Innovation and IPRs Management for Perceived Low-Tech Industries: A Case for the Implementation of Certification Marks in the Fishing and Fish Processing Industry of Newfoundland and Labrador

Christian E Coronado Mondragon[1*] and Adrian E Coronado Mondragon[2]
School of Ocean Technology,
Marine Institute of Memorial University of Newfoundland, Canada[1]
School of Management, Royal Holloway, University of London, UK[2]
christian.coronado@mi.mun.ca[1], adrian.coronado@rhul.ac.uk[2]
**Corresponding Author*

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Abstract

Historically, the fishing and fish processing industry has been portrayed as less dynamic than other resource-dependent research and development (R&D) intensive industries, such as the offshore oil industry. However, some "low-tech" industries have become capital and technology intensive. Despite this transformation, technological innovations are still incremental and are sporadic for this industry. For the fishing and fish processing industry, the use of Intellectual Property Rights (IPRs) to create value and foster innovation has been almost neglected. This paper aims to present, in a qualitative way, the implications and effects of IPRs and product innovation for the so-called "low-tech" industries. In addition to this, the paper reviews the current usage and legal framework of the IPRs in use in the Canadian province of Newfoundland and Labrador. This paper concludes with a proposition to enhance and increase the use of certification marks.

Keywords: Low-tech industries, innovation management, technology management, IPRs, certification marks

1. Introduction

A multitude of studies on Intellectual Property Rights (IPRs) and innovation management, emphasizing the preeminence of high-tech industries in the knowledge economy, have been the common denominators in the debate between the management of IPRs and innovation. In this regard, Christensen et al. (2011) have acknowledged the fact that the innovation dynamics of industries in the primary sector have received limited attention from scholars, practitioners and policy makers. Nonetheless, primary sector activities are still the driving source for economic progress for both developed and developing nations alike.

The fishing and fish processing industry has been portrayed as less dynamic than other resource-dependent R&D intensive industries, such as the offshore oil industry. For that reason, the fishing and fish processing industry can be labeled as "low-tech". However, some "low-tech" industries have become capital and technology intensive. Despite this transformation, technological innovations are still incremental and are sporadic for this industry. A clear motivation for this research is the fact that, in the fishing and fish processing industry, the use of IPRs to create

value and foster innovation has been almost neglected.

To the best of our knowledge, there is a clear void between the innovation management literature and the legal studies literature, which has not addressed of innovation and value creation approaches for SME and low-tech industries through the practical use of IPRs. For this reason, this study aims to help document the dynamics between IPRs and innovation in the fishing and fish processing (F&FP) industry of the Canadian province of Newfoundland and Labrador (NL). This paper could be used to enable the improvement of managerial practices by local producers. In addition, it could assist in the documentation of the policy changes needed to ignite sustainable economic growth for this industry in the province of NL.

1.1. The North Atlantic Fisheries and Fish Processing Industry

The fishing and fish processing (F&FP) industry in the North Atlantic has been a source of wealth and labour for centuries. According to Agnarsson (2003), the North Atlantic countries that are heavily dependent on the fish processing industry are the Faroe Islands, Iceland, Greenland (Denmark), Newfoundland (Canada) and, to a lesser degree, Norway.

Danielsson (1997), as cited in Agnarsson (2003), emphasized that, in terms of labour productivity, the Icelandic fish processing industry is slightly more productive than their Norwegian or Danish counterparts. Olafsson (2001), as cited in Agnarsson (2003), claims that in terms of processing efficiency, Iceland and Norway represent the clear benchmark for the North Atlantic region. In Olafsson's study, the average efficiency of fish processing firms in Iceland and Norway are the highest in the North Atlantic region. Newfoundland was not considered in Agnarsson's study due to the lack of detailed and available data.

1.2. Status of Canada's and Newfoundland and Labrador's Fishing and Fish Processing Industry

According to Fisheries and Ocean Canada (2011), shellfish (lobster, crab, shrimp, scallop, clam, mussels and oysters) was the most profitable seafood accounting for $1.26 billion CAD in landing value (fished shellfish) for 2009. In Canada, ground fish (codfish, haddock, halibut, Greenland turbot, flatfish, pollock, and others) landings accounted for $237 million CAD in 2009.

The Canadian province of NL is located in the North Atlantic corner of the North American subcontinent. The province has an estimated population of circa 511,000 inhabitants (Newfoundland and Labrador Statistics Agency, 2011). Historically, the fishing industry in this province has been the backbone of the provincial economy. It is also a very important component of the social tissue for Newfoundlanders and Labradorians. For more than 200 years of provincial economic history, the fishing industry in NL has been dedicated and focused mostly on the fishing, processing and commercialization of ground fish (i.e. codfish). For instance, in Canada, the fishing industry alone contributes approximately two billion Canadian dollars to the national GDP. In 2008, the Canadian F&FP industry provided employment for nearly 80,000 people in the whole country (Fisheries and Oceans Canada, 2011).

Particularly for the province of NL, the fishing (hunting and trapping included) and fish product industry contributes 0.7% and 0.8%, respectively, to the provincial GDP (Department of Finance, 2010). According to Fisheries and Oceans Canada (2011), in the province of NL the most commonly captured species for their commercial value are crustaceans (snow crab, lobster and shrimp) and ground fish (codfish and turbot). With reference to the status of the F&FP industry, a senior provin-

cial official[1] with insight into the technological and economic realities of this industry in the province, commented on the following:

"The industry in NL has not been particularly innovative in developing or adopting technology. Even technologies in common use elsewhere are slow to be adopted. The basic problem is poor return on capital investment because the operating season is short. When ROI (Return-on-Investment) is already poor, it is difficult to invest even more capital and the short seasons make it difficult to get the returns needed to justify the investment."

2. IPRs and Innovation Management in "Low-Tech" Industries: A Review of the Literature and Related Legal Concepts

Buxton (2005) argues that innovation is far more about prospecting, mining, refining and adding value than it is about pure invention. In this regard, innovation in "low-tech"[2] industries is more about creating value through incremental and constant innovation (i.e. the opening of new markets, improvements in the manufacturing process, etc.) rather than technological breakthroughs. Silverberg and Verspagen (2005) define innovation as the constant process of refining and redefining value creation practices in the form of products, processes, services and other working artifacts. Teece (1986) argues that complementary assets, such as marketing expertise, after-sale service, etc., are critical know-how that can generate profits. For the purpose of this research, the authors identify product and process innovation in the F&FP as value creation and value-capturing practices used by firms.

In this regard, Pavitt (1998) argues that coordinating and organizing correctly are likely to be enablers toward the success of an innovation. Thus, the authors of this paper consider that the only merit of Certification Marks (CMs) as vehicles of innovation is the fact that they enable coordination and organization for producers who would otherwise never be able to successfully compete in the market.

CMs, in contrast to other marketing devices, such as marketing slogans, create for the consumer an inherently distinctive mental association of the CM with the quality and characteristics of the product or service. Conversely, marketing slogans can be trademarked but they have to meet the requirements of the country of origin's trademark office. Reviewing the requirements for the granting of trademark protection is beyond the scope of this paper.

Specifically, this study considers that the effective management of IPRs falls within the scope of management innovation (MI), as defined by Birkinshaw et al. (2008 p. 825). They argue that management innovation refers "to the invention and implementation of a management practice process, structure or technique that is new to the state of the art and is intended to further organizational goals".

From Miller and Floricel (2007, p. 15), it can be assumed that industries that rely on patent rights as their main method of innovation, are industries which are characterized by having high to average levels of knowledge production dynamism and high to average structuring potential that enable value capture (dixit).

For these reasons, patent rights, which require absolute novelty, a high degree of inventiveness and industrial applicability, are not commonly used by "low-tech" industries as rights to protect innovations. Among the relevant approaches for the utilization of patents, Franzoni (2008) argues that patents are not only the statutory rights to protect innovations but can also

[1] The interviewed official plays a major role in the technology adoption policy for the fishing and fish processing industry of the province of NL. The interviewee is the current managing director of a provincial government backed institution based in St. John's, Newfoundland. For privacy considerations, his name has been withheld.

[2] According to the OECD (1994), the definition of low-tech corresponds to those industries that devote, on average, less than 0.9% of their expenditures to R&D.

function as signaling devices for measuring a firm's intangible assets.

According to WIPO (2008), utility models (UMs), or petty patents, are statutory rights that are similar to patents, but with far less stringent patentability requirements. In addition to this, their duration is shorter than patents. UMs are very appealing to "low-tech" industries since they are mostly designed to protect incremental innovations. However, not all jurisdictions have approved the use of UMs in their legislation. For instance, Canada and the US do not offer such an option for incremental innovation. However, many jurisdictions in South East Asia (i.e. Indonesia and Vietnam) and Latin America (i.e. Chile and Mexico) should use this right to protect innovations in the food processing industry.

Authors such as Mansfield (1986) and Lopez (2011) have suggested that only a handful of industries truly depend on patents as an effective mechanism for value creation. It is suggested that for certain "low-tech" industries, such as food or textiles, the natural product lead time and secrecy are more effective mechanisms for protecting innovations. This is explained by the fact that process innovations (such as those needed in the textile and food industries) are easier to keep secret than product innovations (Lopez, 2011). Key drivers of the innovation process in food firms include R&D, market orientation and the role of entrepreneurs (Avermaete et al., 2004).

According to Merges et al. (2011) trademark protection is awarded on the basis of novelty of use in commerce. Merges et al. also claim that trademarks are more relevant to the protection of consumers and unfair competition rather than to encourage innovation and the spread of knowledge (in contrast to patents and copyrights).

Historically, "low-tech" industries have relied on trademarks (Goebel, 2003). However, the food and food processing industry, in particular, has historically used trademarks (TM), appellations of origin (AO), geographical indications (GIs) and certification marks (CMs) as ways to prevent imitation and create value by selective differentiation (Cortes-Martin, 2004). According to the Lisbon Agreement[3] for the protection of AOs from 1958, an appellation of origin is the,

"Geographical name of a country, region, or locality which serves to designate a product originating therein, the quality and characteristics of which are due exclusively or essentially to the geographical environment, including natural and human factors."

Thus, an AO can be considered and be indicative of a source or origin when geographical and human factors determine the quality of the product. Article 22.1 of the TRIPs agreement[4] describes GIs as,

"Indications which identify a good as originating in the territory of a Member, or a region or locality in that territory, where a given quality reputation or other characteristic of the good is essentially attributable to its geographical origin."

Based on the above, it can be said that GIs are technically and legally IPRs, which confers to its holder(s) an economic monopoly similar to a patent or copyright, but with a *de facto* infinite duration. GIs are controversial rights since they are perceived by many jurisdictions to be a hindrance to commerce and trade.

For instance, in Canada, there is much reluctance to enforce GIs other than for wine and spirits (Viju et al., 2011). This can be understood since many of the global GIs for foodstuffs are not from Canada or the North American Free Trade Agreement (NAFTA) region. Thus, enforcing foreign

[3] Lisbon Agreement for the Protection of Appellations of Origin and their International Registration, Oct. 31, 1958. Revised at Stockholm on Jul. 14, 1967. Amended on Sept. 28, 1976.

[4] Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, Legal Instruments-Result of the Uruguay Round, 33 I.L.M. 1125, 1197 [hereinafter TRIPs agreement].

GIs would force Canadian and NAFTA producers out of the local Canadian market.

Taking the example of "Feta" cheese, this cheese is locally produced in Canada and the NAFTA region at large by Canadian and NAFTA manufacturers. However, according to European Union (EU) Council Regulation 1107/96 and its latter modification, the name "Feta" has been declared a GI. This implies that only "Feta" cheese can be produced, and processed in Greece[5].

Certification marks (CMs) are used "*for the purpose of distinguishing or so as to distinguish wares or services that are of a defined standard*"[6] (McKeown, 2010). CMs can encompass the compliance of quality standards by the bearing of a certification mark and or the fact that the good is produced in a certain geographical region (Stack, 2000). According to section 25 of the Trade-marks Act[7], a geographical CM may be registered by an administrative authority or commercial association to describe the place of origin of wares or services. Thus, CMs, contrary to GIs, are IP rights designed to protect the association of producers/manufacturers/service providers, not their specific products or services.

Normally, innovation literature is full of studies that have used patent filings as a measure of innovation or of a firm's innovativeness. The problem with using this metric to measure innovation is that patents can have multiple uses and not all of them attain the ultimate goal of innovation, which should be value creation. For instance, patents can be used to protect value creation innovations (inventions in products or processes depending on the jurisdiction). However, they can also be used as tools to restrict market access, to restrict the rate of dissemination of an innovation or to delineate the freedom to operate in a certain market. Ultimately, it is documented that only a handful of patents truly create value for their holders.

In terms of literature available, there is not much in terms of studies that document organizational innovations regarding CMs. For example, the creation of self-motivated and self-governed organizations with the sole aim of creating value for all the members with a specific certification mark is clearly an innovation, since the members of such a CM collaborate with each other to ultimately compete in a higher and better priced market segment. This is similar to Brandenburger and Nalebuff's (1996) concept of co-opetition.

2.1. Research Methodology

The authors of this research project have been studying innovation management approaches for "low-tech" industries for several years. This paper is an attempt to build and expand on the authors' previous research on innovation management for "low-tech" industries.

Methodologically, this research was conducted to provide an insight into the status of the F&FP industry of NL. Hence, the methodology selected for this study is qualitative in nature and includes the use of a case interview with a subject matter expert on the issues affecting the F&FP industry in Newfoundland and Labrador. Additionally, two well-known existing CMs in the F&FP industry were reviewed, using documents available in the public domain, and then contrasted with an analysis of the case of the F&FP industry in Newfoundland and Labrador. According to Yin (2003), qualitative studies are best suited to providing an accurate description and prognosis of a situation. For this specific research, it was selected to conduct a literature review of the managerial and legal factors affecting "low-tech" industries, especially the F&FP industry. Specifically, this research project ran over a period of six (6) months. The objectives covered by this research include:

(1) Identifying the extent of CMs suitability for small, local producers in the F&FP industry.

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[5] The name "Feta" was permanently accepted as a GI. This is according to the proposal for a Council Regulation amending the Annex to Commission Regulation (EC) No. 1107/96 with regards to the name "Feta", 2002, O.J (C 262E) 7ff.

[6] Canada Trade-marks Act R.S.C. 1985, c. T-10 s. 2

[7] Canada Trade-marks Act R.S.C. 1985, c. T-10 s. 25.

(2) Documenting successful experiences following the implementation of CMs as value creation innovations.
(3) Providing general guidelines on the adoption of CMs by small, local producers in developed and developing countries.

The research question, which this research attempts to answer, is shown below:

Can "low-tech" and labour intensive industries (such as the fishing and fish processing industry) benefit from IPRs to boost innovation? If so, what are the best-suited rights for these industries?

3. Intellectual Property Rights and Innovation in the Fishing and Fish Processing Industry of Newfoundland and Labrador

The F&FP industry of NL is characterized for being a "low-tech" industry with minimal entry barriers, marginal or easily replicable complementary assets and incremental innovations. The managing director of a fisheries innovation center funded by the provincial government of Newfoundland and Labrador (who requested to remain anonymous), participated in this research. He explained the situation of the F&FP of NL in the following quotation[8],

"The seafood sector is intensely competitive, with many suppliers, no effective barriers to entry, and many products that are substitutes for each other. This can lead to innovations in products, processing technologies, and marketing. However, it can also lead to unethical practices, where one species is marketed as another that is more valuable or a poorer quality product is represented as being higher in quality."

For most of the F&FP industry in NL, innovations are regarded as breakthrough technological inventions that completely redefine markets, as seen by the opinion below[9],

"In the fishing industry, ground-breaking technologies come along occasionally (emphasis added). The steam engine, radar for navigation, sonar for finding fish, and hydraulics for handling fishing gear have all had major impacts on harvesting. Refrigeration technology transformed an industry that preserved its products through salting, smoking, and canning into one that distributes most products fresh or frozen. In ground fish processing, flow-line technology has greatly improved efficiency."

Moreover, the interviewee continues[10],

"In the NL industry, most innovations are introduced from outside – OEMs, consultants, universities. Nearly all harvesting and processing enterprises are small and medium sized enterprises (SMEs) and SMEs typically don't spend much on innovation (emphasis added) in any industry. Our industry also has the added problems of poor ROI and a short operating season, so participants are under ongoing pressure to minimize costs."

The above interviewed official was asked the question[11], "What is the role of Intellectual Property Rights (patents, copyrights, trademarks, etc.) in the F&FP of NL?"

His reply was,

"These do not play a prominent role in the fishing industry in general (emphasis added). We do own some intellectual property rights based on work we have done."

3.1 Certification Marks in the F&FP Industry: The Case of the Norwegian Seafood Council

According to the Norwegian Seafood Council (NSC) general presentation, the NSC is an organization of seafood producers with the specific aim to promote the consumption of Norwegian seafood products. In terms of marketing objectives, the NSC aims to increase demand and the awareness of Norwegian seafood (NSC, n.d). Legally, the NSC and its trademark

[8] *Ibid.* supra note 1.
[9] *Ibid.* supra note 1.
[10] *Ibid.* supra note 1
[11] *Ibid.* supra note 1.

guarantee the Norwegian origin of all products bearing the NSC trademark.

Figure 1: Commercialization of Norwegian Individually Packed Salted Codfish in Mexico City.

As per the records of the Norwegian Industrial Property Office (NIPO)[12], the NSC own the trademark "Norge: Seafood from Norway". The graphical representation of this trademark is an oval shape depicting a fisherman sailing through rough waters with mountains in the background with the transliteration "Norge: Seafood from Norway" on the top part of the oval. When used on seafood, this registered trademark guarantees the Norwegian origin of the seafood products.

Figure 2: Branding of the CM "Norge: Seafood from Norway" in an Exclusive Department Store in Mexico City.

The NSC has, arguably, been successful in gaining recognition for Norwegian seafood products around the world. For instance, Figures No. 1 and No. 2 were taken in an exclusive department store in Mexico City by the authors of this paper. From observation, it was noted that consumers in Mexico recognize and actively seek the CM "Norge: Seafood from Norway"[13] when looking for premium salted codfish.

3.2 Certification Marks in the F&FP Industry: The case of the Alaska Seafood Marketing Institute.

As per the United States Patent and Trademark Office (USPTO)[14], the Alaska Seafood Marketing Institute (ASMI) owns the trademark "Alaska Seafood: Natural, Wild & Sustainable". Graphically, this trademark consists of a fishing boat with a triangular-shaped mountain in the background and the words "ALASKA SEAFOOD" over the top of the mountain. In addition, the words "WILD, NATURAL & SUSTAINABLE" are below the boat.

According to the consumer research report of the ASMI, 70% of seafood restaurant patrons that are exposed to the brand "Alaska" or "Alaska Seafood: Natural, Wild & Sustainable" are positively influenced by this mark (Menu Alaska, 2011). In addition to this, the ASMI consumer report claims that, for restaurant use, Alaskan seafood is the most commonly used brand of seafood in US restaurants (Menu Alaska, 2011).

[12] NIPO registration number: 203707

[13] Figures 1 and 2 are copyrighted figures by Christian Coronado.

[14] USTPO registration number 4062345.

Figure 3: Marketing Activities of the ASMI in Moscow, Russian Federation 2011[15].

4. Case Analysis

The analysis of the case of the F&FP industry of NL, in combination with the two cases above, suggests that IPRs can help boost innovation (through product innovation, process innovation and management innovation) not only in terms of patentability and developing new technologies (process and products) but, most importantly, in terms of creating and sustaining strong trademarks through the use of CMs. Indeed, CMs represent the best-suited type of right for the F&FP industry. The two CMs used for the case studies represent some of the most successful examples available in the F&FP industry and these can serve as a point of reference for the F&FP industry in Newfoundland and Labrador.

Organizing the F&FP of NL and creating a provincial CM is a management innovation that could generate value by creating strong market awareness of the fish products of NL. The NSC and the ASMI success stories are good examples and can provide evidence for the importance of non-patented IPRs for "low-tech" industries, such as the F&FP industry. As a matter of public economic policy, this research recommends that the government of the NL province and major seafood producers expedite the creation, commissioning and operation of a Seafood Marketing Council/Institute, similar to the NSC or ASMI.

The authors of this research believe in the benefits of branding the seafood products of NL under a CM, consequently conveying the known goodness of seafood products from the bountiful waters of NL. This, if successfully implemented, could bring positive economic returns to the NL province, to Atlantic Canada and, ultimately, to Canada as a whole.

5. Conclusions and Recommendations

Patent rights confer strong temporary protection to the patent holder. However, they can be costly and there are usually high patentability requirements. The literature suggests that these rights are ideal for a handful of "high-tech" industries (Mansfield, 1986) or industries with very specific value creation and value capturing conditions (Miller and Floricel, 2007).

Therefore, GIs are more appropriate rights for the food and food processing industry. In addition, they offer a quasi-infinite length of protection. Nonetheless, these are controversial rights and some jurisdictions have more reticence when enforcing protection for GIs, other than for wines and spirits. In North America, specifically, there is a strong aversion to GIs, since they are perceived as a hindrance to commerce and trade (Viju et al., 2012).

CMs are rights that protect the association of producers, rather than specific products (conversely to GI). CMs also offer a quasi-infinite length of protection and can serve as a platform to protect the common interests of producers who are members of the CM. CMs seem to offer adequate pro-

[15] Figure duly licensed. Credit attribution: nikshor / Shutterstock.com

tection to those producers who are interested in protecting the producer rather than the product itself.

Regarding the limitations of this study, the authors understand that a wider source and a more ample data set would have been beneficial and better when substantiating the results. However, given the sources of information and resources, the authors deem appropriate, for an exploratory study, the results obtained using information made available by the NSC and ASMI.

Overall, the results of the case analysis can be summarized as follows:

(1) CMs perfectly suit associations of producers in the F&FP due to their quasi-infinite length of protection.
(2) CMs can be used as a platform to protect the common interests of members.
(3) CMs can be used to develop customer recognition through product origin and quality.
(4) CMs increase product differentiation and product awareness. This is because CMs provide legal certainty to consumers and users about the origin of a product, the standards used during processing and the overall quality of the product.

5.1 Applicability of CM to the F&FP in Developing and Less Developed Nations

This research suggests that trademarks, specifically CMs, are ideal rights to protect labour intensive agricultural and fishing products. Developing nations are mostly exporters of fish and fish products, which in most cases are to the final consumers who do not acknowledge the origin of the products they consume. This research suggests that the NSC and the ASMI have achieved a high level of recognition for the origin and quality of their products, which has enabled consumers to make conscious choices on the seafood products they consume. This is particularly important for Southeast Asian countries (e.g. Thailand, Vietnam, Indonesia, Malaysia, Cambodia, etc.) as their culture, as in Newfoundland, relies heavily on fishing and fish consumption.

These nations, and regions with similar economics and demographics, could benefit more from their fishing resources if they create entities, jointly between government and producers, which are charged with the marketing and stewardship of their fishing resources. This could enable them to create strong customer recognition levels, similar to the levels achieved by the NSC or the ASMI, that could be translated into a sustainable industry.

References

Agnarsson, S. (2003). *Economic Performance of the North Atlantic Fisheries: Final Report.* Reykjavik, Iceland: Institute of Economic Studies. University of Iceland. Retrieved from http://www.nora.fo/files/13/20070411152506602.pdf. (Accessed on 06/03/2013).

Alaska Seafood Market Institute. (2011). Menu Alaska 2011: Consumer Research Results, Seattle, WA, Alaska Seafood Market Institute. (Accessed on 08/03/2013). Retrieved from http://www.alaskaseafood.org/foodservice/materials/documents/Research%20Brochure_final_rev1%20(1).pdf.

Avermaete, T., Viaene, J., Morgan E., Pitts, E., Crawford N., Mahon D. (2004) Determinants of product and process innovation in small food manufacturing firms, *Trends in Food Science & Technology*, *15*(10), 474-483.

Birkinshaw, J., Hamel, G., & Mol, M. (2007). Management Innovation. *Academy of Management Review. 34*(2), 825-845.

Brandenburger, A.M., & Nalebuff, B.J. (1996). *Co-opetition, A Revolution Mindset That Combines Competition and Cooperation : The Game Theory Strategy That's Changing the Game of Business.* New York, USA:Doubleday

Buxton, M. (2005). Innovation vs. Invention. *Rotman Magazine.* (Fall), 52-53.

Christensen, J.L., Dahl, M., Eliasen, S., Nielsen, R., & Østergaard, C.R. (2011). Patterns and Collaborators of Innovation in the Primary Sector: A Study of the Danish Agriculture, Forestry and Fishery Industry**.** *Industry and Innovation*. *18*(2), 203-225.

Cortes-Martin. J.M. (2004). The WTO TRIPs Agreement – The Battle between the Old and the New World over the Protection of Geographical Indications, *Journal of World Intellectual Property*. *7*(3), 287-326.

Danielsson, Á. (1997). Labour productivity in the fish processing industries in Iceland, Norway and Denmark. Mimeo, presented at the *Symposium on the Efficiency of North Atlantic Fisheries* Reykjavik, Iceland, September 12-13.

Fisheries & Oceans Canada. (2011). *Canada's Wild Fisheries: Facts and Figures*. Ottawa, ON: The Government of Canada. (Accessed on 06/03/2012). Retrieved from http://www.dfo-mpo.gc.ca/fm-gp/sustainable-durable/fisheries-peches/stats2011/wild-sauvages-eng.html

Franzoni, L.A. (2008). The Contract Theory of Patents in Perspective, In T. Eger, J. Bigus, C. Ott & G Von Wagngenheim, (Eds), *Internationalisierung des Rechts und seine ökonomische Analyse*, (pp. 103-113) Heidelberg, Germany: Physica-Verlang.

Goebel, B. (2003). Geographic Indications and Trademarks-The Road from Doha. *The Trademark Reporter. 93*, 964-95. (Accessed on 06/03/2013). Retrieved from http://www.inta.org/downloads/goebel.pdf.

Lopez, A. (2011). *Innovation and Appropriability; Empirical Evidence and Research Agenda,* Genève, Switzerland: WIPO Press.

Mansfield, E. (1986). How Rapidly Does New Industrial Technology Leak Out? *Journal of Industrial Economics. 34*(2), 217-223.

McKeown, J.S. (2010). *Canadian Intellectual Property Law and Strategy.* Oxford, UK: Oxford University Press.

Merges, R., Menell, P.S. & Lemley, M.A. (2011). *Intellectual Property in the New Technological Age*. New York, NY: Aspen Publishers.

Miller, R., & Floricel, S. (2007). Games of Innovation: A New Theoretical Perspective. *International Journal of Innovation Management. 11*(1), 1-35.

Newfoundland & Labrador Statistics Agency. (2011). *Annual Population - Canada, Provinces and Territories; 1971-2011*. St. John's, NL: The Government of Newfoundland and Labrador, Retrieved from http://stats.gov.nl.ca/Statistics/Population/ . (Accessed on 06/03/2013)

Norwegian Seafood Council. (n.d.). *The Norwegian Seafood Council: A general Presentation [PowerPoint slides],* Tromso, Norway. Retrieved from http://en.seafood.no/About-us/Norwegian-Seafood-Council. (Accessed on 08/03/2013).

Olafsson, K. (2001). *Efficiency and Productivity in the Production of Dry and Salted Fish in Norway and Iceland: A Comparative Study***.** Tromso, Norway: Norwegian College of Fishery Science, University of Tromso.

Pavitt, K. (1998).Technologies, Products and Organization in the Innovating Firm: What Adam Smith Tells Us and Joseph Schumpeter Doesn't. *Industrial and Corporate Change. 7*(3), 433-452

Silverberg, G., & Verspagen, B. (2005). A Percolation Model of Innovation in Complex Technology Spaces. *Journal of Economic Dynamics and Control*. *29*, 225-244

Stack A, J. (2000). Certification Marks in Canada, *Canadian Intellectual Property Review*, 17, 1-30.

Teece, D. (1986). Profiting from Technological Innovation: Implications for Integration, Collaboration, Licensing

and Public Policy. *Research Policy. 15*(6), 285-305.

Viju, C., Yeung, M. & Kerr, W. (2012). *Geographical Indications, Barriers to Market Access and Preferential Trade Agreements: CATPRN Trade Policy Brief*. Ottawa, ON: Canadian Agricultural Trade Policy and Competitiveness Research Network.

WIPO. (2008). *WIPO Intellectual Property Handbook.* Genève, Switzerland: WIPO Press*,* Retrieved from http://www.wipo.int/about-ip/en/iprm/ (Accessed on 06/03/2013)

Yin, R.K. (2003). *Case Study Research: Designs and Methods***.** Thousand Oaks, CA: Sage Publications.

About Authors

Christian E Coronado Mondragon is the Academic Director of the Master of Technology Management at the Marine Institute, Memorial University of Newfoundland, Canada. He holds a doctorate in Industrial Engineering with Focus on Technology and Innovation Management from the École Polytechnique de Montréal, in Montréal, Canada. In addition to this Dr. Coronado holds a Master of Laws (LL.M) in Intellectual Property from the University of Turin, in Turin, Italy and WIPO in Geneva, Switzerland. His research interests focus on innovation management and Intellectual Property, technology transfer and product development, Intellectual Property Management in Low-Tech industries and IP Management in the Automotive Industry. Furthermore, Dr. Coronado is a Certified Six Sigma Black Belt (CSSBB) by the Institute of Industrial Engineers (IIE).

Adrian E Coronado Mondragon is is Senior Lecturer in Technology and Operations Management at the School of Management, Royal Holloway University of London, UK. He teaches Operations Management at undergraduate and postgraduate levels and his research interests focus on supply chain performance, reverse logistics, multimodal logistics and intelligent transport systems. He is/has been principal investigator in research projects sponsored by the UK's Department for Business, Innovation and Skills (BIS), Engineering and Physical Sciences Research Council (EPSRC) and the Chartered Institute of Logistics and Transport (CILT-UK).