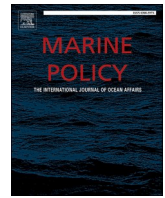




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## Performance differences between nations exploiting a common natural resource: The Icelandic–Norwegian mackerel case

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## ABSTRACT

The same type of industries, located in different nations, may perform differently in global markets. This comparative case study of the Icelandic and Norwegian mackerel industries explores whether national resources, capabilities, and institutional environments can help elucidate performance differences in exporting a common natural resource. To gain insight into the phenomenon, the present study utilizes landing and export statistics from the two nations supplemented with qualitative data based on interviews with key stakeholders in both nations. The findings show that Norway achieves a significantly higher export price on North East Atlantic mackerel than does Iceland. The price premium is consistent over time. Different qualities of the fish exported from the two countries are considered to be the main reason for the price contrast. The quality differential, as the present study argues, is primarily due to biological conditions, which neither of the two nations control, as the natural quality of the mackerel is highest when the fish is accessible in Norwegian waters. Accordingly, Norway has a biological competitive advantage over Iceland in terms of mackerel export. However, it is argued that Norway's ability to exploit the advantage commercially may be related to national resources and capabilities but hardly to the Norwegian institutional framework, which does not allow firms to integrate vertically. Finally, in the paper, the findings are discussed, and implications are outlined.

## 1. Introduction

Oftentimes, Icelandic and Norwegian fish meet as competitors in global markets. Björgvinsson et al. [8] studied the harvesting and marketing strategies of Iceland and Norway in cod (*Gadus morhua*) fisheries and their resulting performance. They found (p. 21) that “Iceland was pursuing a differentiation strategy by exporting more high-priced, fresh whitefish fillets. Such marketing strategy was associated with a procurement strategy that focused on obtaining fresh, high-quality raw materials caught via hook”. Björgvinsson et al. [8] also found that the Norwegian industry caught more fish with gillnets and sold it unprocessed at a low price. They further argued (p. 21) “that the superior harvesting and marketing strategies of the Icelandic industry might be due to national conditions that are difficult to duplicate and a rigid institutional framework in Norway”. This framework among other things prevents the actors to integrate the value chain vertically.

Furthermore, [6] argued that “cod fishing along the coast of northern Norway has largely been about fishing as much as possible with the least possible resource effort, and thereby at the lowest cost. This traditional

volume logic is rooted in biology, meteorology, and small-scale capture technology.” They further reasoned that “the logic is further enhanced by a raw fish market where quality differences essentially are not reflected in the price of the fish” (p. 113). Furthermore, Knútsson et al. [25] found that the Icelandic cod industry outperforms the Norwegian industry in terms of profitability. Their study highlighted that Norway has an institutional competitive disadvantage compared with Iceland through a highly regulated primary market with minimum prices. Additionally, Norway limits on vertically integrated companies that can control the quality of the fish through the entire value chain from the hooking of the fish until it lies ready for customer's consumption. As a consequence of the success of the Icelandic industry, a fishing fee has been imposed, which is now a relevant source of income of the government [13–15].

The effort of the present research is inspired by the aforementioned studies but extended along several dimensions. The present study investigates whether Iceland and Norway perform differently in pelagic fisheries (i.e., the mackerel industry), not only in demersal fisheries (i.e., the cod industry), and whether Iceland is still the winner. The North East

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Atlantic (NEA) mackerel (*Scomber scombrus*) is a common resource where the total quota (TAC) is shared among several nations, including Iceland and Norway. Consequently, the fish is exported by both countries to international customers across the globe. However, when it comes to harvesting and marketing of mackerel, Iceland is a “newcomer” relative to Norway.

The mackerel has another migration pattern besides cod, and both nations fish on the same stock. Mackerel is the pelagic species in Iceland and Norway that has the highest average price per kilo in international markets and also has the highest export volumes in both countries [31]. Hence, mackerel is the most valuable pelagic species for both Iceland and Norway, whereas cod is the most valuable demersal species in both countries, but here, the two nations fish on different stocks. Methodologically, the present study is a follow up of that of Knútsson et al. [25] and extends both Bertheussen and Dreyer’s [6] and Björgvinsson et al. [8] methods by including not only the quantitative data in the analysis but also the qualitative perspectives of industry experts in both Iceland and Norway.

A firm or industry is usually the unit of analysis in mainstream strategic perspectives such as the resource-based view (RBV) (e.g., [4]) or Porter’s industrial view (PIV) [34,36]. Both RBV and PIV pretend to be context-free perspectives in strategic management and thus universal in time and scope. Luo et al. [27] and Peng et al. [33], however, claimed that firms’ strategic choices often depend on the history of the firm and its competitive, institutional, and socio-cultural context. Accordingly, the present study will complement RBV and PIV by including national variables into the theoretical framework applied. Hence, the comparative strategic management perspective of Luo et al. [27] will be supplementing RBV and PIV. This attempt to apply a holistic theoretical perspective is the main theoretical contribution of the present study.

Furthermore, the present study aims to investigate whether there exist performance differences between the Norwegian and Icelandic pelagic industries. If such variations are uncovered, another aim is to explore why these differences endure. The following research questions are raised. Which nation (Iceland or Norway) achieves the highest export value of the NEA mackerel they fish (RQ1)? Why does one nation perform better than another in terms of exploiting a common natural resource (RQ2)? The paper proceeds as follows. Section 2 sets up the theoretical framework applied in this empirical study. Section 3 focuses on the empirical context of the pelagic fisheries in the two nations and develops more specific sub-questions to RQ2. Section 4 describes data and methods, and Section 5 presents empirical results. The paper ends with a discussion and conclusion.

## 2. Theory

The major perspectives on business strategy ultimately seek to answer the same question: What drives performance? Porter [34,36] suggested that the relationship between strategy and performance is primarily about positioning; that is, how a firm can maneuver to a favorable position in the market place in relation to environmental forces, which can both represent opportunities and threats. The five forces are represented by rivals, suppliers, customers, intruders, and substitutes. He further suggested that a firm can choose one of two generic marketing strategies to gain a favorable position in relation to its rivals; it can differentiate or compete on price. A differentiated actor will try to create economic values by delivering quality products (e.g., best-quality fish) to customers who are willing to pay a price premium. If the differentiation results in the company performing better than the rivals over time, it may have developed a sustained competitive advantage, which is the ultimate goal of a firm [34,36]. A player who, however, competes on price is approaching customers who want to pay less than premium price for a standard product. Such a company can create added value over its competitors by being a cost leader. Economies of scale may represent a source to a cost advantage, for example, when a firm has access to larger volumes of raw materials than its rivals, for e.g., by

disposing of larger fish quotas. If a company can produce standard products at lower costs than its competitors in the long run, a cost leader can develop a sustained competitive advantage [34,36].

The RBV of strategy, in contrast to Porter’s environment-oriented industrial view, claims that actors with different resource portfolios can formulate and implement different strategies that have performance implications [4]. Unlike Porter [34,36], RBV assumes that resource portfolios can be heterogeneous and immobile and thus unique to the firm. A portfolio that is valuable, rare, and non-imitable and which the organization can utilize effectively (a VRIO resource) can be unique and thus give rise to a sustained competitive advantage [4]. However, this survey do not make comparisons between firms as such, but between two countries industry sectors.

Luo et al. [27] comparative strategic management perspective (CSM) integrates RBV and PIV into a holistic perspective that analyzes the extent to which strategic management principles, policies, and practices apply from one country to another. CSM involves “comparison of a multitude of strategic management principles, policies, and practices in two or more countries” (p. 191). The authors further claim that the perspective (p. 191) “seeks to determine what, among these principles, policies, and practices, is universal and what is distinctive among nations”. Traditionally, the strategic management discipline uses the firm as a unit of analysis. Firms within the same nation or industry are often heterogeneous as argued by RBV. However, [27] explained that there is a “unique bundle of national-level competitive, institutional, and socio-cultural conditions that function together with a repertoire of distinctive capabilities of most national firms competing in international markets. Hence, distinctive differences in firm-level capabilities and strategies exist across nations” [27,33].

Firm capabilities and strategies can be inherited, inhibited, or reinforced because of the unique environment of the country in which it operates [27]. Consequently, firms in different countries face varying national parameters related to the competition climate, institutional framework, and socio-cultural conditions that affect their strategic decision making [23]. CSM typically has a broad scope that opens to measure similarities and differences of strategic behaviors, understands their sources, explains what is distinctive of these behaviors, and benchmarks various strategic management practices across countries [27]. Accordingly, CSM provides a framework to better understand whether a firm in a country possesses a competitive advantage compared with firms in other nations and to examine how context and history shape firm capabilities, strategies, and subsequent performance [27].

Context-free models in strategic management, such as RBV and PIV, are perspectives that intend to apply universally. However, countless strategic processes and choices are dependent on national contexts. The present study aims to explain performance differences between firms that are located in different nations but nevertheless exploit a common natural resource. The tentative theoretical framework of the present study, which is inspired by RBV, PIV, and the CSM, is presented in Fig. 1.

As suggested in Fig. 1, national differences in resources and capabilities affect firms’ strategic choices [27]. A consequence of the national disparities is that firms located in different countries are expected to perform differently in international markets. For example, two countries may have different access to and control over, for instance, fish resources that can be exported and give national companies an advantage over competitors from a nation less equipped with natural resources. Likewise, national capabilities accumulated, for example, through having a long experience of operating a fishery and exporting to international markets will vary between firms in different countries. This can provide companies in the most experienced nation with a national capability-based advantage [8]. Furthermore, a country’s institutional environment can, for example, influence whether the national value chains are organized in markets or hierarchies and give a national institution-based advantage [13,25]. Strategies that firms in a country formulate and implement can be reinforced and sometimes hampered by

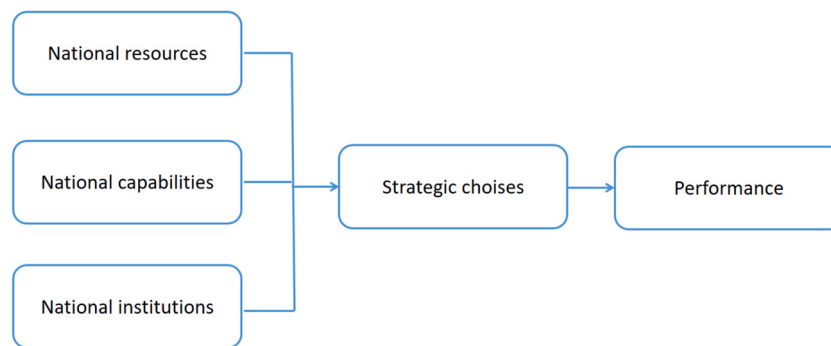


Fig. 1. Tentative theoretical framework.

characteristics of national resources, institutions, and capabilities [27]. Finally, characteristics of the strategies implemented, for example, differentiation or cost leadership [34,36], are expected to have performance repercussions for firms operating in international markets [27].

### 3. Empirical context

Basically, Iceland and Norway are two relatively similar nations with close connections to each other. In both countries, prosperity is high (GDP per capita), the unemployment rate low, and both populations are well educated [42]. However, they differ in other areas. Iceland is an island in the North Atlantic with around 350,000 permanent residents, and the Icelanders fish around the entire island [25]. Norway, with a population of almost 5.5 million, is part of mainland Europe. Fishing is largely carried out along the long coast west and north of the country [6].

Fishing in general and NEA mackerel as a species have different economic significance for Iceland and Norway. The countries also have different experiences, legal rights, and institutional frameworks when it comes to exploiting the mackerel. These differences in empirical contexts between the nations may help explain why a country eventually performs better than the other in terms of market position.

#### 3.1. Two nations: different stories

The fishing industry in Norway can be traced all the way back to the Stone Age. The fish provided the population with food and eventually became an important commodity [19]. Fishing in Iceland has also been of great importance since the country was settled in the late 800s. Until the 1300s, most of the fish was consumed locally, but gradually, it became an important export product in the Icelandic economy [18].

The NEA mackerel made its entry on the Norwegian food platter about 150 years ago and has increased in popularity both nationally and internationally [30]. Initially, the spread was limited, and the mackerel became an important part of the diet of the population in southern and western Norway. In recent years, however, it has spread northward, and the Fishermen's Sales Organisation of Herring reported in 2010 a historical amount of mackerel along the coast of northern Norway. Mackerel has also previously been caught in this region but in smaller quantities and more unevenly [32].

NEA mackerel was first discovered in Icelandic waters in 1895, but the volume was sporadic until 1996. From 2007, there has been a steady amount of mackerel observed in the country's economic zone, and since then, the species has increased in quantity [2]. At the beginning of mackerel fishing in the 2000s, a large part of the Icelandic mackerel was processed to fish meal and oil. Eventually, the Icelanders managed to maintain a quality that was good enough for human consumption [38]. Today, the mackerel industry is an important part of Icelandic seafood industry.

The economic significance of mackerel as a species is different in

Iceland and Norway. In Iceland, cod is the most important species. In 2019, cod exports represented approximately 45% of the total value of Icelandic exported seafood. In second place came the mackerel, which that year accounted for 7.3% of the seafood exports. Mackerel is the second most important wild species for Norway. In 2019, mackerel accounted for 12% of the total value of Norwegian seafood exports when farmed salmon is excluded. Mackerel is the most important pelagic species and accounted for just over 50% of the export value of pelagic fish in 2019, followed by atlantic herring (*Clupea harengus*) by almost 35% [31]. While cod dominates the demersal fisheries in terms of both quantity and value, NEA mackerel's dominance within the pelagic sector is due to its high price; quantity-wise herring (*Clupea harengus* L.) usually dominates mackerel.

#### 3.2. Two nations: different export volumes of NEA mackerel

The stock of mackerel in the Northeast Atlantic initially consists of mackerel that spawn in different areas, but because of migration, it is managed as a single stock. The distribution and spawning areas of the NEA mackerel are shown in Fig. 2. The mackerel's fat percentage increases when grazing in the summer. Then its flesh is firmer, and the quality is at its best. However, the fat percentage and firmness, and thus the quality, change when it migrates back to its spawning area in the autumn [20,40,44]. Thus, the timing of the harvest is important for the fish quality.

The International Council for the Exploration of the Sea (ICES) is an intergovernmental marine science organization that promotes research and provides advice on the marine ecosystem to improve the conservation and sustainable management of marine resources [24]. In 2019, Norway alone was allocated 22.5% of the total mackerel quota as a result of the coastal state agreement of 1999 established by the North East Atlantic Fisheries Commission. Coastal states outside the original agreement had to share 15.6% among themselves. The latter includes, among others, Iceland [37]. Hence, Iceland and Norway have different international legal positions and access to quotas of NEA mackerel. As shown in Fig. 3, compared with Iceland, Norway annually exports a considerably larger volume. On average, Norway has exported around 300,000 tonnes annually over the last 10 years, whereas Iceland has exported just under 100,000 tonnes for the last two decades.

#### 3.3. Two nations: both dependent on sustainable management

The NEA mackerel is a shared stock largely caught in the economic zones of the involved nations but also in considerable quantities in international waters. Because of a changed area of distribution, new nations have gradually taken part in the fishing [41]. Researchers argued about the cause of this change, but warmer seawater appears to be a pervasive factor [1,32]. Furthermore, as a result of the new migration pattern, a conflict over the harvesting of the mackerel has split Norway, the EU, and the Faroe Islands on the one hand, and Greenland, Iceland,

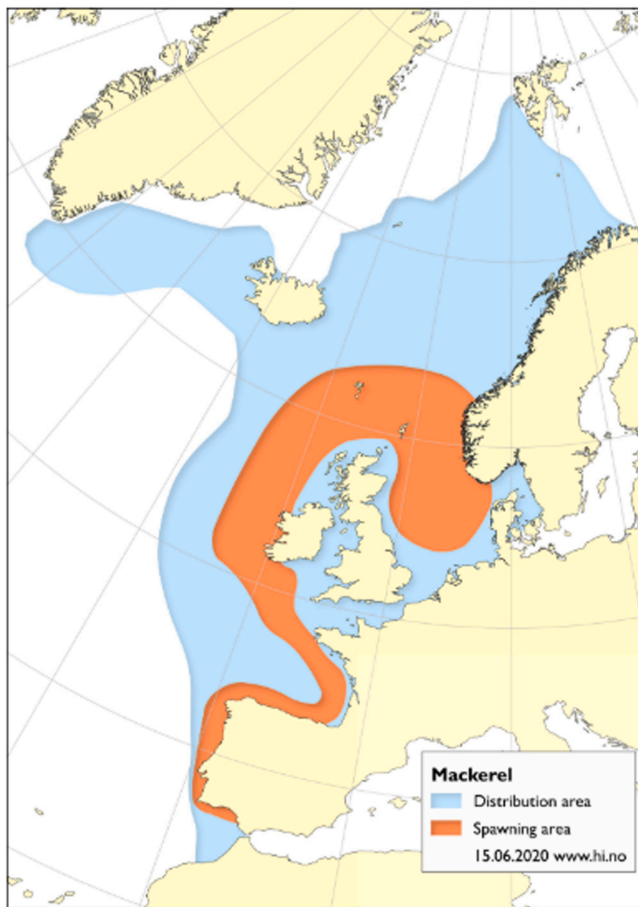


Fig. 2. Distribution and spawning areas for NEA mackerel. Source: Institute of Marine Research, Norway.

and Russia on the other hand [41]. When Iceland and Greenland began fishing for mackerel around 2007, the Faroe Islands wanted to renegotiate the coastal state agreement from 1999, however, without Norway and the EU willing to take part. This caused the management to collapse in 2008. In 2014, a new agreement was reached between the parties Norway, the EU, and the Faroe Islands, but newcomers Iceland and Greenland were still not included. Therefore, as the countries are not able to reach a unified agreement on the management of the stock, this was at the expense of the sustainability of the fishery [41].

The Marine Stewardship Council (MSC) is an international non-profit organization having the ambition to fight irresponsible fishing [28]. The organization has developed an environmental standard for sustainable fisheries where the focus is to maintain sustainable stocks, minimize environmental impacts, and streamline stock management [29]. Fisheries that meet the requirements of MSC receive recognition and reward through a sustainability certificate that can influence customers' willingness to pay a premium price when purchasing seafood [28]. Because of an inadequate management strategy and disagreements among coastal states on TACs according to the scientific advices of ICES, the NEA mackerel does not have the MSC certificate to date. Norway and Iceland are on different sides in the ongoing mackerel conflict. However, both nations are participating in fishing on a shared stock, which according to MSC is not sustainably managed. The absence of sustainability may threaten the long-term survival of the mackerel industries in both countries. Consequently, both nations may be exposed to an international institution-based competitive disadvantage.

### 3.4. Research sub-questions

The present study first examines whether two nations exporting a common natural resource perform differently (RQ1). The performance of the nations will be measured by the export prices achieved in international markets. In Fig. 4, four empirical research questions are linked to the theoretical framework developed in the theory section of the paper (see Fig. 1). To uncover potential causes of an eventual difference, RQ2 is specified by three sub-questions that will be developed in this section (RQ2a, RQ2b, RQ2c).

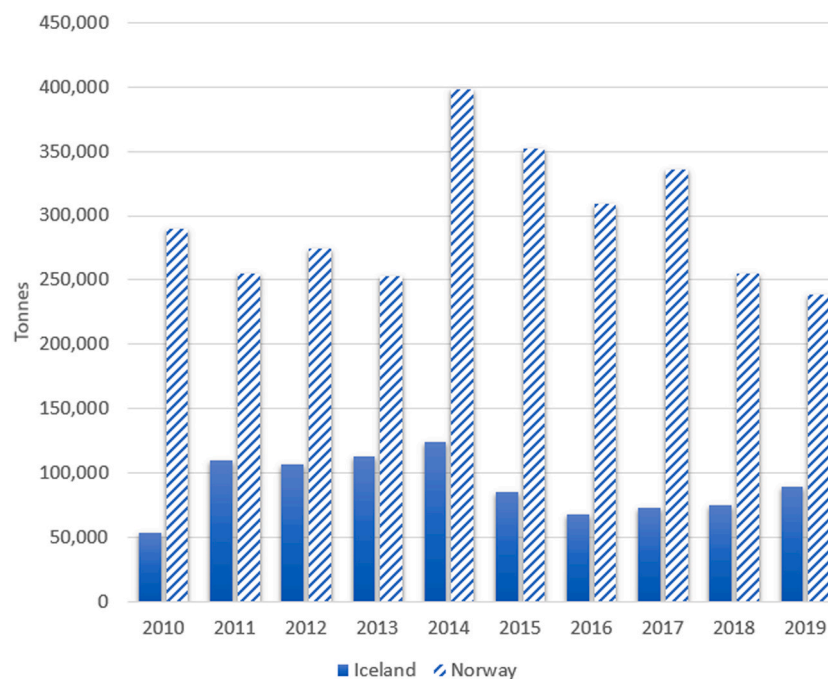


Fig. 3. Icelandic and Norwegian average export volumes of NEA mackerel 2010–2019. Left axis: Tonnes. An unpaired *t*-test shows a significant volume difference between the two nations ( $p < 0.01$ ). Source: The Norwegian Seafood Council.

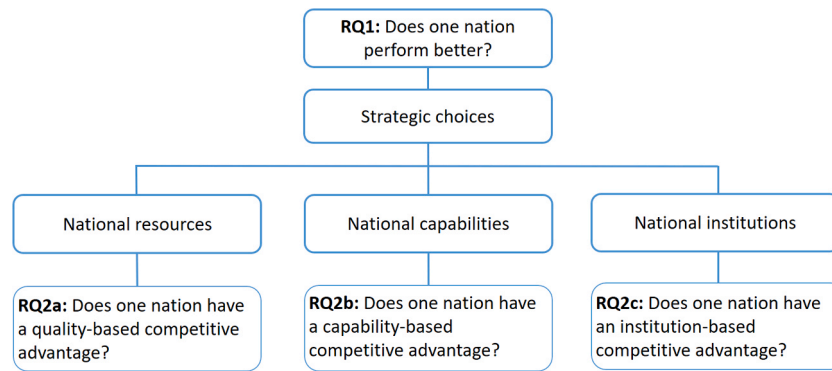


Fig. 4. Theoretical framework including empirical sub-research questions.

#### RQ2a. : Does one nation have a quality-based competitive advantage?

NEA mackerel is a pelagic species that moves over large areas, and it spawns and grazes in various nations economic zones ([41]; also see Fig. 2). This gives Norway and Iceland different strategic positions both in terms of volumes and quality of the mackerel caught. It is therefore reasonable to assume that the natural quality of the mackerel (fat percentage and firmness of the fish muscle) varies in the different periods of the year when the nations have access to mackerel. Based on traditional demand theory, it can be expected that the natural product quality will affect the price that the two nations can achieve in international markets. The national seasonal profiles of the fishery give a picture of when the mackerel is available in the different countries' economic zones. The nation with the "best fit" between its seasonal profile and the natural quality of the mackerel when it is caught can thus have gained a quality-based competitive advantage over the other.

#### RQ2b. : Does one nation have a capability-based competitive advantage?

The empirical context section outlined that Norway and Iceland have different traditions and experiences with mackerel fishing and export (also, see [2,32,38,41]). Knowledge of quality-enhancing fishing methods and preservation of the quality of the catch onboard are acquired over time. It can be assumed that possession of quality-enhancing resources and capabilities can give a nation a competitive advantage and influence the prices achieved in international markets. Norway has also had plenty of time to establish a good reputation in international markets and has probably gained considerable knowledge regarding various market segments for mackerel. Accordingly, the present study asks whether one of the nations has gained a capability-based competitive advantage manifested in the attractiveness of its customer portfolio.

#### RQ2c. : Does one nation have an institution-based competitive advantage?

Different institutional frameworks in the nations can influence how the value system for catching, producing, and selling mackerel is organized [6,13,22,33,38]. The value chain in Norway is legally regulated in a separate catch and production stages through the Participation Act of 1999 and the Fish Sales Act of 2008. Iceland gives greater freedom to players when it comes to integrating the value chain vertically. In Iceland, the post-harvest industry can own fishing vessels in a vertically integrated business model [25,38]. In Norway, all vessels sell their fish at auctions through a jointly owned fishing cooperation [6,39]. Hence, Norway organizes her value system through markets and Iceland through hierarchies. It then seems reasonable to assume that the different ways of organizing the value system may be related to how advanced product portfolios the countries can offer to their customers. Added value is expected to be higher on processed products than on simple, unprocessed raw fish export [8,38]. Accordingly, in the present study, we will investigate if the output of the value system in the two nations is different. It is expected that the nation that offers the most advanced product portfolio has gained an institution-based value system

advantage.

## 4. Data and method

This case study examines performance differences between nations exploiting a common natural resource. Accordingly, it was judged appropriate to compare two countries that are otherwise relatively similar so that the differences in the phenomenon studied can be more easily explained by factors that actually differ between the countries. In the present study, we argue that this is the case for the mackerel industries in Norway and Iceland. The countries have many similarities, and the inequalities are related to the phenomenon being investigated. Furthermore, a case study was selected for several reasons. A case study is credited for forming a good starting point for theory building [12]. Its ability to integrate objective and perceptual data is an additional strength [10]. This research method is also well-suited when the variables of interest are embedded in the context of investigation, and there is a need for multiple sources of data. The present comparative case study examines the performance of the mackerel industries of Iceland and Norway by integrating in-depth interviews with key personnel and analysis of secondary data.

Semi-structured in-depth interviews were conducted with four Icelandic and five Norwegian industry experts, all key players in the mackerel industry in the respective countries. The purpose of the interviews was to identify potential causes of any differences in performance between the mackerel industries of the two nations. An interview guide was developed, which included general topics to be discussed. To ensure relevance, the questions were based on the theoretical perspectives chosen. The questions were open aimed at steering the conversation into the research questions raised. However, the main themes were adapted to each informant because they had different positions and competencies in the industry. For example, the actors in fisheries management were asked to a greater extent about regulations, whereas the actors in the sales organizations were to a greater extent asked about exports and markets. Permissions related to handle personal data were obtained from Norwegian Centre for Research Data. A brief overview of the informants and their professional roles is provided in Table 1.

Before the interviews, the informants read through the interview guide and the consent form. They were informed about anonymity, how the information would be processed, that participation was voluntary, and that the informants could withdraw at any time in the process without having to give any particular reason. All interviews lasted between 45 and 60 min. To ensure quality interviews, they were recorded and subsequently transcribed. This strengthens the reliability of the data. Data were gathered and analyzed concurrently by data reduction. Each case was first treated singularly. Then, when all cases were concluded, it was searched for similarities, differences, and cross-case patterns that would inform the RQs. No data analysis software was considered necessary as the data amount was not as voluminous. The

**Table 1**  
Icelandic and Norwegian informants (anonymous).

Description	Professional role
Iceland 1	Chairman and board member of various Icelandic fishing firms.
Iceland 2	Representative of Icelandic fish sales organization.
Iceland 3	Representative of Icelandic Ministry.
Iceland 4	Representative of Icelandic Ministry.
Norway 1	Representative of Norwegian fish marketing organization.
Norway 2	Representative of Norwegian Ministry.
Norway 3	Representative of Norwegian fish sales organization.
Norway 4	Representative of Norwegian pelagic stakeholder organization.
Norway 5	Representative of Norwegian purse seine vessel firm.

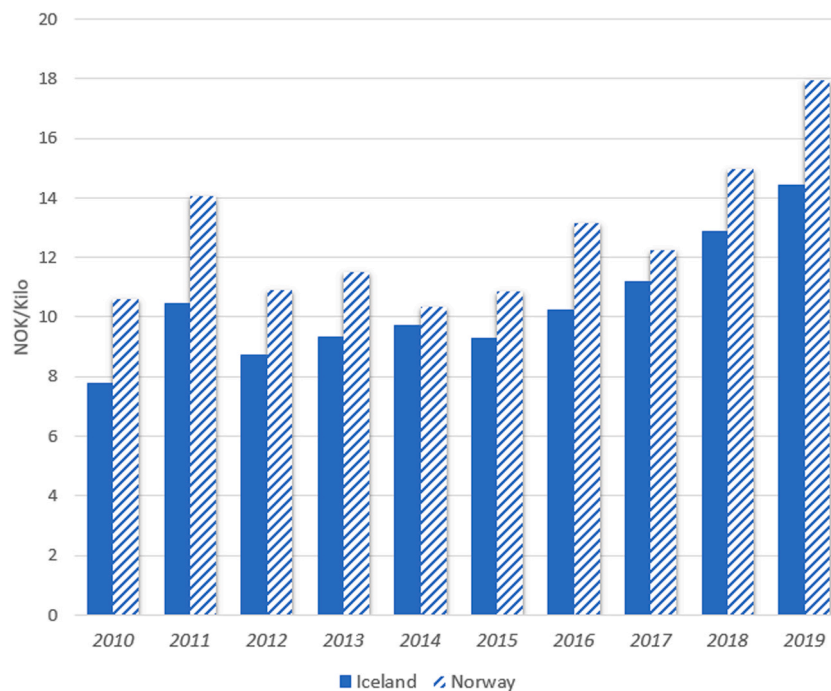
data analysis involved several research team members as recommended by Baxter and Jack [5].

The quantitative data accessed for the present study is essentially two-fold. There are export data of mackerel from the respective countries, which comprise export prices and volume for the 10 year period, i. e., from 2010 to 2019. Because export statistics alone do not show when nations land mackerel, the present study also includes landing statistics for the same time period. The Norwegian Institute of Food Fisheries and Aquaculture Research (Nofima) and the Norwegian Seafood Council have contributed data for Norway. The data from Iceland comes from Statistics Iceland and the Norwegian Seafood Council. The present study considers both Nofima, the Norwegian Seafood Council, and Statistics Iceland as reliable and credible sources.

## 5. Findings

### 5.1. Do Iceland and Norway perform differently?

RQ1 investigates whether there are in fact performance differences between two nations exporting a common natural resource, i.e., NEA mackerel. Performance is operationalized and measured by the export price obtained on the mackerel in international markets. The average export price per kilo of mackerel from Iceland and Norway in the 10 year period 2010–2019 examined is shown in Fig. 5.



**Fig. 5.** Icelandic and Norwegian average export price of NEA mackerel 2010–2019. Left axis: Norwegian Krone (NOK)/kilo. An unpaired *t*-test shows a significant price difference between the two nations ( $p < 0.01$ ). Source: The Norwegian Seafood Council.

As shown in Fig. 5, compared with Iceland, Norway has achieved a significantly higher average price per kilo of mackerel in international markets every single year for the past 10 years. The average over the entire period shows that Norway received NOK 2.05 more per kilo of mackerel than did Iceland. Thus, based on the results in Fig. 5, it does not seem unreasonable to conclude on RQ1 that there is a significant performance difference between the two nations in terms of the export price achieved on NEA mackerel. The present study can now proceed to phase two and present empirical results related to the sub-questions developed to examine possible reasons why a nation perform better than another and thus appears to have gained a competitive advantage (see RQ2a–RQ2c in Section 3.4).

### 5.2. Does Norway have a quality-based competitive advantage?

RQ2a aims to clarify whether the natural quality of the mackerel is different when landed in the two countries and thus impact the export prices achieved. This sub-question is tested empirically by mapping the seasonal profiles of the two countries and compared with the period of the year when it is known that the natural or biological quality of the fish is best (fat and firm fish muscle, not skinny and flabby). First in the results presentation, the seasonal profiles for mackerel fishing in the two countries are presented based on landing statistics.

#### 5.2.1. Seasonal profiles in Norway and Iceland

As shown in Fig. 6, the main season for mackerel fishing in Norway is in September and October. At the beginning of the decade, most mackerel were landed in September (see brightest lines), but the peak has shifted to October in recent years (see darkest lines). As shown in Fig. 7, Icelandic vessels start mackerel fishing in June and extend the season until October. The largest volume is landed around August. The landings of mackerel in Iceland, similar to Norway, have changed in recent years. At the beginning of the decade, the season began in May and ended in October (see brightest lines), peaking in July. To summarize, the season peaks in Norway about a month later than in Iceland. The peak has, however, shifted until later in the fall in both countries.

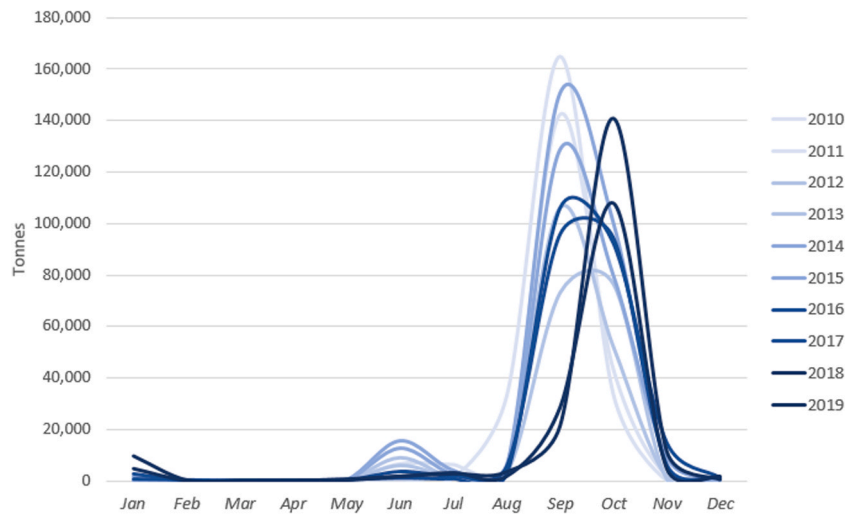


Fig. 6. Seasonal profile of landed mackerel (live weight) in Norway (tonnes).  
Source: Norwegian Directorate of Fisheries.

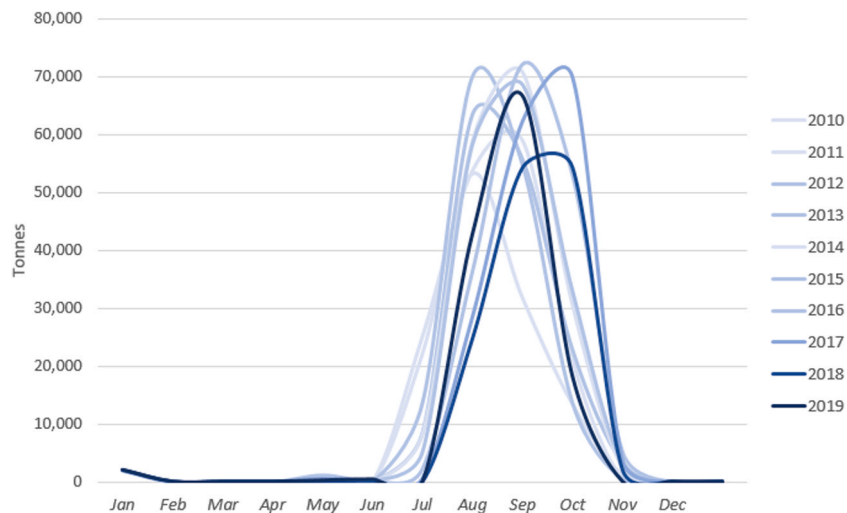


Fig. 7. Seasonal profile of landed mackerel (live weight) in Iceland (tonnes).  
Source: Statistics Iceland.

Furthermore, Iceland has a longer season than Norway.

In the next paragraph, the viewpoints of the Norwegian and Icelandic informants will be disclosed on the relationship between seasonal profile, fish quality, and export price.

#### 5.2.2. Informants on a national quality-based competitive advantage

Norwegian informant 3 believes that Norway is fortunate that the mackerel has the best quality when it is available to Norwegian vessels: "... instead of saying that localization is important for the supply of mackerel, I would rather say it is important for the quality of the raw material ...." Norwegian informant 4 also thinks that the Norwegian fleet catches mackerel when it is at its best, i.e., "... in premium catch season, which is September to November ...." This view is also supported by Norwegian informant 1. Norwegian informant 5 tells that it is the quality that determines the times for mackerel landings, and that "... a good thing for Norway is that the mackerel is near the Norwegian coast in the autumn ...." Norwegian informant 1 points out that pelagic fish such as mackerel and herring are mainly sold as frozen products. This implies that the intensive fishing season does not mean that sales must be immediate but can be distributed over the year.

The Icelandic informants agree that Iceland has a distinct

competitive disadvantage when it comes to the landing pattern and the seasonal profile of the mackerel fishery. Icelandic informant 1 says "... Iceland is the feeding area and not the spawning area for mackerel...." When the mackerel is in Iceland, it is in a period of intense grazing. This makes it very vulnerable in terms of quality when being caught. Furthermore, Icelandic informant 1 believes that the vessels' quota portfolio can affect the time of landing. If the vessels have large quotas, this means that they can extend the season so that it lasts longer. If, conversely, the quota is smaller, they will attempt to maximize the value by taking it as late as possible. Icelandic informant 2 explains that the quality of the mackerel makes them want to catch as much as possible in August/September. Icelandic informant 3 compares mackerel fishing with a lottery because we don't know when the fish leaves Icelandic waters .... The informant says that when Iceland started fishing mackerel around 2007–2008, the season began in June, but they soon realized that the quality was poor and that they thus got a lower price in the markets. Therefore, they postpone fishing for as long as possible, but because it is impossible to say when the fish leave their waters, it is very uncertain whether the vessels can fish their quotas or not. Finding the best landing date has been a steep learning curve for the Icelandic mackerel industry.

5.3. Does Norway have a capability-based competitive advantage?

Norway has been engaged in catching and exporting mackerel much longer than Iceland. The present study therefore expects that this nation has come the furthest on the learning curve [21]. Accordingly, the third research question raised (RQ2b) was whether one nation has a capability-based competitive advantage relative to the other as expressed through the quality of the customer portfolios of the two countries (see Table 2).

As shown in Table 2, the two exporting countries target quite different market segments. Russia was the most important market for Icelandic mackerel until 2015. However, in response to economic sanctions imposed against Russia for its intervention in Ukraine (Crimea), Russia retaliated by banning food imports from those countries involved, including Iceland [43]. After this, the Netherlands has been the most important market for Icelandic mackerel for three of the last five years. A reason may be that the Netherlands act as a port of entry for Iceland’s export to EU-countries in general. EU statistics on import usually reports the first entry into EU. In addition, Netherland act as a large hub for global sea freight – including seafood. Moreover, Lithuania took over the pole position in 2018 and 2019. The Netherlands and Lithuania re-entered the list as the next most important markets for Icelandic mackerel, but also, in 2015 and 2017, China joined in. Nigeria was the third most important market for Icelandic mackerel at the start of the decade (2010–2014), but then, China and Lithuania took over this role at the same time as Nigeria dropped out of the top three list. As also revealed in Table 2, the most important market for Norway is Asia. Besides 2017, where China was number 1 and Japan number 2, Japan has been number 1 and China number 2 all years studied. The third most important market for Norway has varied to a greater extent, but South Korea ranks six times on the list, including the last four.

5.3.1. Informants on a national capability-based competitive advantage

Norwegian informant 5 tells that Norway has been fishing mackerel since the 1950s, which means that the industry has had many years of acquiring knowledge about fishing and exporting. Norwegian informant 1 claims that Asia is the best-paying market, and by Asia is meant Japan, South Korea, and, to some extent, China.

According to Norwegian informants 1 and 5, the Japanese are

Table 2

Top three buyer countries for Icelandic and Norwegian mackerel. The percentages indicate the share of the country’s mackerel turnover<sup>a</sup>.

	Iceland		
	1	2	3
2010	Russia (66.1%)	Lithuania (9.2%)	Nigeria (6.4%)
2011	Russia (42.8%)	Netherlands (17.4%)	Nigeria (12.3%)
2012	Russia (37.4%)	Netherlands (25.1%)	Nigeria (15.5%)
2013	Russia (41.9%)	Netherlands (18.2%)	Litauen (13.1%)
2014	Russia (34.9%)	Netherlands (22.5%)	Nigeria (10.1%)
2015	Netherlands (21.9%)	Russia (34.9%)	China (9.1%)
2016	Netherlands (16.0%)	China (9.1%)	Lithuania (8.3%)
2017	Netherlands (17.6%)	Lithuania (13.7%)	China (11.0%)
2018	Lithuania (15.0%)	China (13.4%)	Netherlands (13.0%)
2019	Poland (16.4%)	Lithuania (14.2%)	Ukraine 10.7%
	Norway		
	1	2	3
2010	Japan (33.1%)	China (17.2%)	Turkey (6.6%)
2011	Japan (32.1%)	China (21.6%)	South Korea (6.5%)
2012	Japan (19.0%)	China (16.6%)	Russia (8.3%)
2013	Japan (23.8%)	China (19.6%)	South Korea (7.9%)
2014	Japan (19.9%)	China (19.7%)	Nigeria (10.5%)
2015	Japan (18.7%)	China (19.8%)	South Korea (12.8%)
2016	Japan (23.4%)	China (13.5%)	South Korea (13.9%)
2017	China (20.2%)	Japan (19.2%)	South Korea (12.2%)
2018	Japan (26.4%)	China (16.0%)	South Korea (11.1%)
2019	Japan (22.1%)	China (19.0%)	South Korea (12.6%)

<sup>a</sup> Source: Norwegian Seafood Council.

extremely quality-conscious. The Norwegian players have spent decades to create loyalty among Japanese buyers through systematic promotion and marketing. The focus of the players is strengthened by Norwegian Seafood Council’s generic marketing effort of seafood in international markets. However, when it comes to cod the Icelanders achieve a higher price [8] despite the efforts of the Norwegian Seafood Council. Furthermore, the Japanese market prefers to buy from one nation rather than dividing imports between multiple suppliers. Norway can offer large volumes with the quality that the Asian market demands. Furthermore, the Japanese market is quite different from what one sees in the EU or Africa when it comes to the prices offered and the mackerel in demand. To create security for the best-paying buyers, Norway grants a refund if the quality turns out to be below what was agreed. This encourages the boats to do what they can to land top quality (Norwegian informant 3). Furthermore, Norwegian informant 1 tells that to uphold the market position, it is important to keep track of potential substitutes for mackerel. If the price becomes too high in relation to the quality demanded, buyers will more easily be tempted to switch to other suppliers or products. For example, coho salmon had such a low price that it became a substitute for Norwegian mackerel in the Japanese market. Norwegian informants 1 and 3 state that the quality of the Faroe Islands, Shetland, and Iceland has proven to be competitive over time, indicating that it is more than natural quality that affects the price level. When asked why Norway manages to deliver more to the Japanese market than Iceland, Norwegian informant 4 replies that it is both due to fish quality and the market work being done.

Icelandic informants 1 and 2 say that in the beginning of mackerel fishing in Iceland, large parts of the catch ended as fishmeal and oil. This was because they had to get experience as they had not done this before. However, after a fairly steep learning curve, today, everything goes to human consumption except for cuttings from the filleting process. Icelandic informant 1 claims that Norway has long been established as number one and has a very good reputation but that Iceland has come a long way although Norway has a much longer tradition of mackerel fishing. According to Icelandic informant 2, Iceland has found markets that pay a good price for mackerel caught in July/August. The bottom line is that the price paid matches the natural quality of the product. The high-quality requirements in the Asian market have made Iceland more dependent on Eastern European markets. Conversely, Icelandic informant 1 states that the Japanese are interested in alternatives to Norwegian mackerel and that Iceland is thus working hard to deliver the desired quality to different markets. Icelandic informant 2 explains that Iceland did not have the best facilities when they first started mackerel fishing. However, the industry has generated profits that are largely reinvested in new modern vessels, the best processing equipment and cold storage. The equipment and facilities now correspond to what Norway and the Faroe Islands have at their disposal. However, Icelandic informant 1 points out that Iceland still has a long way to go in terms of marketing work, “...to enter the most important markets and get to know them ....”

5.4. Does Norway have an institution-based competitive advantage?

Norway has a market-based pelagic value system, whereas Iceland has an integrated pelagic value system in that the vessels are owned by the onshore facilities [38]. This has an impact on the way the companies are organized and operated. It also affects the competitive climate between the different stages in the chain [35]. Furthermore, the values created from the chain and their distribution are impacted [27]. Thus, the fourth research question raised in the present study (RQ2c) was whether one nation has a national institution-based competitive advantage relative to the other. To address this question, the present study includes statistics showing which product categories the two nations have exported the most the last decade.

As shown in Table 3, Norway mainly exports whole frozen mackerel and some fresh mackerel. Norway exports marginally other products.



Furthermore, as Table 3 shows, Iceland also mostly exports frozen mackerel. However, one can observe a rapidly growing trend in recent years of frozen fillets. This shows that Iceland is succeeding to a greater extent than Norway in exporting processed products, which is in line with similar findings in the cod industry [8].

#### 5.4.1. Informants on a national institution-based competitive advantage

The Norwegian informants agree that a vertically integrated value chain can have a positive impact on the product portfolio and thus the export price of mackerel. In the Norwegian value chain, fishers and ship owners are often the economic winners. Norwegian informant 1 informs that there has been a huge difference in profitability between the fleet and the land plants in Norway. For example, fishers get a huge margin while "... the land industry is left with almost nothing ...". A weak plant economy means that new and innovative solutions are implemented to a less degree. Norwegian informant 3 believes that there is a potential for developing new ways of operating the processing process on land to deliver more advanced products and even better-quality mackerel than today.

Furthermore, the Icelandic informants believe that vertical integration can affect the product portfolio and thus export price obtained. Icelandic informant 1 points out that all stages should have their margin but that integration can be positive because the companies are in better contact with the markets. Integration eliminates several steps as companies often sell directly to the end customer. The informant believes that Icelandic firms bring much more of the value home. Icelandic informant 2 also believes that such a value chain has its advantages and disadvantages. The advantage of a vertically integrated value chain is that you can control each stage much better. The companies decide for themselves when, how much, what, and to whom to produce. The main disadvantage, according to the informant, is to determine the price the fishermen will receive and that, compared with Norway, Icelandic fishermen get less. Hence, in Norway there are other losers in the value chain than in Iceland. Icelandic informant 3 believes that an integrated value chain can be good for companies, because they have insight into the entire chain and can thus swiftly make decisions benefiting the whole chain. The disadvantage is that the fishers believe that they will be suffering in an integrated value chain.

## 6. Discussion

### 6.1. Norway does perform better than Iceland on export of NEA mackerel

RQ1 asked whether there is indeed a performance difference between two nations exporting a common natural resource, i.e., NEA mackerel. The question is theoretically rooted in Davies and Ellis [9], who, unlike Porter [35], argued that also advanced economies can be more successful than others by producing and exporting natural resources. The result shows that Norway achieves a significantly higher export price of mackerel than Iceland during the entire 10 year period

**Table 3**  
The mackerel-based product portfolios of Iceland and Norway<sup>a</sup>.

	Fresh		Frozen fillet		Frozen round	
	Iceland (%)	Norway (%)	Iceland (%)	Norway (%)	Iceland (%)	Norway (%)
2010	0.0	6.9	1.4	1.5	98.6	91.6
2011	0.0	4.6	0.2	1.7	99.8	93.7
2012	0.1	3.3	2.0	1.0	97.9	95.7
2013	0.5	2.5	0.7	1.3	98.8	96.2
2014	0.1	2.1	0.4	0.9	99.4	96.9
2015	5.1	0.5	2.6	1.7	92.3	97.7
2016	1.2	0.5	2.3	1.9	96.0	97.7
2017	0.7	2.2	7.7	1.7	91.6	96.1
2018	0.3	4.5	9.6	2.2	90.3	93.3
2019	2.3	3.9	10.1	2.5	87.6	93.6

<sup>a</sup> Source: Norwegian Seafood Council

examined (see Fig. 5). The export price per kilo of Norwegian-produced mackerel products is on average NOK 2 above the price of similar Icelandic products. This means that Iceland loses export values of about 14% (2/14) per kilo of fish compared with Norway. Accordingly, the present study finds it reasonable to conclude that Norway's performance is superior when it comes to mackerel export compared with Iceland. This finding is in sharp contrast to Björgevinnsson et al. [8] findings regarding the export price of cod obtained by the two countries in international markets. They found that Iceland performs significantly better than Norway in cod export. In the four other research sub-questions, the present study examined potential reasons for the performance difference.

### 6.2. Norway does have a quality-based competitive advantage

The second research question raised (RQ2a) was whether one nation has a quality-based competitive advantage (see Section 3.4 and Fig. 4). The landing statistics show that the season peaks vary in the two countries. Norway lands most mackerel in October (see Fig. 6) and Iceland in August/September (see Fig. 7). The informants in both countries agreed that the fish's natural quality (fat content and firmness of the muscle) is best the farther into the season. Then, however, the mackerel moves out of the Iceland's economic zone and into the Norwegian. This implies, according to Luo et al. [27], that the resource ownership is different in the two countries although the species being fished is the same.

The Icelandic mackerel fishery was established about 10 years ago as a result of changes in the migration pattern and distribution of the NEA mackerel [41]. Iceland may have had a strategic incentive for maximizing mackerel harvest quantity over quality. In doing so, Iceland gained recognition and proved that they had access and could fish significant amounts of mackerel in their waters. To implement this strategy, they had to harvest intensively in a part of the year where the most valuable quality attributes are not present. This is a likely explanation for why Icelandic mackerel receive lower export prices than the Norwegian mackerel.

The migration pattern is also a key reason why the natural quality of the mackerel is different when it is landed in Norway and Iceland. This is an external biological condition that cannot be controlled by humans [27]. When the mackerel reaches the Norwegian economic zone, it has a high fat content and a firm fish muscle. Both of these attributes are highly rewarded in the quality-conscious and exclusive Japanese market. Furthermore, an Icelandic informant (2) states that the migration pattern of the mackerel gives Norway a "... natural monopoly ..." in the world's most valuable market segments for mackerel (see Table 2). Luck [3] with the migration pattern seems to be an important reason why Norway outperforms Iceland in terms of mackerel export. However, if climate changes cause future changes in the migration pattern, Norway may lose its existing biological conditioned competitive advantage relative to quality.

### 6.3. Norway can (still) have a capability-based competitive advantage

RQ2b asked whether one nation has a capability-based competitive advantage relative to the other. Compared with Iceland, Norway has much longer experience in fishing and exporting mackerel, and Norway's largest customers are in Asia (Japan, South Korea, and China). The Icelandic mackerel, conversely, is primarily sold to Eastern European countries (see Table 2). These countries have lower quality requirements for the mackerel bought, which is reflected in the price paid. However, Iceland can adapt its product portfolio to the demand in various market segments according to both Icelandic and Norwegian informants (see Table 3). Segments that demand fillets, for example, may be more easily satisfied by approaching Icelandic exporters than Norwegian. This could be a potential future threat to Norwegian mackerel exports [36] that unilaterally offers round mackerel: frozen or

fresh (see Table 3). Norway has spent great resources in establishing loyal customer relationships in Japan. However, Icelandic informants claim that despite this, Iceland may be about to emerge as a competitor in the Japanese market for mackerel as well. Several Norwegian informants point out that the quality of several countries, including Iceland, has in some cases proved to be competitive with the Norwegian. Thus, they believe that it is not only the natural quality of the fish that determines the export price. The Icelandic informants emphasize that Iceland has learned a lot in a short time and has had a strong focus on resource renewal [27]. This shows, among other things, their ability to offer special products such as fillets to customers who request this product variant (see Table 3). It is therefore conceivable that Iceland sometime in the future will regain Norway in knowledge and experience. If that happens, it is the natural quality of the fish that sets the two nations apart.

Nevertheless, knowledge of the requirements of, and access to high paying market takes time and skill to acquire. According to Lieberman and Montgomery [26], there are potential first mover advantages for early movers when entering new markets. This advantage will be sustainable if first movers are able to establish buyer switching cost. Norway has benefitted from a longtime relationship with the Japanese fish market and built a valuable reputation. Furthermore, Norway has institutionalized its generic marketing efforts through the Norwegian Seafood Council. It is conceivable that this has influenced Norway's performance in the mackerel case compared to Iceland.

#### 6.4. Norway does not have an institution-based competitive advantage

RQ2c asked whether one nation has an institution-based competitive advantage relative to the other. Different national institutional frameworks can influence how the value system is organized in different countries and thus the value creation that takes place (e.g., [6,8,22,25]). Although Norway, according to the informants, is adept at catching and maintaining the quality of fish being landed, it does not seem like the country has a great focus on further processing on land to the same extent as Iceland (see Table 3). In Iceland, vertically integrated value chains create fewer links and better communication between the retail market and the catch stage. This helps them to more easily capture trends that are developing in the market and adapt the product portfolio accordingly [25,38]. In the Norwegian value chain, there is a big difference in profitability between the catch and processing stages. Facilities with a weak economy may lack necessary resources to innovate and further develop their production processes and product portfolios [17].

## 7. Implications

The present study shows that a fishing nation can gain an advantage in international markets relative to competitors because of the migration pattern of the species and attributes of the fish when being caught. The biologically based advantage can lay the premise for the nation's capture strategies, product choices, and marketing strategies. However, it is important that both management and industry take conscious steps to exploit the advantage right up to the customer so that the natural advantage is not spoiled on its way.

Although the Norwegian value chain consists of several stages that interact through market-based transactions, and not like the Icelandic in a vertically integrated hierarchy, Norway manages to exploit the biologically created advantage to add superior values, especially for the capture stage (see, for example, [7]). A well-functioning auction-based first-hand market seems to succeed in sending strong market signals from the valuable Japanese market to the catch stage in the form of quality-graded pricing [39]. This has contributed to an intensive seasonal fishing in Norway for a short period when the natural quality of the mackerel is at its best.

The theoretical perspective chosen shows how external biological conditions influence the configuration of internal national resources and

capabilities that contribute to a national competitive advantage. A comparison of the findings in the present study with a similar study in the cod sector between Iceland and Norway [8] shows that analyses at a national level can reveal interesting nuances between related industries when different nations' performances are compared. In the Norwegian mackerel industry, a separated market-driven value chain works better than in the cod sector because a well-functioning auction system promotes premium quality of the landed fish [39].

Norway has, by nature, gained a competitive advantage in harvesting mackerel with attributes that is preferred in the best-paying market segments. But this advantage is vulnerable to climate change and a changed migration pattern for the mackerel. Although Norway today has a first-hand market organized as an auction several informants point out that the distribution of the values created is very uneven between the harvest and post-harvest stages [11,16]. Such a distortion can prove costly, even for fishermen, if the onshore facilities lack the financial resources to innovate and automate their production in line with foreign competitors.

If the migration pattern of the mackerel continues to change, Iceland may be in an even stronger biological position in the future and become a real challenger to Norway on quality. But even in a vertically integrated value chain where the post-harvest industry owns the fleet and has the power to determine the first-hand price, the incentive system can be a challenge. If the vessels are more concerned with efficient fishing than with gentle capture, this can hurt the quality that is landed [6]. Perhaps the Icelandic pelagic industry can be inspired and learn from the country's own cod industry on how to motivate their vessels to deliver top quality [8].

Finally, the mackerel stock must be managed in a biological sustainable way for Iceland, Norway and the other nations involved to be able to continue harvesting this valuable natural resource. According to ICES, an overfishing of NEA mackerel is taking place. This is due to the absence of a coastal state agreement between Norway, the EU, and the Faroe Islands on the one hand and Iceland, Greenland, and Russia on the other hand [41]. When several nations fish on the same stock without such agreement, it is the entire stock that loses its MSC certification. This will therefore affect all parties involved. Absence of certification could lead to a future price reduction in all markets for those who harvest the stock, and of course, a total lower harvesting volume. Today, Norway is harvesting far larger volumes than Iceland (see Fig. 3) at significantly higher prices (see Fig. 5). Norway will therefore, relative to Iceland, experience the greatest absolute value loss if the stock collapses. Relative to their national economies, however, Iceland will be the biggest loser. Nevertheless, with a coastal state agreement it would be possible to reach an agreement on fishing in each others exclusive economics zones, as well as land mackerel in each others ports. Icelandic vessels can in this scenario fish mackerel of superior quality, land and sell it in Norway, and take advantage of Norwegian relations with high paying markets for mackerel (see Table 2). This would favour both the pelagic vessel owners and the crew on board the Icelandic vessels, as the key-side price of the landed mackerel tend to be higher in Norway compared to Iceland.

## Conflicts of interest

The authors declare no conflict of interest.

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