership has a negative association with the probability of exporting. These factors characterize firms clustered in the Chilean salmon industry.

Based on the literature review, this Thesis chapter proposes the following:

P1: Emerging country firms would be willing to reenter developed markets where they lost their market share.

P2: Emerging country firms would prefer to continue targeting well-known global developed markets instead of other new emerging markets.

4.3 The salmon industry context.

The emergence of salmon farming since the 1970's has changed the rules of the aquaculture sector. It has surpassed and replaced wild salmon in production and market coverage. The Norwegian farmed salmon industry, which started in the late 1970's, is the world's largest producer and the country's fourth biggest export commodity behind oil, gas, and metals (Statistics Norway, 2014).

The Chilean salmon industry started in the 1980's. It is now the second global producer and exporter after Norway. Furthermore, it is the third local export commodity after copper and wood pulp (Central Bank of Chile, 2011). The industry is composed both of local and foreign companies, the latter mainly from Norway, Scotland and Canada (Felzensztein et al., 2010a). Felzensztein et al., 2010 present an interesting comparison on the topic of "coopetition" (collaboration between business competitors) in this industry cluster, comparing Chilean versus Scottish producers.

Liu (2010) shows that from 1997, Norway and Chile had been the main salmon producers and exporters. As depicted by Figure 3.1, by 2007 the Chilean growing trend decayed and did not recover until 2012.

In 2007, the Infectious Salmon Anemia (ISA) crisis emerged and provoked disastrous effects on the entire production chain, mostly affecting the production output number and quality; the virus is not harmful to humans, but some buyers, like the supermarket giant Safeway, restricted imports from Chile because of it (New York Times, 2013). Almost all firms of this industry ended in large debt, owing banks a total of 4 billion USD. Individual farming companies were indebted in amounts up to 380 million USD (Murias, 2009). Hence, a large supply space appeared in the U.S. market that was filled mainly by Canadian and Norwegian salmon exports starting in 2007 (Seafood Business, 2010) until late 2013.

There are two local trade associations: SalmonChile and AcoTruch. The role of SalmonChile is to discover and open markets; its members are large and medium-sized companies. AcoTruch is the Chilean Coho and Trout Farmers Association; most of its members are small to medium-sized producers. The Chilean government hands over the regulation and governance of the fishing and aquaculture practices and resources to one agency named Sernapesca, which depends on the Ministry of Economy of Chile (Chilean Secretary of Fishery, 2010). From its beginnings, the Chilean salmon industry has been dominated and managed by an engineering, financial, and commercial view. Its executives have mainly been civil engineers rather than people from the biological community. For this reason, this industry is tremendously efficient in processing fish, developing new products, its low-cost structure, and creating new markets, but very inefficient in the breeding and sanitary aspects (Lizuka and Katz, 2011).

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Unlike the situation in Scotland, Norway, and Canada -where vast geographic zones are used and exploited by only one company per zone, thus enabling each company to determine its own operating risk level- in Chile, there are too many players sharing zones, with the result that none of them have the incentive to do things right and care for the common good within their respective zones, a perfect case of *The Tragedy of the Commons* (Hardin, 1968). As reported by The Economist in its article *Chile's stricken salmon farms, dying assets,* this also results in an over-exploitation that brings the productive system to its sanitary limits (Giordano, 1998; Felzensztein et al., 2010).

4.4 Methodology

Regarding data collection and sample characteristics, this Thesis uses secondary data sources and qualitative research based on in-depth interviews with executives of firms of the salmon cluster. The purpose is the generation of propositions, theory development, and the search for answers. Secondary data was obtained from publicly available sources such as company reports, annual balance sheets, companies and the Salmon Association's online information, research papers, articles from magazines, and journals. Propositions P1 and P2 were asked to each surveyed executive deliberately.

To analyze the theoretical model, field research using a case study approach was conducted and then expanded using inductive reasoning (Yin, 2009).

Although the use of case studies raises issues of external validity and generalizability of the results, this approach has many advantages, particularly for exploratory research, and was conceived to best fit this research. The study was based on a sample of 14 firms, from

medium to large size, operating in two regions in southern Chile and representing more than the 80% of the Chilean production. Table 2 characterizes the firms based on the main features of the industry. Other managers from companies like egg, food, maritime service, and machinery suppliers were interviewed to get a deeper knowledge of this industry cluster. All of the interviewed managers responded to the survey completely but did not disclose most of their financial information.

Each in-depth interview was performed from mid-2010 to early 2013. The interviews were audio recorded and a transcript was written; their contents are properly organized and distributed throughout this chapter. The purposes of the interviews were to unveil and give context to the events and reasoning behind the observed decisions taken before, during, and after the ISA crisis regarding their strategies on market reentry and product repositioning.

The sample consisted of key CEOs and Marketing Directors. Commercial confidentiality prevents disclosure of the company names; due the small number of the cluster firms, a restricted description of the companies will be given in this chapter. The respondent companies were mainly located in Puerto Montt and Chiloe. The high density of productive processing and supply companies located in the same region suggests that they are part of a regional cluster (Felzensztein et al., 2010a).

Salmon farming companies that operate in Chile are typically vertically integrated, although the format of this integration may vary between companies. In some cases, it is so extensive that it may start on one end by sharing ownership with a fishing company also associated with fishmeal plants, various suppliers, egg suppliers, hatcheries, processing plants, and even export companies. The respondents indicated that each of those vertically

linked companies were treated as separate entities, and they claimed that this integration did not result into any formally established advantages but lowered the risks associated with variability in quality, price, and supply volumes.

4.5 Results

4.5.1 Firm structure

The salmon productive chain in most cases consists of a few large farming companies and a larger number of SMEs supporting the entire industry cluster's needs. The industry is also facing the current global trends in mergers and acquisitions (see table 4.1), so it can be noticed that in the period of 2006 to 2009, the number of companies in Chile reversed the trend and increased. The surveyed managers explained that this is caused by the instability in the cluster, especially the productive output, financial problems, and the wait for the government and industry measures; they added that this merging and acquisitions trend will reappear after the crisis, as 2012 seems to confirms it.

Table 4.1. Number of bigger players responsible for 80% of production

	Norway	Chile	Scotland	Canada
1997	70	35	12	-
2000	55	18	8	-
2003	45	15	7	8
2006	31	**10**	5	3
2009	25	**18**	5	3
2012	24	**16**	4	3

Source: Kontali 2014

The interviewed managers mostly coincide with this trend of merging into a lower number of actors, but they do not see them consolidating in the short term. They think there is still too much to grow and expand to be near a final or mature size of development comparable to the one reached in Norway and the other farming regions. Despite those facts, there are

some managers that believe, based on the sizeable debt of the large companies, that due to local managerial features there will always be a large number of small firms.

Firms producing in Chile can be categorized according to their origin, size, and financial status; from each of these categories, we surveyed 2 or 3 companies, covering more than 80% of Chilean production (see table 4.2).

Table 4.2. Sample firm and groping characteristics

	Company Size	Debt during crisis	Comments	Surveyed Companies
Group A	Small	Suffered high losses, financially supported by group.	Normally associated with a fishing company/group that has assets to be shared	A1, A2, A3
Group B	Medium-size	Highly in debt	They require fresh money from banks or others in order to obtain biomass. Banks already own part of the company and some of their assets.	B1, B2, B3
Group C	Medium-size	Suffered high losses, financially supported by group.	With access to resources from Chilean groups that could finance them. They possess attractive assets.	C1, C2, C3
Group D	Large	High debt over their equity.	Local firm exclusively dedicated to fish farming. They require fresh money from banks or others in order to obtain biomass. Banks are already holding some of their assets.	D1, D2
Group E	Large	Suffered high losses, financially supported by group.	Companies owned by international groups, mostly Norwegian and Canadian	E1, E2, E3

Salmon farming is an incipient industry that has been developing in Chile during the last 30 years, governed mostly by entrepreneurs (Amoros et al., 2011; Felzensztein et al 2012). This management performs excellently on the commercial, financial, and engineering area

of the business, such as opening markets, creating a productive chain, generating an ad-hoc financial platform, and achieving high volumes of exports. But most of the technology, protocols, procedures, machinery, and biological support are supplied from abroad. The common lack of biological support on the operational and sanitary decisions from the entrepreneurs and the authorities are seen as a threat to the whole local industry (Felzensztein et al., 2010b). This industry needs to be wary of short-term profit-oriented company owners who tend to stay merely for profit reasons in one industry and then sell and migrate to other industries. As one of the managers (E2) stated, *"this industry has a profile of owners and managers that are haughty, proud, and greedy enough to not collaborate, and tend just to be free riders and aggressive."*

In terms of workforce, the Chilean salmon industry employs nearly 45,000 workers whereas Norway only employs close to 3,000. The salmon and trout added-value products require a great deal of labor. Therefore, Norway cannot develop these products given its high wage level, whereas Chile is able to do so because of its lower labor costs. For the local management of foreign companies, the experience of some Chilean managers is that foreign companies, such as Norwegian, Canadian, Dutch and American companies, had their global trends, goals, and company objectives determined abroad, and it is in Chile that the company managers (E1, E2 and E3) and employees have to decide how to achieve those goal directives. These companies are remotely controlled based on the analysis of detailed weekly reports that are sent to their respective home offices abroad.

In terms of their evolution, most of the largest salmon farming companies started directly as aquaculture production centers, but there are middle-sized firms that added salmon farming as an expansion to their business. As the manager of an **A3** salmon farming company stated, *"We have always been a fishery company, and when we decided to start with aquaculture,*

we defined salmon, trout, and Coho as products, trying not to impact or distort the market by price or volume. Our original clients of white fish forced us to supply them with red flesh fish, warning us that if we didn't abide, they would no longer buy any fish from us. That is the reason of the creation of our aquaculture branch… "

4.5.2 Products

The format of the product mostly depends on the cuts performed to the fish, the removal of parts like head gutted (HG) or skin, if it is fresh or frozen, and further processing like smoking. Of all the company types and roles involved in the salmon chain production, the definition of the product format and volumes to be produced is mainly in the hands of a salmon farming firm manager. As an example, a **C1** salmon farming general manager explained their decision-making process: *"All we produce is a commodity, being fresh or frozen. We decide which of them to produce based on the return on weight per fish. That is, if we plan to export the complete fresh fish to Brazil, then they pay as of today (2011) about 7.6 USD; we may trim this fish in 5 kilograms, at 12 USD per kilogram, losing some weight on the residues, and we may continue to trim. We decide based on the US dollar per fish kilogram and the availability of processing and logistics resources."* Complementarily, other **A2** firm general manager clearly stated: *"We did not decide on the products, we were just processers that received retailers' orders".*

As for the reasons to prefer the format of fresh preservation and simpler cuts, most managers stated: *"the simpler the better for selling"*. A **C2** manager declares that *"One problem on keeping adding value as a decision of the producer is that it may not be required by the market"*. One **A1** Manager described their processing schedule for fresh fish by stating that *"To process a complete fresh fish is very simple: after killing and washing it, in 5 minutes it is chilled on ice. At 5 PM it is departing by truck to Brazil,*

arriving a couple of days after. Or it may depart to the US, where in a couple of days it arrives on Miami, and in 2 more days becomes available for the retail market, where it remains fresh and for sale for 18 days".

Although a commercial strength of frozen fish is that it allows waiting for a good price moment to sell, fresh fish is one of the preferred formats. Like one **B2** manager indicated, *"our Company preferred to sell fresh fish as much as possible because it is cheaper to process, and there is a good and sufficient profit. And just managing four farming centers you may be able to provide your customers with an uninterrupted supply; once reaching a continuous supply, it may be possible to deal a contract with a big retail chain like Wal-Mart."*

Every time a new market is opened, an adequate product portfolio must be proposed and tested; in some cases, it reveals excellent commercial opportunities for expanding business models or creating new ones. For instance, a new cold-chain truck path was opened between Chile and Brazil, and as a **D2** general manager declared: *"We decided to sell fresh salmon to the USA, and fresh complete fish (only gutted) to the Brazilian market, which turned out to be a great business because you are selling the tail, fins, and skin, and do not have to deal with those residues, which imply a great environmental effort."* So Brazil is now open for Chilean producers as an interesting market with a population of 200 million that (Murias, 2011), for now, mostly buys complete fresh fish like salmon and trout, and its demand is currently expanding.

Some companies have tried to produce and commercialize products in other formats but have a low sell volume. As a **C1** manager declared: *"The organic salmon market is a little*

market in the U.S.A. with low volume demands, so it can be fulfilled easily; value is interesting but the volume makes it unattractive for us…Europe is the great buyer of smoked salmon, but the consumer may vary there from region to region with the specific smoking process and the resulting preferred taste. So, there is no easy way to enter the market as a whole and each region is a very small market." So it is sustained that it is preferred to produce high volumes of low processed and low added value products instead of low volumes of products with high added value.

During the time of the crisis and with the scarcity of salmon in the market, Chilean trout that was not affected by ISA related mortality was offered and exported, gaining some of the U.S. market. However, it was difficult to have a massive entrance because the U.S. market perceived the "trout" as lower quality compared to Salmon. As one of the interviewed **C1** managers also stated, *"We produce salmon and trout as complete fish. It may be frozen or fresh. Our clients are located in Sao Paulo, Brazil, USA, Japan, and Russia".* Another important consideration for the salmon and trout farming industry is that trout can only be harvested during three fixed months in the year, so it cannot be produced as continuously as the salmon.

4.5.3 Markets

The year 2007 saw the start of the Chilean ISA sanitary crisis, and the resulting forced harvest and frozen storage permitted the export volumes of 2008. From then on, Chilean farmers could not produce enough salmon to fulfill the supply volumes required by the main markets, especially the U.S. There was little change in the demand in the main markets; the Norwegian and Canadian producers mainly provided the fish that filled the void left by Chile. The U.S. Atlantic salmon market is dominated mainly by three players, Canada, Norway and Chile: Canada with 44% of all the market, with most of their supply

being fresh whole salmon, Norway with 22% of the market, supplying preferably fresh and frozen fillets, and Chilean exports, which consist of fresh fillets.

The Chilean supply shortage contributed to an increase in global prices, especially for Atlantic salmon; as a result, Norway took the opportunity to sell large volumes at higher than expected prices. Before the ISA crisis, Norway was seen as the leading producer but not as an aggressive competitor because the Chilean exports were not directly competing with Norwegian destination exports, which historically were mostly focused on the European and Asian (without Japanese) markets. But with the late Norwegian entrance into the U.S. market, some now see it as a real challenger. As **A3** one manager stated: *"I see a Norwegian company as a competitor as well as some of the local companies. We now reached and compete for the same markets".* From 2008 till mid-2011, markets had been very variable in price and volumes given an increase in the supplies by Norway and North America and catastrophic events like the Chilean ISA crisis, earthquakes, and later tsunamis in both Chile and Japan. After ISA's devastating mortalities of the 2007 and 2008 period, producers decided to make a prominent switch in programmed production from Atlantic Salmon to Rainbow Trout and Coho Salmon, species that are not affected by the virus. At the same time, the Latin American market started to significantly raise its demand for salmon, especially Brazil. The Brazilian market currently represents three quarters of the Latin American demand of Chilean salmon.

Prices are variable in time and differ slightly from market to market. For Chile, the main reference markets are Oslo (Norway), Miami (East Coast), and Seattle (West Coast). Although these trade market prices are the main references for transactions, the actual volumes and prices are commonly determined by a supply contract between the provider and the distribution channel. There are a wide variety of formulas for short and long-term pricing programs, depending on the offered product as well as upon the specific

characteristics of the client involved. As an example, a **C1** general manager described their price structure by stating that *"There are many formulas for price, and the financial office decides the deals with clients: In the case of fresh, the last 2 weeks of a month we set a fixed price for the entire following month. Sometimes there are long-term price programs with a retail chain store and we fix prices for a 3 to 6 month period. So, the commercial and financial department has to take into account many factors, such as the supply of fish from stocks in Norway and Chile and the demand from the US and Europe, and decide the pricing strategy to follow accordingly."*

Prices of salmon products in world markets constantly increased in the period from 2008 to early 2011, and with the increase of their own exports, it also resulted in an incredible profitable season for Norway; Most interviewed managers believe that this was a unique *"once-in-a-lifetime opportunity"* and a result of a series of favorable factors that they don't expect to happen again. As expected, some of the interviewed managers expressed their concerns about the lack of confidence in reentering the previously exited markets and a little fear of being subject to prejudice based on the previous experience of not being able to comply with export orders (Javalgi et al., 2011). At the same time, they were aware that this reentry might also lead to competitive advantages due their previous experience, knowledge, and commercial network. Chilean exports started their recovery in 2011, when global prices dropped. Since 2012, the global market restarted its growth and prices have been increasing steadily. Chile re-established its position as prime supplier to the US market at the end of 2013 (FAO Globefish, 2014).

4.5.4 Players

It is widely believed that the industry is not viable with the present number of players, and a new disastrous event is foreseen to happen in the near future due to the existence of several

major threats including the ISA virus. It is expected that this event will be followed by a new order, whereby production boundaries will be set for some centers, causing some of them to disappear. With fewer centers in operation, it is expected that the entire productive system will become more stable and safe.

Most managers stated that a renewal of players and agents in the Chilean salmon industry is expected to begin in the next years, when companies will somehow have to pay off their debts or at least show signs of a positive change and when some of them will begin to close or acquire one another. This situation can turn into a critical one, because farmers need to constantly supply their clients. So, if they are small companies, and have a few production centers in the same zone, they will have to migrate to other zones in order to have a constant production, resulting in renting new sea concessions and tackling many other costs, a situation that does not seem viable. Many farmers suggest that in such a scenario, these little firms will likely disappear. As a **C1** manager affirmed, *"The regulations that determine neighborhoods are a complete disaster, an example of incompetence. Exclusive zones for groups of farmers were determined without considering many key factors, such as geographical conditions. Looking at the map and knowing the zone, one would think that this distribution was more closely related to business and negotiating than to an experience-based decision aimed at seeking biological threat isolation between farming clusters."*

4.5.5 Firm profile changes

In order to recover and survive the effects of the crisis, all Chilean salmon firms had to adapt to changes in their products, positioning, and target markets. Table 4.3 shows a summary of the observed and declared changes of the surveyed companies in the marketing variables: markets, products, and positioning.

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Table 4.3.Firm changes regarding main subjects before and after the ISA crisis.

Company	Change in Target Market	Product Change	Positioning Change
A1	Recovering in USA and Europe, entering Brazil	Always produced Trout and now entering 30% of Atlantic Salmon	Still head gutted (HG), introducing a small amount of fillets for Europe.
A2	Growing in LatAm, especially Brazil, softly recovering in USA	None, still in Trout and Coho	None, still head gutted (HG)
A3	Little in USA and growing in LatAm	Trout replaced Atlantic Salmon as leader in recent years, but from 2011 Atlantic Salmon is recovering	Still head gutted (HG), introducing a small amount of trims.
B1	Still in USA, entering Brazil, Taiwan, Hong Kong and Singapore.	Trout leader, with a small amount of production of Atlantic Salmon	Still in added value products like trims and fillets.
B2	Entering Brazil, and still in USA and growing in Japan	Trout replaced Atlantic Salmon as leader in recent years, but now Atlantic Salmon is leading.	Mostly trims and fillets
B3	Entering Brazil, Colombia, diminished in the U.S.	None, still in Atlantic Salmon	Still fresh fillet
C1	Opening Brazil Japan increase	Mostly Trout	Still in head gutted (HG), fillet and salted filet, but getting trout to a higher weight, 3.5 kg
C2	None, still in recovering only in the USA	Trout replaced Atlantic Salmon as leader in recent years, but from 2011 is 80% Atlantic Salmon and 20% Trout	Still head gutted (HG) and fillets
C3	Recovering USA, growing in Japan and entering Brazil	None, still in Atlantic Salmon	Still head gutted (HG), fillets and trims
E1	Reentering Europe and USA, growing in Japan	Trout replaced Atlantic Salmon as leader in recent years, but from 2011 is mostly Atlantic Salmon	Still head gutted (HG) and fillets.
E2	Recovering in Japan and entering Brazil	None, mostly Trout and Coho	Still head gutted (HG) and fillets.
E3	Recovering USA, growing in Japan and Russia	Trout replaced Atlantic Salmon as leader in recent years, for mid-2011 is mostly Atlantic Salmon	Still head gutted (HG) and fillets.
D1	USA down, Japan up and rising	Atlantic Salmon almost completely replaced by Trout, Pacific Salmon rises.	None
D2	Japan up and rising	Trout replaced Atlantic Salmon as leader in recent years, but now Atlantic Salmon is recovering its place.	None
General	Japan, the main destination, 45% Latin America 14% Opening Brazil (76% LatAm) U.S., lower volumes, 14% Europe, reduction, 2% Russia 3%	Trout over Salmon in volume. Coho high price, but fixed demand.	Lower prices scheme Only commodities Growing production

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4.6.Discussion

We discuss our key results, which are related to re-entry strategy.

Our results show that there will be no or very low entry barriers established by the Norwegian producers that occupied the U.S. market and replaced Chilean products. The reentry will be governed by price and supply reliability and availability. To recover the markets, the Chilean industry used its previous knowledge of distributors, logistics, and previous negotiations, and differentiated by price. We can say that this case profile for the Framework of Reentering International Markets and the Market Reentry Matrix in the Chilean salmon farming market reentry has *"High Market Attractiveness, Low Market Risk, and High Firm Resources and Capabilities".* Javalgi's (2011, p. 386) suggested that if the host country market attractiveness is high, market risks are low, and firm resources and capabilities are high, firms can attempt large scale market reentry through early timing and equity modes such as joint ventures or alliances. In the case that firm resources are less than high, its reentry should be moderated by careful considerations of the long-term market stability, risks, and attractiveness.

The events observed in the Chilean salmon farming industry in recent years occurred accordingly with this forecast and proposed strategy. Therefore, we agree with Javalgi's strategy proposal; emerging country firms were willing and successfully tried to reenter the developed markets (especially USA) where they previously lost their market share. Thus, our proposition 1 is confirmed.

According to our propositions 1 and 2, we can say that firms, because of their large output profile and commercialization channels, only have a few available main target markets at which to aim their recovering harvest: the USA, Japan, and the EU. Markets like the EU

were discarded because well-settled competitors already covered them; Japan imports were maintained mainly because of Coho (not affected by ISA), so producers were practically reduced to Japan and Chile. The main challenge was to recover the US market seized by the Norwegian and Canadian exports. Chilean producers were willing to reenter these lost markets, but their managers' opinions were split between the fear and confidence of whether or not the pricing strategy would recover the preference of the food distribution channel purchase operators; finally, the strategy was successful and Chile recovered its position on 2013.

As the second proposition stated, emerging country firms had preferred to continue targeting well-known global developed markets instead of other new emerging markets. But this didn't restrict some firms from also trying out markets that were new, closer, and easier to deliver. As stated by Murias (2011), firm managers were not reluctant but rather open to new markets, especially if they were local. For instance, the opening of a new transportation channel between Chile and Brazil allowed for the rapid formation of a cold truck chain that enabled and created a new and fresh market for Salmon products, which is just starting and may grow significantly. Chilean firms and its government are currently putting a lot of effort into developing consumer growth in this market.

In summary, proposition 1 (P1) was accepted and proven in this case. Proposition 2 (P2) was also accepted but only partially given that emerging country firms were not completely closed to new opportunities, they aimed to the well-known global developed markets but also tried out a new one.

4.7. Conclusions and implications

Chilean salmon retreated from the US market in late 2008, and since late 2011 it has been recovering its lost channels. Interviewed managers suggest that this process is mainly due to Chilean salmon's lower pricing and is not due to any kind of loyalty to a brand or other factor related to Chile. They believe that the Chilean origin is simply well recognized for its sufficiency of quality and that this recovery is not the result of a significant increase in monetary value, although they do hope that one day this will be recognized and prized. They avow that regardless of their interruption in the supply, there has been no reported loss of clients or channels on their return to market. Javalgi et al. (2011) propose that there is an advantage on reentering a previously exited market. This is based on many factors, like high foreign market knowledge, an established network of commercial relations, and commercial experience in the host country. Hence, this is a confirmation of the reviewed literature regarding positioning and market reentry.

In regard to adding value to their products, managers explained that if they went into a higher level of processing and specialization of their products, they would not be able to put the large volumes that they process into the market. This explains why the main products are commodities and why this suits them well. However, there exists a particular case of a Chilean based producer that successfully exports large volumes of specialized products to developed markets, but this was initiated and developed because they first established a strategic alliance with a distribution channel that was already successfully distributing specialized products, such as smoked salmon and particular commercial cuts, into the USA market. This firm replaced only the source of their products from the USA to Chile.

Based on the findings of our study and following Javalgi et al. (2011), we propose a model for market reentry from developing economies into developed markets (Figure 4.3).

Firm Resources and Capabilities

		Low	High
Causes of Previous Exit	Related to Producer	Use knowledge for early, large-scale reentry with a non-equity mode. Repeat entry positioning.	Use knowledge for early, large-scale reentry with equity mode. Repeat entry mode and positioning.
	Related to Target Market	Use knowledge for careful progressive-scale reentry with a non-equity mode. Develop new positioning strategy.	Use knowledge for careful progressive-scale reentry with equity mode. Develop new positioning strategy.

Figure 4.3: An international market reentry matrix: Cause of previous exit and firm resources and capabilities.

In these cases, the target markets are developed economies with large markets, where usually the big buyers are gatekeepers that provide flows of products to big retail chains. The global environmental drivers are comprised of a stable exchange rate, political stability, and trade liberalization, and the host-country environments are high gross domestic product and per capita income, stable government, regulations, and demographics.

The main dimensions of this model are *causes of previous exit* and *firm resources and capabilities*. The *cause of a previous exit* must be understood and classified according to the real reasons behind the past retreat from the target market, where a *related to the producer* condition corresponds to an exporting firm failure to successfully supply the target country where this may be related to producing, logistics, transport, sanitary matters, or any other problem, such as longshoremen, that went on strike or dumping sanctions; Hence, there is no signal that the target market has changed its preferences regarding the offered product. A *related to the target market* condition refers to an economic, marketing

and strategic past failure as the firm had the opportunity to enter the market and compete but for local target market conditions it failed and decided or was forced to exit that market; hence, the firm must develop a new positioning strategy for its product. The *firm resources and capabilities* are the same as presented in Javalgi's model.

As we show in Figure 3, we have developed a 2-dimensional market reentry matrix in which *causes of previous exit* and *firm resources and capabilities* contain two levels each (low, high). This matrix suggests a strategy for the market reentry of four cases which are reviewed as follows:

Previous exit related to producer, low R&C. If the reason for the previous exit was forced by other causes not related to the target market, the firm must reenter as soon as possible, repeating the entry mode and positioning; in order to diminish financial risks and allow for strong reentry, the firm must develop a non-equity mode strategy (eg: Joint Venture, or other alliances).

Previous exit related to producer, high R&C.

In this case the target market should not have changed since firm's departure; hence, the reentry must be done as soon as possible, repeating the entry mode and positioning.

Previous exit related to target market, low R&C.

In this difficult situation, risks due to a challenging market make the firm exposed to financial losses and threats to its marketing success. Firms should carefully evaluate

specific risks and strategies to overcome drawbacks associated with each risk. If the firm has or can develop capabilities to overcome risks, it may reenter the markets with caution. Another viable option for a firm would be to acquire more knowledge about the host country markets and operate using non-equity modes to mitigate its risks.

Previous exit related to target market, high R&C.

Market reentry success is a challenge due to past strategy failure. The firm requires the use of knowledge for a careful and progressively growing reentry; with its market experience, the firm must develop a new positioning strategy.

The case of market exit and reentry mainly reviewed in this chapter was caused by the cluster firms' failure to provide a constant supply. But, those firms reestablished their resources and capabilities; hence, the *previous exit related to producer, high R&C* case was observed and the strategy used was as suggested: reentry was governed by price and supply reliability and availability. This strategy resulted in Chilean firms regaining their lost market in a 3-year period.

The level of development of the producing country and the target market studied determines the limitations of this study; this consideration clearly affects the market reentry strategy. Buyers from important distribution channels and target retail products are the key agents for defining a successful or unsuccessful reentry. As exposed above, in some cases, the number of these "gatekeepers" is a dozen for a full country (e.g. France). It is key to know each case's purchase strategy for a successful reentry. This sometimes involves price and availability and at other times involves historic reliability.

4.7.1 Managerial implications

Based on Javalgi et al. (2011) and interviewed managers, we present that the lessons learned from this experience confirmed that alliances and strengthening the supply chain are important along with building trust and partnerships.

Regarding product positioning, strategies may be represented as price, product type, and the destination market's choices of asymmetric competitors. Because the Norwegian Salmon Industry is now a stronger competitor than the Chilean Salmon Industry, each should follow different product positioning strategies as proposed by Thomadsen (2007) for these kinds of cases. Additionally, the mode of reentry in previously exited international markets is a crucial decision for firm growth; in this case, it is concluded and observed that the Chilean firms were likely to repeat the same entry mode, assuming that there were no important market changes during their absence. They started reentering in 2011 as early and quickly as they could, mainly differentiating by price. We suggest managers to follow an exporting mode, to develop alliances, and in the long term to add or capture specific market high value segments.

The high number of Chilean, Norwegian, and Canadian brands present in the US market, as well as Norwegian and Canadian brands currently producing and processing in Chile and exporting from there as well, leads to the question of whether customers actually differentiate between these producers. However, as Bronnenberg et al. (2009) states, the knowledge of the Chilean salmon products may persist because they were the first to flood the US market and, therefore, this will be valid for the large channel buyers' agents, gatekeepers, and the final consumer. It is a common concern between managers that the

Norwegian industry will react to the loss of the USA market and the increase in production of Chile and Canada; therefore, Chilean producers must develop a long-term strategy accordingly.

Finally, managers in Chile and elsewhere need to understand how a product differentiation strategy affects competition in a particular industry, where availability and quality of products are variable due to threats to production and to fluctuating yield volumes. The mode of reentry in previously exited international markets is a crucial decision for a firm's growth, and for this case, for its survival.

A continuing line of research would be to follow the reentry of products into the US, the corresponding measures taken by the competing countries' producers to recover the lost market, the development and evolution of the product and positioning profile, and the resulting economic and marketing benefits.

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5. General conclusions and future prospects

5.1 General conclusions

Chilean food exports, an industry on its way to development, have to face several challenges regarding internationalization and delivering commodities with added value products. This will raise the Chilean economy from a more *efficiency-driven* stage to a purely *innovation-driven* development stage. This Thesis proposes that Chile requires establishing and using innovation and development platforms dedicated to the food industry, and that the government must provide a robust and top-notch regulatory institution that establishes and enforces a new order to guide and protect this industry, thus allowing its sustainability.

This challenge covers several developmental and productive aspects. In this Thesis, the focus is to thoroughly understand the Chilean food exports industry, with special attention to firms focusing on new product design processes and the business management of a new exporting industry.

The most significant contributions of this Thesis are the following:

> This study presents a first approach on comparing producers' assumptions with actual consumers' preferences on sample food product components with the help of marketing tools. This will allow for the amendment of misalignments and the efficient achievement of more added value food products.

> Research on moral disengagement applied to business and management comes from an approach based on philosophy, generally centered on the John Rawls and Albert Bandura legacy. This Thesis presents for the first time a study that involves the next

logical process: moral reengagement and restorative justice in a business and managerial context. The in-depth interviews specifically asked about the process of re-enabling the moral and ethical mechanisms associated with ERM and sustainability, in order to avoid repeating a *Tragedy of the Commons* scenario. A theoretical model for business management behavior is presented considering moral disengagement and the establishment of an Environmentally Responsible Management platform in order to restore the performance of this export oriented cluster with the appearance of executive moral reengagement and reparative justice.

Market reentry has been studied in the case of large international firms from developed economies that attempt to re-enter a previously active market. This Thesis studies for the first time international firms from emerging economies that reenter previously abandoned developed economies, presents a theoretical model for this specific situation, and validates it with the Chilean farmed salmon exports.

The salmon cluster is one of the most important industries in its contribution to the Chilean economy; it involved the creation of value in many ways, such as the increase in employment, exports, and regional development, as well as the creation of a cluster. The ISA crisis started a series of managerial actions in order to let firms survive and restart. This study presents for the first time in-depth interviews with key executives in order to reveal foundations and reasons about managerial decisions that give sense to the actions taken.

In summary, regarding the design of new products, food producers choose the component profile design of their products based on their own assumptions about consumers' preferences and on the observed market response to competitors' products. Chilean

managers prefer to produce commodities instead of added value products because they lack a trade platform capable of distributing their products in different kinds of formats and target markets; they prefer "the simpler, the better".

A set of tools (Kano and Conjoint Analysis) to help achieve differentiation through a better NPD program has been presented in the context of proving that producers' perceptions of consumers' preferences may be not be accurate or significantly genuine and must be integrated as a component of any action to keep ahead of the competition. From a managerial perspective, these tools help reveal the importance of involving consumers into new product development and engage buyers to cooperate and participate in the design with their opinions about preferences of existing attributes while also helping to incorporate new features.

Results exposed indicators of misalignments in producers' assumptions of consumers' perceptions about certain features and preferences, but they were not extreme opinions or trends. It may be suspected that this occurs because these firms are already survivors in the real market, so the differences in their presumed and the actual consumer interests may not be large enough to make their products fail and disappear.

With regards to adding value to their products, managers explained that if they transitioned to the higher level of processing and specializing their products, they would not be able to put the large volumes that they currently process into their numerous target markets. This explains why the main Chilean products are commodities and why this suits the producers well.

Regarding the Chilean salmon farming cluster, this study shows that it behaved as a *Tragedy of Commons* environment due to many reasons exposed (shared resources, diffusion of pollutants, etc.), and after the cluster production had collapsed, which resulted in a financial debacle, the only feasible way out for most firms in this industry was to ask the government and investors for help, who were not willing to help if the same *Tragedy of the Commons* situation was to reappear later. Naturally, given this new industry setting and managerial context, the change came as *Moral Reengagement* to executives and directors.

Entrepreneurs may be left alone in some areas, but they must be controlled in order to avoid a new crisis. Therefore, this established new order must be enforced by the industry and the government.

Chilean salmon companies are not focusing on Environmentally Responsible Management but should do so if they want to become more internationally competitive in emerging markets. Thus, the Chilean Government and firms are likely to adopt Environmentally responsible management to enhance and improve their international competitiveness and survive, but only under the threat that their production might be destroyed if they are to ignore this management scheme.

It is a common concern between Chilean salmon farming managers that the Norwegian industry will react to their loss of the USA market and the increase in production of Chile and Canada; therefore, Chilean producers must acknowledge this possibility by developing a long-term strategy.

Finally, managers in Chile and elsewhere need to understand how a product differentiation strategy affects competition in a particular industry, where availability and quality of

products are variable due to threats to production and to fluctuating yield volumes. The mode of reentry in previously exited international markets is a crucial decision for solid growth, and in this case, survival.

5.2 Limitations

This work presents some limitations regarding the topics and problem revised; the main considerations are presented as follows.

Regarding the added value study of chapter 2, it must be considered the fact that the survey campaign was performed only in Chile and not abroad. The retail markets chosen were mainstream were not specialized into categories such as organic products or specialized wine or high value vegetable products. Furthermore, the number of producers surveyed and assessed was only 3 per product. Hence, it is suggested to consider these factors to improve the tests.

Chapter 3 presents the study of the business management of the Chilean salmon farming industry which was performed surveying Chilean employees (mostly managers) of Chilean and foreign firms and not managers from international firms with a branch operating in Chile (eg: Norwegian, Canadian, etc.). Therefore, limitations are present due some managerial and strategic views regarding the salmon farming business may have been neglected. Another concern is the important changes performed (or suffered) by the Chilean salmon farming industry during this 4-year study; the downfall and rebirth of the industry and the temporary stress may have led to strong biases and opinions in managers due the great economic losses..

Regarding the market re-entry study presented in chapter 4, the fact that the level of development of the producing country and the target market studied determines the limitations of this study; this consideration clearly affects the market reentry strategy. Also, buyers from important distribution channels and target retail products are the key agents for defining a successful or unsuccessful reentry and, in some cases, the number of these "gatekeepers" is a dozen for a full country. It is key to know each case's purchase strategy for a successful reentry. This sometimes involves price and availability and at other times involves historic reliability.

5.3 Future prospects

A next step on added value research would be to compare these findings with a group of producers about to introduce a new product into the market and perform these tests before their first entrance into the market, comparing afterwards their actual market results; we estimate that the research would span over several years but consider that it is worth it in order to unveil further relations between producers' perceptions and the real market.

This study confirms that alliances and strengthening the supply chain are just as important as building trust and partnerships. It could be interesting to study how this is expressed in different industries and would be very helpful for managers and policy makers.

Regarding market reentry, in order to further validate the findings of this study, a following study should include respondents from company clusters not only in Chile but also in other emerging economies. A continuing line of research would be to follow the reentry of products from emerging to developed economies. The development and evolution of the product, its positioning profile, and the resulting economic and marketing benefits, in light of the required environmental responsibilities, deserve a longitudinal study.

It is important to follow and review the development of the new order in the salmon industry, to study the actual strengths, flaws, and weaknesses of the current system, and to suggest corrections.