

IT AS AN AGENT OF SOCIAL CHANGE: *LONXANET* AND THE CASE OF THE GALICIAN ARTISANAL FISHERIES

Enrique Dans
Instituto de Empresa
Madrid, Spain
Enrique.Dans@ie.edu

Juan Freire
Universidade da Coruña
A Coruña, Spain
jfreire@udc.es

Abstract

Information technologies (IT) can be used as an agent to foster social change. This case study describes an Internet start-up, Lonxanet, and analyzes its potential role as a catalyst of changes in the Galician (northwest Spain) artisanal seafood fisheries. These fisheries are traditionally associated to rural communities of fishers, selling their products in local auction markets known as lonxas. Galician seafood is hugely appreciated in the Spanish market, where products achieve very high prices and have luxurious connotations. However, the product passes through a wide array of intermediaries where lack of transparency prevails until it reaches the end market, so fishers achieve just a tiny amount of the potential profits despite assuming all the risks associated to the extractive phase. In order to foster social and economic change, Lonxanet proposes a large electronic marketplace initiative partially owned by fishers' organizations, integrating marketing and logistic services and selling directly to restaurants and other final consumers. This change enables fishers to exert control over the whole commercial cycle. Consequently, they switch from a survival mentality to an industrial one, and they become especially interested in the sustainability of the resource, thus achieving environmental benefits.

Keywords: Internet, social change, marketplaces, fishing industry, markets, electronic commerce

1 BACKGROUND

The Spanish seafood market is extremely complex. It is comprised by a diverse set of species, mainly mollusks, crustaceans, and fishes, extracted in many zones along the coast, but competing also with foreign imports. Along these Spanish coastal zones, one in particular possesses intrinsic characteristics that differentiate it from the rest. Galicia is a region with an autonomous government (*Xunta de Galicia*) located in northwest Spain (northeast Atlantic) and with a population of approximately three million inhabitants. It boasts an extensive, irregular coastline (1,295 km) with a series of coastal embayments known as *rias*, which may take the form of wide, gentle incoming bodies of water, such as the *Rías Baixas* (in the South) or be smaller in extension and have a more rugged appearance, such as the *Rías Altas* (in the north) (Freire and García-Allut 2000).

The special morphology of the coastline, in combination with the oceanographic features of the area, favors the emergence of a special type of ecosystem characterized by its cool and nutrient-rich waters, high biological productivity, and large biodiversity. As a result, seafood raised in that area have a particular taste and texture, interpreted by the market as a superior quality in relation to seafood from other areas.

These physical circumstances enable the emergence of a millenary industry, based on the extraction of resources from the sea. But besides the inherent quality of Galician marine products, social and cultural circumstances accompany the development of Galician fisheries. Before the 20th century, fishing was as important as any abundant natural resource in an economically depressed region. Considering the lack of industrial alternatives, fishing was, along with agriculture and emigration, a mere survival option.

It is in the second half of the 20th century, with the advent of the refrigeration technologies, that Galician products start to gain a strong reputation for quality in external markets, and the traditional extractive activity grows substantially.

Additionally, Galician industrial fleets have been operating in distant waters for long periods, so fishing culture appears strongly consolidated. The artisanal industry encompasses everything from fishers in small ships and vessels to pure hand-picking from the sand or the rocks, depending on the species (most species inhabit the areas immediately along the coastal line). Goose barnacles, for instance, are hand-harvested from the rocks, while lobsters and crabs are caught in traps; clams, cockles, and other bivalves are semi-cultured in intertidal areas.

2 THE ARTISANAL FISHERIES INDUSTRY

As a whole, the industry employs some 40,000 people, with approximately 8,500 vessels. Within the inshore fishery, the artisanal sector is the most numerous. This usually consists of productive units made up of very few fishers who are usually related to each other. In fact, the generic makeup of these types of vessels tends to constitute ideal models such as father/son(s), father-in-law/son(s)-in-law, cousins, brothers-in-law, etc., completing the crew with people who are not related, when the various family households are unable to supply new members (García-Allut 1998). However, the total number of people would be much higher if we come to consider other collectives different from the full-time fishers: part-time and amateur fishers, usually not included in official statistics. From an economic perspective, and using official data provided by *Xunta de Galicia*, the fresh weight of captures landed in 1998 amounted to 171,000 tons, and reached a first-sale value of over €364 million.

The inshore fishery industry comprises approximately 50 species harvested for commercial purposes. They are an extremely diverse group from a taxonomical viewpoint: crustaceans (velvet swimming crab, spider crab, prawns, and goose barnacle); bivalve mollusks (several species of clams, razor clams, scallops, and cockles); cephalopods (octopus, cuttlefish, and squid); and fishes (hake, sea bass, monkfish, sole, turbot, etc.). Only a few of those species support mono-specific fisheries (consisting, on a global level in Galicia, basically of hake, octopus, spider crab, velvet swimming crab, clams, razor clams, and goose barnacle). For the remaining species, fishers' strategy consists of exploiting a specific gear to catch whatever becomes available, since the abundance and commercial value of these species do not allow for further specialization. From an ecological viewpoint, the Galician ecosystem can be defined as clearly overexploited (Freire and García-Allut 2000). Some facts prove such assertion: the virtual depletion and collapse of several stocks, important in previous years, such as lobster, spiny lobster or bream; the sharp decline in captures of other crustacean species; and data on specific fisheries which reveals exploitation rates higher than 90 percent per fishing season.

Fishers are grouped into fishers' organizations known as *cofradías* (equivalent to guilds), originated in the 15th century. These organizations are, at a minimum, comprised by a principal, called *patron maior*, democratically elected by the fishers from their membership, and an administrator.¹ Every *cofradía* exerts its influence over a given part of the littoral. The whole coast of Galicia is divided into 61 *cofradías* of unequal sizes (see Figure 1). Besides representing fishers' interests, *cofradías* run the *lonxa*, the local marketplace where fishers have to sell their catch, in exchange for a small percentage, usually 2 to 4 percent over the final amount of the transaction. Selling at a *lonxa* is mandatory; other channels such as direct sales to bars or restaurants are illegal.

The efficiency of the *lonxas* as marketplaces depends mostly on their size. By law, all of them operate using a Dutch auction mechanism, and following a set of standard procedures regarding lot size, etc. In general, big *lonxas* are able to attract many buyers and, therefore, the process of price building happens normally. However, the scarce presence of buyers in the small *lonxas* typically derives in buyers' driven markets and, consequently, price collapse (for a detailed explanation, see Milgrom and Weber 1982). If market prices go too low due to the absence of buyers, fishers may ask for a special permission or *guía* to sell their catch in a different *lonxa*. Fishers generally try to avoid this procedure, since it forces them to incur in transportations costs, but the permanent lack of qualified buyers has led to the demise and disappearance of some of the small *lonxas* along the coast, thus destroying economic value for the region.

¹The administrator can be a public officer (paid by the autonomous government), or an independent professional hired by the *cofradía*. This fact has a great deal of importance not only in the relationship *cofradías* have with the public administration (more fluent when a public employee is leading it), but also in the administrator's skills (public employees have limited management skills, and their duties do not include business management activities). Larger *cofradías* can also have a biologist, other administrative personnel, etc. Recently, some *cofradías* have adopted a more business-oriented mentality, and their management can include professional managers in charge of different areas such as the marketplace, commercial activities, etc.

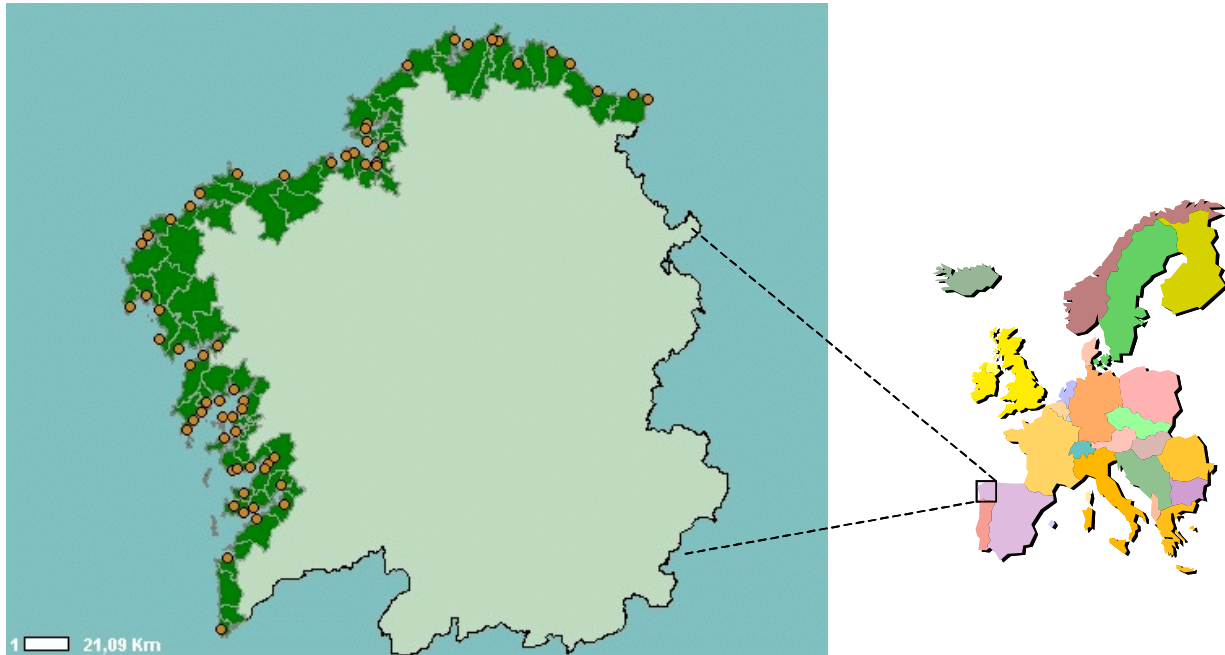


Figure 1. Map of Galicia (Northwest Spain)
The dots along the coast represent *cofradías*.

Once the catch is sold at the *lonxa*, a long array of intermediaries follows until it finally reaches the end consumer. Channels differ widely in length and variability, and include both the legal and the illegal. In the shortest version, for instance, the owner of a local restaurant can buy directly at the *lonxa* and serve the seafood right away.² In the longest one, a consolidator (*vendeduría*) could buy seafood at the *lonxa*, which is sold to an intermediary, then resold to a wholesaler that transports it to the main markets in, for example, Madrid, to another public market called *MercaMadrid*.³ Once there, there could even be another wholesaler distributing the seafood to local restaurants and shops, conforming channels with four or even five steps, each of them with healthy commercial margins. As a result, seafood typically suffers increments of over 100 percent or 150 percent, depending on the species, between the first price in the *lonxa* and the price paid in the point of final consumption.

Consumption patterns are strongly seasonal, but not totally associated with the biological behavior of the species. The Christmas season brings, undoubtedly, the highest demand and the highest prices, since seafood is somehow considered a typical dish for the Christmas table. The summer also brings a peak in demand, associated with the inflow of tourists to Galicia. Theoretically, every species has closure periods, as decided by the local government (*Xunta de Galicia*) and communicated through the *cofradías*. The local government can also impose other spatial and temporal closures in cases of scarcity, and regulate other aspects such as number and type of gear used, size of the catches, etc. However, according to many scientists, the measures taken are normally more political than ecological, and, combined with the pressure exerted by illegal fishers, do not protect the affected species enough to guarantee a sustainable exploitation.

An additional problem is related to the lack of information to consumers regarding quality and origin of the seafood in the majority of final destinations. In general, information about freshness and preservation mode is scarce, even though they greatly affect product quality. This forces Galician seafood, with a higher quality and price, to compete with foreign imports apparently similar, but with uncertain origin and quality. Final buyers and, ultimately, consumers in some cases lack the knowledge and criteria to

²There could be an even shorter, but illegal, version: a local restaurant gets a daily visit from fishers, who try to sell through this irregular channel every product that cannot be auctioned at the *lonxa* (size too small, closure periods, etc.).

³There are equivalents in most of the main Spanish cities, *MercaBarna* (Barcelona), *MercaValencia*, *MercaSevilla*, etc.

differentiate⁴ both types of seafood, and even though some initiatives point toward the establishment of a guarantee of origin (as in other products such as wines, cheeses, etc.), no actions have been completed yet.

The final destination points for seafood can be classified into many categories. While there is no doubt about who the final customers are, there are many instances of consumption: bars or restaurants, hotels, catering services for weddings or celebrations, small fish-markets, supermarkets, or even hypermarkets are places where consumers can buy or consume seafood. In most cases, the product reaches those final destinations via long, multi-intermediated, extremely variable channels. Despite some exceptions (restaurants close to ports are able to fulfill their seafood needs by buying directly at the *lonxa*), merchants usually get seafood from a single source, either a central market such as *MercaMadrid* or a specific wholesaler, who carries a wide array of products. Prices are not negotiable and variable, a circumstance that forces restaurants to indicate the price in their menus as “s/m” (*según mercado*, meaning “according to market prices”). The relationship with the seller is crucial for bars and restaurants. Product quality, price, and uninterrupted supply are key elements. A basic segmentation would split the sample into those who value quality over price (whose customer base is willing to pay for a superior product) and, inversely, those who value price over quality. Uninterrupted supply is key in both cases: being left without product on an important day can be a source of major problems.

Accordingly, the main problems identified in the current scenario are:

- Lack of integration of the extractive part of the industry (the fishers) with the commercialization process.
- Lack of qualified buyers in many small markets, which leads many communities and their *cofradías* to economic difficulties and a constant struggle for survival.
- Unstable demand, excessive impact of seasonality.
- Fishers themselves are subjected to the pressure of a survival economy: their income flow is small and unpredictable.
- Excessive time to market, critical for fresh products. Interestingly enough, the market’s perception is exactly the other way around: they think the product they actually receive could not be fresher, when the truth is that average cycle times (from the catch to the restaurant or consumer) are never less than three days, and in many cases and species, much longer.⁵
- Lack of transparency. Since not all quality attributes are easy to recognize, some intermediaries mix foreign imports with local catches, keep the product for a longer period to favor market scarcity conditions, etc. These practices obviously damage the perception of quality associated with Galician seafood as a whole.
- Over-exploitation of the resource, caused in part by the lack of information about market conditions. In a situation of unstable demand in which fishers cannot calculate the expected value of their catch, the optimum strategy consists in the maximization of that catch under any circumstances. If adequate information about the preferences of the market is offered, fishers could opt for a self-regulation of their captures in order to maximize their economic value under such preferences, maximum value that usually happens at lower levels of capture by conveying an idea of scarcity.⁶
- No “brand image” associated with Galician seafood. The product is hard to differentiate from foreign imports, despite its superior characteristics.

⁴However, a small segment of affluent customers exist who really appreciate the special characteristics of Galician seafood and have a willingness to pay for it, so one of the main problems is how to allocate the scarce production to make it available to this precise customer segment.

⁵Certain species, such as crabs and lobsters, can be maintained alive and stored in special premises for periods longer than a month. However, they cannot be fed due to water quality problems, so the process reduces the overall quality of the product. In other cases, such as most fishes, the product can be preserved in cold, without freezing it (freezing it would classify it as a lower quality and thus lower price product) for several weeks.

⁶Obtaining higher prices by bringing fewer products to the market could be considered a tricky strategy. However, in this case, the scarcity is real, since offering more products could effectively threaten the survival of these fisheries.

3 LITERATURE REVIEW

The initial idea was to put together an electronic marketplace, as an attempt to fix the huge inefficiencies in the market. Due to the recency of the *e*-marketplace phenomenon, very few empirical examples can be found in the literature. However, research about the implications of information systems and technologies into the structure, dynamics, and characteristics of the markets can be found long before the advent and popularization of the Internet phenomenon. Referential works by Malone et al. (1987) or Gurbaxani and Whang (1991) use the agency or transaction costs frameworks to elaborate on the potential effects a reduction in coordination costs could have on the markets, long before the term *e-marketplace* was coined. This term is rooted in the so-called “inter-organizational systems” (Barret and Konsynski 1982), and thus can be defined as “an inter-organizational system that allows its participants to exchange information about their offers, demands, products and prices.”

An e-marketplace solution seemed perfect, from a theoretical standpoint, to solve some of the aforementioned problems, as seen in the following propositions:

Proposition 1: One big, central electronic market should be much more efficient in the price formation processes than some 60 small, unconnected markets distributed along the coastline (see Bakos 1991, 1999; Lee 1998).

By putting together a larger number of buyers and sellers, the market should allow for a true valuation of the items being sold, isolated from local disturbances. Additionally, it should allow qualified buyers, with a higher willingness to pay, to get the high quality products they are looking for.

Proposition 2: An electronic market could act as friction reducer (Dans and Allen 2002; Garicano and Kaplan 2000; Kumar and Christiaanse 1999), in an industry where friction is large enough to cause huge increments in price through intermediaries, logistics, etc.

This reduction of friction could allow for redistribution in the industry’s value chain. An e-marketplace could cause a reduction in the vast array of intermediaries in the distribution chain (Gurbaxani and Whang 1991; Katz and Shapiro 1985), some of which were clearly adding little to no value at all (García-Allut 1998).

Proposition 3: The operative of an e-marketplace could determine a reduction in time to market, since products could be sold even before they were landed at the port.

With the appropriate logistics optimization processes, Lonxanet could deliver an amazing 24 hours cycle time anywhere within Spain and Portugal (versus the current minimum of 2 to 3 days) from the moment of the catch until the product reaches the restaurant. This type of efficiency gains has been also indicated in other *e*-marketplaces (Garicano and Kaplan 2000).

Proposition 4: An electronic market could allow for redistribution in the industry’s value chain, thus allocating a significantly higher amount of value to the fishers.

By providing fishers with more information and giving them a high degree of control over the commercialization channels, they could retain some of the utilities previously distributed among inefficient intermediaries. Specifically, fishers could be able to sell at higher prices to a group of qualified buyers with a higher willingness to pay.

Proposition 5: Redistribution in the value chain could cause fishers to develop their activities with a focus on sustainability.

Environmental considerations also played a fundamental part in the idea. According to the founders’ original plan, the new scheme would make fishers switch from a survival mode, in which they need to catch basically whatever is available (and even engage in illegal practices such as commercializing individuals smaller than the minimum size through irregular channels), to a sustainability mode. With such a mentality, they would collectively realize that they could get much higher prices if they fish according to the rules and to the demand predictions. For instance, there would be no point in catching a small crab since fishers would be better off returning it to the sea to fish it again later, when it has reached the minimum size and a much higher price.

While propositions 1 through 3 emerge from previous literature, propositions 4 and 5 are new, and may indicate, as stated in the title, new and ambitious venues for e-marketplaces.

4 LONXANET

Originally conceived in August 2000 by two university professors, roommates during their undergraduate studies, the idea was overly simple: put together a number of *cofradías* and provide them with the means to reach the markets using technology. One of the original founders, a biology professor at Universidade da Coruña, had spent several years researching the biology of several seafood species, their life histories, population dynamics, migration patterns, etc. For these studies and others related to fisheries management, he had to interact with numerous fishers and communities of fishers, and he was well-known in the fishers' environment. The other founder was a Management professor at Instituto de Empresa, Madrid, who was doing research on e-marketplaces and the new economy as a whole. They put together the idea, initially, as an avenue that would allow them to do joint research. Soon, the idea started to take shape with the incorporation of a third professor, an Anthropologist, also from Universidade da Coruña, who had spent a long time doing anthropological and sociological studies in communities of fishers and was also extremely well known among several fishers' communities. A fourth member, a former executive at a logistics company with extensive management experience, joined the team at the business plan phase.

On the logistics side, the plan included a partnership with a logistic company. This company had to have an urgent delivery service, in 24 hours to anywhere in Spain, and refrigerated vehicles.⁷ The company would pick up lots, packed according to buyers' requirements, at the *cofradía's* premises in each of the ports. Lonxanet would provide the *cofradía* with the specific packages as indicated by the logistic company, but with the Lonxanet logo, and they would be taken directly to their final destination in less than 24 hours. Lonxanet was also thinking of partnering with the restaurants to advertise the superior quality of their seafood and the sustainable fishing idea in the restaurant's menu, and perhaps even provide other elements such as product guides, to promote the creation of a brand associated with high quality seafood and a seal conveying the idea of seafood fished according to sustainability standards.

Public funds were also expected, since the idea was promoting both social and environmental goals. Empowering the previously depressed fishers' communities should be a desirable goal from the autonomous government's viewpoint, as it should be to create a brand linked to the Galician origin of a high quality product. The autonomous government is only now starting to promote the establishment of a guarantee of origin for products such as the goose barnacle, and its implementation seems difficult. Therefore, any chance to promote differentiation would undoubtedly be welcomed. Finally, the sustainable, environmentally friendly consequence of the idea could also be capitalized as a cause for the public support of the project.

Lonxanet was incorporated in July 2001, after a one-year period of incubation and maturation of the idea. The project had been carefully tested with several business school professors in different areas, executives in the electronic commerce arena and in different positions in the food industry, and, finally, with customers. The commercial efforts would target restaurants and supermarkets in large cities outside Galicia: Barcelona, Madrid, and Valencia. There would also be a small, non-advertised business-to-consumer initiative through the Website, although it was not thought to be overly popular.

One of the first conclusions of the market tests was that the penetration of the Internet with customers was extremely low. Practically no bars or restaurants had an Internet connection, and they were accustomed to doing all of their purchases via traditional media: in person, by telephone, or via fax. Their inclination to install a computer in their premises was also rather low. This fact had two main consequences. First, restaurants would have to be marketed via a sales force, in the traditional way. Second, the need for a call-center was extremely clear.

A second problem was the inclination of restaurants to have a single source for many different products. Practically all seafood, including fishes and shellfishes, usually came from the same vendor. The original Lonxanet idea was to concentrate activities in species that offered the highest prices, but were also easy to describe through an electronic medium. The problem was how to replicate the interaction between buyers and sellers at the *lonxa*. Right before the auction, buyers were usually allowed to closely inspect the catches, in some species even weighting them with their own hands. The number of attributes determining the quality of some species of seafood can be very high, including aspects such as size, relationship between size and weight, color, texture, gender (in most crabs, female individuals are considered to be of a higher quality than their male counterparts), and even the

⁷However, this was not a critical element. It is actually possible to refrigerate seafood introducing freezer gel capsules into specially insulated boxes. In fact, both systems are now combined: the logistic company uses refrigerated vehicles in most of its routes, while Lonxanet puts freezer gel capsules inside their packages.

aspect of certain parts of the animal.⁸ Replicating such a number of attributes would offer obvious difficulties through the Internet or even with the telephone, so a decision was made to initiate activities with just two species: goose barnacles, whose quality was thought to be basically determined by size,⁹ and octopus, whose price is determined only by weight. After the rollout phase with these two products, the product line would be gradually extended to carry more and more species, based on the confidence, trust, and reputation built.

However, problems appeared with the beginning of the commercial prospecting: Lonxanet found that, even though restaurants could have alternative vendors, they require each vendor to carry a wide catalog of products in order to be in their consideration set. Accordingly, most restaurants said they would not be inclined to explore a new channel to just source one or two products. This circumstance forced Lonxanet to extend its line of products to virtually any of the commercial species, instead of the few initially thought to be easy to describe. Accordingly, Lonxanet started operations with a catalog of 19 species, covering practically the whole traditional Galician seafood spectrum.

Replicating the auction mechanism through an electronic medium was also a tricky part. The Dutch auction¹⁰ mechanism used at the *lonxas* required all buyers to be physically present at the time of the auction, and required complex mechanisms to determine who pushed the “stop” button first. Instead of trying to replicate the same scheme, the development of the idea pointed toward a new system of *anticipated auction*: buyers would submit their calls via the Internet or a call-center even before fishers left the port, and those orders would be classified according to product and price offered. Later, when fishers returned to the port, bidders would be awarded the lots according to the order previously established. Of course, complete information about previous days’ bidding processes would be available to buyers, so they would be able to figure out their chances when offering a certain price. The system was, following the original auction’s terminology (Vickrey 1961), an electronic implementation of a sealed envelope, first-price auction with multiple items.

It was clearly assumed that the only way to make the system work would be based on trust. Any intentional or unintentional mistake in the product classification could cause major damage in the brand image, as the buyers were giving up their right to inspect the product and relaxing their criteria to someone else’s standards. A certification system embraced by both the *cofradías*’ authorities and Lonxanet had to be necessarily developed in order to be able to guarantee origin, quality, and freshness.

With the system in place, fishers would know in advance (the day before) the market conditions and seasonal trends for each of the species being fished. They could plan their efforts accordingly, at least to the extent an unpredictable activity such as fishing can be planned, and their catches would not go to the *lonxa*. Instead, they would be classified and specially packed for the logistic operator to pick them up. All classification and packing operations would be developed and controlled by the *cofradía*. Ownership of the firm was also carefully studied: even though *cofradías* would not contribute with any money to incorporate the society, they would be given one-third of the shares in exchange for the use of their port infrastructure and personnel. Feeling themselves as owners and definitely interested in the survival of the system, *cofradías* would have a clear incentive to avoid intentional mistakes in the classification procedures, thus ensuring satisfaction on the buyers’ side.

The main change in the concept, though, came from a legal restriction: by law, the first sale of the products had to be done at the *lonxa*. Therefore, no product could be previously retired to auction it electronically at Lonxanet. The way to circumvent this legal restriction was via an electronic catalog. It clearly did not make much sense to have a first auction at the *lonxa* and a second one at Lonxanet. Consequently, Lonxanet was structured as a flexible price catalog, with an open possibility to negotiate volume discounts. Instead of the originally designed auction scheme, Lonxanet would have a buyer on each *lonxa* (a person from the corresponding *cofradía*, thus benefiting from local expertise), who would buy the amount of products indicated by the system. According to the price obtained in the different *lonxas*, Lonxanet would then calculate the price to be offered at the catalog on a daily basis. Lonxanet’s main value proposition for restaurants would then be the possibility of buying directly from the *lonxa*,

⁸In the spider crab, for instance, the color and appearance of a certain part of the abdominal region, visible only when an operculum covering the abdomen is raised, is used as an indicator of quality. In this case, traditional knowledge is supported by a true biological fact: the observed color is conditioned by the thickness of the periabdominal muscles, whose development is related to the moment of the last moulting.

⁹In fact, quality perceptions in goose barnacles are much more complex and are based on length, thickness, coloration, extraction mode, type of cut, etc.

¹⁰Dutch auctions are continuous descending auctions: bidders can see the current price and must decide if they wish to purchase at that price or wait until it drops. The winner is the first bidder who stops the auction at a given price (Dans 2002).

receiving the product in less than 24 hours and being able to choose quality ranking from average to very high (in principle, no low quality seafood was available at Lonxanet)

5 RECENT HISTORY

The initial requests for development proposals from potential technology partners started in June 2001, right after incorporating the society. During July and August, Lonxanet started a round of meetings with *cofradías* to present the business plan and negotiate agreements. Simultaneously, they started presentations to potential partners. The initial objective was to get €180,000 to cover financial needs until April 2002. Although they did contact institutional and public investors, they decided to discard them due to their slow decision making. Instead, they reached agreements with individual investors, most of them linked to the logistic company. These investors have been key in the development of the crucial relationship with the logistic company.

Besides looking for investors, Lonxanet started hiring: initially, a commercial director, an operations director, and two interns. Their role was to get in touch with the first target market, Madrid, and to design the operations with the *cofradías*. Seven *cofradías* agreed initially to join Lonxanet, although, for operative reasons, only four of them started immediately. Not being accustomed to this type of deal, their entrance was extremely complicated from a legal perspective.

In October 2001, Lonxanet went to its first financing round: the technology partner and individual investors contributed to the expected goal, and the four *cofradías* joined via non-monetary contribution.¹¹ At the same time, they started contacting the first customers, and they fine-tuned operations and logistics.

The Web page was launched: although originally non-transactional, its role was to act as a communication vehicle—some 500 visits per day—and to support the back-office operations with the logistic company and the *cofradías*. By that time, a public relations campaign produced the first press releases in Galician media, pointing out the socio-economic aspects of the project and its potential implications for Galicia and the Galician fisheries industry.

December 2001 signaled the beginning of commercial operations. Despite some coordination problems with the *cofradías* and some misunderstandings with customers,¹² Lonxanet started to gain knowledge about customers' behavior, etc., and started creating the feeling of belonging to a common project. On each of the *cofradías*, two key people are designated in charge of the relationship with Lonxanet: the *patron maior*, or administrator, and an employee, dedicated almost exclusively to that role.

In April 2002, Lonxanet started its second round of financing with the goal of raising €330,000, enough for one year of operations. The initial investors and some new ones showed their interest in participating and two new *cofradías* joined the initiative. Lonxanet was featured several times in Galician and national media. After being featured on national TV, the visits to the website skyrocketed to 30,000. Lonxanet put together a call-center and continued growing and hiring. At the moment, some 30 people work for Lonxanet, including employees with partial dedication such as those at the *cofradías* and the founders.

Despite the recency of the venture, some comments signal the beginning of the changes indicated in propositions 4 and 5. The administrator of a particular *cofradía* indicated, after 4 months of activity, that “if things were to continue at that pace, it would mean an increase of approximately 40 percent in our sales.” This increase, without putting additional pressure on the environment, comes from being able to fetch higher prices in the market, from an increase in the amount of product transacted at that *cofradía* (instead of being transported to larger *cofradías* with the *guía* or deviated to illegal channels) and, in sum, from a “fishing better” instead of a “fishing more” approach.

¹¹The agreement with the *cofradías* included keeping a total participation and control of one-third of the shares, independently of new capital increases being made and new *cofradías* joining the system. Such participation is complex, and considers the economic value of the rights to use the *cofradías*' infrastructure and personnel at the port. In exchange, Lonxanet pays an agreed compensation for the work performed by the *cofradías* on behalf of Lonxanet.

¹²An especially interesting problem came to light when a certain customer complained about the lack of freshness of the product. After thorough research, it turned out that the customer was not used to receiving the products so fresh: when fishes are caught, they maintain a soft appearance that lasts several hours, until they acquire the characteristic firm touch commonly identified as an attribute of freshness (but in some cases obtained by adding salt to the ice used for preservation).

6 CONCLUSIONS

This case study shows how IT and communication technologies can be used for fostering social change and transformation in a particular industry. Although is obviously too early to draw conclusions about the success or failure of the initiative, the steady increase of sales and the growing confidence shown by *cofradías*, customers, and investors could be interpreted as good signals for the future. Whether or not the future brings new horizons for the company is yet to be seen. However, the experience constitutes an interesting example of how an academically conceived initiative becomes real and tries to influence the social structure of economically depressed communities and to alter the value chain in a whole industry to generate more resources and economic value to the fishers, the ones who ultimately generate that value and take the risks.

7 REFERENCES

- Bakos, Y. "The Emerging Role of Electronic Marketplaces on the Internet," *Communications of the ACM* (41:8), 1998.
- Bakos, Y. "A Strategic Analysis of Electronic Marketplaces," *MIS Quarterly* (15:3), 1991.
- Barret, S., and Konsynski, B. "Inter-Organization Information Sharing Systems," *MIS Quarterly*, Special Issue, 1982.
- Dans, E. "Existing Business Models for Brokering and their Adaptation to Electronic Markets," *Journal of Electronic Commerce Research* (3:2), 2002.
- Dans, E., and Allen, D. "B2B e-marketplaces: What's in it for Me?," in *Proceedings of the Ninth European Conference of IT Evaluation*, 2002.
- Freire, J., and García-Allut, A. "Socioeconomical and Biological Causes of Management Failures in European Artisanal Fisheries: The Case of Galicia (NW Spain)" *Marine Policy* (24), 2000.
- García-Allut A. "Historia da Pesca en Galicia," in C. Casanova (ed.), *Biblioteca de Divulgación*, Universidad de Santiago de Compostela, 1998.
- Garicano, L., and Kaplan, S. N. "The Effects of Business-to-Business Electronic Commerce on Transaction Costs," Working Paper, Graduate School of Business, University of Chicago, 2000.
- Gurbaxani, V., and Whang, S. "The Impact of Information Systems on Organizations and Markets," *Communications of the ACM* (34:1), 1991.
- Katz, M. L., and Shapiro, C. "Network Externalities, Competition and Compatibility," *American Economic Review* (75), 1985.
- Kumar, K., and Christiaanse, E. "From Static Supply Chains to Dynamic Supply Webs: Principles for Radical Redesign in the Age of Information," in P. De and J. I. DeGross (eds.), *Proceedings of the Twentieth International Conference on Information Systems*, Charlotte, NC, 1999.
- Lee, H. G. "Do Electronic Marketplaces Lower the Price of Goods?," *Communications of the ACM* (41:1), 1998.
- Malone, T. W., Yates, J., and Benjamin, R. I. "Electronic Markets and Electronic Hierarchies," *Communications of the ACM* (30:6), 1987.
- Milgrom, P. R., and Weber, R. J. "A Theory of Auctions and Competitive Bidding," *Econometrica* (50), 1982.
- Vickrey, W. "Counterspeculation, Auctions and Competitive Sealed Tenders," *Journal of Finance* (16), 1961.