

**STRATEGIC *BALANCED SCORECARD* AT PROPEIXE OP
(COOPERATIVA DE PRODUTORES DE PEIXE DO NORTE, CRL)**

by

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Project Work for the Master's Degree in Finance and Taxation

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ABSTRACT

Traditional management systems based on economic and financial indicators performance analysis, which still predominate among the few management tools currently used in Portuguese companies reveal themselves less and less able to analyze and determine the assumptions that explain the success or failure of Portuguese companies. Still far from the effects of the crisis that has shaken, we face disunity in the European Union with the victory of Brexit UK unpredictable consequences in the near future. Improving the performance of companies is one of the fundamental issues of our time, especially for the Portuguese economy. It was to respond to the new needs of strategic management that did the Balanced Scorecard methodology, which although it was originally adopted by big companies should also be seriously solved by SMB that have adopted this type of management. The contribution of our work is the development of the Balanced Scorecard model proposal applied to a Fishing Producers Cooperative, Sardine Port of Matosinhos, which has never been done to date.

Keywords:

Balanced Scorecard, Strategy, Strategy Map, Indicators

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1. INTRODUCTION

Increasing openness and globalization have led to higher levels of competition between companies, forcing those among them who wish to be competitive and successful to suit their management models to the emerging challenges placed before them.

The increase in competition pressure has exposed the hardships stemming from low performance and productivity in a large section of national companies, when compared to their counterparts in developed countries. Competition originating in less developed countries, but with access to technology and low-cost skilled labour (in Eastern European and Asian countries, particularly in China) has made forms of influencing and supporting performance growth in Portuguese companies essential.

Improvement in companies' performance is one of today's fundamental questions, especially for Portuguese economy.

Traditional management systems, based on economic/financial indexes of performance gauging, which are still predominant among the few management tools currently in use by Portuguese companies, are showing themselves to be less and less capable of analysing and determining the assumptions that explain the success or lack thereof of Portuguese companies. The logic of short-term maximization of earnings (unsustainable in the medium- or long-term), matched with an increase in the risk of operations, the manipulation of results, the deregulation of markets and the absence of interventions on the part of the authorities responsible for the control and oversight of activities, were all part of the origin of the serious crisis which affected the global financial sector starting in 2007 and which, in 2009 and 2010, resulted in the largest international economic recession since the Great Depression of 1929.

We are presently still far from recovered from the crisis that shook us, and faced with a state of disjunction in the European Union, after Brexit's victory in the United Kingdom, whose short-term future consequences are unpredictable.

Currently the idea that financial data are insufficient to evaluate the performance and success of companies is consensual. One need only observe that the valuing assigned by the stock markets to companies' stocks is strongly dependent on intangible, non-financial, factors, both intrinsic and extrinsic to the companies themselves.

It was in order to respond to the new needs of strategic management that the *Balanced Scorecard* (BSC) methodology arose, which, although initially adopted by large companies, should also be seriously considered by small and medium companies, some of which have already incorporated it.

With the Carnation Revolution of 1974 came upward social mobility for several strata of society, which led to the rejection of traditional economic sectors, which were seen as unattractive. Fishing was one of these areas.

Many Portuguese people continue to associate fishing with the hardships of the past and a lack of social and economic relevance for those that participate in the activity.

The results are visible and clear. Access to many long-distance fishing vessels was lost, European subsidies were used to abate fleets and catches have been decreasing gradually. Over 60% of the fish consumed in Portugal is imported.

Our project's contribution is the elaboration of a proposal for a BSC applied to a Fishing Producers Cooperative, Sardine Port of Matosinhos, which hadn't been done until now. Simultaneously, we historically contextualize the sea, fishing in Portugal and seine fishing, for future studies.

This work is divided into three major parts. The first one intends to present the theoretical context of the themes (chapter 2), the historical context (chapter 3), and the context of fishing in Portugal (chapter 5). The second part presents Organização de Produtores de Peixe do Cerco de Matosinhos PROPEIXE, a sardine seine fishing cooperative (chapter 6). The third part contains the presentation of a proposal for a BSC model to PROPEIXE (chapter 7).

2. THEORETICAL CONTEXT

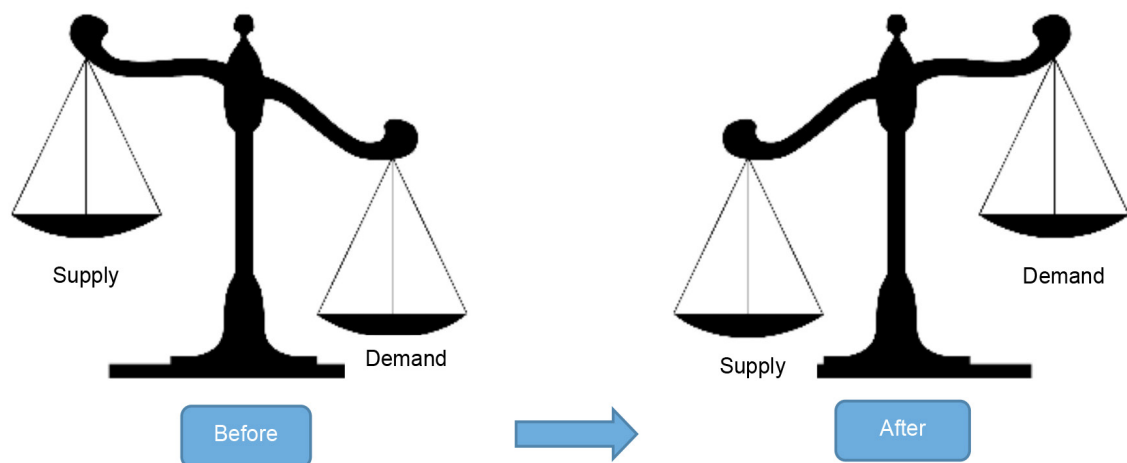
2.1. The need for non-financial indicators in the measurement of organizational performance

A management system is a system designed to establish a policy, a plan, a strategy with the purpose of differentiating an organization from its competition and potentiate its competitive advantages.

The designing of this strategy includes the choice of a proposal of value and its translation, in a context of change, into a plan towards transformation in the organization. Top managers analysed financial information, which we can call tangible assets.

The triumph of Japanese economy, which seemed to successfully invade everything, offered products that were not only cheaper but also had a better performance. The aftermath of the second oil shock changed perceptions regarding the importance of factors of production and value attributes for clients.

For the first time since the Industrial Revolution, there was a change in the supply and demand equilibrium; we went from a market in which demand became larger than supply to a market where supply was larger than demand.



Picture 1. Change from a market with an excess of demand to one with an excess of supply.

With this shift in paradigm, news of bankruptcies arose, due to company purchases by foreign competition, which took over segments of the market; also due to the decrease in competitiveness in America's economy; this led to researchers studying events and attempting to explain what had happened.

Several articles were published, such as Robert Kaplan's "Yesterday's accounting undermines production," published in the Harvard Business Review (July-August 1984); "One cost system is not enough," by Robert Kaplan, also published by the Harvard Business Review (January-February 1988), among others. Several books were also published, such as H. T. Jonson and R. S. Kaplan's "Relevance lost: The rise and fall of Management Accounting," published by the Harvard Business School Press in 1987.

According to these authors, most accounting and management control systems had the following serious flaws:

- they distort costs and do not give access to key non-financial data, which are needed for effective operations;
- the data they create reflect external needs for reporting, rather than the new economic situation;
- many companies continue to use decades-old cost accounting and management control systems, which were designed for a competitive environment which differs from the current one;
- systems designed primarily to value inventory for financial and tax returns do not enable managers to promote operation efficiency and measure the costs of products and services by not giving managers the necessary and key information they require.

The organizations' top management received and analysed mostly financial indicators and financial information. Financial indicators, however, show results, and give no information about the path, the process, the evolution; thus, when results were analysed, it was too late to act. Management's acting based exclusively on financial indicators only improves financial results in the short-term. The need to obtain good short-term financial results by management is only achievable through damage to the investments and decisions which would bring positive results in the medium- or long-term. Shareholders may have not been prepared to wait for so long for results, switching to a management team that could reinforce short-term earnings.

In the 1990's, an increasing number of organizations began measuring nonfinancial indicators. The simultaneous analysis of both financial and non-financial indicators provided a balance between the short- and the medium- or long-term.

Making use of non-financial indicators, managers could obtain information about the progress, the evolution of the organization long before the financial information became available, giving them some leeway to change their approach.

Collaborators could also receive further information about actual, necessary actions to take in order to accomplish the strategy. Investors could have access to better information

about the general performance of the organization, since non-financial indicators can reflect intangible values (such as R & D productivity), that accounting rules could not (and cannot) recognize.

Measurement of performance is an essential component in management, giving managers the necessary information to take decisions, oversee and coordinate performance and adequately use available resources.

There are several reasons for measuring the performance of organizations. Lawton (2002:68) lists the following as the most relevant:

- To align the mission, the strategy, the values and behaviours
- To continue the perfecting of processes, products and results
- To quantify the successes or failures attained.

About this theme, Kutucuoglu et al. (2001:4) put forth that:

- The role of performance measurement evolves from historical record to a prospective vision;
- The measurement of performance allows feedback, comprehension and motivation;
- The fulcrum of this analysis is currently systemic thought, structural change and organizational learning;
- Performance measurements are essential for everyone's understanding and adaptation to the organizations' goals.

The literature of organizational performance points towards the following features in effective systems of performance measurement:

- They recognize different hierarchical responsibilities within organizations in performance management;
- They present a balanced outlook on the measured system;
- They recognize the multiple dimensions of performance measurement;
- They relate measurements with their relevant goals;
- They connect performance measurement to strategy;
- They involve employees.

These are the traditional systems of management, exclusively based on economic/financial indicators of previous performance evaluation, that are still predominant among the few management tools currently in use by Portuguese companies.

The growing inadequacy of traditional systems is due to, with the rise of the information age and Big Data, Critical Success Factors (CSF) for companies' competitiveness being more and more dependent on intangible factors Carvalho et al (2001:57), such as:

- The quality of their products and services;
- Customer satisfaction and degree of loyalty;
- Response capacity and effectiveness of internal processes;

- Employee motivation and competence.

Currently, the idea that financial data are insufficient to evaluate the performance and success of organizations is consensual. One need only observe that the valuing assigned by the stock markets to companies' stocks is strongly dependent on intangible, non-financial, factors, both intrinsic and extrinsic to the companies themselves.

Due to the new competition settings in which companies act, those of the growth of the importance of intangible factors for company success, it is necessary to find ways of valuing qualitative and non-financial aspects (such as quality, productivity, management and mastery of information and knowledge, relationships with clients and other external entities, motivation and training of the company's human resources, response capacity and the time taken to respond to opportunities and threats).

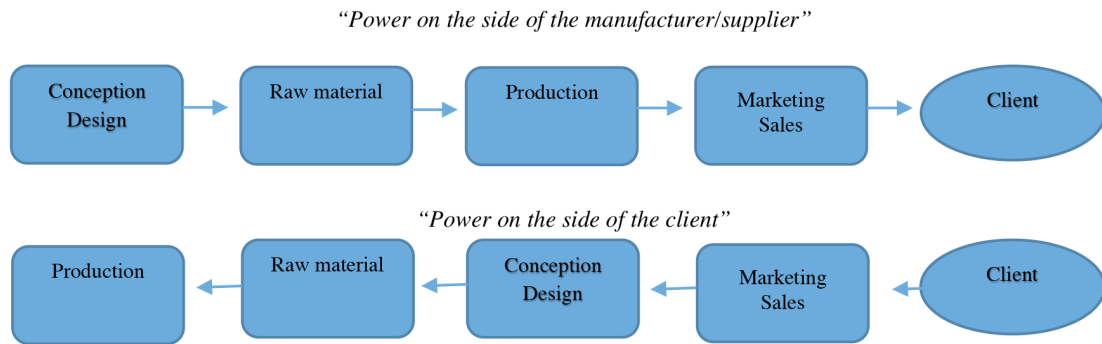
Presently, managers and researchers recognize access to multidimensional measurement systems as essential Bergeron (2000:7). The *Balanced Scorecard* is a tool capable of answering the new multidimensional needs of management.

2.2. The *Balanced Scorecard* - performance measurement

The first study about the BSC, led by Robert Kaplan and David Norton, was conducted in 1990 as a result of research commissioned by 12 large North-American companies, who were aware of the growing inefficacy of traditional financial indicators used in their evaluation of performance. The ability to measure and define value creating activities in modern organizations was at stake.

Discussion of the problematic of a management exclusively guided by traditional financial measurements is an old one, as Kaplan and Norton (2001:87) observe as they discuss the example of the French *Tableau de Bord* (TDB) or General Electric's experience with non-financial indicators in the 1950's.

The emerging changes in business and the economy were strongly boosted by the development of technology and the speed of information due to the rise of the Internet. Information became extremely relevant in business, in performance and in organizational management. There was a change in the power of the actors in the value chain. Power, which for many years stood on the side of manufacturers and suppliers, was definitively transferred to the clients' side. Currently, clients possess more and more information about the products and services they intend to acquire: they know their characteristics, their prices, their user experiences. Products are easily imitated, which makes them increasingly similar. What makes a difference when it comes to choice is not the product itself, but the quality of the service associated with said product and also, more and more,



the relationship between supplier and client.

Picture 2. Change in the value chain.

This change in the value chain, transferring the power from the side of the supplier to that of the client, creates a new relation between “product value” and “value of the service associated with the product,” which has intensified with the Internet’s growth and the development of information systems and technologies.

The complexity and speed of the changes seen in the last years in three components (relation between tangibles/intangibles, human capital value and information value) have created in organizations the need to face performance management as a real integrated system, within which several tools, methodologies and solutions may interact, helping them become more competitive, efficient and generating greater value to all the stakeholders.

The BSC, created in 1992, has accompanied all this organizational change and integrated the evolution of the concept of performance management. Its great acceptance and the growth in its use throughout thousands of organizations worldwide have made possible the creation of an important knowledge platform, which has been shared between implementers, consultants, software creators and academics. This knowledge has resulted in an almost natural evolution of the concepts associated with the BSC.

One of the possible ways of analysing the BSC’s evolution is through the sequential evolution of the practices and concepts presented by Kaplan and Norton in several of their published books and articles.

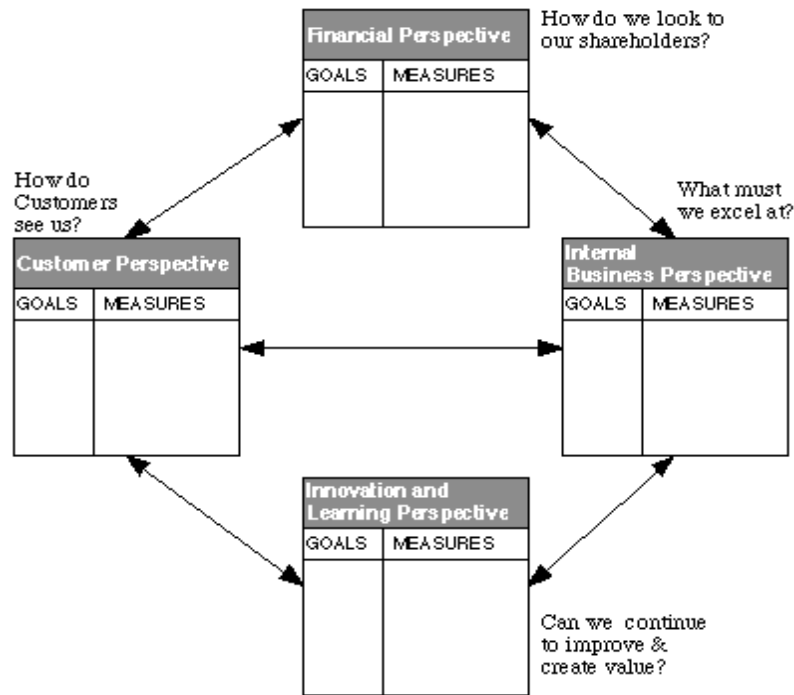
The first article, published in 1992 in the Harvard Business Review (January-February), titled “The Balanced Scorecard - Measures That Drive Performance”, marks the creation of the BSC.

This initial version presents four perspectives - financial, clients, processes and learning - and was centred on fixing objectives, goals and indicators in each of the four perspectives, highlighting the need to identify connections and interdependencies (cause-effect) between all of them.

The main focus of the BSC, in this early stage, was the creation of a new concept of measurement, which included intangible values along with the financial, thereby allowing

companies to envision their long-term strategies and articulate them with their short-term decisions.

In this way, besides largely financial historical information - “that which has already taken place” - there would be a measurement of intangible values, balancing and connecting financial and non-financial indicators. This was the innovation that BSC brought to the table.



Picture 3. First version of the Balanced Scorecard.

In 1993, Kaplan and Norton published a new article in the Harvard Business Review (September-October), titled “Putting the Balanced Scorecard to Work”. After almost two years of the BSC being introduced, several companies started processes to put the concept in practice. In this article, Kaplan and Norton reinforce the model’s potential:

“Effective measurement, however, must be an integral part of the management process. The balanced scorecard, first proposed in the January-February 1992 issue of HBR (“The Balanced Scorecard- Measures that Drive Performance”), provides executives with a comprehensive framework that translates a company’s strategic objectives into a coherent set of performance measures. Much more than a measurement exercise, the balanced scorecard is a management system that can motivate breakthrough improvements in such critical areas as product, process, customer, and market development.”

Kaplan & Norton, “Putting the Balanced Scorecard to Work”,
Harvard Business Review, Setembro-Outubro, 1993.

In this second article, Kaplan and Norton show the first practical results of the BSC’s use in several companies, and start to show that the model had much more potential than initially proposed, when it was geared essentially towards the system of performance

measurement. The BSC was starting to be seen as a true management system, capable of interacting with different processes and methodologies for improvement.

The BSC was gradually showing a strong ability to help solve problems between the lack of consistency and the articulation between the various systems: process reengineering, quality management, benchmarking, and empowerment. Its ability to help solve these kinds of problems, putting forth consistency and easing alignment, became a tool which integrated several improvement solutions.

2.2.1. The Balanced Scorecard's Perspectives

Financial Perspective

In the financial point of view the goals and targets that allow you to answer the question – “How should we be seen by our shareholders?”- are placed.

The reason why the financial perspective is placed on top of the BSC is connected to the goals of organizations, their profit, productivity and profitability, in terms of success. The results of integrated performance and behaviour in the other three perspectives are expressed in this perspective. The measurement of the goals set in this perspective is based, essentially, on financial indicators.

Clients Perspective

In the clients' perspective the goals and targets that allow you to answer the question - “How should we be seen by our clients?” - are placed.

The goals usually included in this perspective are: fishing capacity (market share, client satisfaction, retention, loyalty and profitability of clients). These goals represent the development of a set of assumptions about the clients, their habits, market segments, perceived value and their relationship with the organization.

Internal Perspective

In the internal perspective the goals and targets that allow you to answer the question – “in which processes do we have to be great?”- are placed.

To please clients, organizations can conclude that only improving current activities is not enough. It may be necessary to create completely new internal processes. Some of the most frequently used indicators are cycle time, cost, quality, productivity, innovation and partnerships.

Learning and growth Perspective

From the perspective of learning and growth the goals and targets that allow you to answer the question – “How can we develop capacity for change and growth that will allow us to materialize the vision?”- are placed.

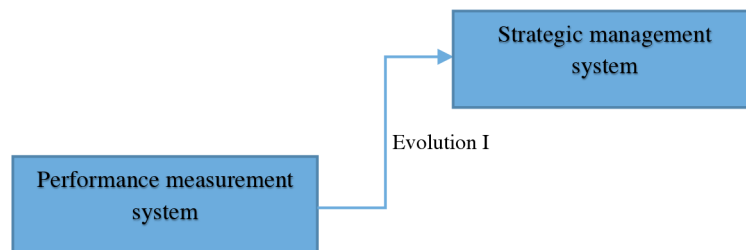
This perspective includes a set of intangible values, such as human capital and information and organizational capital. At the base of the BSC, this perspective establishes crucial cause-and-effect relations with the other perspectives, influencing the eventual success achieved by internal processes (internal perspective), creating value for clients (client

perspective) and shareholders (financial perspective).

Commonly used indicators to measure performance in this perspective are satisfaction, employee retention, training hours, acquired skills, team work, suggestions for new products/services, performance of information systems, motivation and leadership ability.

2.3. The *Balanced Scorecard* - strategy management

The experiences and evolution which took place between 1992 and 1996 confirm that the companies' practical experience had placed the BSC on a level higher than that of the simple measurement of performance incorporating intangible and financial values, having had evolved into a tool for strategic management.



Picture 4. The Balanced Scorecard's Evolution I.

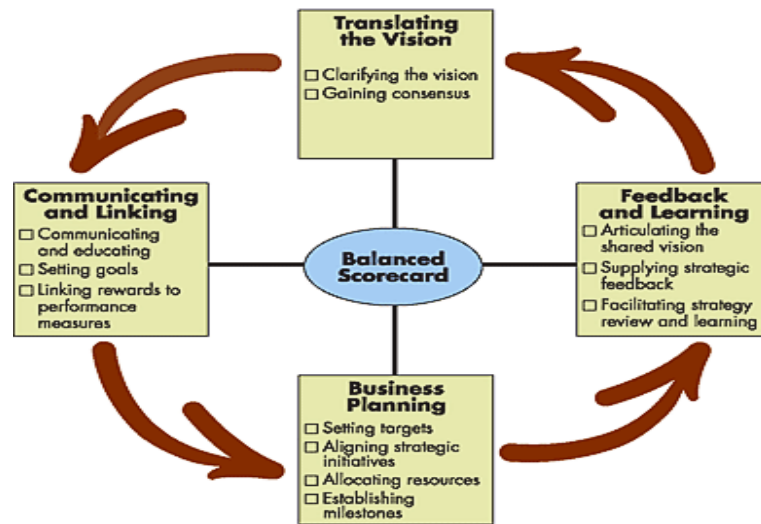
The BSC's evolution can be seen in four stages – performance measurement system, strategic management system, strategy communication tool and change management support tool.

Throughout this evolution there are two important steps: the concept of “strategy-focused organization” and the creation of Strategy Maps.

The BSC's new role was well defined by Kaplan and Norton in 1996 when they published the article “Using the Balanced Scorecard as a Strategic Management System” (January - February) in the Harvard Business Review and the book “The Balanced Scorecard - Translating Strategy into Action” (September). In this book, still a fundamental reference point for methodology, the authors, besides reiterating the concepts they developed in the articles, present the experiences of several companies that used the BSC, as well as introduce some new concepts that practical experience added to the BSC.

The first stage, which had intended to create a new system for performance measurement, became quickly outdated and the BSC began being used as a system to manage strategy.

Managing Strategy: Four Processes



Picture 5. Four processes for managing strategy.

The introduction of four new processes for strategy management which, combined or apart, contribute to the connection of long-term strategies to short-term actions:

- Translating the Vision
- Communicating and Linking
- Business Planning
- Feedback and Learning.

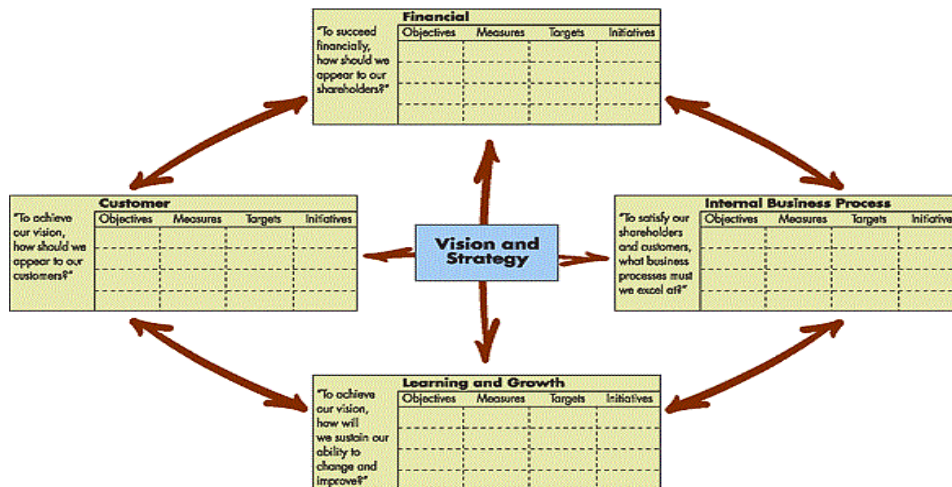
The first process - Translating the Vision - entails the need to bring to the operating lines the vision defined by the top management lines, to translate a vision and long-term strategies, consensual in the top management, into operational goals that people can understand and execute.

The second process - Communicating and Linking - entails communicating the strategy defined at the top to all the areas of the organization, linking it with departmental and individual goals.

The third process - Business Planning - entails the need to integrate the business plan with the annual budget. Managers, through the BSC, started grounding themselves in the goals and indicators of the BSC to make resources in the budget available, to coordinate and finance initiatives known to be directed towards medium- and long-term objectives.

The fourth process - Feedback and Learning - is centred on the ability of organizations to develop a learning process which allows it to review and make changes to strategies, based on the performance's behaviour.

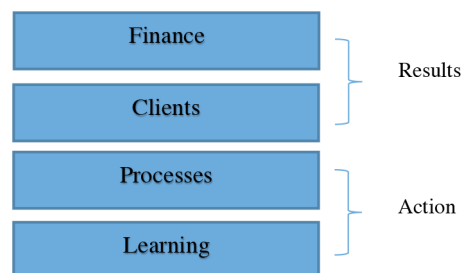
Translating Vision and Strategy: Four Perspectives



Picture 6. Translating the vision and strategy in four perspectives.

On picture 6 the novelty is the focus on vision and strategy, placed at the centre of the BSC. The new picture clearly means that the BSC was being used to manage strategy, translating it into operational goals, duly distributed across the four perspectives through a cause and effect relationship. The second novel aspect is the inclusion of the four fundamental concepts - objectives, measures, targets and initiatives - in each of the perspectives, working as a logical sequence and establishing cause and effect relationships between its parts.

Vision and strategy are placed at the centre of the four perspectives that make up the BSC (picture 6) – they are the starting point of a BSC’s development and, at the same time, the guiding light that the organization must never abandon throughout its strategic path toward the set vision.



Picture 7. *Balanced Scorecard* – interdependency.

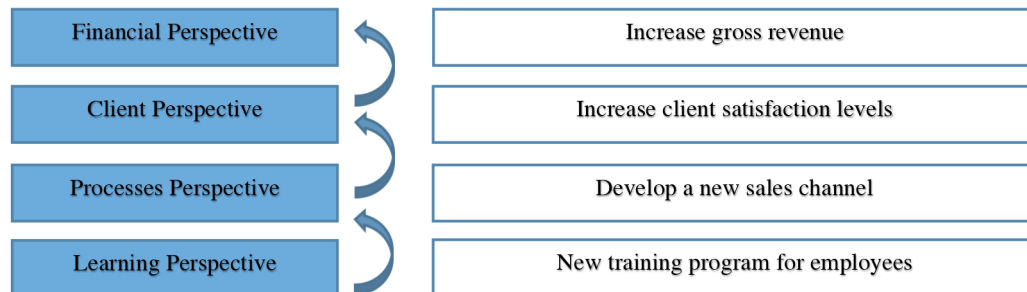
On picture 7, the BSC is presented in a different configuration so as to better translate the role of the perspectives’ interdependency. The two perspective son the bottom are the drivers, the actions, the initiatives, that which makes things happen. The other two show the results of those actions, such as more or more satisfied clients generate better financial results and more return for shareholders.

2.4. Cause and effect relationships

The BSC has as its core principle the creation and verification of cause and effect relationships between perspectives, targets, goals and indicators. This principle is part of the model since its beginnings and distinguishes the BSC from any other performance measurement system, regardless of whether solely financial indicators are in use or a combination of financial and intangible indicators.

Cause and effect relationships work as a test to evaluate whether the BSC is effectively reflecting the organization-s strategy.

It-s necessary to choose lag indicators, which define long-term strategic targets, and lead indicators, the mechanisms through which targets may be reached.



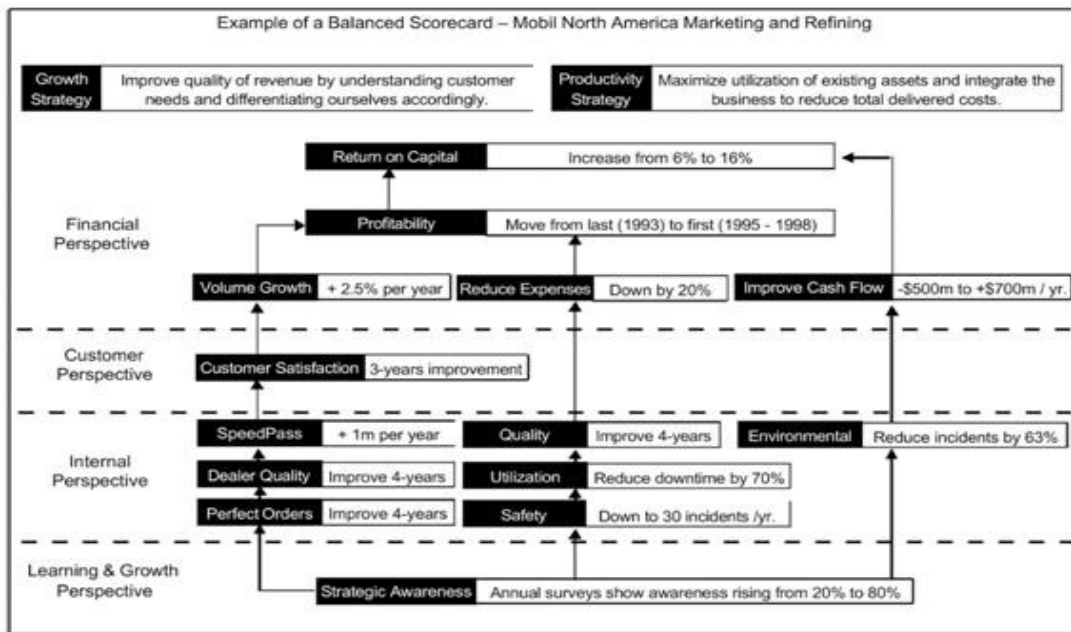
Picture 8. Cause and effect relationships.

2.5. Strategic map

During the process of the BSC's implementation in organizations it was common for managers and project teams, when trying to identify cause and effect relationships between targets, to use graphic representations to visualize those connections. This practice was perfected with the BSC's creators' intervention, originating a new fundamental tool, currently indispensable for any implementation - the Strategy Map. Kaplan and Norton consider this concept's genesis as important as that of the BSC's and expanded thus upon the premises of performance measurement:

*"You can't manage (third component) what you can't measure (second component)."
"You can't measure what you can't describe (first component)"*

Kaplan & Norton, *"Strategy Maps - Converting Intangible Assets into Tangible Outcomes"*,
Harvard Business School Press, Boston, 2004



Picture 9:“Mobil Case” Strategy Map – Source: Kaplan and Norton .

Strategy maps help companies identify important gaps in the implementation of the strategy at an organization’s lower levels.

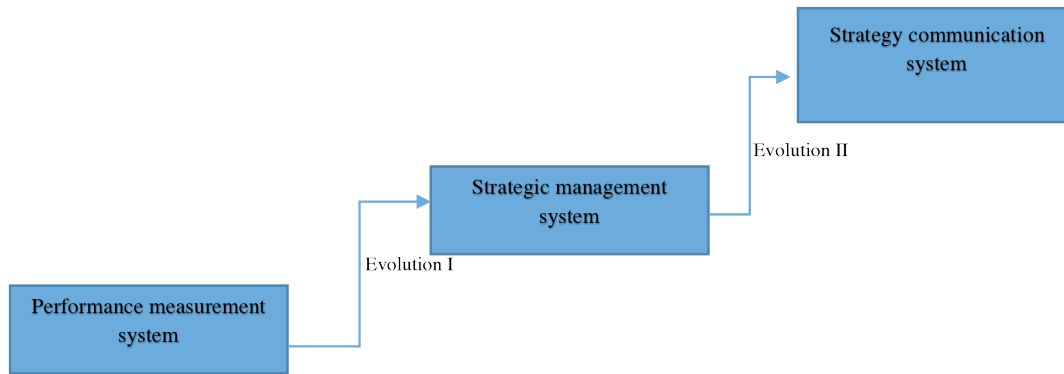
The authors do not claim they were able to turn strategy into a science.

The formulation of large-scale strategies is an art, but their description is not.

The authors compare the situation to that of a General who takes his troops into a neighbouring country. Obviously, these troops need details, information. This information will be detailed in maps where cities, villages, retreat spots, bridges, tunnels, and roads that cross the cities are marked. Without this information it would impossible to communicate the strategy to the officers and the rest of the troops.

These situations do not always happen. In great discoveries, the discoverer often can’t give a use to their discovery, make a business out of it. The authors place vision as a starting point, but in order to have a vision one needs a preceding discovery. Most companies do not want to communicate their discoveries to all their staff lest they divulge relevant information to the competition. The strategy is only accessible to everyone in the end of the process.

This makes it hard to apply this situation to all kinds of companies, especially those dealing with state of the art technology.

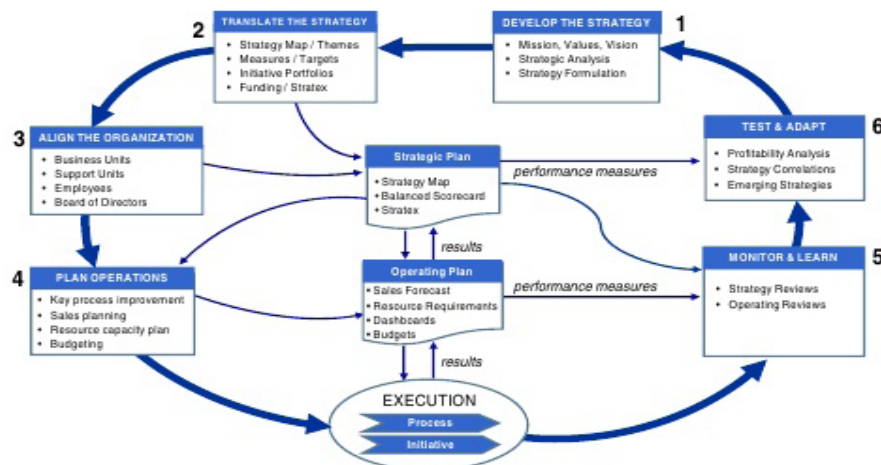


Picture 10. The Balanced Scorecard’s Evolution II.

2.6. Management system integrating strategy and operation

The fundamental aspect of the BSC is its capacity to connect strategic planning to execution Kaplan & Norton (2008a&b). Picture 11 shows the six stage architecture of a closed management system which connects strategic planning to operational execution.

- Develop the strategy
- Translate the strategy
- Align the organization
- Plan operations
- Monitor and learn
- Test and adapt



Picture 11. A closed cycle management system for strategy execution – Source: Kaplan and Norton.

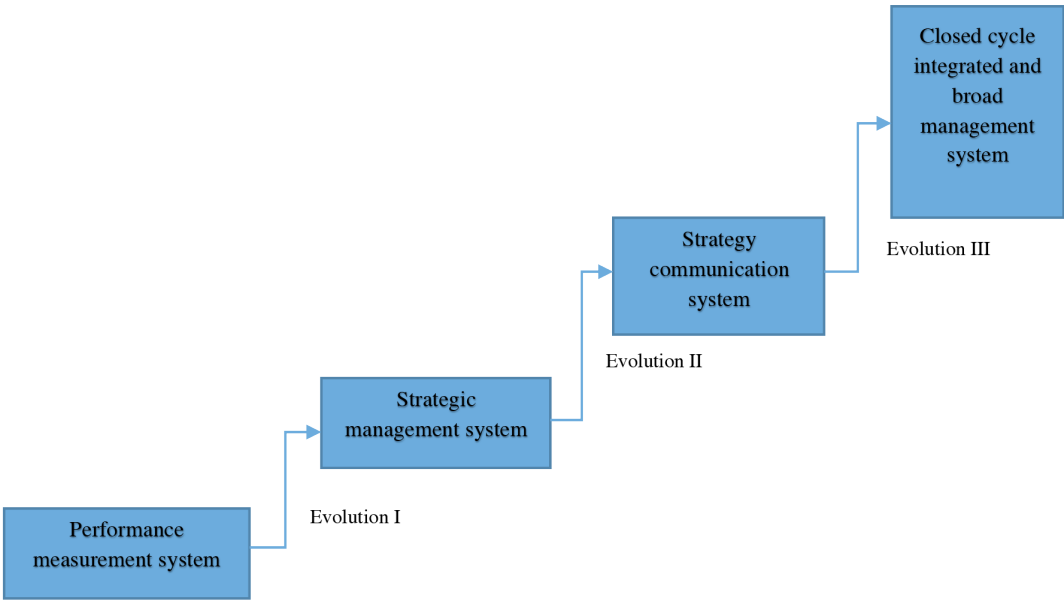
In the six stages, managers use internal operational data and competitive new external data to test and update the strategy, which launches another cycle around the integrated strategy and the operational management system. This new approach includes not only the previous work on strategy maps and employee alignment and motivation, but also quality management, dashboard, costs and time spent on the resources' ability for planning and strategy feedback (Kaplan & Anderson, 2004, 2007), strategy development and tool formulation, and analyses to test and adapt the strategy.

This proposed new management system gives us a global framework; now, we have the various activities necessary for strategy development, along with planning, alignment, operational planning, operational control and control strategy within a closed cycle, an integrated and broad management system.

The closed cycle integrated and broad management system has many mobile sections and interrelationships, and requires a simultaneous coordination between all organization lines and staff areas.

The need for a new organizational function, called Office of Strategy Management (OSM), which would be responsible for the strategy execution system and its process components, was identified (Kaplan & Norton 2005).

The OSM is responsible for the new strategy processes and their transmission in a cascade; it links them to operations, organizes the review of the strategy, tests the strategy and conducts adaptation assemblies.

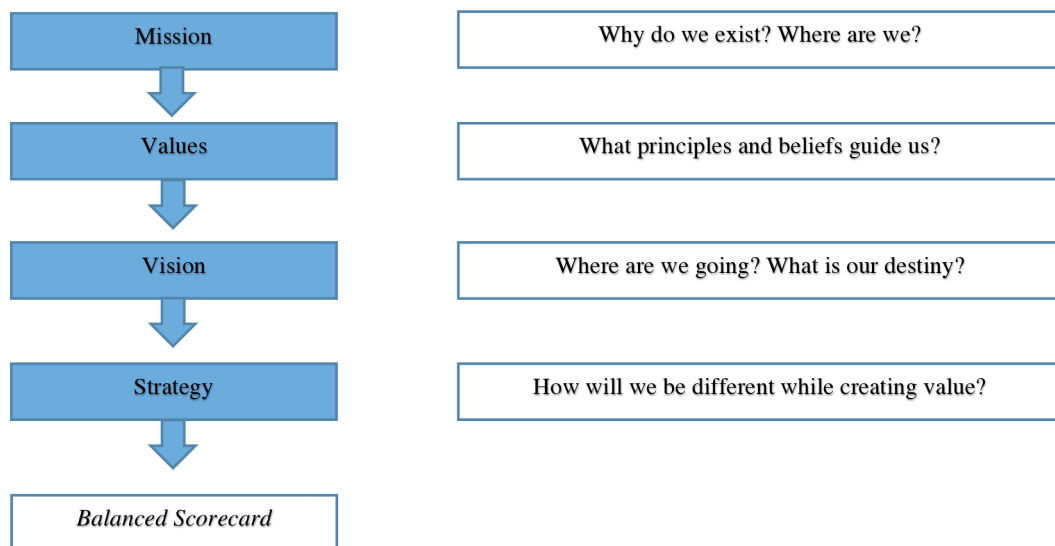


Picture 12. The Balanced Scorecard's Evolution III.

2.7. Balanced Scorecard Implementation

To implement a BSC in any organization it is necessary to reflect on three fundamental concepts:

- **Mission:** Defining the task (purpose) that the organization intends to accomplish.
- **Values:** Timeless principles. Public proclamation of what the organization expects from its collaborators. Values must be linked to the mission, giving it a logic continuation.
- **Vision:** The dream that the organization's members must never abandon. It's reflected in the image that the organization wishes to attain. The definition of a vision is necessary for the top executive team's work on the strategy formulation process.



Picture 13. Balanced Scorecard sequence - Source: Pinto (2009).

The organization defines its strategy based on its mission and vision in competition with rival organizations. However, according to Porter (1996), a company can only supersede its rivals if it can establish a sustainable differentiation.

Before formulating the strategy, a consensus regarding mission, values and vision is necessary. Mission and values are stable in time, but vision does not enjoy this stability (Kaplan and Norton, 2008).

Mission, values and vision are, then, key and decisive factors in the definition of a strategy (Kaplan and Norton, 1996a).

The organization strategy is not unchangeable, and is usually connected to the organization market's evolution. Each sector of activity has its own peculiarities which determine the critical success factors (CSF) shared by all the organizations operating in that area.

However, market changes, volatility, can change them, which leads organizations to be attentive to changes in their activity (Russo, 2006).

For Kaplan and Norton, strategy is a set of hypotheses. Strategy represents the organization's movement (its path) from the current situation to a desirable future expressed by the vision. Since that future is unknown, this is something new, full of uncertainties, both internally and externally.

These uncertainties are hypotheses that the strategy will test, making use of the BSC.

There are, then, the following steps:

- Mission, values and vision – the BSC's pillars and the beginning of the strategic priorities formulation process;
- Strategy and vision – placed in the centre of the BSC's four perspectives;
- Cause and effect relationships – between the objectives and the indicators in all four perspectives;
- Targets, goals, indicators and initiatives – set within each perspective;
- Developing strategy, communicating the strategy, aligning the organization, operational planning, monitoring and learning and testing and adapting the strategy - connecting strategic planning to execution.

3. HISTORICAL CONTEXT

The sea has played an important role in national life through a long period of Portugal's history, from the beginning of the 15th Century and the legendary School of Sagres and the subsequent Portuguese discoveries, colonial period, and, more recently, the Estado Novo's overseas policy. After this, there was a lethargic period during the latest decades of the current democratic regime, during which the idea of a connection with the sea and the sea as a national asset lost strength, busy that we were consolidating democracy. The integration in the European bloc, which until today we have understood as a continental bloc and whose sea project was seen as expendable or even an extremely low priority, followed.

With the Carnation Revolution of 1974 came upward social mobility for several strata of society, which led to the rejection of traditional economic sectors, which were seen as unattractive. Fishing was one of these areas.

Many Portuguese people continue to associate the sea not to innovation, to the future and profitable economic opportunities, but to the past and its hardships and lack of economic importance.

The results are visible and clear. Access to many long-distance fishing vessels was lost, European subsidies were used to abate fleets and catches have been decreasing gradually. Over 60% of the fish consumed in Portugal is imported.

Instead of explored or navigated, the sea became the object of contemplation.

We can divide the current democratic political regime in three distinct periods in what comes to the relationship with the sea:

- The second half of the 1970's, during which the dismantling of traditional maritime sectors.
- The 1980's and early 1990's, during which the shortcomings in the perception of the sea's strategic value were consolidated.
- From the late 1990's to the present, after Expo 98 and Portugal signing the United Nations Convention on the Law of the Sea, during which Portugal's connection to the sea was once again discussed.

Currently, a new drive towards sea exploration is increasingly clearer, unavoidable as it is for Portugal both through traditional maritime sectors and those connected to innovation, technology and new uses for the sea in conjunction with the preservation and protection of the maritime environment, an essential basic resource for all economic exploration.

Portugal is eighteen times larger in sea area than land area – we can begin to see ourselves not as a small land country, but as a great world oceanic nation. Should the sea become a national priority, we would be able to reconnect with the ocean.

In May of 2009, a proposal to expand Portugal’s continental shelf beyond 200 nautical miles was submitted to the United Nations. This means a vast oceanic domain, over which Portugal may hold sovereignty, including its marine ground and underground and their resources.

3.1. The Sea – Portugal’s future strategy

Offshore energy

The energy generated by the sea is important for Europe’s fulfilling of its strategic targets in energy policy, and it is also, in the case of renewable offshore energy, important for the reiteration of Europe’s targets in the fight against climate change.

Portugal has the availability of large swathes of sea and of its shelf’s depth in order to develop an offshore wind power industry, specifically through the use of floating turbines. Portugal has some tradition in wave power research and could capitalize on it by putting itself forward as a country directed towards the development of offshore renewable energy sources.

Climate

Nowadays, it’s possible to also hear talk of “oceanic weather,” as opposed to the past when “atmospheric weather” was dominant. Although we know little about the oceanic system’s functioning, we do know that it is the “oceanic weather” that largely determines the “atmospheric weather,” by virtue of its currents.

Portugal has two natural laboratorial platforms, the islands of Madeira and the Azores, and their exposure to the great Gulf Stream should guide some of the scientific critical mass towards specialization in the field of the oceans’ role in climate regulation.

Marine environment

Marine environment protection is becoming more and more an area with great potential for the creation of companies geared towards nature management and sustainability, since there are many functions and services to be generated around the environment and coastal marine biodiversity.

The University of Porto has created a company incubator for companies focusing on maritime exploration; it is in Portuguese universities that one can find a significant part of the

scientific critical mass needed to create companies dedicated to the marine environment and underwater eco-technologies.

Ship transport and ports

The ship transport and ports sectors are crucial for sea exploration. They are the backbone of any sea cluster and work as a catalyst pole for many other sectors and sea companies, such as shipbuilding enterprises and naval equipment companies or companies dedicated to storage or refrigeration, among others.

Europe has a new public policy, which will benefit rail and water transport as opposed to road transport for environmental reasons, in order to cut down greenhouse gas emissions and other pollutants in the transport sector, and due to the unsustainable growth of road transport on European roads.

Sea tourism

About two thirds of Europeans would rather spend their holidays and leisure time by the sea. This explains the growth in the coastal and maritime tourism sector in Europe in the last decades. This means there is a strong demand for goods and services connected to nautical tourism in Europe.

This area comprises cruise-ship tourism, recreational sailing, marinas, marine activities, maritime/touristic activities and the development of nautical sports.

Continental shelf prospection and exploration

The exploration of the continental shelf and its living and non-living resources which can be found on the seabed and underneath throughout Portugal's extensive continental shelf. It's important to organize the necessary means in order to be able to prospect and subsequently explore; the involvement of large Portuguese companies, in partnership with experienced international companies in the field of offshore exploration, should be the way to start the exploration of the continental shelf.

Fish and food

The fish and food sectors must be a sector for the future. Portugal is the world's third largest consumer of fish, after Japan and Iceland, which creates a large deficit in the commercial scales.

Over two thirds of the fish in Portugal are imported. With the diminishing catches and quota reductions, new opportunities arise. Aquaculture is a possible solution, alongside traditional fishing. The Portuguese government and the European Commission grant support to companies who wish to develop this industry.

Complementing the aquaculture and fishing industries, their respective fish production allows us to think about the creation of new, innovative and creative fish transformation industries.

4. FISHING IN PORTUGAL CONTEXT

The Portuguese Instituto Nacional de Estatística (INE) and the Portuguese Directorate General for Natural Resources, Security and Maritime Services (DGRM), published the annual “Estatísticas da Pesca 2015” (“Fishing Statistics 2015”) in the context of their technical institutional collaboration with the objective of producing and divulging official fishing statistics.

The following results were divulged:

Fishing Population

- *On 31-12-2015 there were 17 536 registered fishermen, 757 more than in 2014 (+4,5%). In the activities of seafood harvesting and dismantled fishing without recourse to vessels, there was a decrease in the number of licensed fishermen, the former decreasing by 4,7% and the latter by -1,7%.*
- *The number of registered fishermen comprises all individuals who, being involved in commercial fishing, were active in this sector, even if seasonally or part-time.*
- *The Algarve region was the only one registering a decrease in the number of registered professionals in comparison with the previous year (-4,3%), while all other regions increased their number of registered fishermen.*
- *The analysis by type of fishing shows that seine fishing was the only segment that showed a decrease in the number of registered fishermen (-2,7%), with 55 fewer fishermen, as a result of restrictions to sardine fishing applied to many vessels for four months of the year. For fishing in inland non-maritime waters and trawling there were increases of 5,0% e 9,4%, 81 and 117 more individuals, respectively.*
- *The number of registered individuals for polyvalent fishing, which involved about 70% of total registered fishermen nationally, increased by 5,2%, meaning 614 more registered fishermen.*
- *The age structure of registered fishermen shows a predominant “35 to 54 years of age” demographic (58,8% in 2015 and 58,9% in 2014); the remainder of the population was relatively evenly distributed across the age demographics “16 to 34” (21,9% in 2015, 22,2% in 2014) and “over 55” (19,2% in 2015, 19,0% in 2014).*
- *The relative relevance of younger fishermen in 2015 was greater in the Centro region (29,3%, compared to 27,1% in 2014) and in the Madeira Autonomous Region (26,9%, compared to 29,7% in 2014). The oldest fishermen were in operation in the Algarve (27,5%) and in Lisbon (26,1%), compared to 25,3% and 25,7% in 2014, respectively.”*

- *Fishermen over the age of 55 were prevalent in inland non-maritime waters, with 28,9% of the total fishermen in this demographic (30,0% em 2014). Trawling is the activity involving the most professionals under 35 (25,9% of the total fishermen in this demographic, 24,9% in 2014), at the same time as it holds the smallest number of older fishermen, since only 8,9% of trawling professionals were over the age of 55 (8,6% in 2014).*
- *The Norte region displayed the largest number of registered fishermen (26,0% of the total), simultaneously having the largest percentage of registered seine fishermen (50,1% of this segment's total, 49,2% in 2014). The Centro region comes in second place, with 22,3% of the total registered fishermen and also being the region that had in 2015 more than half (51,8%) of trawling professionals (52,0% in 2014) and of the inland non-maritime waters fishermen (51,4% in 2015, compared to 53,3% in 2014). In what relates to total registered fishermen, the Autonomous Region of Azores (18,0%) follows; then, the Algarve (16,0%), Lisbon (10,4%), Alentejo (4,0%) and the Autonomous Region of Madeira (3,4%).*
- *Seafood harvesting and dismantled fishing without recourse to vessels were generally taking place as a complement to other economic activities.*
- *In 2015, there were 969 registered seafood harvesters (1 017 in 2014) and 234 dismantled fishermen (238 in 2014), using trammel nets for demersal fish species fishing, handheld harpoons for bivalves, or galheiros for lamprey fishing in the Cávado river.*
- *Compared to 2014, there was a decrease in the number of registered fisherman, both for seafood harvesting (-4,7%) and dismantled fishing (-1,7%). The number of harvesters decreased in the Centro and Algarve regions, but increased in the Norte, Lisbon and the Alentejo. The number of dismantled fishermen decreased everywhere except in the Norte.*
- *In 2015, statistics regarding accidents in the fishing sector, originating from mutual organizations of fishermen and ship-owners, pointed to 11 deaths (1 during fishing labour and 10 in shipwrecks), three more than in 2014. The number of wounded was lower than in 2014 (102 fewer wounded professionals), but the number of sick leave days increased to an average period of 37 days per accident, compared to 2014's 31 days per accident.*

Fishing Structures

- *The licensed fleet in 2015 totalled 4 188 vessels (98 fewer licenses when compared to 2014), a 3,0% decrease in the number of vessels, 2,7% in gross tonnage and 2,9% in potency. 158 fishing vessels were removed from operation, 77 more than in 2014. On the other hand, there were 55 new entries in 2015, a 25% growth compared to 2014, 24 of which were newly built ships (43,6% of total ships).*

Fishing Products Market and Organizational Structures

- *In 2015 there were 15 Producers' Organizations (Organizações de Produtores - OP) for fishing, which had 1 696 vessels associated with them (1 585 in 2014, 111 more units), totalling 41% of total licensed ships in Portugal. The volume of unloaded fish catches from OP's grew 27,8% compared to 2014, most notably in mackerel*

catches (+60,3%) and horse-mackerel (+38,2%). On the other hand, sardine catches decreased by 14,3%.

- In 2015 there were no payments towards helping store fishing products.*
- The average annual unloaded catch price decreased nationally 10,6% in 2015, going from 2,02 €/kg to 1,81 €/kg. This decrease was in line with the decrease in prices in Continental Portugal (-13,8%), since the Azores and Madeira Autonomous Regions showed, compared to 2014, growths of 13,5% and 24,8%, respectively.”*

Unloaded Catches and Catches

- In 2015, Portuguese fleets caught 194 164 tonnes of fish, a 5,6% increase in national fishing when compared to 2014.*
- The 140 831 tonnes of fresh or refrigerated fish sold at fish markets (119 890 tonnes in 2014), worth 260 984 euros (250 501 euros in 2014), grew 17,5% in volume and 4,2% in value, compared to 2015.*
- The decrease in average national price was in keeping with the increase in caught amounts of fish. The amount of lower-value fish caught in 2015 (mackerel and horse-mackerel, for instance) was important to this result.*

Fishing and Aquaculture Products Processing Industry

- The Aquaculture and Fishing Products Processing Industry presented, in 2015, a total “frozen,” “dried and salted” and “prepared and preserved” production of 241 thousand tonnes (-2,0% compared to the previous year), registering a lower amount especially in “prepared and preserved,” which showed a 3,9% decrease, but also in “frozen products” (-2,1%) and “dried and salted” (-0,5%).*
- “Prepared and preserved” products did not go past 46 thousand tonnes (48 thousand tonnes in 2013). Sardine preserves decreased by 20,6%, with production of “sardine preserves in other vegetable oils” decreasing to almost half of its values in the previous year, mostly due to the capturing restrictions in place in 2014.*
- Sales were of 898 million euros, a 5,8% increase compared to the previous year.*

International Commerce

- There was a deficit in the commercial scales of fishing products (735,0 million euros, compared to 659,6 million euros in 2014), there having been a 75,4 million euros increase compared to 2014. The coverage rate was 58,4%, a 0,2% increase compared to 2014.*
- The main group of imported products remained “frozen fish excepting filets.” Spain remained the main supplier, holding 38,3% (- 4,2% compared to 2014), followed by the Netherlands, with 18,7% (-2,6% compared to 2014).*
- “Dried, salted, smoked fish” stood as the most negatively in deficit, totalling 257,4 million euros in deficit (an increase of 45,3 million euros).*
- In 2015, as usual, only foreign transactions in “prepared, preserved fish and prepared fish roe” were positive for Portugal, with a surplus of 66,6 million euros, 14,8 million euros more than in 2014.”*

Fishing Economy

- *At the end of 2015, there were about 251 million euros in support from the EU (FEP), in terms of approved and consummate projects. This is a commitment rate of 111,0%; the non-execution of the totality of projects, which is to be expected, will probably lead to a final execution rate of no more than 100%.*
- *PROMAR's (Operational Fishing Program) execution in the end of 2015, in terms of public and fund spending was close to 85%, but the final execution rate is dependent on approvals occurring later than this date, since promoters could turn in their requests for payment until April 30th, 2016, in order to be analysed and reimbursed within 2016's first semester.*

Main Stocks and Exploration Levels

- *The chances for fishing rose by 22% in 2015 (+10% in 2014). Within the set of species subject to catch limitations, there are notable rises in quotas for horse-mackerel (+70%; +16% in 2014), for Atlantic bonito (+37%; +28% in 2014), for blue whiting (+32%; +114% in 2014), for European anchovies (+10%), for crayfish (+15%; -10% in 2014) and for monkfish (+13,5%). Quotas for red seabream, smooth weakfish and imperial scaldfish decreased (when compared to 2014) by 50%, 15% and 39%, respectively.*

A report on sardine fishing sustainability recommends revisions to the current management plan and stresses that Portugal and Spain should settle their dispute regarding fishing quota distribution by the beginning of next year.

The study, dating from November, was commissioned by the European Parliament's Committee on Fisheries and developed by specialists from the Instituto Português do Mar e da Atmosfera (Portuguese Sea and Atmosphere Institute) (IPIMAR), the Spanish Institute for Oceanography (Instituto Español de Oceanografía), the French Research Institute for Exploration of the Sea (IFREMER) and the universities of Aveiro and Santiago de Compostela.

Besides evaluating the current state of the resource, as well as the economic and social situation associated with sardine fishing, the report proposes improvements in knowledge of the species and management measures to be followed to ensure that fishing is sustainable.

Faced with the Iberian sardine stock, which has been declining since 2006 due to low recruitment (that is, the young sardines added annually to the population and the death rate in fishing), investigators defend the adoption of additional technical measures and the review of the multiannual management plan that Portugal and Spain implemented in 2012.

Minimum catch size and areas or time periods closed off for younglings' protection, as well as revisions in catch rules in accordance with the dynamics of the stock in recent years are among the measures proposed.

The same study advises: *“The limit for catches resulting from the enforcement of the management plan’s rules for catch control should be shared between Portugal and Spain at the beginning of the year,”* stressing that *“the current lack of understanding regarding distribution between both countries should be solved.”*

The promotion of multidisciplinary studies to evaluate the impact of environmental factors on recruitment, improving knowledge about the connection between different stocks of sardines, improving fishing practices and collecting social and economic data are among the other suggestions.

There are two stocks of sardines in the European Atlantic waters: the North region stock, where fishing is conducted mostly by Spain and France, and the South stock (Iberian), where both Portugal and Spain fish.

Unlike the North region stock, which tends to grow, the Southern one has been in decline, with possibilities for catch declining as well, which are ruled by Portugal and Spain unlike the remaining European fishing quotas, imposed by Brussels.

Quotas decreased from 27.900 tonnes in 2014, to little over 19.000 tonnes in 2015 and 14.000 tonnes in 2016.

Quotas for sardine fishing are not defined by the European Union: Portugal and Spain manage the resource directly, based on a management plan put forth in 2012. The limits to fishing this species have the approval of the International Council for the Exploration of the Sea (ICES), which defines the TAC, total allowable catches. Brussels accepts the quotas defined by Portugal and Spain based on that recommendation.

However, in Portugal, sardine fishing has been defined by governmental resolutions that assign periodic quotas to each OP.

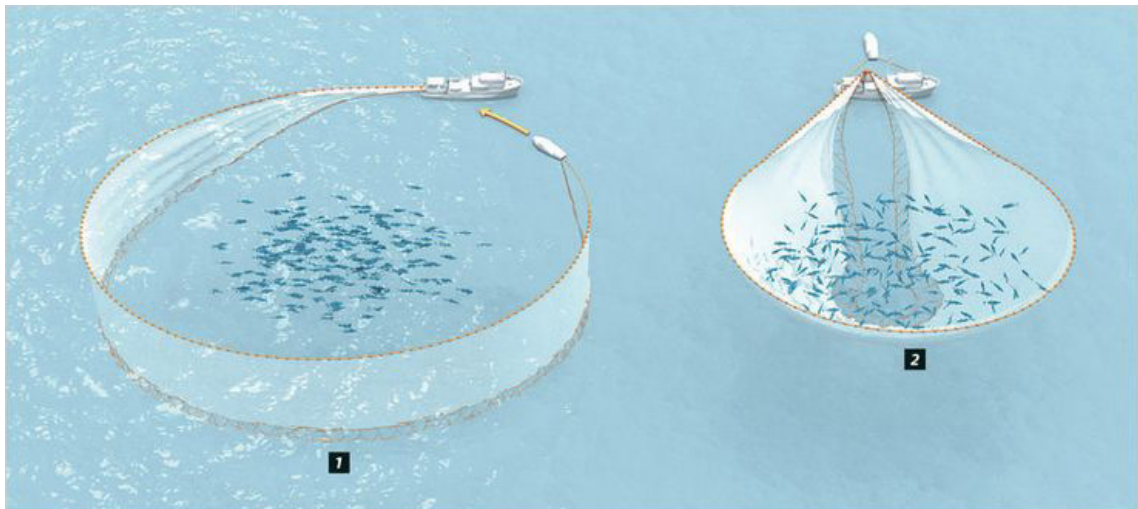
With the definition of fishing quotas, the amount of this species in the market is lowering abruptly. The laws of supply and demand apply as if in a textbook example. Prices have skyrocketed to 20-year highs. A kilo of sardines has never been this expensive. The average negotiated price in national fish markets reached €2,19 per kilo, the highest in the last 20 years. In 1995, the price was €0,31 per kilo. In the last four years, the price has almost tripled when compared to prices between 1995 and 2011.

To fight the lack of sardines in the market, recourse to importation was necessary: over 60% of sardines consumed in Portugal are now imported and most sardines reaching the country is frozen.

Spain was the main supplier of fresh sardine in the last year, holding over 98% of the total imported value. In frozen sardine, Spain is also at the top spot, with 69,9% of the total value of imports in 2015. Morocco takes the second place, with 23,2% in the same year.

5. SEINE FISHING CONTEXT

A mobile form of fishing, seine fishing refers to any fishing method using a long and tall net wall, dropped so that it may surround the prey and minimize their ability for flight. It is a surface fishing method used to catch pelagic species.



Picture 14. Catching process in seine fishing.

The catching process involves enveloping the fish from all sides and from below, disabling them from escaping through the lower part of the net, even when in use in deep waters. Seine fishing is often practised with the help of light sources to attract and concentrate shoals.

The seine net used in continental Portugal is characterized by the use of a gantline in the lower part of the net, which allows the net to be closed like a purse, so as to retain the catch.

The maximum length of the corkline and the maximum height of the net vary according to the size of the fishing vessel, their length falling between 300 and 800 m and their height between 60 and 150 m.

Minimum mesh size: 16 mm.

Authorized outside a quarter of a mile away from the shore and, between a mile and a quarter of a mile, only in waters deeper than 20 m, except in the Nazaré Captaincy jurisdiction are for squirelfish fishing.

The minimum percentage of pelagic species (target species) per voyage, as set by the law, is 80% and ancillary catches are permitted up to 20% of the total catch weight on board.

Fishing targeted towards small pelagic species: sardine (*Sardina pilchardus*), mackerel (*Scomber colias*), Atlantic mackerel (*Scomber scombrus*), bogue (*Boops boops*), European anchovy (*Engraulis encrasicolus*) and horse mackerel (*Trachurus spp.*).

The following species may also be caught: Spanish mackerels (*Scomberomorus spp.*), Atlantic bonito (*Sarda sarda*), triggerfish (*Balistes spp.*), garfish (*Belone belone*), mullet (*Mugil spp.*, *Liza spp.*, *Chelon spp.*) and anchovy (*Pomatomus saltatrix*).

5.1. Sardine (*Sardina pilchardus*)



Picture 15. Sardine (*Sardina pilchardus*), Source: Instituto Português do Mar e Atmosfera (IPMA).

Elongated, subcylindric body, blue or silver grey back and silver belly, flanks with round dark spots. Non-rayed dorsal and anal fin. Outer border of the operculum rounded with 3 to 5 grooves in the lower portion, irradiating downwards.

Sexes are differentiated and distinguishable through observation of the internal reproductive organs (ovaries/testicles).

On the Portuguese coast, reproduction occurs throughout the continental shelf during a long period (October and April), intensifying between December and February. In the Western North region, egg-laying is more intense in the autumn and winter, whereas in the South region the egg-laying season is longer, becoming more intense before the northern one.

Sardines store fat beginning in the end of spring and up to mid-autumn (September - October), to grow and have energy to produce the oocytes and spermatozoa needed for reproduction in the following months. This fat, rich in polyunsaturated fats (especially omega 3) deposits in the muscle around the viscera and gives the sardine its appreciated taste. At the end of the egg-laying season, sardines are leaner due to the energy spent in reproduction.

Reproduction involves external fertilization of the eggs and occurs preferentially in temperatures between 14-15°C, avoiding temperatures lower than 12°C and higher than 17°C to reproduce. Each female emits eggs every two weeks on average (multiple or serial reproducer) throughout the egg-laying season.

The eggs are pelagic (they float in the top layers of the water columns, swaying with the currents), measure about 1,5mm in diameter and develop over 3 to 5 days. Larvae measuring between 3 and 5 mm in length hatch from the eggs. Larvae grow and go through metamorphosis after 40 days until they reach 3 to 4 cm in length, when they acquire the typical sardine form (youngling). The transition into adulthood (puberty, first reproduction) occurs when the sardine reaches one year of age and about 14cm in total length.

Larva survival and their evolution into adulthood depends essentially on environmental conditions, particularly food availability in the areas where they develop. Reproductive success also depends on the size of the females and their energy reserves.

Their growth is fast – a sardine may reach about 90% of its maximum length during its first two years. They live up to the age of fourteen and reach 27cm in total length. However, on the Portuguese coast, younger sardines (up to 6-7 years) and smaller ones (up to 21-22 cm) are more common.

The sardine is a species which uses two modes of feeding: passive filtration and active predation, feeding exclusively on plankton (particularly on microalgae, copepods and other crustaceans, as well as fish roe, mostly their own eggs).

They are distributed across the entire Portuguese continental shelf up to 100 m in depth.

Their abundance decreases from North to South. Younglings and young adult fish are concentrated around the more coastal and productive areas (up to 50 m in depth), close to the mouths of rivers and rias, especially on the north-western coast between Porto and Figueira da Foz and the Lisbon area. It is a species with great mobility, forming shoals (gregarious) in the water column (pelagic), which can stretch over 100 square metres in area and weigh over ten tonnes.

Their migrations are not well known but there are signs of seasonal migrations across the coast and migrations taking place as they grow towards the north coast of Spain (northern Galicia and Cantabrian Sea).

The distribution and variation of sardine abundance are connected to upwelling, an oceanographic phenomenon caused by winds from the Northern quadrant, more common

in the summer, which lead to increases in the amounts of available plankton, the sardine's nourishment, along coastal waters.

Sardines have an important role to play in the ecosystem because they are the main prey of several species of dolphin (common dolphin or porpoise), of several seabirds (gannet, shearwater, seagull) and fish (tuna, whiting and other pelagic fish, some of which feed on their eggs and larvae).

Sardines are primarily caught by seine fishing (98%), but are present in smaller amounts in trawling, gillnet fishing and arte-xávega. Seine fishing is used by about 130 fishing vessels, which generally use a smaller, auxiliary vessel to help during the fishing manoeuvres, and which make several daily voyages and fish around their original port.

In seine fishing, the catching of shoals of exclusively sardines or of sardines mixed with other small and medium pelagic fish in the same catch, such as mackerel, horse-mackerel and Atlantic anchovy, occurs.

Sardine fishing is managed by Portugal and Spain according to a Management Plan agreed upon by both countries. This plan includes limitations to annual catches and fishing efforts (maximums of 180 days of fishing per fishing vessel and no fishing allowed during two days of the week, during the weekend), periods of forbidden sardine fishing (between December and April, depending on the coastal area) and, more recently, limitations to youngling catches. The minimum size on unloading, 11cm, is regulated at the European level. There is also a set of regulatory measures for seine fishing regarding the method and operation areas of fishing vessels.

Unloading ports: Matosinhos, Aveiro, Figueira da Foz, Peniche, Sesimbra, Sines, Portimão and Olhão.

5.2. Horse-mackerel (*Trachurus picturatus*)



Picture 16. Horse-mackerel (*Trachurus picturatus*), Source: Instituto Português do Mar e Atmosfera (IPMA).

Elongated and slightly compressed body; two dorsal fins; one complete set of scutes along the lateral line with marked inflexion in the anal spines; ancillary lateral line ending between the 19th and 31st rays of the second dorsal; green grey or blue grey colour on the back, silver flanks and belly.

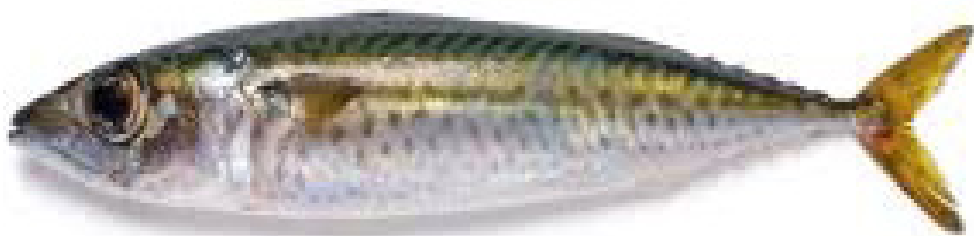
Rapid growth in early years, reaching around 20 cm in length in the first year of life; longevity exceeds 20 years. Indeterminate fecundity (serial egg-laying) and a long reproductive season (mostly between December and March) - ready to reproduce from age 2 on. Feeds preferentially on small crustaceans (zooplankton), but diversifies the diet as it grows, feeding on larger crustaceans, other fish and cephalopods (squid) when it reaches 30cm in length. As an abundant species, it frequently integrates the diet of carnivorous fish, sharks, dolphins and seabirds.

Distributed along the continental shelf and margin, from shallow depths up to depths of 400 m. Initially a pelagic species forming dense shoals, the horse-mackerel tendentially moves to deeper waters and closer to the seabed as it grows. It cohabitates with two other horse-mackerel species in Portuguese waters: the Atlantic horse mackerel and the Mediterranean horse mackerel (much less abundant).

Horse mackerel fishing is one of the most important in terms of economic value in the catches from the continental Exclusive Economic Zone (EEZ), only surpassed by octopus and sardine fishing. The fish is caught throughout the year, mostly by trawling directed to demersal fish. It's also caught by the seine fishing fleet and *arte-xávega* (especially small sizes) and with gillnets (especially large sizes). Rejection estimates for horse mackerel in the trawling fleet tell us that they are ineligible.

Unloading ports: Viana do Castelo, Póvoa de Varzim, Matosinhos, Aveiro, Figueira da Foz, Nazaré, Peniche, Cascais, Sesimbra, Setúbal, Sines, Lagos, Portimão, Olhão, Tavira, Vila Real de Santo António.

5.3. Mackerel (*Scomber colias*)



Picture 17. Mackerel (*Scomber colias*), Source: Ciência Viva.

Elongated, scaleless body with light silver colouring on the belly and darker greenish blue on the back, with irregular dark lines that give it a tiger-like look. It's found in

the Northeast Atlantic and the Mediterranean Sea, where it lives in the water column in coastal areas up to 250 m in depth. Forms frequently migrating large shoals that stay near the seabed during the day and rise at night to hunt for fish, molluscs and small crustaceans.

They reproduce between February and April, when the females lay 100.000 to 400.000 eggs. Seine fishing, trawling and gillnets are used in its fishing.

Mackerels are very similar to the Atlantic mackerel (*Scomber scombrus*), but the mackerel has spots ('sardas' in Portuguese) on the belly, whereas the Atlantic mackerel ('sarda' in Portuguese) does not, which justifies the saying "a sarda é mentirosa" ("the Atlantic mackerel lies").

Minimum unloading size: 20 cm.

5.4. Atlantic mackerel (*Scomber scombrus*)



Picture 18. Atlantic mackerel (*Scomber scombrus*).

Scaleless body and pointy, elongated head, greenish back with blue stripes and silver, spotless belly, which distinguishes it from *S. colias*. Has a black spot over the operculum and a longitudinal band over the dorsal. Pelagic species, living in water columns in coastal areas, forming large migratory shoals.

Minimum unloading size: 20 cm.

5.5. European anchovy (*Engraulis encrasicolus*)



Picture 19. European anchovy (*Engraulis encrasicolus*).

Small bluish osseous fish of the Engraulidae family whose scientific name is *Engraulis encrasicolus*. Also known as anchovy. Abundant in Mediterranean regions and the Atlantic coast of Africa and Europe. Its distinguishing features are the slit-shaped mouth and the pointy snout extending beyond the lower jaw. The European anchovy is similar to the sprat and has a bifurcated tail, with a single dorsal fin, but a round and slender body.

Maximum length of 21 cm. Its main form of consumption in Portugal is as preserved anchovies. Its popularity is so great that almost all of the European anchovy caught in Portugal is quickly directed to the hospitality industry in Portugal and Spain, practically rendering it unavailable in the markets.

6. CASE STUDY: PROPEIXE OP

6.1. Sector Description

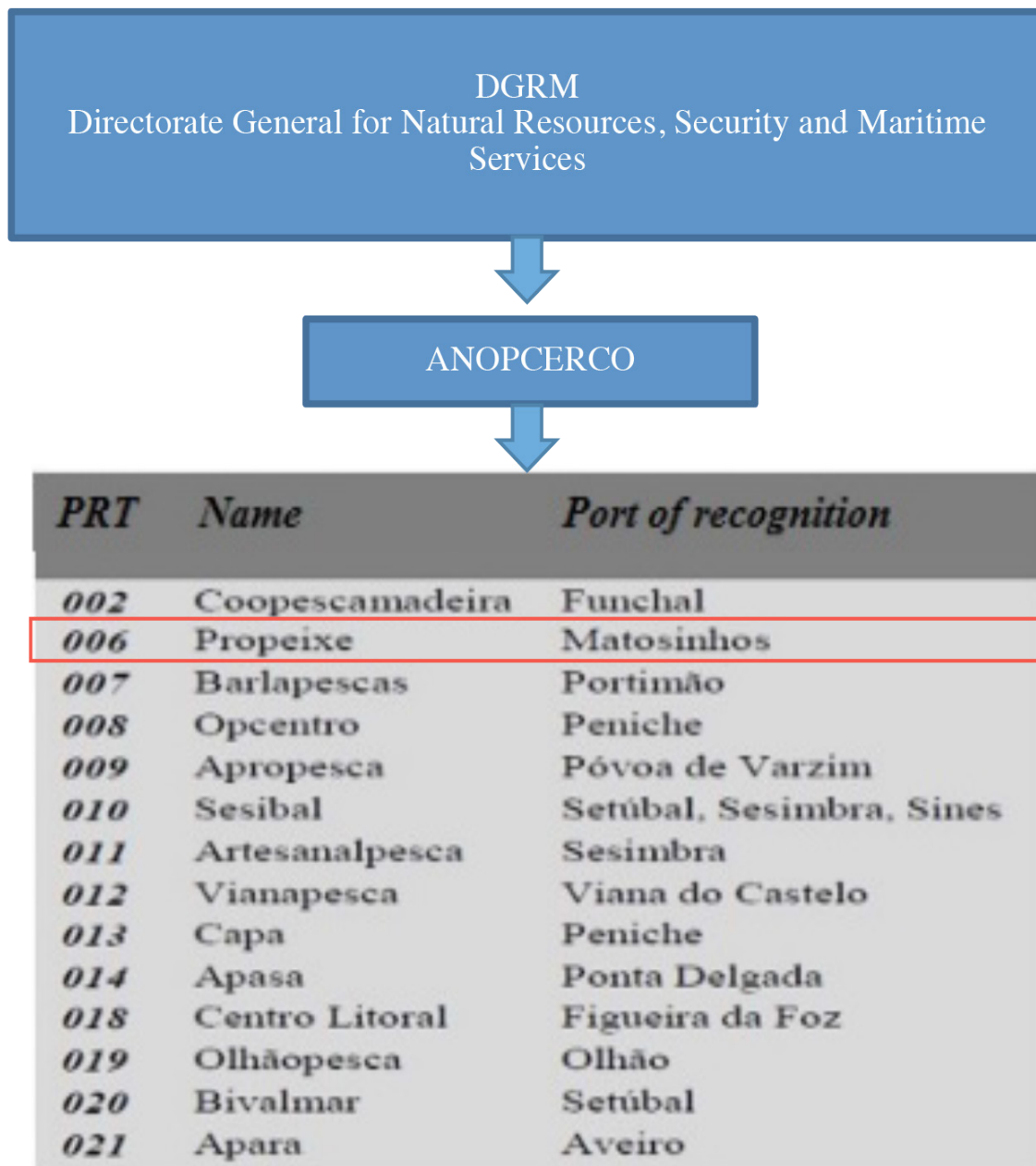
The Portuguese Directorate General for Natural Resources, Security and Maritime Services (DGRM) of the Ministry for Agriculture and the Sea (MAM) is a central service of the State's direct administration, with administrative autonomy, whose mission is:

- The execution of natural marine resources preservation and knowledge policies
- The execution of fishing, aquaculture, processing industries and connected activities policies.
- The development of safety and maritime services, including the maritime-port sector, as well as ensuring regulations, inspections, over, coordination and control of the
- activities within these policies.

DGRM is the entity which recognises associations as *Producers' Organizations* (OP's) in Portugal.

The National Association of Seine Fishing Producers' Organizations (ANOPCERCO) is a non-profit fishing association congregating Producers' Organizations founded by seine fishing ship-owners, whose goal is to represent these OP's interests regarding seine fishing to the national tutelage. Faced with the constant instability of the Portuguese sardine market and fish market price fluctuations, the OP's felt it necessary to create a national organization to represent and defend seine fisher's livelihoods.

OP's arise from the need for collective responsibility and for the conjugation of individual efforts with a common goal to accomplish common goals on production and activities levels, both up and downstream in the chain of business. Member producers benefit from this system, and all other agents in the sector are excluded from it. Joining an OP is optional. It is important to mention that fishing Producers' Organizations arose with Portugal's entry into the EEC, with the knowledge of the coming deep changes to the sector.



Picture 20. Sector organization.

6.2. PROPEIXE OP's activities are as follows:

- Creating production and commercialization plans
- Signing fish supplying contracts (for consumption buyers and fish preservation factories)
- Ensuring processing (freezing) and temporary cold storage for fish in times of low outflow (sale in fish markets), or situations where the minimum price has not been reached (*desencadeamento*).
- Ensuring production outflow for their associates and continuous attention to market fluctuation (search for supply and demand balance), imposing daily catch limits as needed.

- Occasional logistic and financial support for associates.
- Procuring sources of extra revenue through the sale of fish preserves in the national market and providing transportation services, among others, to other companies operating at the fishing port.

6.3. PROPEIXE O.P.'s creation

PROPEIXE is a Producers' (ship-owners) Cooperative for sardine seine fishing in Matosinhos. When Portugal joined the EEC on January 1st, 1986, the need for a Sardine Fishing Producers' Cooperative in the Matosinhos port arose, in order to join all the sardine seine fishing vessels, and was named PROPEIXE O.P. (Producers' Organization), becoming formal in December of the same year. During the creation stages of this Cooperative the fleet was made up by 70 sardine fishing vessels, currently down to 26 due to incentives to abate fleets encouraged by joining the EEC, even if the surviving vessels fish as much or more than the original 70 did as a result of the evolution in ships. The impulse to start this cooperative stemmed from the following needs:

- For concentrating the fleet of an activity with common interests into a single structure.
- For facing the new challenges stemming from Portugal's joining the EEC.
- For solving structural problems that were already showing effects and would certainly become more serious with open borders.

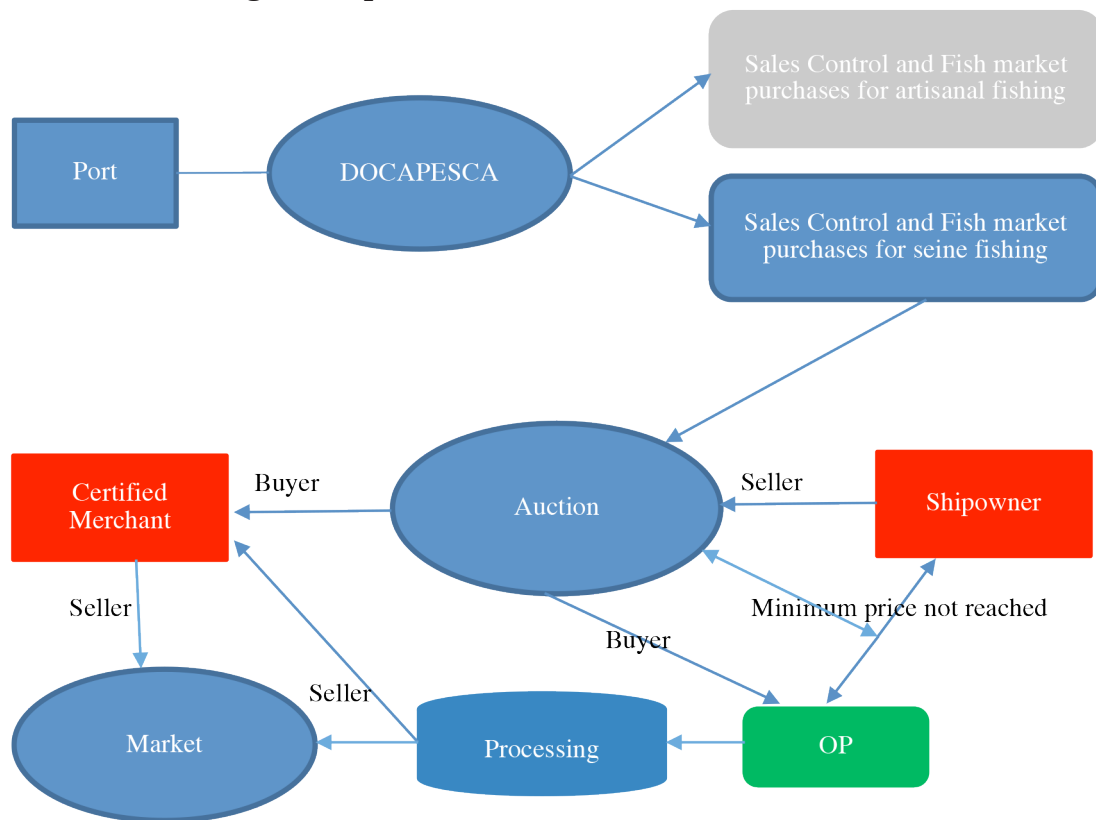
The OP's activities:

- On the Institutional Plane (as a Cooperative):
 - Coordinating its associates' fishing activity. P1010001
 - Keeping up with legislation and guidelines from the EU and the Portuguese Ministry for Agriculture and Fishing.
 - Keeping up with technological progress and processes that could benefit productivity and quality in fishing.
 - Determining daily catch quotas per fishing vessel, prioritizing the protection of species and the maintenance of a balanced price in the market.
- On the Functional Plane
 - Putting in practice commercial and industrial activities, to generate revenue destined to provide broader support to its associates. Associates' contributions are merely symbolic.
 - Producing high quality fish preserves (outsourced).
 - Maintaining a fleet of 72 stackers for rent, to unload and transport fish within the fishing port where activities take place.

The Matosinhos Fishing Port's support infrastructures can be seen on picture 22 - the most important ones for the sector and held by PROPEIXE O.P., either as property or through exploration contracts, the only instance of this in Portuguese O.P.'s structure. As shown in the picture, PROPEIXE holds a high-investment cold store on lease, equipment for fish freezing, purchases fuel to lower costs for associates and has a fleet of 72 stackers for rent, to unload and transport fish within the fishing port where activities take place.

All other valences at the Matosinhos Fishing Port (fish market, warehouses and ice factory) belong to DOCAPESCA.

Matosinhos Fishing Port Operations



Picture 23. Matosinhos Fishing Port.

Within the Port, DOCAPESCA has facilities where the unloading fish markets are located, isolated from non-certified personnel.

Note: To take place in the Auction, the fish merchant or restaurateur must sign up in the fish market where they intend to buy fish (either seine or artisanal fishing); besides the company's identification data, they will need a bank guarantee (minimum value of 2.500,00€) and to acquire a bidding device (for bidder-present auctions at the fish market), or a license for the Online Fish Auction (available at the Matosinhos, Figueira da Foz, Peniche, Sesimbra and Portimão fish markets). PROPEIXE O.P. also acts as a buyer, and is represented at the auction.

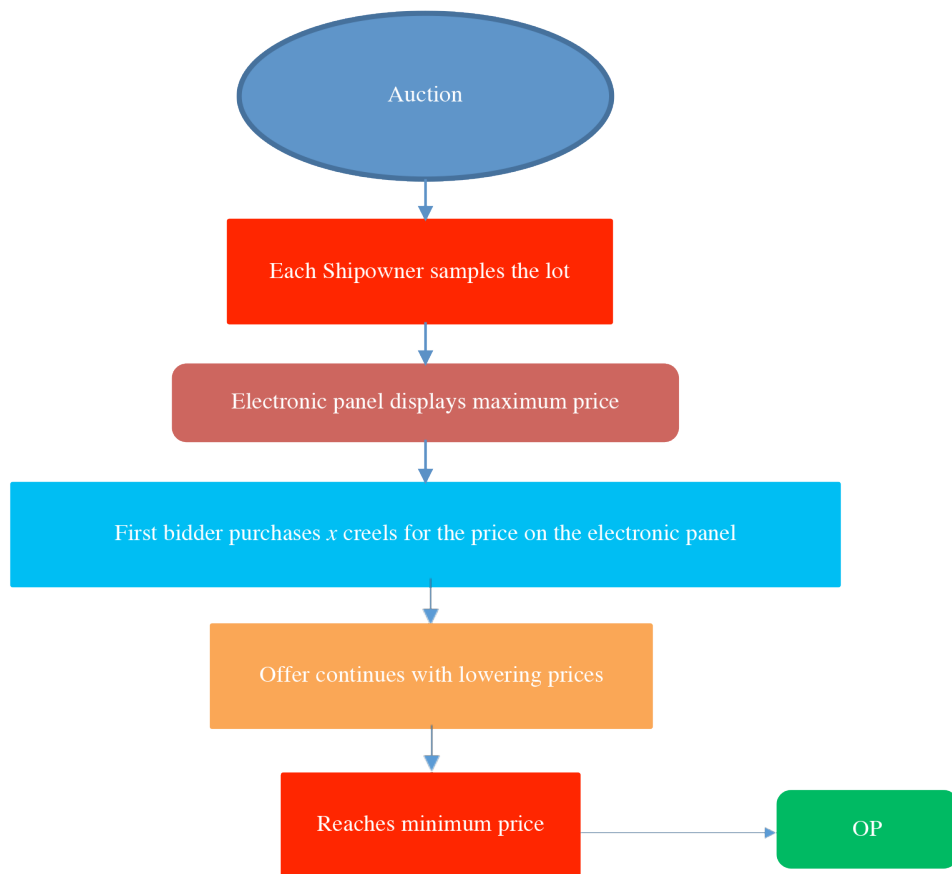
There are two fish markets, one for seine fishing catch unloading and the other for all other methods (trawling and artisanal). Fish is directed towards the first sale (picture 25), during which each ship-owner samples the lot for auction. On the electronic panel (picture 26), the maximum price is shown as it decreases until someone states their interest. The buyer who first shows interest on the panel purchases a certain amount of creels (each weighing about 22,5 Kgs) at the set price.

If there are further creels in the same lot or another, the price on the panel continues to lower until a new bidding emerges, whose limit will be the minimum price set at the beginning of each catch (picture 24 for 2016).

When the minimum price is reached, the auction ends and the fish may be acquired only by PROPEIXE O.P., if they have any commercial quality in the future after processing, the goal being to avoid as much as possible the fish's direction to fishmeal production.

Species	Classification	Kg	Creel	Species	Classification	Kg	Creel
Sardine	Extra 1	0.60	13.50	A. mackerel	Extra 2	0.18	4.05
	Extra 2	0.60	13.50		Extra 3	0.17	3.83
	Extra 3	0.40	9.00		A 1	0.40	9.00
	Extra 4	0.40	9.00		A 2	0.20	4.50
	A 1	0.60	13.50		A 3	0.20	4.50
	A 2	0.67	15.08				
	A 3	0.50	11.25				
	A 4	0.46	10.35				
Species	Classification	Kg	Creel	Species	Classification	Kg	Creel
Mackerel	Extra 2	0.29	6.53	H. mackerel	Extra 3	0.30	5.40
	Extra 3	0.20	4.50		Extra 4	0.25	4.50
	Extra 4	0.20	4.50		Extra 5	0.30	5.40
	A 1	0.40	9.00		A 1	0.80	14.40
	A 2	0.40	9.00		A 2	0.40	7.20
	A 3	0.24	5.40		A 3	0.39	7.02
	A 4	0.19	4.28		A 4	0.39	7.02
					A 5	0.39	7.02
Species	Classification	Kg	Creel	Species	Classification	Kg	Creel
				E. anchovy	Extra 2	0.48	10.80
					Extra 3	0.38	8.55
					A 2	1.00	22.50
					A 3	1.00	22.50
					A 4	0.50	11.25

Picture 24. *Desencadeamento* selling prices for the Storage Mechanism 2016.



Picture 25. Auction.

The OP may never sell fish before five days have passed, to ensure that it is processed (frozen) and sold at the best time. This operation is referred to as “fish *desencadeamento*,” or “*Peixe de Reporte*” before 2014. Were it not for this rule, there could be simulations for delivery at a lower cost than the set minimum.



Picture 26. Electronic panel. Source: DOCAPESCA.

DOCAPESCA controls the auction (picture 27), manages the electronic panel, transportation rules for unloading at the port and circulating in the fish market, initial bidding, removal (*desencadeamento*) price per species, fish classification, sale rules, and delivery

rules and transmits all this data to the O.P.s. It is the O.P.s that manage daily fishing quotas (the aforementioned limitations) for their ship-owners.



Picture 27. Auction Control.

About the action:

- O.P.'s fix the minimum removal price with the tutelage at the beginning of the catch.
- Maximum initial prices are the auction's responsibility, for every fishing method.
- For seine fishing, minimum purchases are of 30 creels (+/- 675 Kgs), while for all other methods, minimum purchases are of 1 Kg.
- In seine fishing, pre-contracts with factories are possible; for other methods, there may be contracts with other kinds of buyers, although with current restrictions to catch sizes with protection and sustainability in view, this kind of practice is no longer as common due to the economic interests on all sides.



Picture 28. Example: Deductions and Compensations.

After the auction, the ship-owner collects the value of the sales and delivers a percentage of the value of each sale to DOCAPESEA, deducts expenses with fuel and oils and distributes 40% of net income over the crew as in picture 28.

Sardine Fishing

COMPARATIVE TABLE FOR THE LAST 14 YEARS														
MESES	FISHED TONNES OF SARDINE													
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
JANUARY	1,317	272	964	1,565	1,584	1,880	1,423	1,148	1,149	672	792	799	649	0
FEBRUARY	0	7	8	3	629	675	2,169	880	1,384	736	0	0	0	0
MARCH	0	6	2	23	9	0	30	0	0	208	0	10	0	0
APRIL	721	1,131	834	961	458	730	803	716	529	1,550	381	585	436	459
MAY	1,514	2,098	742	1,274	1,607	1,880	2,363	1,915	2,241	2,115	962	357	520	697
JUNE	1,809	1,699	1,856	1,883	1,660	1,614	2,948	1,794	1,700	1,486	542	543	425	455
JULY	2,186	3,395	2,748	1,513	1,486	2,246	3,301	2,539	2,152	1,154	697	911	743	959
AUGUST	2,817	3,010	2,596	1,714	2,247	2,551	3,145	1,964	2,039	1,508	1,697	796	828	666
SEPTEMBER	3,494	3,775	3,048	1,851	2,444	3,642	3,344	3,145	3,422	2,462	1,187	1,683	331	557
OCTOBER	3,648	2,328	1,760	2,213	1,672	4,338	3,659	2,839	3,626	1,954	1,245	1,036	0	59
NOVEMBER	3,315	3,333	2,385	2,178	2,844	3,041	3,490	3,034	3,503	3,503	1,896	1,000	0	0
DECEMBER	1,999	732	1,655	1,365	1,712	2,645	1,658	736	1,361	1,410	728	555	0	0
TOTAIS	22,820	21,786	18,598	16,543	18,352	25,242	28,333	20,710	23,106	18,758	10,127	8,275	3,932	3,852

Table 1. Comparative table for the last 14 years of sardine fishing. Source: PROPEIXE OP.

As shown by table 1, since 2010 there has been a drastic reduction in the amounts of fished sardine, due to the quotas imposed in order to recover stocks. Catches in 2015 only started in April and ended in October, thanks to the O.P.'s intervention to contend the information given to ship-owners regarding each fishing vessel's quota.

COMPARATIVE TABLE FOR THE LAST 14 YEARS															
MONTHS	REMOVED TONNES OF SARDINE REPORTE													DESENCADEAMENTO	
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
JANUARY	124.580	0.000	0.000	533.070	509.240	649.350	135.090	523.500	69.525	0.000	0.495	0.000	29.540	0.000	
FEBRUARY	0.000	0.000	0.000	0.000	146.990	0.000	34.880	217.350	128.632	8.482	0.000	0.000	0.000	0.000	
MARCH	0.000	0.000	0.000	0.000	2.680	0.000	0.000	0.000	0.000	1.755	0.000	0.000	0.000	0.000	
APRIL	0.000	0.000	0.000	94.880	53.930	0.000	1.440	10.550	28.080	247.252	0.000	25.087	85.630	36.200	
MAY	0.000	0.000	3.870	164.380	252.020	300.100	211.370	149.830	468.787	285.143	0.000	1.260	9.220	7.850	
JUNE	0.000	0.000	0.000	293.130	131.060	57.760	173.520	20.020	0.000	147.465	0.000	0.000	0.880	3.100	
JULY	0.000	0.000	58.610	140.850	346.100	46.550	83.390	154.560	0.000	19.530	0.000	2.925	7.090	3.150	
AUGUST	0.000	0.000	135.200	0.000	0.000	250.040	350.700	249.370	8.122	30.960	91.620	2.565	4.320	4.070	
SEPTEMBER	0.000	16.420	346.930	0.000	0.000	491.530	353.810	439.130	587.678	24.480	3.825	24.008	0.920	0.300	
OCTOBER	0.000	26.480	362.360	0.000	184.270	390.960	634.790	650.360	791.325	62.393	16.312	13.815	0.000	1.890	
NOVEMBER	0.000	23.130	319.120	102.560	984.980	374.670	865.350	1,039.840	417.735	148.657	15.098	21.960	0.000	0.000	
DECEMBER	0.000	7.270	463.390	236.160	604.000	978.140	555.680	90.540	209.408	29.520	0.000	10.102	0.000	0.000	
TOTAIS	124.580	73.300	1,689.480	1,565.030	3,215.270	3,539.100	3,400.020	3,545.050	2,709.292	1,005.637	127.350	101.722	137.600	56.560	

Table 2. Comparative table for the last 14 years of sardine fishing reporte/desencadeamento. Source: PROPEIXE OP.

According to table 2 and chart 1, we can see that reporte/desencadeamento, when the lowest price is reached and there is no buyer so the O.P. keeps the fish, does have the same variation as in the period starting in 2010. Years of high percentages of *reporte/desencadeamento* are due to high supply that the market did not absorb.

% REPORTE/DESENCADEAMENTO

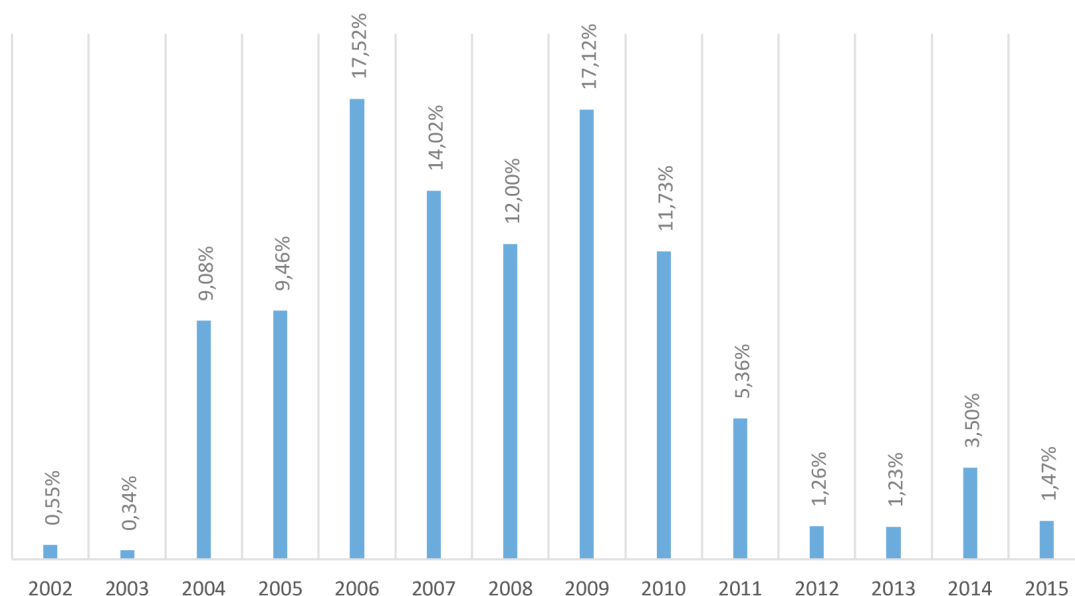


Chart 1. Comparative chart for the last 14 years of reporte/desencadeamento in sardine fishing percentages. Source: PROPEIXE OP.

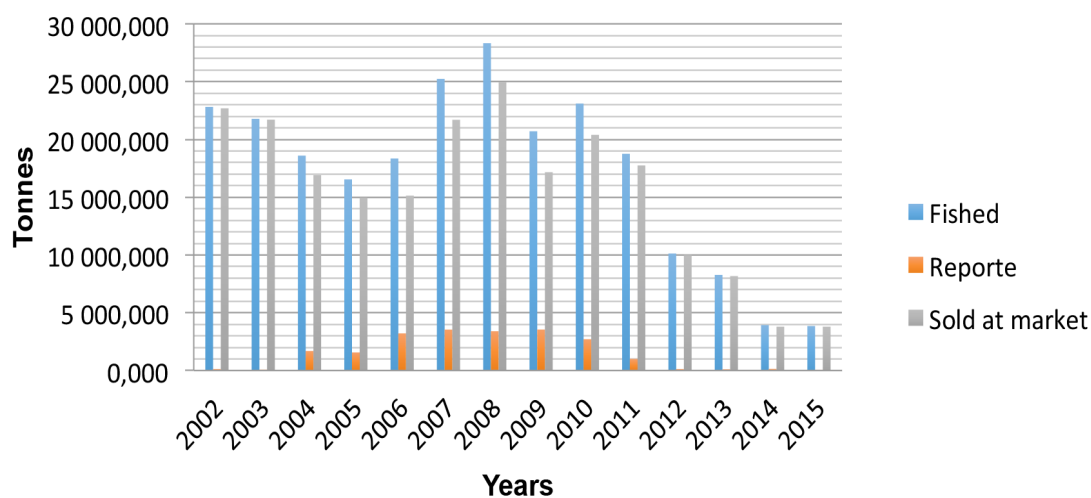


Chart 2. Comparative chart for the last 14 years of sardine fishing. Source: PROPEIXE OP.

On chart 2 we can analyse the evolution in fished amount, the amount sold at the fish market and the amount of fish in *reporte/desencadeamento*.

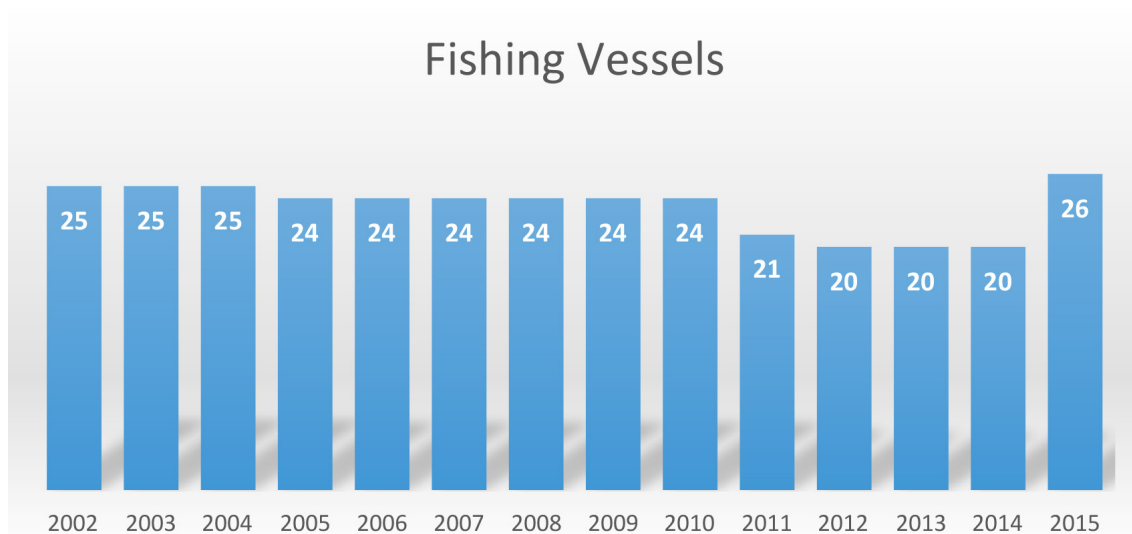


Chart 3. Number of fishing vessels. Source: PROPEIXE OP.

Between 2002 and 2010 had between 25 and 24 fishing vessels active in seine fishing; between 2011 and 2014, there were only 20 left. However, in 2015, the number of fishing vessels rose above 2002's, which shows a belief in the O.P.'s support provided to ship-owners.

It is important to mention that, due to modernization, the current 26 fishing vessels fish greater amounts than the original 70.

COMPARATIVE CHART FOR THE LAST 14 YEARS

Anos	TONNES OF SARDINE													
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Fished	22,820.000	21,786.000	18,598.000	16,543.000	18,352.000	25,242.000	28,333.000	20,710.000	23,106.000	18,758.000	10,127.000	8,275.000	3,932.000	3,852.000
Reporte	124.580	73.300	1,689.480	1,565.030	3,215.270	3,539.100	3,400.020	3,545.050	2,709.292	1,005.637	127.350	101.722	137.600	56.565
Sold at market	22,695.420	21,712.700	16,908.520	14,977.970	15,136.730	21,702.900	24,932.980	17,164.950	20,396.708	17,752.363	9,999.650	8,173.278	3,794.400	3,795.435
% Reporte	0.55%	0.34%	9.08%	9.46%	17.52%	14.02%	12.00%	17.12%	11.73%	5.36%	1.26%	1.23%	3.50%	1.47%
Fishing vessels	25	25	25	24	24	24	24	24	24	21	20	20	20	26

Table 3. Comparative chart for the last 14 years 14 years in sardine fishing. Source: PROPEIXE OP.

Table 3 demonstrates the values shown in charts 1, 2, and 3.

PROPEIXE's situation in the end of 2015

COMPARATIVE CHART FOR SEVERAL SPECIES IN 2014

Species	FISHED AMOUNT (Kg)				Avg. Price	
	Fished	Consumed	Contract	<i>Desencadeamento</i>	Fished	Consumed
Sardine	3,931,685.00	3,762,871.00	30,484.00	137,610.00	1.83 €	1.88 €
Mackerel	2,425,086.00	1,827,958.50	571,162.50	25,965.00	0.32 €	0.36 €
Eur. anchovy	379,395.00	379,395.00	0.00	0.00	2.65 €	2.65 €
Atl. mackerel	81,293.60	57,128.60	0.00	24,165.00	0.42 €	0.50 €
Horse mackerel	488,083.40	347,899.40	0.00	140,184.00	0.58 €	0.66 €

Table 4. Comparative table for several species in 2014. Source: PROPEIXE OP.

COMPARATIVE CHART FOR SEVERAL SPECIES IN 2015

Species	FISHED AMOUNT (Kg)				Avg. Price	
	Fished	Consumed	Contract	<i>Desencadeamento</i>	Fished	Consumed
Sardine	3,918,755.00	3,852,670.00	9,520.00	56,565.00	1.94 €	1.96 €
Mackerel	3,149,600.20	2,666,682.70	303,840.00	179,077.50	0.32 €	0.32 €
Eur. Anchovy	1,104,412.50	1,093,792.50	0.00	10,620.00	1.81 €	1.82 €
Atl. Mackerel	391,019.00	365,751.50	0.00	25,267.50	0.28 €	0.28 €
Horse Mackerel	962,419.20	842,827.20	1,800.00	117,792.00	0.88 €	0.96 €

Table 5. Comparative table for several species in 2015. Source: PROPEIXE OP.

We can conclude, from analysing tables 4 and 5 and charts 4, 5, 6, and 7, that in 2015 the amount of fished sardine was roughly the same as in 2014, with a small increase in the average price.

The catchings, starting from April 7th, were characterized by serious limitations to daily catches, so as to be extended in time for as long as possible, maximizing the fishing and obeying the maximum fishing amounts for 2015, as set by tutelage ordinance.

The O.P. imposed daily catch restrictions to its associates, only stopping sardine fishing on October 2nd, which seems to point towards a recovery in resources, which will lead to a greater abundance of this species, a requirement for this sector.

Comparative Chart for Several Species in 2014

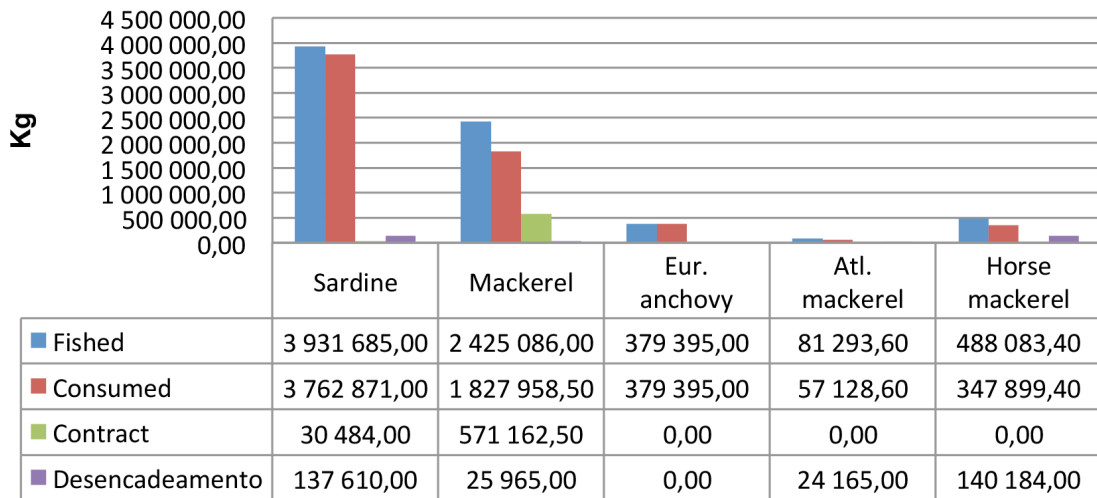


Chart 4. Comparative Chart for Several Species in 2014. Source: PROPEIXE OP.

Comparative Chart for several species in 2015

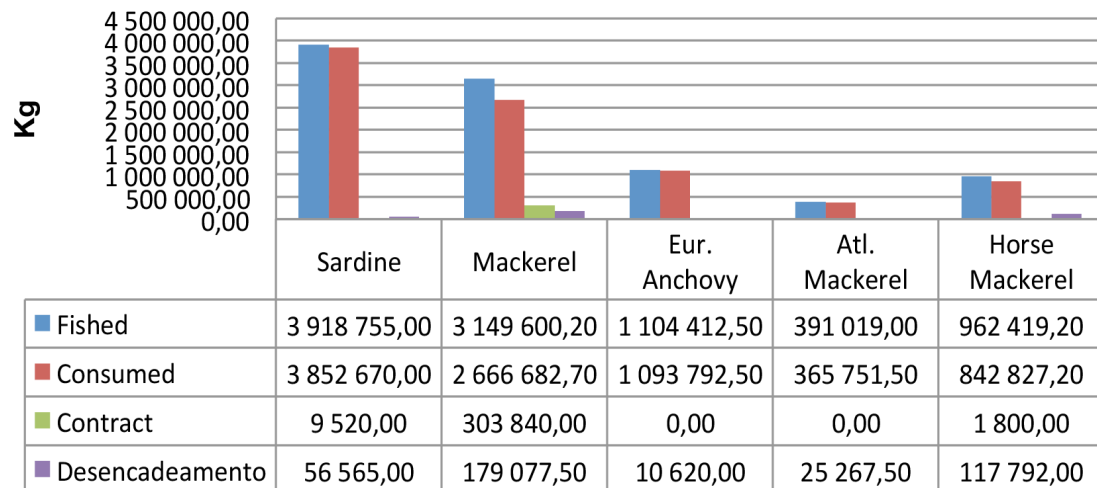


Chart 5. Comparative Chart for several species in 2015. Source: PROPEIXE OP.

Comparative Chart for Average Price/Species in 2014

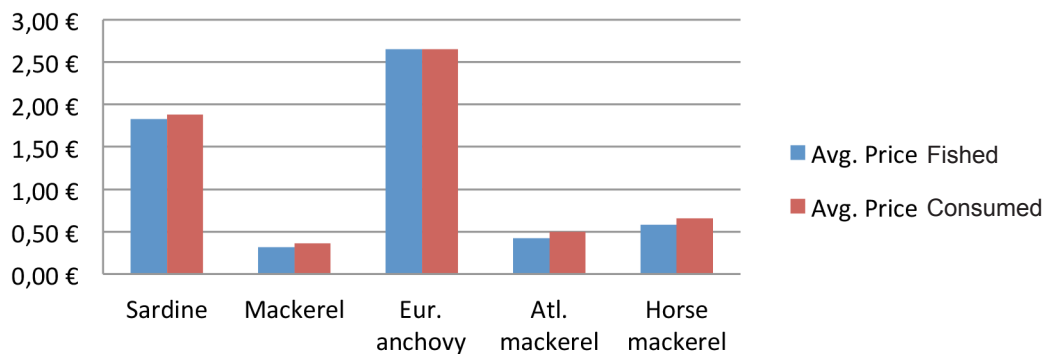


Chart 6. Comparative Chart for Average Price/Species in 2014. Source: PROPEIXE OP.

Comparative Chart for Average Price/Species in 2015

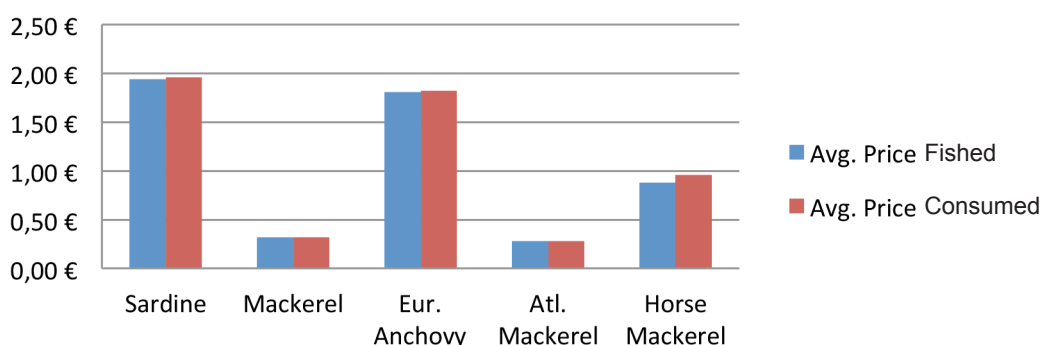


Chart 7. Comparative Chart for Average Price/Species in 2015. Source: PROPEIXE OP.

In 2014, 3.931.685 Kg of sardine were caught, generating an income of 7.192.977,00€; in 2015, 3.918.755 Kg of sardine were caught, generating an income of 7.597.713,00€.

This slight increase in revenue is due to an increase in the average price, which was 1,83€ in 2014 and 1,94€ in 2015.

In 2014, 2.425.086 Kg of mackerel were caught, generating an income of 784.347,00€; in 2015, 3.149.600 Kg of mackerel were caught, generating a revenue of 993.600,00€.

This increase in revenue is exclusively due to an increase in catches, since the average price of 0,32€ was the same as the previous year's.

In 2014, 488.083 Kg of horse mackerel were caught, generating an income of 284.229,00€; in 2015, 962.419 Kg of horse mackerel were caught, generating a revenue of 850.728,00€.

This increase is due both to increased catches and to a substantial rise in the average price from 0,58€ to 0,88€.

Overall, total catches in 2015 were of 9.558.128 Kg for all species and generating a revenue of 11.560.902,00€, a 28% increase in captures and 23% increase in revenue when compared to 2014 (total catches of 7.427.495 Kg and revenue of 9.375.958,00€).

Although far from previous years' revenues as a result of imposed limitations, the sectors progress towards necessary stability is noticeable.

It is important to mention that PROPEIXE O.P. grew in number of associates, with six new cooperative members increasing its fleet with their fishing vessels, and only one fishing vessel leaving.

In the remaining sectors the following was recorded:

- In transportation, due to increased catches, there was a 27,5% increase in revenue.
- The cold store showed a significant increase, both in rental and freezing. 3.500 tonnes of fish were frozen, compared to 1.839 tonnes in 2014.

This processing resulted from the fish purchases at the fish market by merchants and preservation industries, as well as fish removed by PROPEIXE or coming from other ports.

This increase was foreseen due to the completion of the freezing tunnels.

This is the context in which PROPEIXE is considering increasing freezing capacity in 2016, by including in the factory one further large capacity freezing tunnel, able to respond to spikes in production increase, such as those resulting from mackerel fishing in several times of the year, as a complementary species to supplement catches in times of sardine fishing restrictions.

PROPEIXE made the timely decision to commit to and participate in new projects in the value chain, despite the difficulties and adverse circumstances, having been able to fully accomplish said participation, in preparation for a better future.

Despite the hardships felt in the last years, PROPEIXE has concluded the liquidation and finalization of all PROMAR projects, liquidating in 2015 a total of € 664,419.00 in outstanding amounts.

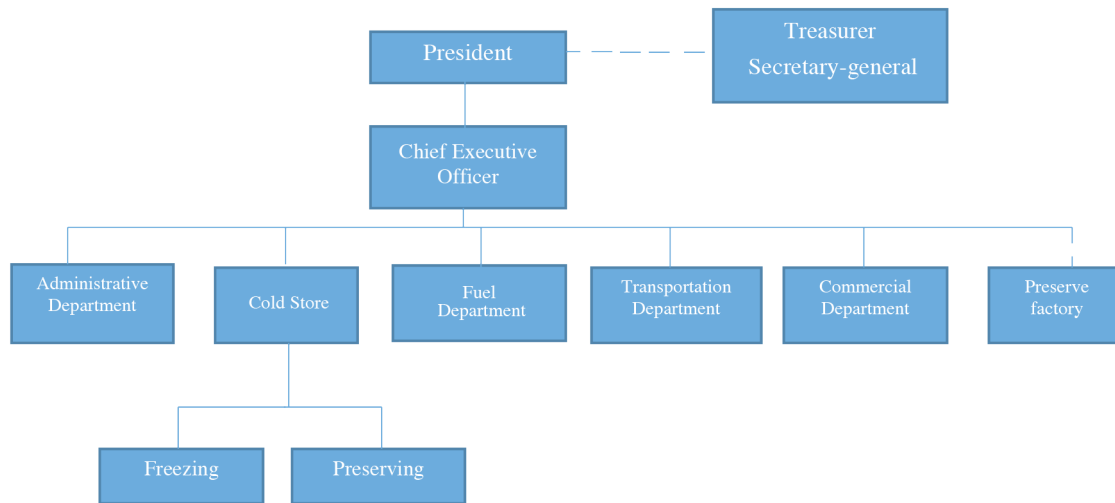
Fuel continues to be a noteworthy source of costs for this type of activity.

PROPEIXE continued to provide support and put in place improvement measures started in previous years (departure times, the use of vats, keeping up with limitations and good fishing practices) in fishing vessels, as well as protecting quality.

The soullike environment among associates remained steady even in times of serious lack of resources.

In what comes to functional and organizational discipline, there were no events or incidents to report among all associates regarding rule infraction.

6.4. PROPEIXE O.P.'s strategic analysis



Picture 29. PROPEIXE OP chart. Source: PROPEIXE OP.

Mission

To regulate actions and arbitrate conflicts between ship-owners, both on land and at sea during productive activity.

To keep up with the internal and external markets for this product and guide the fleet towards creating the necessary synergies needed to react to the rule changes it is used to, in order to respond to market demands already established in this first year.

To interpret guidelines stemming from the government and the European community and to defend the sector's fundamental interests.

On the other hand, when needed and possible, to act as a recognized interlocutor, with representation in the sector, and present alternative solutions to proposals and/or guidelines set by the European Community, through the Ministry for Agriculture and Fishing.

In order to have a fully functional administration, PROPEIXE would benefit from monthly contributions from the members of the cooperative (ship-owners) who would join the association.

Values

The fishing sector has social, regional and local relevance substantially greater than its expression at the level of the main national macroeconomic aggregates.

Fishing works as a population settlement factor, there being many communities across the coast for whom fishing is the main activity and which present serious difficulties in reconversion and/or professional diversification.

With Portugal's joining the EU Common Market and the resulting free circulation of goods and services, the fishing sector had to adapt to the new guidelines stemming from the EEC:

- Regarding the means and rules of production (balance and maintenance of resources), a Common Policy Treaty for Fishing Resources and Environment Management was imposed.
- Regarding the handling and commercialization of products (hygiene and food safety).

Resource Sustainability

In accordance with the World Commission on Economic Development, sustainable development is the development that responds to present needs without compromising the future generations' ability to meet their own needs.

In fishing, the concept of sustainability was initially connected to the fisheries' administrations major goal that of obtaining the maximum sustainable yield, that is, the largest possible sustainable catches.

Currently this goal has been broadened to include the maximization of fishing's social and economic benefits.

Sardine Fishing's Case

Markets are more and more demanding regarding quality (standard sizes without mixing, level of freshness and overall look) in fresh, frozen and preserved sardines.

An advantage to consumers is the price, as well as the sardine's high nutritional quality.

Because of this information, which is part of public knowledge, sardine consumption in its fresh, frozen and preserved forms has increased strongly.

Additionally, starting from January 2010, sardines caught on the Portuguese coast began having a certification of quality, the first time this has taken place for sardines globally.

This certification will pay off in other countries, not only for frozen sardine but also for the preservation industry, namely in England. In the same way, this certification will bring sardine commerce an advantage over other competitors, especially in the preserves area.

This certification is valid until 2014; however, there will be annual audits in order to ensure that the quality remains steady, based on three key areas: sustainable fishing, minimal impact on the ecosystem, and effective fishing management.

Vision

To consolidate into a single structure the fleet of an activity with shared interests.

To face the new challenges stemming from Portugal's joining the EEC.

To solve structural problems that were already showing effects and would certainly become more serious with open borders.

PROPEIXE O.P. outgrew being merely the administrative support system to become an additional support for producers in obtaining and transmitting knowledge indispensable to the production sector's modernization, so as to be prepared for the new challenges arising from open borders.

Strategy

In 2011, the state of Iberian sardine stocks were already worrying, seeming to point towards a decline in biomass. The risk that this decline could pose to sustainable Iberian sardine fishing led the International Council for the Exploration of the Sea (ICES) to recommend a drastic reduction in the fishing effort and, thus, fishing mortality.

This situation also led to the suspension of the Marine Stewardship Council (MSC)'s certification, the international certification for Portuguese sardine, based on the same data and conclusions.

Still aware that the marine stock replenishment problem could, for some time, compromise our most important source of revenue, with the caution we have been known for, we began to create new projects, starting in the end of 2015, to be submitted to the DGRM's approval in late July, when they will be received under the new Community Support Framework.

It was in this context, and convinced (sure) that, as in previous projects, our new ones would be fully approved by the DGRM, that we developed studies for the implementation of:

- Gourmet preserve factories (artisanal manufacture and pre-cooked products) in order to explore the niche market in high demand, both internally and externally; this unit is predicted to employ 12 new employees, supported by the rest of the pre-existing structure and producing between 5.500 and 7.000 tins per day on average (single schedule).

In our experience, the internal market will absorb 30% and the remaining 70% will be absorbed by the external market, whose demand is much higher.

- Changes to and inclusion of new automatic elements in processing (freezing) systems, aiming to increase production per hour and expansion to other types of fish and sea products.

7. PROPOSAL OF A BSC MODEL FOR PROPEIXE OP

PROPEIXE OP's top-ranking division is the Cooperative President, who defines and sets guidelines, procedures and policies to be followed by the company. It is thus the President's responsibility to define the company's mission, which was thusly defined:

"To support the cooperative members (associates) in developing the sector and innovating within it";

Once the mission was defined, there was a need to adjust the company's vision, thusly defined:

"Greater profitability in order to better support the cooperative members (associates) in years of crisis; Renowned producer of traditional Portuguese fish preserves";

Once the mission was defined and the company's vision adjusted, the following **development strategy** was defined:

- *"To create a gourmet fish preservation factory (artisanal manufacture and pre-cooked products) in order to explore the niche market in high demand, both internally and externally; this unit is predicted to employ 12 new employees, supported by the rest of the pre-existing structure and producing between 5.500 and 7.000 tins per day on average (single schedule). In our experience, the internal market will absorb 30% and the remaining 70% will be absorbed by the external market, whose demand is much higher. This project will amount to 3.327.000,00€, with no VAT applied";*
- *"Changes to and inclusion of new automatic elements in processing (freezing) systems, aiming to increase production per hour and expansion to other types of fish and sea products. This project will amount to 3.300.000,00€";*

S.W.O.T. Analysis

PROPEIXE O.P.'s main strengths are:

- Because it is the largest sardine producers organization in the country (35% of the fish) and has one of the largest cold stores (since January 20100), it has the advantage of obtaining controlled costs, obtaining an advantageous return to scale.

- It benefits from the advantage of being able to use vertical control processes, from production to commercialization.
- Because of its positioning in the sector, it has client trust and reliability.
- It has invested in its own specific software systems for areas of production, and standard software in the administrative areas, renewed and updated as needs arise.

The O.P.'s main weaknesses are:

- Opportunities for international growth beyond Spain can only appear when it diversifies production beyond current species; they do not intend to do this for pelagic fish because it would be an intrusion into clients' (large stockists') territory.
- Moroccan low-cost products are a weakness, since they prevent the setting of acceptable prices in the frozen market; Morocco also produces lower quality preserves for less demanding markets.
- The uncertainties around the entire fishery sector: weather, pollution, ecological disasters at sea.

PROPEIXE O.P.'s main opportunities are:

- Innovation in technology available to fishing vessels and in freezing processes are creating opportunities to increase effectivity and lower costs in all production processes (fishing and production).
- Although the fleet has diminished by 60% (down to the current 26 fishing vessels) compared to 1989's numbers, the renewal of ships, the technology to which younger ship-owners have gotten used to and new methods of control and oversight have allowed for productions lower by 30% with a greater profitability index for ship-owners and crews; this profitability (costs x incomes) tends to grow.
- Disappearance of traditional Portuguese method preservation companies.

The main threats to PROPEIXE O.P. are:

- The risk of an ecological disaster on our coast, much like what happened in Galicia.
- New kinds of quota restrictions or limitations from the E. U., against which we've displayed little firmness in our demands.
- Competition from preservation companies (Morocco, Thailand, etc.) that, little by little can limit some (currently strong) Portuguese and Spanish preservation companies' market, good clients for Portuguese sardine.
- Competition from alternative frozen products and new fish preserves, which may become the preference of some of our largest European consumers.

PROPEIXE O.P. felt the need to implement a BSC to manage and monitor Vision and Strategy. I was invited by PROPEIXE O.P. to present and implement a BSC, a project I wholeheartedly took on.

PROPEIXE O.P. is a Cooperative and thus is seen as a non-profit company.

Cooperatives

Concept

Associations that are permanently open to new associates, who contribute with goods and/or services to participate in an economic activity with a mutualistic scope. Their economic purpose is to meet their associates' needs by obtaining certain goods at prices lower than the market's, or selling their products, thereby eliminating the market's middlemen.

Purpose

Cooperative members stand to obtain earnings or expense savings that will be part of their property, rather than the cooperative's. In the case of surplus in revenue over expenditure, this surplus is given back to the cooperative members according to the operations they participated in within the cooperative – thus, not dividends, but reimbursements. According to the Código Cooperativo (Cooperative Code), cooperatives are legal persons of free constitution and variable capital and composition, that aim to meet, without profit, the economic, social or cultural needs of its members through cooperation and mutual help between them. They can also, additionally, take part in operations with third parties. Cooperatives may be first degree or higher degree.

Degree

First degree cooperatives are those whose members are singular persons of age or legal persons, with additional legislation applicable to the various branches of the sector to be put in place should a cooperative member not yet be of age. Higher degree cooperatives group or affiliate members taking the form of unions, federations and confederations.

Liabilities

A cooperative member is only liable for the amount of capital he submits, with the impossibility of a cooperative's statutes determining that a member's liability is limitless, or limited for some members but not for others.

Cooperative members

The number of members in a cooperative is variable and limitless, but cannot be lower than five, in the case of a first degree cooperative, or two, in the case of a higher degree cooperative.

Capital

A cooperative's share capital is variable, with the possibility of its own statutes and additional legislation applicable to the various branches of the cooperative sector determining a minimum initial amount that cannot, except in this last case, be lower than 2500 euros.

Source: IAPMEI

There is here a difficulty in choosing the BSC structure to put in place, since PROPEIXE O.P. has had to evolve into other areas of business to benefit the profits, among other things, of associates (ship-owners). Picture 29, PROPEIXE O.P.'s chart, shows us that the Cold Store, the Transportation Department and the Fuel Department serve both the O.P.'s associates and clients, whereas the Commercial Department serves the O.P.'s clients and the future preserve factory will have the O.P.'s clients.

Which BSC structure to propose?

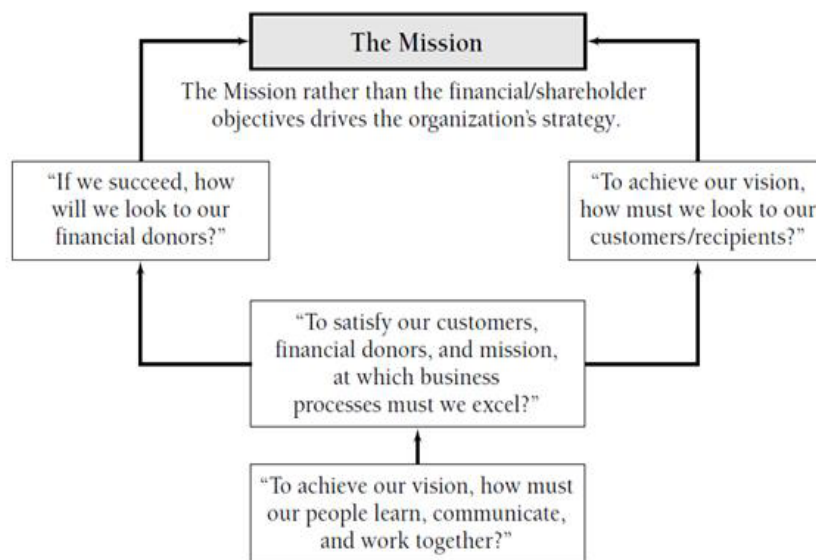
- Financial, Clients/Cooperative members, Internal Processes, Learning and Development Perspectives
- Clients/Cooperative members, Financial, Internal Processes, Learning and Development Perspectives.
- Financial and Clients/Cooperative members, Internal Processes, Learning and Development Perspectives

In dealing with the President’s vision and the crisis in fishing resulting from the quotas set for sardine fishing, we will prepare a strategic map with the following structure:

- Financial, Clients/Cooperative members, Internal Processes, Learning and Development Perspectives.

Kaplan (2001b:360) mentions that non-profit organizations have different missions from private companies because they incorporate goals such as decreasing poverty, illiteracy, pollution or improving health conditions in those to whom they provide services; this is not PROPEIXE O.P.’s case.

Another of Kaplan’s points (2001b:360/361) is the distinction in the concept of client in non-profit organizations. In the private sector, the client is the one who pays for and receives a service, whereas in non-profit organizations there are two kinds of client: the one who pays for the service (contributors and donators) and those who receive it (beneficiaries and users). The first ones should be represented in the financial perspective. The ones who use the services should be included in the clients’ perspective. The author argues that both these groups are connected to the organization’s mission, and thus recommends a BSC structure for non-profit entities.



Picture 30. BSC structure in non-profit organizations. Source: Kaplan (2001b:361).

It is clear in this analysis that there is a differentiation between non-profit organizations that are more heavily geared towards the public sector and those that allow for dealings with third parties and permit profits; often they are confused for one another. It’s also our understanding that non-profit satisfaction of economic, social or cultural needs of cooperative members is nothing but an intangible goal in this sector. The O.P. creates the conditions for meeting the interests of its associates by obtaining prices much lower than the market’s, which doesn’t imply that they don’t profit from this operation. The O.P. cannot eliminate middle men in the market, like DOCAPECA and licensed merchants.

This O.P., being a cooperative, does not eschew the goal of profit; the concept may be in need of re-evaluation, but this is not our object of study.

As an SMB, effects on resources must be taken into account while implementing the BSC: there are 26 full-time employees and six to eight more unskilled seasonal workers. Since middle management does not exist at most business units, with the exception of the Cold Store, where an Engineer works as a middle manager, the following questions are asked:

1. Is communicating strategy more or less complicated?

Most employees have as their skills their physical ability, rather than schooling. PROPEIXE O.P. has conducted training activities for their employees, which increased motivation and effort put into their different tasks. As Elisabete Ferreira Nunes, Engineer, mentioned, there is a greater ease of communication between employees in the cold store, as well as greater autonomy on the part of employees regarding their tasks.

We believe that, despite there being no middle management, cascading communication of strategy will not be impaired, thanks to high levels of motivation.

2. Will there be difficulties in developing business units Scorecards?

We believe that six business units Scorecards will be developed; they are: Administrative Department, Cold Store, Fuel Department, Transportation Department, Commercial Department and the preserve factor, which, despite being in the early stages of its project, can already be the object of a business unit Scorecard.

Elisabete Ferreira Nunes, Engineer had been involved in academic work, which I hope she will return to, regarding a BSC exclusively for the Cold Store; there should be no conflict, since she is a staunch supporter of the BSC. Other areas, units/departments, of business will require more work to adapt employees, but we think this process will be successfully concluded.

3. As an SMB, is investing in BSC software worthwhile?

We do not believe that acquiring the tool is mandatory for now, since, besides the associated expense, it requires employees with some training in order to make the most of its features.

4. How can a timeline for implementation be defined?

Kaplan and Norton (1996 a) propose that a timeline with stages for implementation be defined, comprising the duration and the execution stages. Programming the implementation stages in a timeline will pose a difficulty: on the one hand, the project management stems from outside the organization; on the other, there are few managers, and only one middle manager – this makes the bulk of the organization rest on the Chief Executive Officer's shoulders, who has other activities to manage. We will try to program the development of the project around Kaplan and Norton's proposal.

7.1. PROPEIXE O.P.'s strategic map

“We do not claim to have made a science of strategy; the formulation of great strategies is an art, and it will always remain so. But the description of strategy should not be an art.”

Kaplan, R.; Norton, D. (2000a)

Strategic maps help companies discover important gaps in strategy implementation at organizations' lowest levels. The authors do not claim they were able to turn strategy into a science.

Based on meetings with the President and the Engineer responsible for PROPEIXE O.P.'s cold store with strategy as a backdrop, the following corporate objectives were presented, for the different perspectives:

For the **learning and development perspective**: Changes to and inclusion of new automatic elements in processing (freezing) systems, gourmet preserve factory, human resources qualification.

The fish transformation process, freezing, will see its production per hour rate increase and will expand into other types of fish and sea products, the critical success factor being the use of machinery.

The creation of a gourmet preserve factory, which will act within an internal and external niche market with demand, yet another investment awaiting the opening of applications for community support, is a new challenge, the critical success factor being the development of new products (pre-packaged).

Human resources qualification is of paramount importance; with the increase in support to the new factory, it will be necessary to requalify extant employees as well as new ones, the critical success factor being the human resources' capacity.

It is important to mention that these three goals have a common critical success factor, which is food certification. If they cannot produce a quality product, everything may fall apart.

Based on these objective, in the learning and development perspective, we define the objectives for the internal processes perspective.

For the **internal processes perspective**: Increase production, decrease the operating cycle's length, maintain food safety, diversify products and guarantee innovation, decrease the percentage of flaws and lack of quality, increase deliveries within the time limits.

Investment in fish transformation will bring about a cause and effect relationship between the increase in production and the decrease in the operating cycle's length, the critical success factor being high production rates.

Investment in the gourmet preserve factory will result in a cause and effect relationship between product diversification and ensuring innovation, the critical success factor being proximity to raw materials and the ability to select them.

With human resources qualification, there will be a cause and effect relationship between decreasing the percentage of flaws and lack of quality and increasing deliveries within the time limits, as well as maintaining food safety, the critical success factors being high efficacy and meeting deadlines.

With these two fundamental BSC perspectives, we can state that we have inductors, drivers, the actions, the initiatives, which will make things happen.

On to the other two top BSC perspectives that show evidence of the results of the aforementioned actions:

For the **clients/cooperative members' perspective**: Increase market share, increase number of clients, decrease the number of client complaints, diversify the goods and services on offer, minimize purchasing costs for clients/cooperative members, guaranteeing high quality.

The investment in fish processing, which requires an increase in production and a decrease in the length of the operating circle, will result in a cause and effect relationship between the increase in market share, since the O.P. has the ability to process more kinds of fish, increasing number of clients and minimizing purchasing costs for clients/cooperative members and diversifying the goods and services on offer, the critical success factors being client/cooperative member satisfaction, the clients/cooperative members' perception of service quality and excellent value for money.

With the investment in the gourmet preserve factory, which implicates diversifying the product and ensuring innovation, there will be a cause and effect relationship between the increase in market share, due to lower numbers of traditional preserve factories, the increase in number of clients, minimizing purchasing costs for clients and diversifying the goods on offer, the critical success factors being client satisfaction, the client's perception of product quality and excellent value for money.

With human resources qualification, which requires decreasing the percentage of flaws and lack of quality, increasing deliveries within the time limits and maintaining food safety there will be a cause and effect relationship towards guaranteeing high quality, the critical success factors being client/cooperative member satisfaction, the client/cooperative member's perception of service and product quality and excellent value for money.

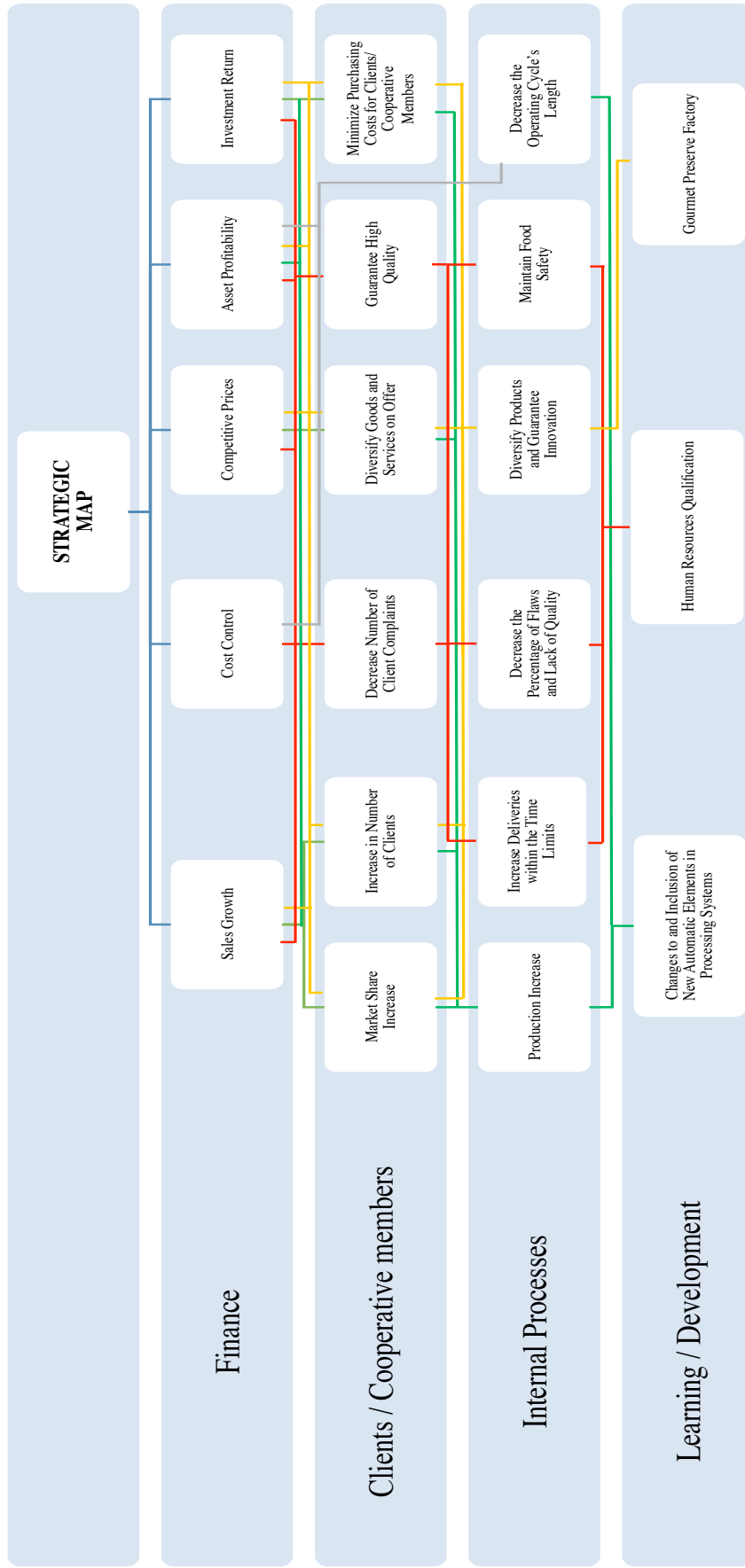
In the **financial perspective**: sales growth, cost control, competitive prices, asset profitability, and investment return.

With the investment in fish processing, which implicates an increase in production and a decrease in the length of the operating circle, which in turn implicates an increase in

market share, since other kinds of fish can be processed, increasing the number of clients, minimizing purchasing costs for clients/cooperative members and diversifying the services on offer, there will be a cause and effect relationship towards sales growth, competitive prices, asset profitability and investment return.

With the investment in the gourmet preserve factory, which implicates diversifying the product and ensuring innovation, which in turn implicates an increase in market share, due to there being fewer traditional preservation companies, increasing the number of clients, minimizing purchasing costs for clients and diversifying the offer of products will result in a cause and effect relationship towards sales growth, competitive prices, asset profitability and investment return.

With human resources qualification, which requires decreasing the percentage of flaws and lack of quality, increasing deliveries within the time limits and maintaining food safety, which in turn implicate ensuring high quality, there will be a cause and effect relationship towards sales growth, competitive prices, asset profitability and investment return, the critical success factors being high productivity, growth and profitability.



Picture 31. Strategic map proposed to PROPEIXE O.P. Source: Own creation.

7.2. BSC indicators for PROPEIXE O.P.

“I often say that when you can measure what you are speaking about, and express it in numbers, you know something about it; but when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meagre and unsatisfactory kind. If you can not measure it, you cannot improve it.”

Lord Kelvin (1883)

Based on meetings with the President and Chief Executive Officer of PROPEIXE O.P. centred on strategy and corporate objectives set for different perspectives, it's important to highlight that we are excluding the investment to be directed towards the gourmet preserve factory; although we have moved forwards with the objectives, we thought it early to define the indicators/KPIs to be used, the following indicators/KPIs are presented for said perspectives:

For the **learning and development perspective**: Number of training hours per year, employee satisfaction levels, percentage of increase in equipment productivity, percentage of robotised/computerized productive activities.

Based on corporate objectives and critical success factors, four indicators/KPIs were set;

1. Human resources qualification and food certification require monitoring the number of training hours per employee per year, as well as employee satisfaction levels. These two indicators should ensure that there is the necessary suiting of the work force to food safety problems and that it feels connected to productive processes.
2. In order for there to be changes to and inclusion of new automatic elements in processing (freezing) in order to increase production, monitoring of the percentage of increase in equipment productivity and of the percentage of robotised/computerized productive activities is necessary. It is important to evaluate whether the equipment is in keeping with the new challenges and whether robotisation/computerisation are being put in place.

For the **internal processes perspective**: Percentage of deliveries within the time limits, percentage of new products/services sales, number of days in the productive cycle, percentage of defective products, equipment productivity rate, order completion deadline, number of improvements in processes.

Based on corporate objectives and critical success factors, five indicators/KPIs were set;

1. In order to monitor increase in production, we should use the equipment productivity rate, equipment occupancy rate and percentage of new services sales. These indicators will allow us to assess whether or not the equipment increased production, whether they're being used more often and have created new services, such as the processing of new kinds of fish.
2. In order to monitor the decrease in the operating cycle's length, we should use the number of days in the productive cycle. It is important to ensure that the investment put in place is not working below or above its capacity.

3. In order to monitor the percentage of flaws and lack of quality, we should use the percentage of defective products. It is important to know if there are deficiencies in human resource training.
4. In order to monitor deliveries within the time limits, we should use the order completion deadline, so as to understand where in the new equipment or in human resources lies the flaw.
5. In order to guarantee food safety, we should use the number of improvements in processes, a key aspect. With human resource training, employees will be better suited to helping in tasks.

For the **clients/cooperative members perspective**: Market share percentage, client/cooperative member level of satisfaction, percentage of sales to new clients, number of complaints, percentage of factory costs in sale value, sales by product and service segment.

Based on corporate objectives and critical success factors, six indicators/KPIs were set;

1. In order to monitor market share we should use the market share percentage. This indicator is more complicated to put in use; for fishing it will be based on the imposed annual quotas on catches, for services it will be based on the new valences for clients/cooperative members.
2. In order to monitor the number of new clients, we should use the percentage of sales to new clients. This indicator will be based on billing and leave little margin for doubt.
3. In order to monitor client complaints we should use the number of complaints. It will be necessary to establish if there is an increase in complaints due to increased productivity, since equipment may not be working properly or human resources will not be trained to use them.
4. In order to monitor the diversification in goods and services supplied, we should use sales by product and service segment. This indicator will be based on billing and leave little margin for doubt.
5. In order to monitor purchasing costs for clients/cooperative members, we should use the percentage of factory costs in sale value. This indicator is relevant because it allows us to establish whether or not new production equipment has brought new fixed costs.
6. In order to monitor quality we should use the client/cooperative member level of satisfaction. This indicator tells us if clients/customers are not inclined to complain, which lowers the number of complaints and prevents the gauging of service and product quality.

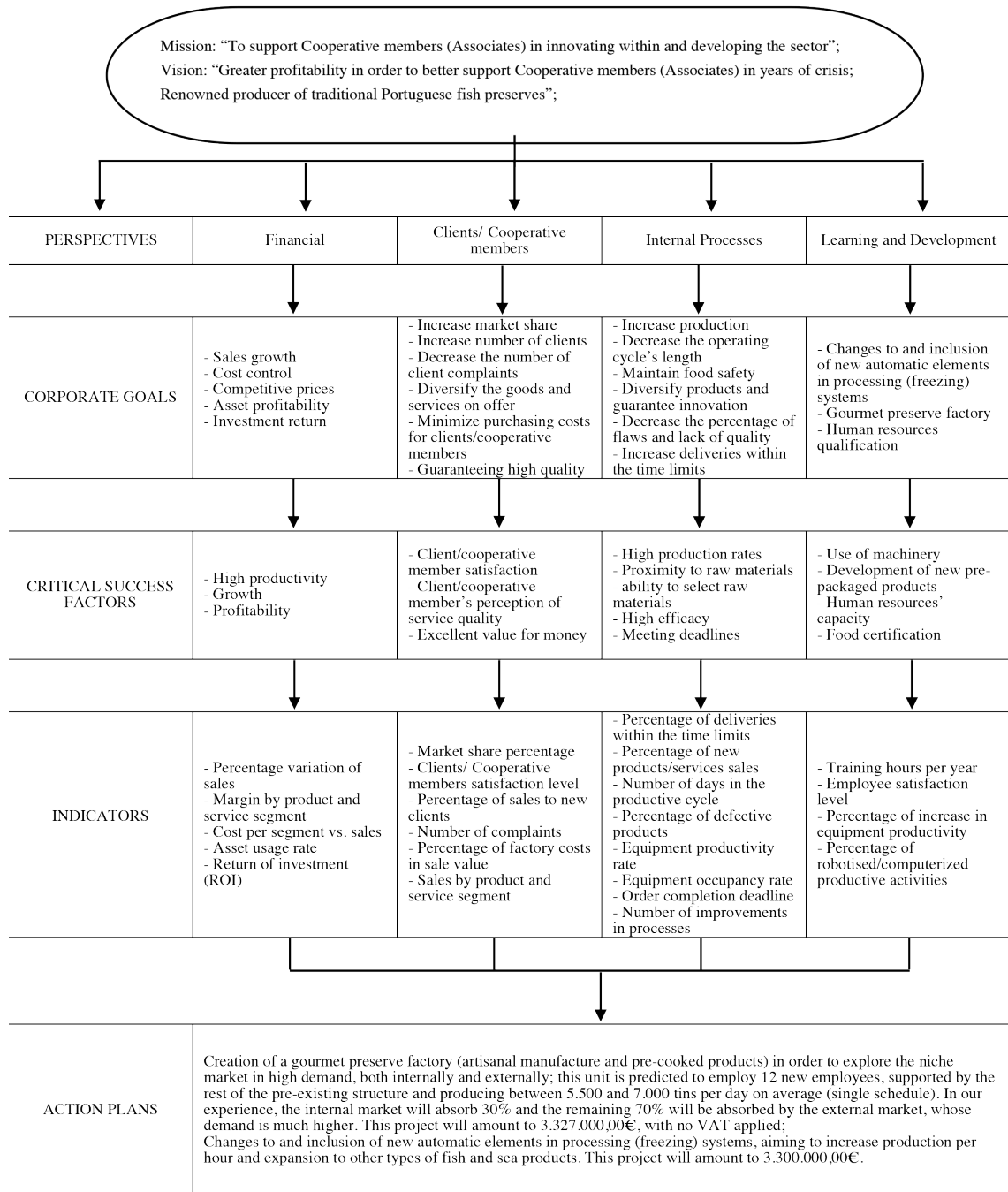
For the **financial perspective**: Percentage variation of sales, margin (%) by product and service segment, cost per segment vs. sales, asset usage rate, Return on Investment (ROI).

Based on corporate objectives and critical success factors, five indicators/KPIs were set;

1. In order to monitor sales growth we should use percentage variation of sales. This indicator will allow us to gauge whether equipment is being used for other kinds of fish.

2. In order to monitor cost containment, we should use cost per segment vs. sales. This indicator will allow us to know if we were able to lower costs for clients/cooperative members.
3. In order to monitor price competitiveness, we should use the margin (%) by product and service segment. Despite being an internal indicator and, on first reaction, a strange one, its use has a reason. Cooperatives have as their function the support of cooperative members, creating purchase conditions for goods and services on better terms than those reached through direct negotiation between supplier and cooperative member.
4. In order to monitor asset profitability, we should use the asset usage rate. This indicator allows us to know if the investments on equipment raised its capacity.
5. To monitor investment return, we should use the Return on Investment (ROI). This indicator will show the amount of net income per 100 units (percentage) of invested capital.

Strategic Map



Picture 32. Strategic map proposed to PROPEIXE O.P. Source: own creation.

7.3. Implementation Schedule

In this section, we will put forth the various stages for the BSC implementation at PROPEIXE O.P. in accordance with Kaplan and Norton (1996 a).

It is our belief that the zero point has already been reached when the Vision was made clear. In this stage, PROPEIXE O.P. showed openness to a complementary area of the sector, that of the preserve factory, as well as to improvements to the cold store by including new automatic elements.

The second stage, which to us is **communication with middle management**, has already been accomplished, since the projects are already in motion.

According to Kaplan and Norton (1996 a), this stage should happen between month 4 and 5 as “Stage 2A”; it is our belief, that in an SMB, this stage would happen almost immediately, in the following day.

For us, the third stage is are the **meetings to develop business units Scorecards**, in order to prepare specific strategic goals for each of the four BSC perspectives. Based on the information collected during meetings, we were able to start the process of developing the strategic goals, which were integrated and arranged by perspective in cause and effect relationships. At the end of this stage, we were able to list the main potential targets specific to each perspective. According to Kaplan and Norton (1996 a), this should take place between months 6 and 9 as “Stage 2B”; it is our belief that this is the current time period, month 6.

According to Kaplan and Norton (1996 a), during month 6, “Stage 3A” should take place: the **elimination of strategic investments**, as well as “Stage 3B”, the **launching of a corporate change program**. We do not believe these stages are applicable to PROPEIXE O.P. This is where we cease to follow Kaplan and Norton’s (1996 a) methodology and begin using our own schedule.

Stage four is, for us, the creation of PROPEIXE O.P.’s **Strategic** map, based on information collected during the third stage. The fifth stage, **Preparation and definition of strategic indicators, KPIs**, should happen on months 6 and 7.

The sixth stage, the **business units Scorecards** revision, should take place in month 9.

The seventh stage, communicating the BSC to the entire organization, should take place on month 10.

In the following months we will set monthly meetings to keep up with flaws in order to introduce corrective measures.

This is our proposal for the project’s development under normal circumstances; however, PROPEIXE O.P.’s upcoming preserve factory means we will have to follow Kaplan &

Norton's (2008a&b) methodology of connecting strategic planning to execution. We must be prepared to use internal operational data and new external competitive data in order to test and update the strategy, so as to launch, if need be, another cycle around the integrated strategy and operational management system.

PROPEIXE O.P. is working in a sector in crisis due to the imposition of fishing quotas; therefore, it may not have privilege access to their raw material, the sardine, which is the foundation of its business; with investments to be made of around 6.627.000,00€, with no VAT, it may encounter some treasury problems, despite its good working relationship with banking.

8. CONCLUSION

In the last few decades, there has been a pronounced interest on the part of researchers to solve the question of intangible factor measurement and management and of strategy formulation and implementation, there having been several methodologies that attempt to solve the problem.

The BSC is a methodology that gained notoriety from the start, partly due to the influence of the Harvard academics and their disciples, and partly due to the countless examples of success in multinational companies, who were able to reverse negative cycles of profitability after this management tool's implementation.

In Portugal, this methodology went into use more recently, with the set of companies and organizations using it being small, which is unsurprising, due to the corporate fabric's being 98% micro-companies or SMBs.

Upon consulting the Balanced Scorecard Institute's website, <https://balancedscorecard.org>, we can see the location of courses outside the United States – none in Europe, but present in Africa, the Middle East, and Asia.

This management tool has, however, seen growing support by companies and organizations in many countries in all continents.

There are criticisms of the model, which we believe to be surmountable limitations, due to the model's flexibility and adaptability to multiple possible scenarios.

In the third part of this project, we presented the preparation of a BSC model proposal for PROPEIXE (chapter 7), based on the methods and methodologies of its founders, Kaplan and Norton, and opinions stemming from other authors.

After setting the mission and adjusting the O.P.'s vision, we presented a development strategy. We conducted a S.W.O.T. analysis in order to understand the setting, to establish the company's strategic position in the current environment.

Reflection on some questions was necessary – from the very beginning, for example, with the decision on what BSC structure to propose; despite the O.P.'s being a non-profit company cooperative, we did not agree and presented the BSC structure as follows:

Financial, Clients/Cooperative members, Internal Processes and Learning and Development Perspectives.

With the strategy-focused meetings with the President and the Engineer responsible for the Cold Store, we chose the drivers that would best allow us to reach a defined development strategy. This choice was based on strategy, learning and development perspective, having risen in the hierarchy of perspectives in order to connect the corporate goals a critical success factors through cause and effect relationships.

In the learning and development perspective, we included the creation of a gourmet preserve factory and changes to and inclusion of new automatic elements in the processing (freezing) systems. We went against the majority's opinion, which would include these corporate goals under the internal processes perspective. Firstly, it is our belief that when a new unit/department is created, the cause and effect relationship will result in new internal processes, generate new clients and increase net income; secondly, it is our belief that in additional innovation to equipment, the cause and effect relationship results in production increase, in decrease in the operating cycle's length, in increase in the market share, in increase in the number of clients, in minimizing purchase costs for clients/cooperative members, in diversifying the services supply and in increasing net income.

With our strategy- and established corporate targets-oriented meetings with the President and Chief Executive Officer, in all perspectives, we chose Indicators/KPI for the various perspectives, rising through the hierarchy of perspectives in order to connect each Indicator/KPI to another through cause and effect relationships; for some corporate targets, we presented more than one Indicator/KPI.

Regarding Indicators/KPIs, it's important to highlight that we are excluding the investment to be directed towards the gourmet preserve factory; although we have moved forwards with the objectives, we thought it early to define the indicators/KPIs to be used. Targets for the Indicators/KPIs were also not defined, since investments have not been started yet, which could lead to testing and updating of the development strategy without its being initiated.

We may have to enact changes to the implementation schedule we presented; these are situations for which we must be ready. As an SMB, we have limitations in resource allocation to enter the inputs; not all situations can be easily computerized, as some are dependent on the human element.

It is our belief that the implementation of the BSC at PROPEIXE O.P. will positively impact management efficiency, as it will give access to knowledge of the flaws at the lower levels of the pyramid.

9. BIBLIOGRAPHY

- Bergeron, H el ene (2000), “*Les indicateurs de performance en contexte PME, quel mod`ele appliquer?*” 21EME CONGRES DE L’AFC, May (2000), France, <https://halshs.archives-ouvertes.fr/halshs-00587425/document>,acedido em 9 Junho 2016.
- Carvalho, Carla, Azevedo, Graça (2001), “*Balanced Scorecard – Sistema de Informa  o vs. Sistema de Gest o*”, Revista Estudos do I.S.C.A.A., II.^a S erie 6/7, pp. 56-78.
- Cunha, T. P. (2011), *Portugal e o Mar*, Ensaios da Funda  o, FFMS
- Instituto Nacional de Estat stica, “*Estat sticas da Pesca – 2015*”, Junho (2016), https://www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_publicacoes&PUBLICACOESpub_boui=261842006&PUBLICACOESmodo=2, acedido em 15 Junho 2016.
- IAPMEI,Junho(2016),“*Cooperativas*”,<http://www.iapmei.pt/iapmei-art-03.php?id=479>, acedido em 28 Junho 2016
- Johnson, H.; Kaplan, R. (1987), *Relevance lost: The rise and fall of Management Accounting*, Boston: Harvard Business School Press.
- Kaplan, R. (1984), “*Yesterday’s accounting undermines production*”, Harvard Business Review, Julho-Agosto, pp. 95-101.
- Kaplan, R. (1988), “*One cost system is not enough*”, Harvard Business Review, Janeiro-Fevereiro, pp. 61-66.
- Kaplan, R., Anderson, S. R. (2007), *Time-Driven Activity-Based Costing*, Boston: Harvard Business School Press.
- Kaplan, R., Anderson, S. R. (2004), “*Time-Driven Activity-Based Costing*”, Harvard Business Review, Novembro, pp. 131-138.
- Kaplan, Robert S., Norton, David P. (1992), “*The Balanced Scorecard - Measures that Drive Performance*”, Harvard Business Review, Fevereiro, pp.71-79.

Kaplan, Robert S., Norton, David P. (1993), "*Putting the Balanced Scorecard to Work*", Harvard Business Review On Measuring Corporate Finance, (1998), Harvard Business School Press, pp.147-181.

Kaplan, Robert S., Norton, David P. (1996a), "*Using the Balanced Scorecard as a Strategic Management System*", Harvard Business Review On Measuring Corporate Finance, Harvard Business School Press, pp.183-211.

Kaplan, Robert S., Norton, David P. (1996b), "*The Balanced Scorecard: Translating Strategy into Action*", Harvard Business, Boston, Massachusetts.

Kaplan, Robert S., Norton, David P. (2000a), "*Having Trouble with Your Strategy? Then Map It*", Harvard Business Review, Setembro-Outubro, pp. aa-bb.

Kaplan, Robert S., Norton, David P. (2000b), "*The Strategy-Focused Organization: How Balanced Scorecard Companies Thrive in the New Business Environment*", Harvard Business, Boston, Massachusetts.

Kaplan, Robert S., Norton, David P. (2001a), "*Transforming the Balanced Scorecard from Performance Measurement to Strategic Management: Part I*", Accounting Horizons, pp. 87-104.

Kaplan, Robert S. (2001b), "*Strategic Performance Measurement and Management in Nonprofit Organization*", Nonprofit Management & Leadership, 11(3), pp. 353-370.

Kaplan, Robert S., Norton, David P. (2004), "*Strategy Maps: converting intangible assets into tangible outcomes*", Harvard Business School Press, Boston.

Kaplan, R. S. and D. P. Norton (2005) "*The Office of Strategy Management*", Harvard Business Review, Outubro, pp. 72-80.

Kaplan, Robert S., Norton, David P. (2008a), "*Mastering the Management System*", Harvard Business Review, Janeiro, pp. 62-67.

Kaplan, Robert S., Norton, David P. (2008b), "*The Execution Premium: Linking Strategy to Operations for Competitive Advantage*", HBS Press, Boston.

Kutucuoglu, K.Y., Hamali, J., Irani, Z., Sharp, J.M. (2001), "*A Framework for Managing Maintenance Using Performance Measurement System*", International Journal of Operations & Production Management, Bradford, England.

Lawton, Robin (2002), "*Balance your Balanced Scorecard*", Quality Progress, Março 2002, pp. 66-71.

Pinto, F. (2009), *Balanced Scorecard – Alinhar Mudança, Estratégia e Performance nos Serviços Públicos*, Lisboa: Edição Sílabo, Lda.

Porter, M. (1996), “*What is Strategy*”, Harvard Business Review (Novembro-Dezembro 1996).

Russo, J. (2006), *Balanced Scorecard para PME e Pequenas e Médias Instituições*, Lisboa - Porto: Lidel - Edições Técnicas, Lda.