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FROM INNOVATION TO ECO-INNOVATION: AN APPLICATION TO THE SPANISH WINE SECTOR

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1. INTRODUCTION

The concern to care and respect the environment is something that is increasing in recent times. We can see that in almost all areas there is already an awareness of respect for our planet. Companies, public institutions and even within homes already have certain rules on how to protect the environment.

Focusing on the business world, the concern to be sustainable has already been present for some time, offering companies and entrepreneurs a new sustainable business vision that translates into the creation of a new model of business management, Corporate Social Responsibility (RSC). This concern to preserve the environment can become a competitive advantage for existing companies and, in addition, offer business opportunities for entrepreneurs. This is because the creation of a sustainable environment has become a necessity for society and companies that manage to meet this need will have greater social acceptance and positive economic and environmental results

In this context, entities must be aware to be able to achieve the change from "normal" company to sustainable company. This change is achieved with eco-innovation. Innovations with specific characteristics centered on the care of the environment but without forgetting the own business objectives. Currently there is a latent need in companies to create a plan for the development of eco-innovation, as the objective of this is to incorporate improvements in the entity that can increase economic and environmental benefits. At the moment this environmental innovation is present in almost all the sectors but in some of them, as in the more traditional ones, to a lesser extent than in other more technological ones.

Starting from this idea, we can see that innovations and sustainable management in some moments go in parallel ways and it would be important to unite them to obtain new results that adapt to the change of mentality of the society. So eco-innovation can be the factor that unites sustainability with innovation. In addition, we also consider that there is a "gap" in research that links the terms eco-innovation with its application to traditional sectors, mainly because these sectors are the most reluctant to change and to implement new innovations. Faced with this reality and based on an analysis of innovation and its relationship with the environment, and its subsequent impact on business results, for the realization of this work we choose a traditional sector of great importance in the Spanish and Valencian economy, Wine sector. Thus, the objective of

our work is to apply concepts as novel as eco-innovation in a traditional sector such as wine.

The work will be divided into three main parts: in the first part it will develop the whole theoretical framework of work where we will delve into three concepts: the environment, innovation and eco-innovation. In the second part of the work an analysis, both internal and external, of the wine sector will be carried out. Finally, the reasons why the sector studied needs to apply eco-innovation and what eco-innovations it could implement to improve its results. Finally a summary will be made where the conclusions obtained will appear and, in addition, the possible future lines of research related to the concept of eco-innovation will be exposed.

2. ENVIRONMENT

2.1. Concept

The environment is defined as a set of external components and conditions that influence the development of living beings, as well as their activities[1] (Hora, 1997).

Nowadays, the concern to protect the environment is increasing, and this moves to promote techniques and actions to reduce pollution. Pollution destroys the environment and pollution is generated by the emission of gaseous pollutants through cars, industrial factories, etc. However, there are other factors that also generate pollution such as those explained below.

- Animals: In particular the bovine species, their flatulence, belching and feces contaminate the environment. These animals may account for 18% of the pollution caused by the greenhouse effect (FAO Report, 2006).
- Deforestation: This factor is caused by man and affect the environment because less trees and plants eliminate living things that clean the air.
- On afforestation: Although this may seem beneficial, it can be harmful, as excess vegetation leaves the soil with no nutrients.
- Fires: Fires emit large amounts of carbon dioxide, known as CO2. This gas is highly polluting and if you inhale excessively it can lead to death. Another

[1] https://es.wikipedia.org/wiki/Medio_ambiente.

negative aspect of forest fires is that they cause deforestation, another problem for the environment as explained above.

2.1.1. Worl Environment Day

The concern for the environment emerged as a new trend at the end of the last century that was gradually entering into society and that over time has become a way of life. On December 15, 1972, the United Nations General Assembly established June 5 as the World Environment Day[2] and it was celebrated in 1973. The objective of the UN with the creation of this event was to motivate the people of The whole world to make a change of attitude fostering cooperation between them to achieve a sustainable environment.

2.1.2. Environment: business opportunity and competitive advantage

Today, the environment has become an opportunity for the company to achieve a competitive advantage over its competitors. If companies include environmental care as an important variable to be taken into account when developing business strategies, they will be more creative and innovative (Porter and Van Der Linde, 1995) and in this way they will achieve positive results to Level of efficiency and sustainability. These results can lead companies to achieve a competitive advantage that gives them that added value that sets them apart from their competitors

Not only can the management of the development of a sustainable strategy with the environment give a competitive advantage to existing companies, as mentioned in the previous paragraph, but it can also become a business opportunity for entrepreneurs. Thus, the environment is a key element for economic development (García and García, 1980). There is a foundation in Spain that helps both companies and entrepreneurs achieve the goal of implementing the environment as an essential strategic variable. This foundation was created by the Ministry of Agriculture and Fisheries, Food and Environment in 1998 and is called the Biodiversity Foundation[3].

The Biodiversity Foundation wants to take advantage of the opportunities that the environment offers to create jobs and also to improve some jobs. This foundation offers

[2] https://es.wikipedia.org/wiki/D%C3%ADa_Mundial_del_Medio_Ambiente.
[3] http://fundacion-biodiversidad.es/es/economia-empleo-verde.

support to companies already active with the "Program employs Green" plan, and to entrepreneurs with "Red emprendeverde". The grants and subsidies of these programs are jointly financed with the European Social Fund under the Operational Program Employment, Training and Education 2014-2020. The objectives of this program are:

- To incorporate to the labor market to 4,800 people in situation of unemployment.
- Help 3,000 entrepreneurs, approximately, to improve their company or create a new one.
- Achieve the qualification of more than 24,000 people.
- Improve the employment situation of more than 6,000 workers.

In addition to managing aid to companies and entrepreneurs, the foundation is the entity in charge of coordinating the European Environment Awards to the company in the Spanish section. These awards are held every year in order to value the efforts of companies to be more sustainable. There are five types of awards: Best Management Award, Product and Service Award, Process Management Award, International Cooperation Award and Business and Biodiversity Award. The winning entities of the 2016/2017[4] edition were the following:

- Management award:
    - Mahou San Miguel.
    - Ewaste Canarias S.L.
- Product and services award:
    - IRIZAR Sociedad Cooperativa.
    - Energy Revival S.L.
    - Onyx Solar Energy S.L.
- Process award:
    - Gerdau Aceros especiales de Europa, S.L.
    - Algaenergy, S.A.
    - Endesa, S.A.
    - Glen Biotech S.L.

- International Business Cooperation Award:

[4] http://fundacion-biodiversidad.es/convocatorias/premios/edicion-20152016-de-los-premios-europeos-de-medio-ambiente-la-empresa-seccion.

    - Maditer Trade S.L.
- Special Mention: Business and Biodiversity:
    - Agrotechnnical Services S.L.
    - Mar Cristal Marilum S.L.

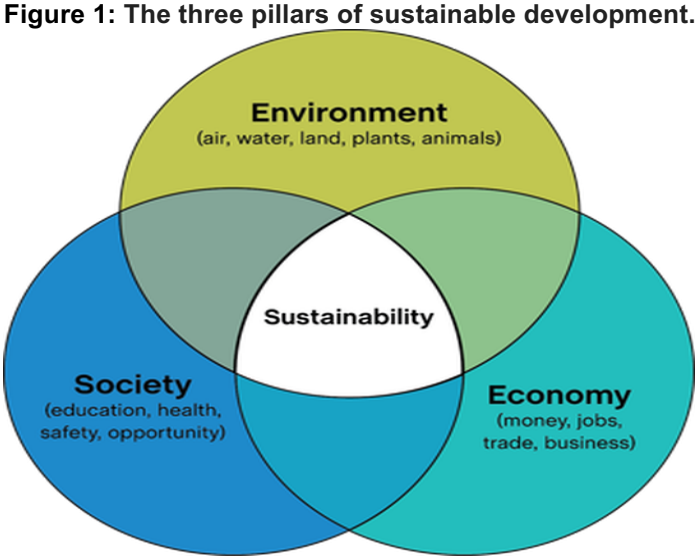
These companies that value the care of the environment enjoy a good image in the market by consumers and, this fact, gives them a competitive advantage than other companies that do not consider it necessary to change their management model to be more Sustainable. The award-winning entities not only achieve good results at the environmental level, but also have very good economic results. Thus, these entities serve as examples to show that the concern to improve and be sustainable is related to an overall efficiency improvement of the whole company.

2.2. Sustainable development

The first definition to define sustainable development was formalized by the United Nations World Commission on Environment and Development in 1987. "Sustainable development is development that meets the needs of the present generation without compromising the ability of generations to meet their own needs" (Report of the Bruntland Commission, 1987).

Sustainable development is a way to care for and maintain the environment. The natural resources of the earth are limited and there is a risk that some of them will be depleted, that is why sustainable development must be carried out. Within sustainable development there are three pillars: society, the economy and the environment. In Figure 1 we see how these three pillars complement each other.

Figure 1: The three pillars of sustainable development.



Source: http://www.geocoops.com/sustainable-cities.html

In this figure we see the union of the three pillars that form sustainable development. They must also be modified so that sustainable development is possible, that is, society must be responsible to the environment and companies, which are driving the economy, must also be so. These three pillars must be sustainable and must take into account certain aspects to achieve this:

- Sustainable economy: companies must be able to implement innovations in their facilities to reduce the level of emissions and make business a more environmentally friendly activity. Not only do companies play an important role in this pillar, the government must also help and boost aid for companies to adapt to change
- Sustainable society: Society must be aware and change the mentality to be able to carry out actions that promote sustainability. Some examples of this are the recycling, the use of electric vehicles and the reduction of the use of paper.
- Sustainable environment: to achieve this it is necessary that nature does not receive negative impacts for its survival. The use of renewable energies together with the actions of the two previous pillars make it possible to achieve a sustainable environment.

In Spain, the concern for a sustainable environment is reflected in the Constitution. In Article 45, the environment appears and states the following:

1. Everyone has the right to enjoy an environment suitable for the development of the person, as well as the duty to preserve it.

2. The public authorities shall ensure the rational use of all natural resources, in order to protect and improve the quality of life and to defend and restore the environment, based on indispensable collective solidarity.

3. For those who violate the provisions of the previous section, in the terms established by law, criminal or administrative sanctions will be established, as well as the obligation to repair the damage caused.

2.2.1. Global Compact

In January 1999 Kofi Annan, the Secretary-General of the United Nations at that time, proposed to leaders of large companies to create a pact establishing the principles to be followed by companies that decide to choose the path of sustainable development. These principles are grouped in three areas, the first two belong to the area of human rights, the next four are to the labor area and the last three to the environment. In total, there are nine principles that form the Global Compact and are as follows:

1. Respect for human rights.
2. Do not be complicit in the violation of human rights.
3. Support labor negotiation.
4. Do not apply forced labor.
5. Eliminate child labor.
6. Eliminate discrimination and promote equality.
7. Protect the environment.
8. Promote sustainable development.
9. Create environmentally friendly technologies.

2.2.2. Sustainable development in companies: CSR.

The economy is one of the pillars of sustainable development, and it moves and works through business activity. If companies use environmental care as an opportunity to be more competitive and gain a competitive advantage over their competitors, and implement strategies that promote sustainable development, these companies enter a period of transition where they change their management model. Entities move from a traditional model where it is only important to reach maximum benefit (Friedman, 1962) to a model with a responsibility to the environment that aims to achieve good results through innovations that offer the company changes to be sustainable. In the traditional

model, companies only took into account the opinions of shareholders, instead in the new model, entities take into account the needs of all stakeholders, who are customers and suppliers.

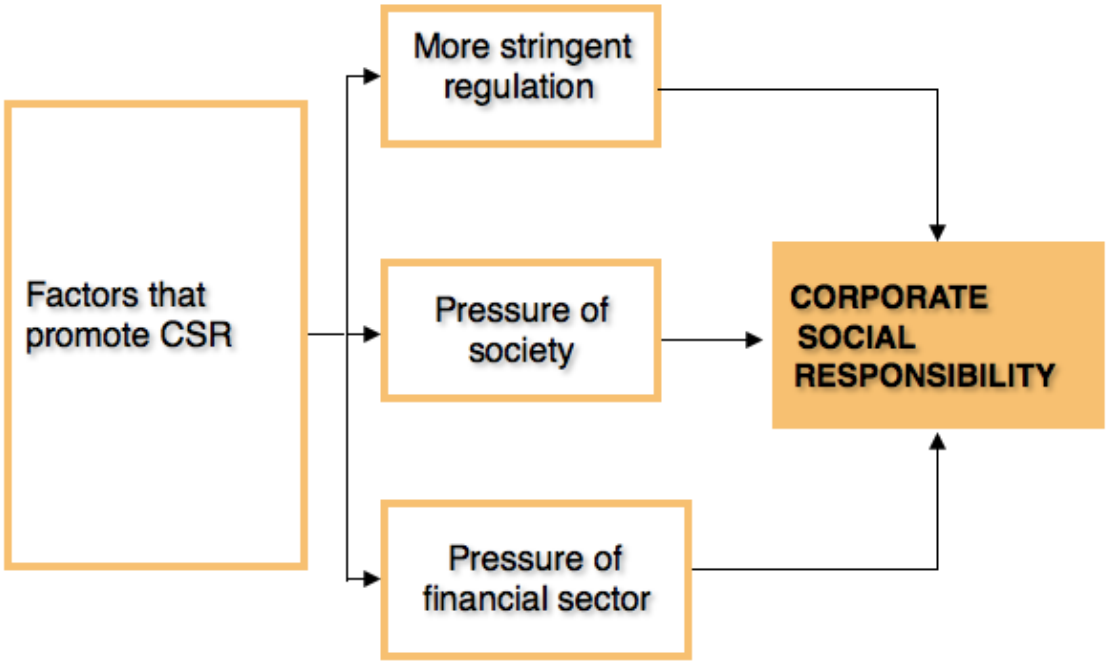
This new model of business management is known as Corporate Social Responsibility or CSR. The number of companies that implement CSR is increasing and in many of them there is a specific department that is responsible for the direction of CSR. The implementation of a CSR brings benefits such as getting a better view of the entity by consumers and customers and be more creative and innovative to be able to combine sustainable development with business activity.

2.2.3. Factors that promote CSR

Corporate Social Responsibility has undergone great growth in recent years, especially in developed countries where more pollution exists and where there is more means to innovate and make changes in companies. Citizens' mentality has also evolved in these countries. Over a decade ago, several studies[5] in Europe proved that more than 58% of citizens agreed and supported companies to implement CSR. So we already have the first factor that drives companies to establish CSR: society. The other two factors that promote CSR are regulations and the financial market. These factors are shown in Figure 2.

[5] Study on the attitudes of European consumers, CSR Europe and MORI, 2000.

Figure 2: Factors that promote CSR.



Source: Own Elaboration.

The three factors that appear in the image are explained in more detail in the following subsections.

Pressure of society.

Currently the company values aspects that, a couple of decades ago, did not value when choosing a product or a brand. If a brand or company, carries out actions that favor the sustainability of the environment, it has a better acceptance by the consumers, in contrast companies that do not collaborate with the sustainability of the environment are increasingly criticized and punished by the consumers. The actions that companies can play to become sustainable companies are endless, as they can carry out actions that promote CSR at any time or process of production, such as:

- Use recycled materials for packaging.
- Recycle waste that can be generated in the manufacturing process.
- Eliminate machinery that can emit contaminating gases.
- Use electric vehicles.
- Reduce the use of paper and use the electronic format to send invoices, delivery notes, etc.
- Reduce the number of truck trips to reduce carbon dioxide emissions.

If companies want to maximize profits and increase their sales volume, they must incorporate CSR because it will bring them both economic and environmental benefits.

More stringent regulation.

The regulation on environmental aspects have been gaining rigor. There are regulatory laws that establish maximum levels of pollution and actions that must be carried out if companies do not want to pay fines for not complying with the regulation. In Spain, the same Constitution establishes the basis of how to care for the environment. So there is environmental legislation at the state level and also at European level, which companies must comply with in order not to comply with the corresponding sanctions.

Financial sector.

In the section on social pressure, consumers are said to have a preference for products and services that come from companies that implement sustainable actions. This fact also affects the companies when they need some type of financing. Both banks and other non-bank financing entities, such as venture capital funds, are betting on the already operational entities that have a CSR in place and for new companies that want to be sustainable. This shows that CSR has a positive relationship with increased funding (Margolis and Walsh, 2001). This positive relationship is argued by the following practices:

- CSR reduces fines and penalties to companies, which means a reduction of expenses.
- The management of companies with CSR is of a higher quality than that of companies that do not carry out corporate responsibility.
- CSR brings better reputation to entities and this translates to more consumers.
- Companies with CSR are also preferred by employees, so these companies have more opportunities to get a better quality team than companies with a traditional management model.

After conducting an analysis of the environment, we conclude that it is a very influential factor in the field of business management, both nationally and internationally. The intense search of the companies to find their competitive advantage takes them to use the environment to be able to obtain it and to stand out among the competitors in the market. This competitive advantage can be maintained over time if the entity

implements CSR and develops a sustainable strategic plan. But it is not only the desire to gain a competitive advantage that leads companies to develop a sustainable plan, their environment, society and the State pushes them towards it.

3. WHAT IS INNOVATION?

3.1. Concept

The concept of innovation has been extensively analyzed over the years by various authors. This concept has undergone several variations although, there is always a basis that is common in all its definitions. One of the first definitions was made by Schumpeter (1934) where he says that “an innovation is the introduction of something new”. It may be the introduction of a new good to the market, the introduction of a new method of production, distribution, and / or communication, and even an entry into a new market. We can qualify Schumpeter as the "father" of innovation because he conducted research where he sought to demonstrate that innovation can lead companies to economic growth. After Schumpeter, other economists developed their own definitions of innovation. In Table 1 we can observe these definitions:

Table 1: Definitions of innovation according to different authors.

Author	Definition
Gee (1981)	*Innovation is the process in which, starting from an idea, invention or recognition of a need, a product, technique or useful service is developed until it is commercially accepted.*
Pavón and Goodman (1981)	*Innovation is the set of activities, inscribed in a certain period of time and place, leading to the successful introduction in the market, for the first time, of an idea in the form of new or better products, services or management techniques and organization.*
Freeman (1982)	*Innovation is the process of integrating existing technology and inventions to create a product, process or system. Innovation in an economic sense consists of the consolidation of a new product, process or improved system.*
Nelson and Winter (1982)	*The innovation is:* *a) The new products or services, new processes and new organizational structures that companies use to compete with each other and satisfy customer demand.* *b) The adoption of a new idea, process, product, or service, developed internally or acquired externally as a function of the technical, strategic and administrative skills of a company..*
Drucker (1985)	*Innovation is the specific tool of innovative entrepreneurs; The means by which to exploit change as an opportunity for a different business. It is the action of endowing resources with a new capacity to produce wealth. Innovation creates a "resource". There is no such thing until man finds the application of something natural and then endows it with economic heat.*

Source: Own Elaboration.

The previous table shows the similarities and differences between the definitions. Based on these, we find a more current definition of the concept of innovation: "The introduction of a new, or significantly improved, product (good or service), a process, a new marketing method or a new organizational method, in the internal practices of the company, the organization of the workplace or the foreign relations" (OECD 2005).

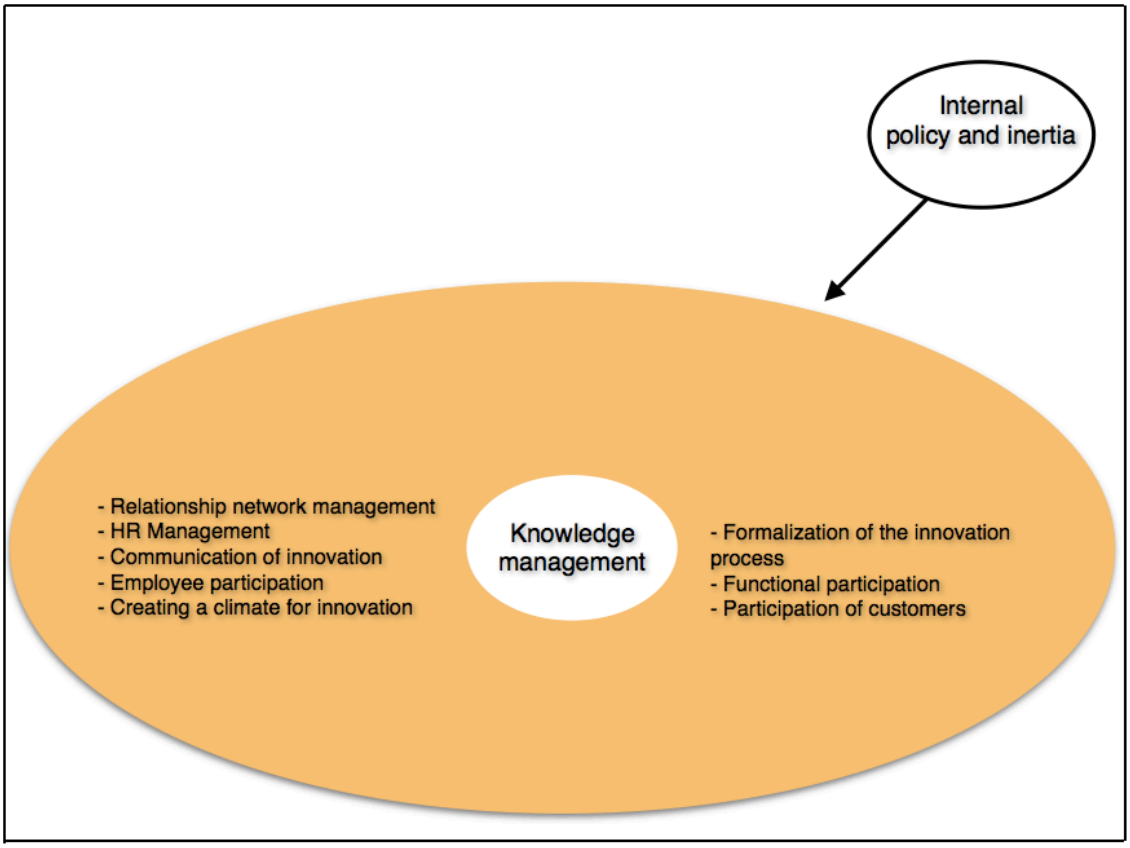
3.1.1. Process of innovation

It is quite common to find cases where innovation is thought to be synonymous with invention, but it is not. There is a distinction between invention and innovation (Schumpeter, 1934). An invention is the creation of something that is new and did not exist in the past, and this invention does not have to become an innovation. The invention will become an innovation when it is commercialized and has a place in the market. Therefore there is a process in which an invention is "transformed" into innovation. The phases of this process are as follows (Hinojosa, 2006):

1. Diagnosis: A diagnosis is made of all the factors that have some type of intervention with the main activity of the company. Its objective is to make a medium-term forecast taking into account the current market situation, possible threats and future changes in the market.
2. Identification of opportunities: to develop products or services that meet future needs.
3. Technical capacity of the company: it is necessary to take into account the resources and capacities of the company before developing an innovation development plan.

Therefore, in order to innovate, it must have a very broad knowledge of the market in which the company operates and of the internal resources and capacities, that is, an external and internal knowledge. Knowledge that if managed, will become an innovation (Schilling and Werr, 2009). So that, to reach innovation according to these two authors begins with the collection of information that brings knowledge. This knowledge comes from the internal scope of the company and, also, from the external scope. Once a high knowledge is reached, we can begin to realize the management of knowledge to finally reach the last phase: innovation. In Figure 3, we can observe the innovation process according to Schilling and Werr (2009).

Figure 3: Innovation process.



Source: Own Elaboration from Schilling and Werr, (2009).

If we compare the process proposed by Hinojosa (2006) with that of Schilling and Werr (2009) certain differences are observed. In the first process, an order is established that the company must follow if it wants to become innovative, whereas in the model that appears in Image 3, there is no order since it is based on the management of all the knowledge that the company Collects from the interior of this and its surroundings. Good knowledge management helps companies to develop new organizational structures that foster innovation, as well as new corporate strategies aimed at developing innovation.

3.2. Types of innovation

There is a great variety of types of innovation. As we have pointed out previously, innovation may be present in the product, in a process, in a method of communication, etc. There are different classifications that allow to order the innovations, finding, among others, the one that attends the grade of novelty (Zaltman et al., 1973). There are also others such as those based on the relationships between the components that make up the product (Henderson and Clark, 1990) or the technology / market effect

(Abernathy and Clark, 1985) and those that differentiate disruptive innovations from those of support .

The classification that takes into account the degree of novelty divides innovations into *radicals or incrementals* (Zaltman, 1973; Freeman, 1994). *Radical innovations* come about when a new product or process appears which generally require new manufacturing techniques and organizational changes. In contrast, incremental innovations are those that consist of improvements of the known products. They are usually the result of learning by doing and involve a reduction of costs.

As for the classification of innovation according to the relationships of the components (Henderson and Clark, 1990), it adds to the previous classification two new categories: *modular and architectural innovation*. Table 2 shows the table of this classification.

Table 2: Innovation according to the relationships of the components.

	Components		
Relationship between components		**New**	**Current**
	New	Radical	Architectural
	Current	Modular	Incremental

Source: Own Elaboration from Henderson and Clark, (1990).

As can be seen in the table, in *modular innovation* the relationships between the components are kept unchanged but they do change the components, either because they change material or change their structure, but they perfectly fit the previous configuration of the product. The opposite occurs with *architectural innovation*, that maintains the above components but change the interrelationship between these. This new Interrelationship offers a more sophisticated product.

The classification proposed by Abernathy and Clark (1985), where they take into account the effects of technology / markets, analyze which innovations are power-enhancers and which are destructive of competencies. Table 3 shows the classification of these authors:

Table 3: Innovation according to the technology/markets effects.

	Technology / Production		
Markets/Customers		**New**	**Current**
	New	Architectural innovation	Innovation creating niches
	Current	Revolutionary innovation	Regular innovation

Source: Own Elaboration from Abernathy and Clark (1985).

In this new classification, we find the *architectural innovation*, which is characterized by experiencing a significant technological leap that leads to the entry of the product into new markets. According to Abernathy and Clark (1985), this type of innovation "destroys" competitors, as it leaves them obsolete at the technological level by means of a new technology and this allows them to enter a new market where consumers have different needs than the previous ones. *Revolutionary innovation* also destroys skills, according to the authors, because it is an innovation that leaves the processes and / or technologies of competing companies obsolete but, unlike *architectural innovation*, it does not compete in a different market.

The two following innovations have in common that both use the current technology. *Innovation creating market niches* enhances competition, since this type of innovation is based on existing knowledge and skills, that is to say, this innovation improves the product. The improvement it applies to the product allows it to expand its market share by covering new segments. *Regular innovation* creates product enhancements that allow you to compete in the same markets as ever but creating competencies.

There is a recent classification of innovation that distinguishes *disruptive innovation* from *support or sustaining innovation* (Christensen, 1997). According to this author, disruptive innovations are based on the goal of implementing a significant change to the product, such as reducing its cost, making its use easier, that is, changes that make customers change How to use that product. Support innovations, on the other hand, provide gradual product improvements, such as improved performance, but do not lead to a discontinuity in product evolution.

3.3. Innovation models

In terms of innovation models, there is a wide variety of models created by different authors. Explaining how innovation works or generalizing the process of innovation is not an easy task (Cooper, 1983; Forrest, 2005), for this reason each author has a vision of how innovation is generated and all models currently coexist. The most common classifications of innovation models can be seen in Table 4.

Table 4: Classification of innovation models.

Author	Classification of innovation models
Saren, M.A. (1983)	- Departamental- Stage Models - Activity- Stage Models - Decision- Stage Models - Conversion Process Models - Response Models
Forrest, J. (1991)	- Stage Models - Conversion Models and Technology-Push/Market-Pull Models - Integrative Models - Decision Models
Rothwell, R. (1994)	- First-generation innovation process: Technology- Push - Second-generation innovation process: Market-Pull - Third-generation innovation process: Coupling Model - Fourth- generation innovation process: System Integration and Networking
Padmore, T., Schuetze, H., y Gibson, H. (1998)	- Linear model - Chain link model - Cycle model
Hidalgo, A., León, G., Pavón, j. (2002)	- Linear model: Technology push/pull demand - Mixed model - Integrated model
Trott, P. (2002)	- Serendipity - Linear models - Simultaneous coupling model - Interactive model
Escorsa, P. y Valls, J. (2003)	- Linear model - Marquis model - London Business School model - Kline model

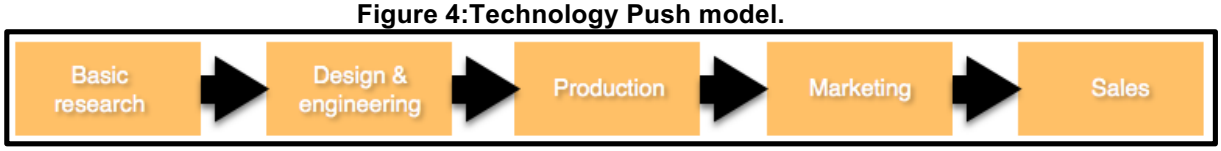
Source: Own Elaboration.

After analyzing all the classifications of the authors, we observe that there are some classifications that are repeated more frequently. Thus, the models that stand out most are linear models, interactive models, integrated models and the network model. Below, we will delve into each of these models.

3.3.1. Linear models.

Linear models are considered as the First and Second generation models (Rothwell, 1994). The *Technology Push* and *Pull demand* models have in common the linearity of the innovation process. The *Technology push* model appeared after the end of World War II. Figure 4 shows the process of this model.

Figure 4:Technology Push model.



Source: Own Elaboration from Rothwell, R., (1994).

In this model we can highlight its linearity, the model progresses progressively and orderly. In the first place is the basic search for information, where knowledge appears, and this is the source of innovation. Once the innovation is discovered, the product is designed, manufactured, made a marketing plan and finally goes on sale.

The *Pull Demand* model, considered the second generation of innovation models, appeared later than the previous model, in the late 1960s. At this time the companies had overcome the crisis of the postwar period and began to grow economically. This growth forced companies to increase their investments in Marketing to meet the needs that consumers could have at that time. This Rothwell model is linear and sequential, just like the previous one, but it differs in that the entire process of innovation is born of the needs of the consumers and not of a basic research. In Figure 5 we can see this model.

Figure 5: Pull Demand model.

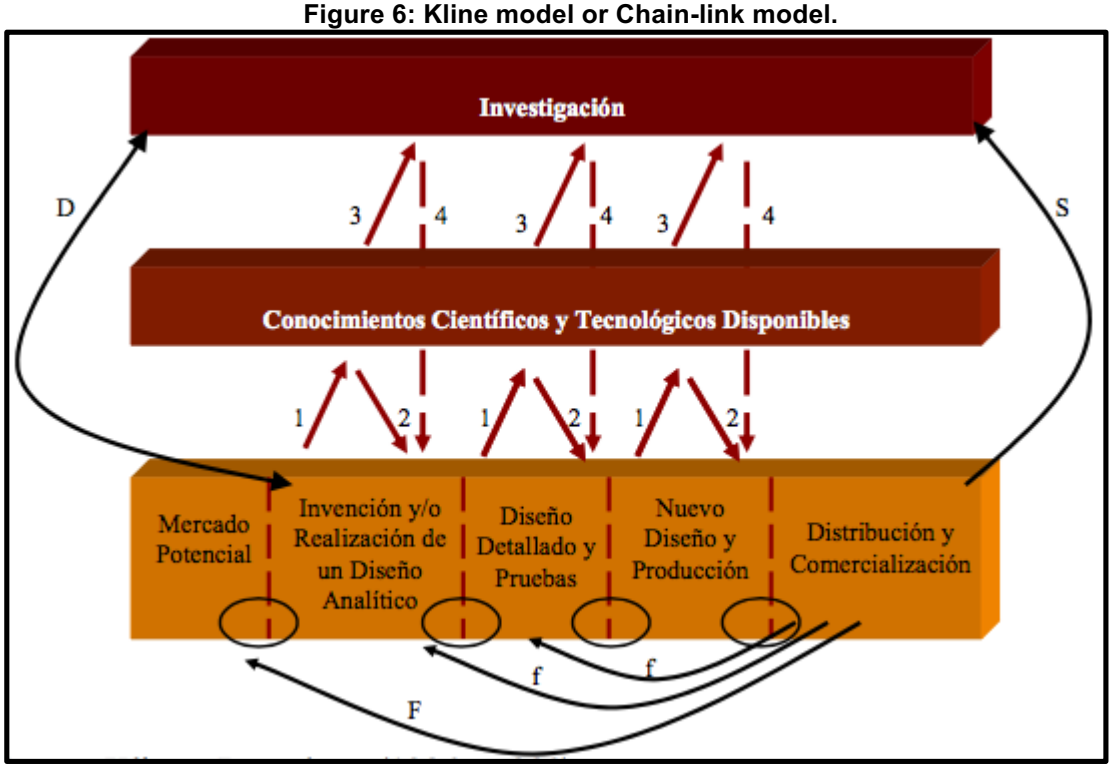
Source: Own Elaboration from Rothwell, R., (1994).

3.3.2. Interactive models.

Interactive models are classified as Third Generation models (Rothwell, 1994). It was in the late seventies when more were used by companies. Within these models, it is possible to emphasize the *model of Kline*, also called model *chain-link model* (Kline

and Rosenberg, 1986). This model is no longer linear, it has five trajectories that serve as connectors of the three relevant areas of the innovation process. The three relevant areas are: research, knowledge and the core chain of the technological innovation process. In Figure 6 we look at the three relevant areas and the five paths that interconnect them.

Figure 6: Kline model or Chain-link model.



Source: Kline and Rosenberg, 1986.

If we observe the Image 6, we find the three relevant areas represented in rectangles and the paths that interconnect them are symbolized with arrows. The first path in this model is called the central innovation chain (Kline and Rosenberg, 1986). This path is born of an idea that, at first, must cover a market need. The second path is based on feedback within the phases of the core chain of the technological innovation process. The arrows "f", are responsible for giving information to the previous phases of the needs of the market.

The first two paths interrelate the central chain with the knowledge area, while the third and fourth path make more complex interconnections. The third path relates knowledge and research to the central chain of innovation. This process begins at the moment when the central chain presents some type of problem. When there is a problem, the first step is to go to knowledge, just as arrow 1 indicates. If the knowledge area can provide a solution to the problem, this solution, or this knowledge is transferred to the

design as reflected in line 2. However, in some cases the existing knowledge is not sufficient to solve the problem, when this happens we must go to research (indicated by line 3). When the research obtains results, this new knowledge will be transferred to the area of knowledge, expressed with line 4.

The last path connects the investigation with the invention, and is reflected by arrow D. When these two areas are connected, radical innovations often emerge. The arrow is bidirectional because, on the one hand, research can create new products and, on the other hand, the emergence of new needs in the market can initiate new research (Fernández, 1996). The arrow S, connects the market with innovation. This is because, in practice, many innovations are used to support and improve research. If we compare this model with the previous ones (the linear models), we find as main difference that the latter relates science and technology in all the stages and not only at the beginning, as it happens in the linear models.

3.3.3. Integrated models

The Fourth Generation of innovation models are integrated models (Rothwell, 1994). These were used from the eighties until the beginning of the nineties. Within the integrated models, the Schmidt-Tiedemann Model or "concomitance model" (Forrest, 1991) stands out. This model presents three functional areas that aim at industrial innovation. The first area is the research function, the second is the technical function, which includes the identification of needs and technical assessments presented by the company. The third is the commercial function, which includes market research, sales process and distribution. These three functions support each other during almost the entire innovation process (Schmidt-Tiedemann, 1982). This model does not take into account factors such as organizational structure or external factors such as politicians, for this reason some authors believe that this model should be located within Third Generation models (Hobday, 2005), although most believe that it is more correct that are within the Fourth Generation.

3.3.4. Network model.

According to Rothwell, the Fifth Generation model is the network model or the "Systems Integration and Networking" (SIN). This model offers a new vision by saying that innovation is a distributed network process (Hobday, 2005). This model came into

force in the 1990s, where companies began to present greater flexibility and adaptability both organizational and productive and product strategies were aimed at quality. In Figure 7 we can see the scheme that follows this network model.

Figure 7: Example of SIN

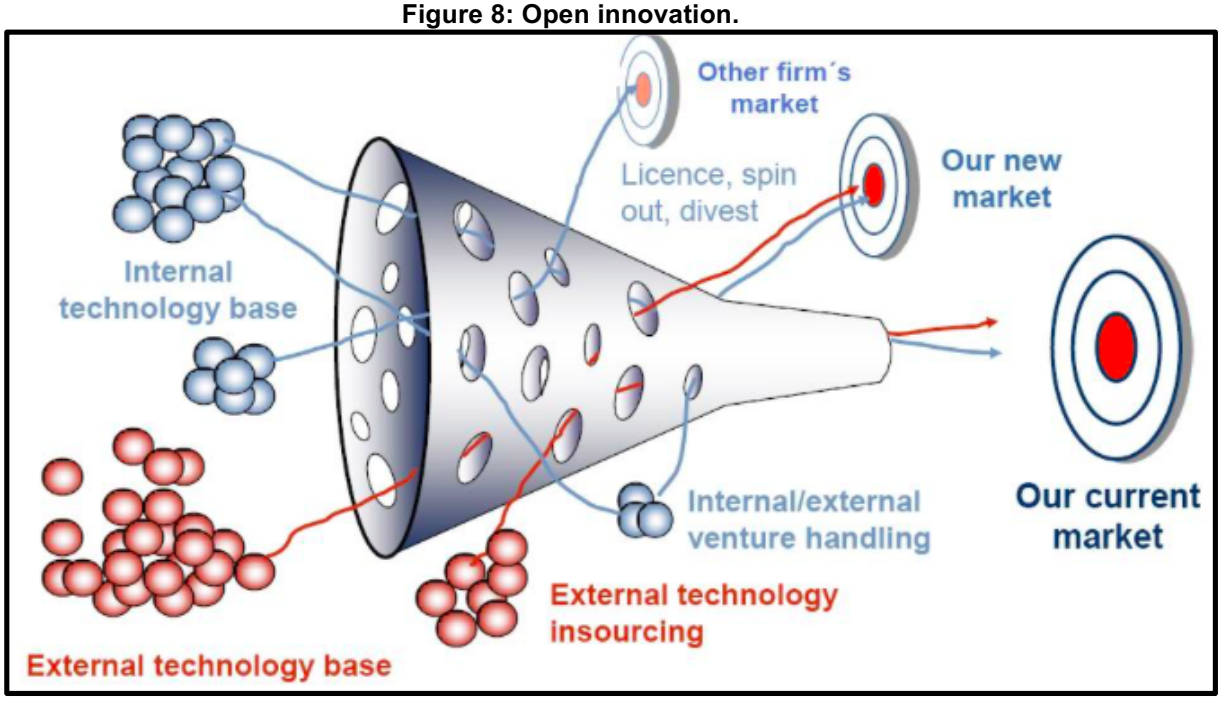
Source: Trott (1998) and Hobday (2005).

This fifth model has as main characteristic the use of technological tools that allow to increase the efficiency in the production and in the same product. This development receives influences both internal and external, such as suppliers and customers. Suppliers, customers and agents of interest or stakeholders continuously exchange information with related companies and this produces a continuous exchange of information resulting in a new system of innovation (European Commission, 2004). These figures that exchange information with the entities form technological networks (Freeman, 1987).

3.3.5. Open innovation

The previous model has many similarities with the model that is used today, the model of *Open innovation* (Chesbrough, 2003), that could be integrated within a new generation. In Figure 8 we can see how this concept of open innovation is structured.

Figure 8: Open innovation.



Source: Henry Chesbrough, (2003).

Increased competition in the market forces companies to carry out reorganization internally and externally, that is, new organizational structures are created that favor flexibility and create new and better relationships with external agents. The environment in which businesses operate is increasingly turbulent and changing: products have an increasingly shorter life cycle, the complexity of their production is increasing and the number of competing companies does not stop growing. This situation makes the entities establish knowledge flows, but also not internal, also with the aim of promoting innovation (Chesbrough, 2003).

Entities have also suffered from other external changes that have affected them internally, such as the increase of workers with medium and high skills. This fact leads companies to detect and exploit any opportunity to innovate, any idea of a new worker has to be taken advantage of by the company, it is necessary to generate a good level of internal communication so that the high hierarchical levels are abreast of any idea that can be exploited (De Jong et al., 2008). This innovation model helps organizations achieve internal improvements such as cost reduction and / or increased sales volume (Lee et al., 2010) and at the human level, workers who perform their work under the "rules" of the open innovation increases their work performance (Canal and Llaneza, 2000).

3.4. Innovation direction

Business innovation has reached such importance that it is necessary to control it, ie it is necessary to carry out a strategic direction of innovation. This direction should take into account that innovative projects should be put into action after an analysis of the resources and capabilities of the company and the strategic objectives. In other words, innovation must be a tool that helps the company reach its objectives. To foster innovation, it is necessary for the internal organizational structure to have an appropriate format to foster innovation and facilitate the implementation of innovative projects (Schilling, 2008).

If there is a strategic direction of innovation, there must be an Innovation Director. The qualities that must have an Innovation Director, according to the Association of Economists of Valencia, should be the following:

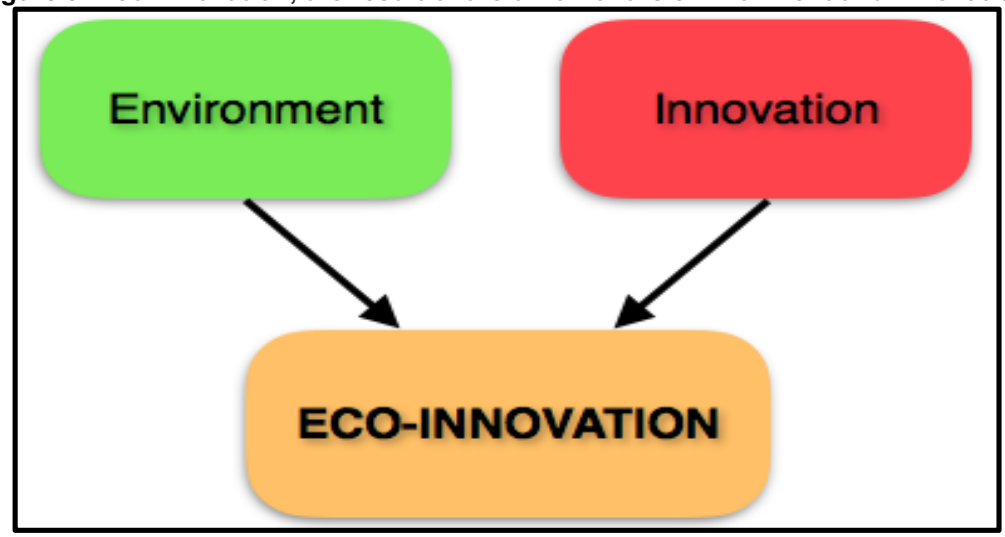
- Have a strategic vision.
- Customer orientation.
- Have a high adaptability.
- Have a flexible thinking.
- Have a high decision-making capacity.
- Ability to take risks.
- Have a participative and non-authoritarian management style.
- Know how to work as a team.

This director will need to have a complete knowledge of the resources and capabilities of the company and propose improvements to these resources and capabilities, in order to obtain improvements in future products and / or services. It must have the capacity to generate good relations with suppliers and also to ensure that customers are loyal to the company or brand. A very important factor is that it must be able to anticipate possible threats and anticipate them, but it must also be able to detect all the opportunities that the environment offers and must know how to exploit them to enhance innovation (Dogson and Salter, 2008).

4. WHAT IS ECO-INNOVATION?

In the two previous sections, we have analyzed in depth two important factors for the development of this work: the environment and innovation. Therefore, we can say that the union of these two factors form the eco-innovation. This union is shown in Figure 9.

Figure 9: Eco-innovation, the result of the union of the environment and innovation.



Source: Own Elaboration.

Eco-innovation is the result of merging the concern to care for the environment with innovation. At present the companies have the need to be sustainable and for this they need a series of innovations that allow them to carry out their activity with the least negative impact towards the environment. These innovations need to have non-polluting materials, in addition, the way of using these innovations should not contaminate, they must be sustainable. For this reason, sustainable development and innovations have evolved to a higher level, eco-innovation. Thus, eco-innovation is the main factor that we want to analyze in order to apply it to one of the most traditional sectors of the country, the wine sector, in order to demonstrate how the chosen sector can be improved.

4.1. Concept and approaches to eco-innovation

Eco-innovation can be understood as an evolution of innovation. More and more companies are inclined to the stream of becoming sustainable companies to get a better position in the market. Thus, the combination of innovation and environmental

care results in eco-innovation. According to the OECD (OECD report, 2010) eco-innovation is defined as follows:

“Eco-innovation is the production, assimilation or exploitation of a product, process of production and / or service that, throughout its life cycle, results in a reduction of environmental risk, pollution and other negative impacts of the use of resources (including energy).”

In addition to the OECD, several authors are investigating eco-innovation in order to define it. Table 5 shows the different definitions of eco-innovation.

Table 5: Definition of eco-innovation according to several authors.

Author	Definition
Huppes, 2009	Eco-innovation is the change that is made in economic activities that implies an improvement in social, economic and environmental performance.
Hong y Shuai, 2008	Eco-innovation is considered a process that has several characteristics of economic, technological and environmental scope that results in sustainable technologies, economic and social benefits.
Peiró el al. 2001	Eco-innovation is any type of innovation aimed at sustainable development, through actions such as reducing negative impacts on the environment and promoting a more responsible use of natural resources.

Source: Own Elaboration.

There are several approaches in which an interrelationship between the factors influencing eco-innovation is made. Approaches can be divided into three categories: the conventional approach, the business management approach and the evolutionary approach. The three approaches are discussed in detail in the following subsections.

4.1.1. Conventional approach

The conventional approach is related to theories of linear models of innovation, based on the fact that innovation goes through different phases and there is no interrelation between them. El modelo de eco-innovación convencional tiene como objetivo controlar la contaminación mediante la innovación y las regulaciones de la política ambiental. Politics plays a very important role in this approach because, according to authors who support this approach, policy instruments such as taxes, subsidies or permits encourage companies to innovate to be sustainable, ie, encourage eco-innovation. Studies show that political power encourages, or forces, companies to eco-innovate in order not to suffer fiscal reprisals.

An analysis comparing innovation in pollution control technologies in three different countries: the United States, Japan and Germany, showed that the United States experienced an increase in the number of patents after undergoing a stringent increase in the regulation of emissions of pollutants (Popp, 2006). The increase in the number of patents implies that more eco-innovations have been made. The other two countries, by not applying more stringent regulation, were not concerned with increasing the number of environmental innovations.

The number of patents to measure the degree of environmental innovation has been used by other authors. In some countries, increases in costs of pollution control by businesses are determinant to eco-innovation (Brunnermeier and Cohen, 2003). The US industry sector of the last century revealed that companies that increased pollution control spending to comply with environmental regulation also increased R & D investment and patents (Lanjouw and Moddy, 1996). Done that shows again the direct relationship between eco-innovation and the regulatory political factor.

4.1.2. Internal factors: corporate environmental management and internal technological competence

When a company decides to become an eco-innovative company, it must make internal changes at an organizational, strategic and technological level. But, in some cases, companies do not choose the path of eco-innovation of their own free will, but by a series of pressures that finally force the company to eco-innovate (Fischer and Schot 1993; Cabezudo, 2000). These pressures are as follows:

- Pressures of government regulation.
- Pressures on the part of society, expects companies to care about the environment.
- Demand pressures, such as changes in consumer preferences. Consumers prefer to consume products from sustainable companies.
- Financial pressures. Investors may decide that the company will make changes to become a sustainable company.

All these pressures can be solved by implementing a strategic eco-innovation plan that is part of the company's environmental strategy (Fisher and Schot, 1993).

Sometimes, companies decide whether or not to adopt eco-innovation, taking into account how the benefits will be received, which the company can contribute to the workers, consumers and society in question. general. This adoption can imply a change in the culture or business philosophy and achieve a new corporate image that improves market positioning (Sharma, 2000). The strategies that companies can follow to develop their environmental plan can be of different types, as can be seen in Table 6.

Table 6: Environmental strategies.

Environmental strategy	Comments
Hyperactive	This strategy considers that companies have the need to protect the environment because it can generate opportunities in the market and achieve competitive advantages.
Proactive	Some companies consider that their environmental problems are their responsibility and must take them into account or their long-term existence may be threatened. Proactive companies often anticipate future regulations and thus invest in technologies that are above existing regulatory needs.
Reactive	They have the vision that environmental issues are costs that must be reduced. They react only when external factors exert pressure.
Follower	The follower companies only carry out environmental actions when the regulation requires it to avoid sanctions (costs) that can create a bad image at a social level.
Inactive	They deny the existence of pollution problems in their company, and believe that the measures they take are sufficient.

Source: Own Elaboration from Lindeggard and Remmen, (1998) and Faucheux et al. (1998).

In terms of internal technological competence, this depends on the capabilities and resources that the company possesses. It is necessary to present a minimum level of technological competence to implement environmental strategies. The use of new equipment requires certain skills in the personnel that will use them (Teece and Pisano, 1994) and a process of adaptation and training. In order to be up-to-date, a company must make an economic effort in technology, although the cost of acquisition depends on the capacity of absorption that owns the company, that is, the technical level that already possesses. It is important that the company has previously made investments in R & D (Nelson and Winter, 1997) and have experience in this department. In order to make R & D decisions it is important to have an expert dedicated to environmental, research, development and innovation issues.

4.1.3. Evolutionary approach

The evolutionary approach has some relation with the models of innovation that affirm that there is a feedback between the phases of the model. Thus, this approach understands technological change as the result of the interaction of supply, demand and social forces. These three factors create a certain level of uncertainty for firms (Nelson and Winter, 1977), because one can not predict exactly how they will react or evolve. However, this level of uncertainty is positive for companies because it motivates them to innovate.

When firms make innovations, they do not know whether those innovations will succeed, or not (Simon, 1957). Therefore they establish a protocol where it is established that before starting any innovation it is necessary to have a high level of knowledge. Once a certain level of knowledge has been acquired, it will be applied in the development of eco-innovation. Eco-innovation has two dimensions, the technical dimension and the social dimension. The technical dimension is entrusted to the experts, the workers who have skills to manage knowledge for the creation of innovations. Instead, for the social dimension, it is necessary to use the evolutionary approach, since it pays attention to all the institutions that are sources of innovation, or, in other words, interrelates all the institutions that are responsible for creating, storing and transferring knowledge (Metcalfe, 1995).

This approach is also related to some types of innovation, since the evolutionary approach distinguishes the level of radicality of innovations. Therefore, it shows the existence of differences in the barriers that may exist for radical eco-innovation and the barriers of incremental eco-innovations.

4.2. Barriers to eco-innovation

The implementation of eco-innovation in companies is not always an easy task, because there are certain barriers that prevent reaching this point of sustainability. To begin with the analysis of these barriers, we can begin with the lack of vision and commitment of the highest hierarchical levels of the company (Ashford, 1993). In addition, it is necessary that the company has an organizational structure that provides flexibility to management, since companies with little organizational flexibility have more difficulty implementing new strategies than those with a more flexible organizational model. Another aspect that may be a barrier to eco-innovation is the

level of qualification required by workers. Large companies have qualified staff in all departments, especially R & D, but small and medium-sized enterprises do not have such highly qualified staff to implement an eco-innovation development plan.

4.3. Eco-innovation: models and results

In Spain there is an entity that helps companies to carry out innovative actions that contribute to a sustainable environment. This entity is called the Eco-Innovation Laboratory and is made up of "La Caixa" Obra Social and Fundación Forum Ambiental. The Laboratorio Econinnovación "identifies, classifies and disseminates practical cases of national and international companies that have increased their competitiveness by incorporating eco-innovation". The number of companies that have applied eco-innovation and become more competitive companies is increasing. In order to observe how eco-innovation can improve the competitiveness and efficiency of a company, in this sub-section some cases of Spanish companies will be analyzed.

Since the purpose of this work is to demonstrate that eco-innovation can improve the wine sector, in particular wine-producing companies, we must observe real cases of companies that have carried out eco-innovation, to analyze the results they have obtained and the improvements they have experienced. We are going to analyze national and international companies.

4.3.1. National cases.

Mercadona

Mercadona[6] has implemented eco-innovation to improve logistics efficiency. To develop this eco-innovation has been carried out reverse logistics, ie the same truck that transports the goods to supermarkets is the same that is responsible for collecting all the containers that have to recycle. In addition to reverse logistics, the packaging of products has also been redesigned so that in the same trip the volume of product is greater. To achieve the reduction of space of the containers has been necessary to apply ecodesign. An example of ecodesign is the compacted celluloses, which occupy

[6] Case study drawn from http://www.laboratorioecoinnovacion.com.

less space than other material such as plastic or cardboard; Another example is the design of square-base oil bottles to be able to stack more easily.

The idea is that the truck is always full and take full advantage of all the routes, that is, optimize the routes. As Juan Roig, president of the entity said: "Full truck, full pallet, full box, full linear and product, also full". This initiative has meant for the entity of energy and economic saving. The main results and benefits of implementing eco-innovation in logistics have been the following:

- Savings of 24 million euros for improvements in logistics, because they have been able to reduce 6 million kilometers by road. Savings of 140 tons of plastic and 2,189 of carton thanks to the packaging and packaging of cellulose.
- Reduced costs, bottles with square base are 0.01 euros cheaper because they optimize the stack.
- Reducing carbon dioxide emissions thanks to the new oil bottles, because they can be stacked better, you can transport 16% more in each pallet, which means fewer trips and fewer emissions.
- Thanks to reverse logistics, 164,000 tonnes of waste were collected in 2013.

Fruits de Ponent.

The strategy of this entity to develop eco-innovation is to obtain new varieties of fruit through a genetic process that serves to cross different varieties already existing. The purpose of these alterations is that the new varieties adapt to the warm climate that exists in the lands where the company cultivates its varieties, located in Lérida. The entity obtained 246 new varieties, although only 20 of them became commercialized. The results obtained by the company with these new varieties are as follows:

- The new varieties have allowed them to access more exclusive markets.
- Reduction of 10% in production costs for the farmer.
- Reduction of losses and increase of efficiency.
- The production of fruit adapted to the climate of the land of the entity reduces the carbon footprint of logistics by 15%.
- Reduction of plant protection products by 20%.

Freixenet

This company that operates in the wine sector has managed to develop eco-innovation by robotizing the "up and down" of cava bottles, which are logistical tasks. The benefits[7] offered by this robotization are as follows:

- Increase of the capacity of the cavas in 32.2%.
- The centralization of the current production entailed a reduction in the transport of product, that is to say, a great reduction of emissions and a reduction of costs.
- Decrease in external warehouses, resulting in reduced costs and shortages.
- Improvement of the company's reputation in society.

4.3.2. International cases

Levi's.

Levi's company uses a large volume of liters of water for the production of its textile articles. The heavy reliance on water and the threat of a water shortage forecast led the company to make the decision to develop eco-innovation to reduce water consumption. The technique that was developed to reduce the consumption is called "Water> Less", this technique combines several processes wet in one and incorporates the ozone for the washing of the fabrics, in this way it is possible to reduce the consumption of water. Thanks to the technique "Water> Less", Levi's obtained the following results:

- Reduction of 28% of average water in the production process.
- The use of this technique improved the reputation of the brand by getting "Water> Less" products sold faster than traditional products.
- "Water> Less" products were so well accepted by the company that in the first 9 months of 2013 revenues increased by 135% compared to the previous year.
- From 2011 to 2013 saved 699 million liters of water in the production process.

[7] Case study drawn from http://www.laboratorioecoinnovacion.com.

3M.

The company 3M operates worldwide and owns large facilities for the manufacture of its products. One problem they observed from the facility was the direct sunlight coming into the windows. This light caused a rise in temperature of the facilities which led to the use of blinds to cover the light and therefore, the lights were turned on in the middle of the day and air conditioners were used to reduce the temperature. This meant a very high energy consumption. To solve the problem, this company created the 3M Daylight Redirecting Film. This eco-innovation deals with a transparent film that adheres to the windows and prevents direct entry of the sun. The benefits of this eco-innovation are:

- Reduces eye strain on workers by avoiding glare.
- Reduces the need for air conditioning and lighting during the day.
- Reduction of an average of 55% in energy costs.
- Reduction of 77% of the accumulation of heat.
- Improved business reputation by winning the "Record Products 2014".

Once we have analyzed these five cases we observe that there are indeed economic and environmental benefits if an eco-innovation development plan is carried out. In this way not only the company benefits, but also an important part for these customers, since a reduction of costs implies better prices and a reduction of pollutant emissions improves the air quality and reduces the health problems caused by the polution. The following table, Table 7, sets out the clear benefits that these companies have achieved thanks to eco-innovation.

Table 7: Results obtained with eco-innovation

Company	Sector	Environmental benefits	Economic benefits
MERCADONA	Distribution	✓	✓
FUITS DE PONENT	Feeding	✓	✓
FREIXENET	Vitivinicultural	✓	✓
LEVI'S	Textile	✓	✓
3M	Industry	✓	✓

Source: Own Elaboration.

The five cases analyzed belong to different sectors, a fact that shows that eco-innovation can be applied to any sector, therefore, that a company operates in a more

traditional sector does not represent a barrier to the application of eco-innovation, as We can observe in the case of Freixenet and Fruits de Ponent. Another aspect to highlight of these cases is the high level of knowledge, internally, about your product or service. These companies have been able to detect new market needs and, using their internal knowledge, have been able to adapt and reinvent themselves to meet the new market needs through eco-innovation.

5. WINE SECTOR

5.1. Background of the sector

The wine sector is one of the most traditional sectors, and we could also say ancient, that exist in Spain and around the world. Some archaeological studies prove that the wine was produced in the time of BC[8] (between 8,000 and 5,000 BC). The areas where this drink first came was in Georgia and Iran and a little later came to areas located in the Middle East, Sumer and Ancient Egypt. In Figure 10, we see Egyptians harvesting, this image was discovered in one of the ancient tombs of Old Egypt, the tomb of Nebamun.

Figure 10: Egyptians doing the vintage.

Source: Wikipedia, figure extracted from the tomb of Nubamun.

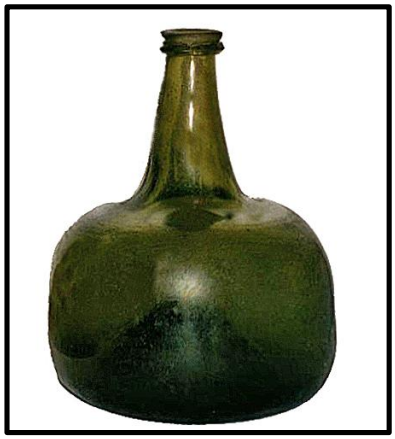
Continuing with the time of BC, advancing a few years, wine came to Classical Greece (about 700 BC) and also to the Roman Empire (year 200 BC)[9]. After the year zero, the

[8] https://es.wikipedia.org/wiki/Historia_del_vino.
[9] https://es.wikipedia.org/wiki/Historia_del_vino#Imperio_romano.

wine also continued to have prominence, especially in the Middle Ages. In this historical period, wine became an essential for religious orders, as they needed it for the consecration of the Mass. In addition, it was during this period that the wine began to be stored in wooden barrels rather than stored in amphorae made from clay as was done in the previous period.

The wine sector was experiencing improvements in its production and storage, but the most significant improvements came in the Modern Era, at which time the first document of Denomination of Origin in the Spanish territory[10] was elaborated and was recognized worldwide by the International Bureau of Intellectual Property. During this period the first two innovations were made in this sector, the creation of the glass bottle and the cork stopper. In Figure 11 we can see how the bottles were used at that time, quite different from the current ones.

Figure 11: Glass bottle of the Modern Era.



Source: Wikipedia.

At present the innovations that this sector has experienced are technological innovations, especially innovations that improve the environment to protect grape productions (ecoinnovations). These eco-innovations can be applied to the wine production process, or to growing grapes in the vineyards. Another type of innovations that this sector is experiencing are innovations in the field of marketing, namely, the design of wine bottles. The wine companies invest more and more in the design of the bottles, the cap and the label, in short, all the packaging of the bottle. The purpose of this is to draw the attention of consumers and increase the number of sales. Then, in Figure 12, we can see some of the most ingenious and breaker designs of wine bottles, very different from the initial bottle that we can observe in Figure 11 above.

[10] https://es.wikipedia.org/wiki/Historia_del_vino.

Figure 12: Bottles of design.

Source: https://dominiomundial.com/33-disenos-impresionantes-de-botellas-de-vino/

5.2. Analysis of the sector

In order to have a knowledge of the current situation of the wine sector we must make an analysis of its general environment followed by another analysis of the specific environment of the sector.

5.2.1. Analysis of the general environment

To perform the analysis of the general environment there are certain factors that must be analyzed in depth in order to have a knowledge about the environment in which a company or a sector is located. The factors to be analyzed are six: the political factor, the economic factor, the social factor, the technological factor, the ecological factor and the legal factor. The analysis of these factors is known as the PESTEL analysis (Iborra, 2010). Such an analysis is normally common to all companies operating in the same country, as it affects them and benefits from the legislative, economic and cultural changes that society may suffer. Next, we will proceed with the analysis of the general environment through the PESTEL analysis.

Political factor.

Spain has suffered a complicated political situation in the last two years, since, since December 2015, Spain has been without government ten months because of the lack of agreements between political parties. After these months of political ambiguity, the

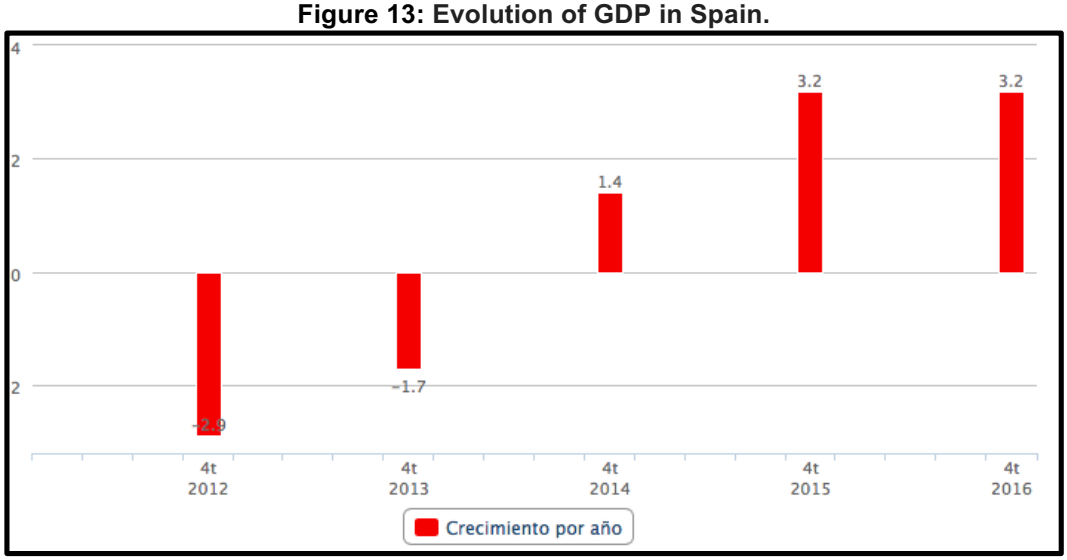
country has again passed laws and budgets. This affects both directly and indirectly the wine sector.

- At the beginning of this year a law was passed that directly affects the sector to be analyzed. This law is "Order 1/2017, of 13 January, of the Conselleria de Agricultura, Medio Ambiente, Cambio Climático y Desarrollo Rural, which establishes the regulatory basis for aid to the wine sector of the Comunitat Valenciana for the promotion In third country markets (DOCV of 20 January 2017) ". This law aims to help wine companies in this autonomous community, in order to increase their production for later distribution, both nationally and internationally.
- In this same region, the political party PSPV (Partido Socialista del País Valenciano) demands to the Government a reduction of the VAT of the wine. This claim has not taken effect, but if it had, VAT in this sector would be from 21% to 10%.

Economic factor.

The spanish economy has been affected by the economic crisis that began in 2008. Although there is still no total recovery of the economy in the country, there has been a growth of the national GDP, as we can see in Figure 13.

Figure 13: Evolution of GDP in Spain.



Source: "Instituto Nacional de Estadística", January 2017.

The crisis affected the wine sector, since domestic consumption was reduced by the reduction of the purchasing power of the families, nevertheless, found an escape route

with the exports. Exports are one of the reasons why Spain has managed to increase its GDP in the last year, so the wine sector has participated in this growth.

Technological factor.

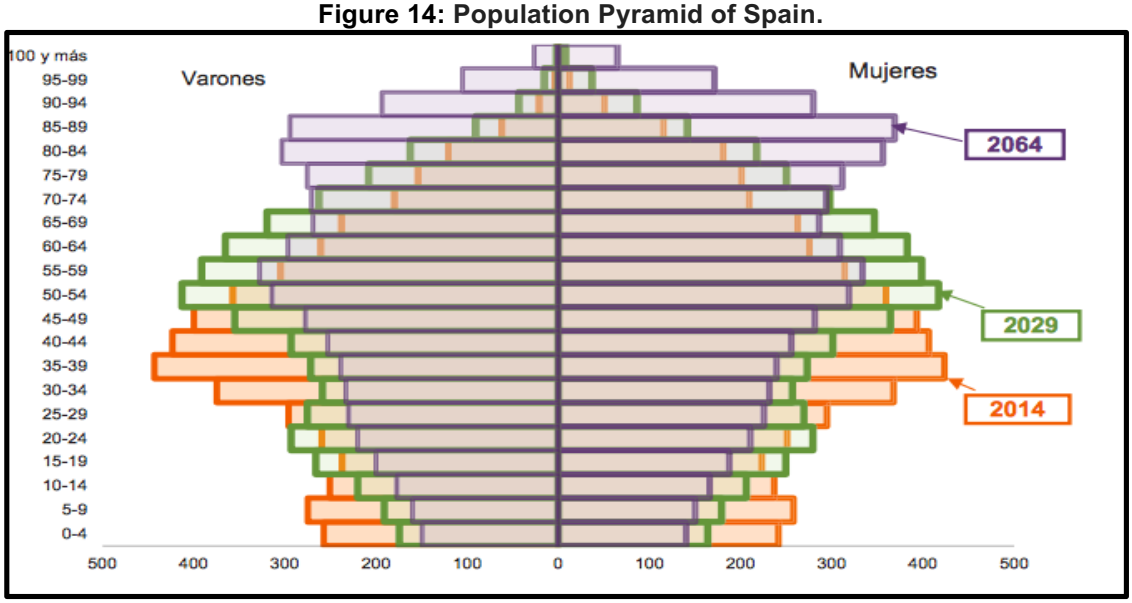
Technology has advanced considerably in the past ten years. The technology market offers innovations for virtually all economic sectors today. National companies have increased the capital invested in the R & D & I (Research, Development and Innovation) departments. New technologies improve economic growth, helping the national GDP increase in 2016.

The wine sector can also benefit from new market innovations. For example, by the end of 2016 a dron was created exclusively for spraying large agricultural hectares to control pests.

Social factor.

One of the sociocultural factors that most worries in Spain is the demographic factor. The population pyramid of the country presents a form of "mushroom", fact that shows the aging that is suffering the country. In Figure 14 we can observe the population pyramid.

Figure 14: Population Pyramid of Spain.



Source: "Instituto Nacional Estadística", October 2014.

These data are negative for many sectors, but in the case of the wine sector they are positive. The consumption of wine in young people is quite low, prefer to consume

other types of drinks. In contrast the population of 40 years onwards, are the biggest consumers of wine. Therefore, although it seems contradictory, the population aging benefits the wine sector.

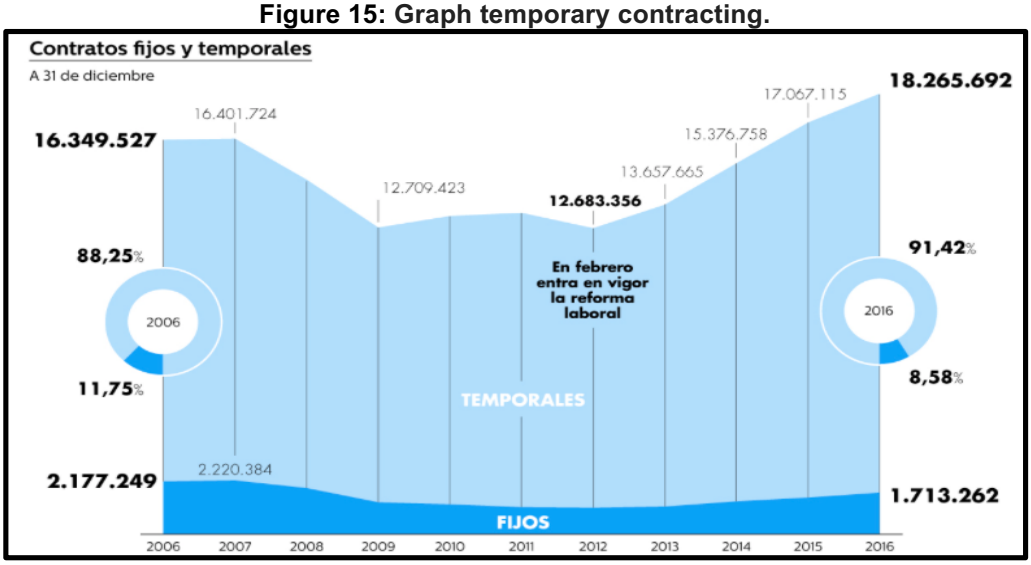
Environmental factor.

The mentality of society has changed and there is a trend towards organic products. Consumer needs are no longer covered by any product, they are preferred to be "eco". For this reason the spanish wineries are in a process of change where productive processes that are damaging to the environment by sustainable processes are eliminated. An example of this are methods of fumigation and non-invasive care for the environment. Such as the use of drones. The wine federation in Spain is responsible for carrying out a CSR department to change and innovate certain aspects of the wineries so that they have an economic activity that does not have an impact on the environment.

Legal factor.

In the labor market, the labor reform carried out in 2012 has helped temporary contracts increase to 33.7% in the last three years, as we can see in Figure 15. Since this law has not been reformed at the moment, this benefits the wine companies, since a high percentage of the work in this sector concentrates in a few specific months, the months of verema. In this way the entrepreneurs can make temporary contractions for the verema season and are not forced to carry out indefinite contracts.

Figure 15: Graph temporary contracting.

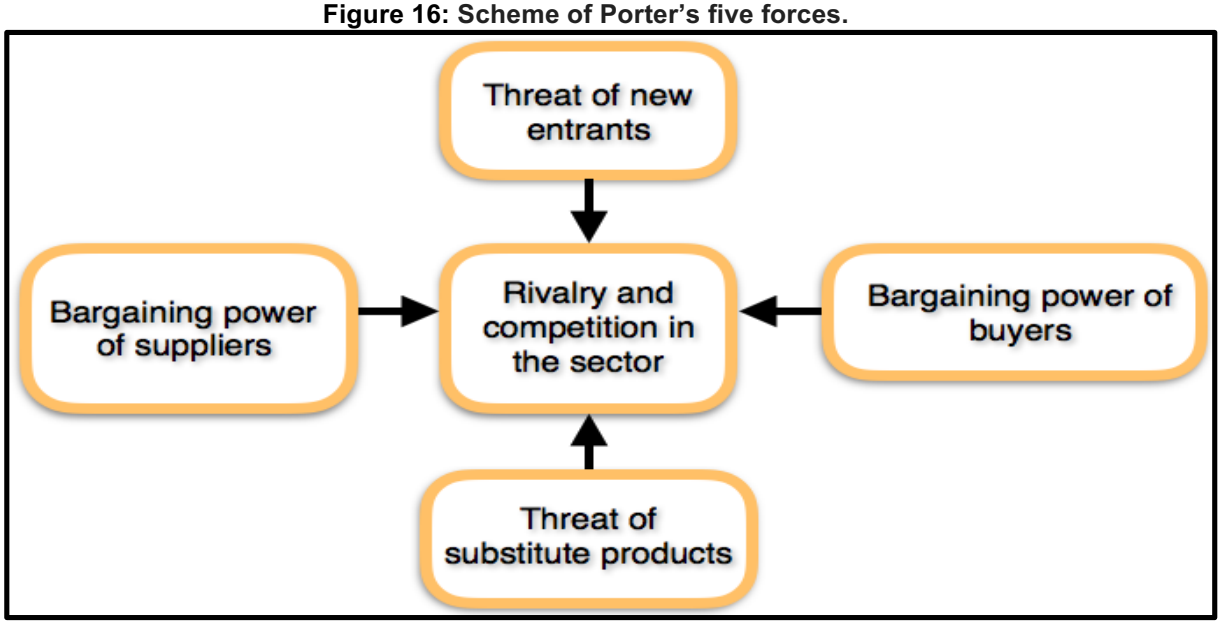


Source: "Servicio Público de Empleo Estatal", December 2016.

5.2.2. Analysis of the specific environment

After analyzing the general environment of the wine sector, we will proceed to the analysis of the specific environment. In order to carry out this analysis, we will use Porter's five forces model (Porter, 1980), which analyzes the degree of threat of new competitors entering the sector and the threat of substitute products, the bargaining power of customers and the Suppliers and rivalry and the level of competition that currently exists in this sector. In Figure 16 we can see the scheme that follows this model.

Figure 16: Scheme of Porter's five forces.



Source: Porter, (1980).

Rivalry and competition in the sector.

In the traditional sector that we are analyzing, there is currently a great rivalry between wine companies with a competition that is growing year after year. The competition is quite strong since the number of wineries that are dedicated, both to marketing and winemaking, came to be in 2015 of 4,120.[11] Therefore, we are faced with a very competitive sector where quality and innovation add value to the Denomination of Origin brands. Below we analyze the volume of wine production in Spain, the behavior of domestic consumption and exports of this product.

[11] https://www.vinetur.com/2016090125256/cuantas-bodegas-hay-en-espana.html.

At present, this traditional sector is growing economically, although it is certain that at the beginning of the crisis the sector suffered some ups and downs. Demand for wine fell and production fell sharply during this crisis. Figure 17 shows the fall in production suffered by the sector:

Figure 17: Graph of wine production in millions of hectoliters, in Spain, 2006-2016.

Source: Own Elaboration from "Memoria anual año 2014 FEV" and "Memoria anual año 2016 FEV".

The time of the crisis, discussed above, began in 2008 and, as we can see from the graph, from 2012 the situation of the sector improved. One of the biggest declines in production took place in 2012, where production was only 35.8 million hectoliters. Since production forecasts were not in line with actual demand, wine prices in the markets increased by more than 30%[12]. After the notable fall of 2012, in 2013 the production of wine in Spain reached its historical maximum with 50.6 million hectoliters. In 2016 production has dropped to 42 million, although it is not a negative figure since it is a higher indicator than those obtained in the time of crisis. This level of production or supply is in line with market demand, a fact that is worthy of value since it is a difficult task in this sector to reach market equilibrium.

As for the behavior of the internal consumption of wine, the era of the economic crisis also affected the wine. This is due to the fact that the main wine distribution channels suffered a decrease in sales during the crisis and this led to a reduction in purchases of this product. The main distribution channels are, on the one hand, supermarkets and

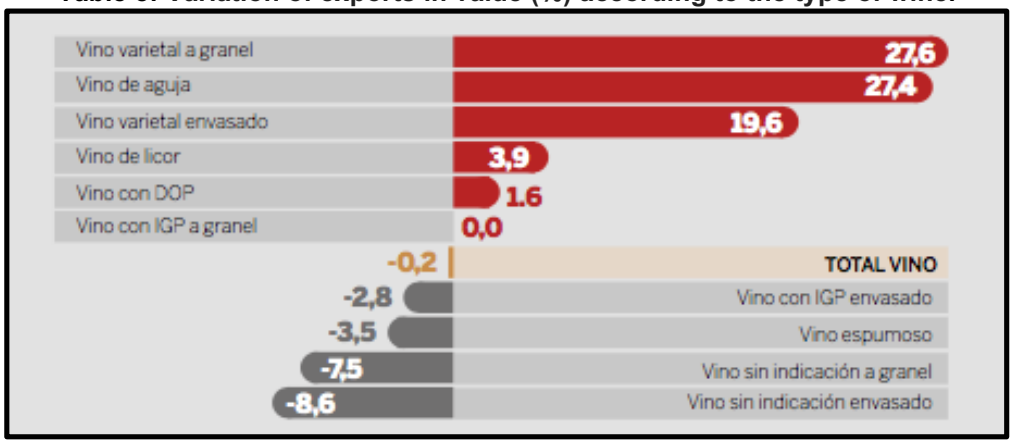
[12] Annual Report of the year 2014 of FEV.

hypermarkets and, on the other hand, the entire hospitality sector. The latter was more affected than the food sector, because at the period of crisis citizens reduced leisure spending, which includes a reduction in wine consumption in bars and restaurants. However, domestic consumption began to increase when the Spanish economy was improving and in the past year 2016 was able to increase domestic consumption to reach 9.8 million hectoliters. This increase in consumption is due in particular to the increase in demand for the product from the two main distribution channels and to the emergence of a new distribution channel, online sales, which is achieving very positive results and it is estimated that these Increase in the coming years.

As domestic demand for wine fell, in the recession period, Spanish wineries had to look for foreign markets to be able to sell their production. In the year 2014 wine exports began to increase considerably, although it was not until 2015 when Spain became a world leader[13] as a wine exporting country. This had a positive impact, but also a negative one, since even though we were the leaders in volume of exported liters, we were not the country that obtained greater profits. The price of the liter was lower than that of other wine-exporting countries like France and Italy.

Data for the year 2016 show that the export situation is beginning to change. Exports have been reduced by about 7%, while the price per liter has begun to increase[14]. We can observe these data in Tables 8 and 9.

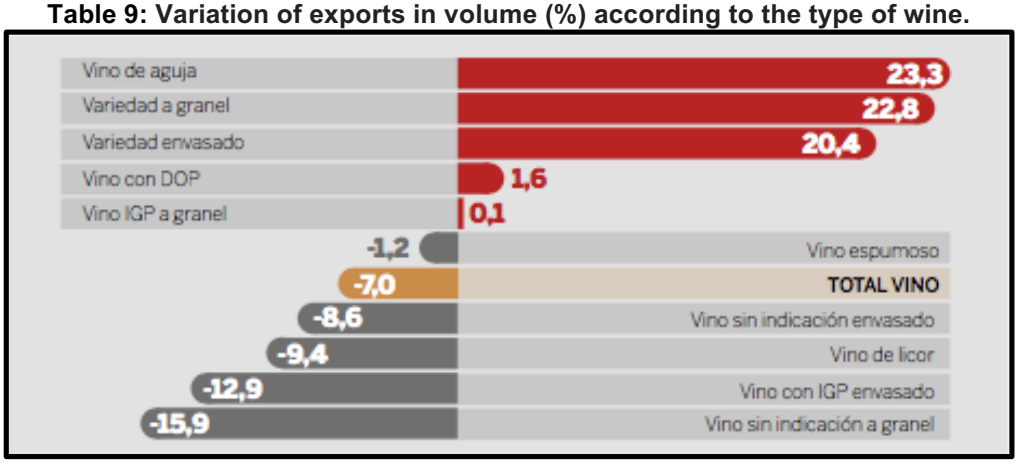
Table 8: Variation of exports in value (%) according to the type of wine.



Source: "Memoria anual FEV", (2016).

[13] http://economia.elpais.com/economia/2016/02/28/actualidad/1456679185_773790.html.
[14] Annual Report of the year 2016 of FEV.

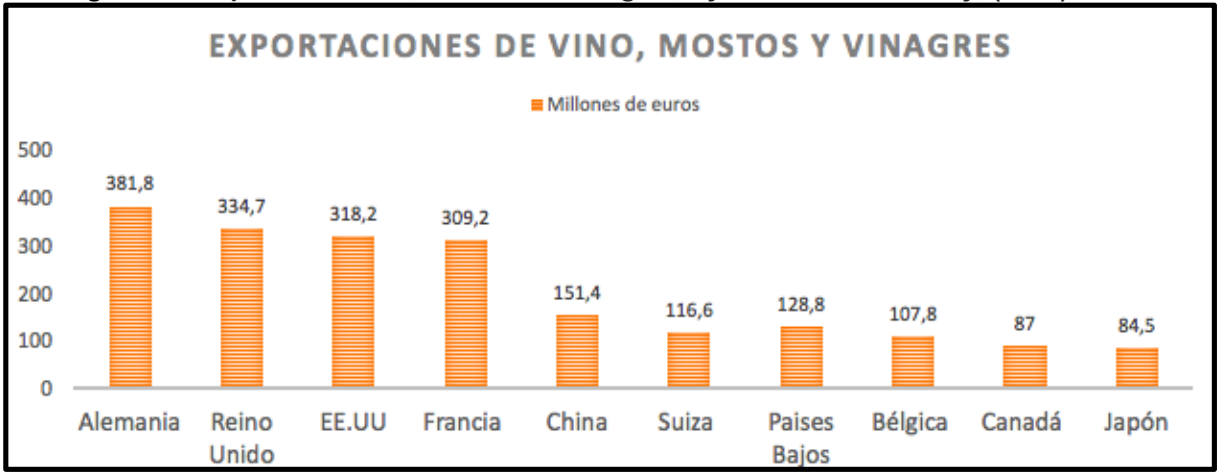
Table 9: Variation of exports in volume (%) according to the type of wine.



Source: "Memoria anual FEV", (2016).

Since exports play a very important role for the economic growth of this sector to continue to rise, it should be noted that the countries with the highest volume of Spanish wine import. In Figure 18 we can see a list that orders the countries according to the million euros that invest in Spanish wine (this table includes musts and vinegars, in addition to wine).

Figure 18: Exports of wines, musts and vinegars, by destination country, (2016).



Source: Own Elaboration from "Memoria anual FEV", (2016).

Threat of new entrants

The number of current competitors, as we have already mentioned in the previous section, is very high in our country, but the threats that among a large number of new competitors are not very high. First, creating a winery with wines with Denomination of Origin, requires a large initial investment. It takes a lot of land to plant the grapes and

these lands are not very economical, although it depends on the areas. In the areas of La Rioja and Ribera the prices range from € 40,000 to € 70,000[15].

Second, creating a winery is a more sacrificial business plan than another type of business. It requires specialized personnel in each and every one of the stages of wine production, and in addition this specialized staff usually charges a very high fees. This happens especially with the figure of the winemaker. In Spain there are very well-known winemakers and with a reputation worldwide, which translates into a high cost when hiring them. It is imperative that a winery has the advice of a prestigious winemaker, who is the expert in the product and makes the final result the optimum. Therefore, there are barriers to entry in this sector, especially economic, which prevent a massive entry, in the short term, of new competitors.

Bargaining power of buyers.

Customers in the wine sector are grouped into different groups: food establishments such as supermarkets and hypermarkets, specialty product shops, the hospitality sector and wholesalers who act as intermediaries between the winery and other wholesalers and / or retailers.

The group of customers that have the most power to negotiate with the wineries is the HORECA sector, which is the acronym for hospitality and catering, as it is the sector that consumes a greater volume of the product. In general, the hotel sector generally does not negotiate directly with the wine producing companies, they are usually distribution companies that take on the role of intermediaries between both sectors. These intermediaries have a strong bargaining power with the wineries, who always negotiate to get the winery to offer them the lowest price per bottle or lot. Intermediaries must get the product at a good cost because later, they will sell the product purchased to the hotels and catering establishments. These intermediaries get lower prices than the winery offers in direct sales to final consumers. The price that the final consumer pays for a bottle of wine, when there are intermediaries, is much higher than the price that a customer can pay by obtaining the wine through another distribution channel.

[15] http://www.emprendedores.es/crear-una-empresa/coste-minibodega-oportunidad-negocio.

Another group of clients with great bargaining power is the food sector. Due to the high level of competition between the distribution companies of food, these negotiate directly with the wineries to obtain prices very competitive and better than the other chains of feeding. Wine producers know that they should offer a good price to these customers and want their product to reach a number of customers' mayor. Specialty stores have a lower bargaining power because they do not buy a high volume of products from the wineries like the types of previous customers.

Threat of substitue products.

Wine is a traditional product used for both domestic and leisure use. It is one of the most valued products of our culture and is one of the basics of the Mediterranean diet. Therefore, this product satisfies two needs, the basic need to quench thirst, and the social need to drink a more special drink during the time of leisure. However there are several products that meet both needs and pose a threat to wine. The drinks that are considered products substitute of the wine are: distilled alcoholic drinks, the beer, other fermented drinks like the cider or the cava, the soft drinks, the juices and the water.

The causes of a real threat of substitution of wine by one of the previous products is that, on the one hand, wine has a niche market for people over 30 years of age, regular wine consumers are among the 30 and 60 years, leaving a large part of the population, young people, who are not considered frequent consumers of wine. The segment of young people between the ages of 18 and 30, are those who tend to substitute wine for beer or other alcoholic beverages when they go out to do leisure and in their homes are often replaced by soft drinks or water. The other reason that wine is substituted is the price of other substitute products, beer, soft drinks and water are priced more cheaply than wine, both in leisure places (restaurants and bars) and in supermarkets and hypermarkets.

Bargaining power of suppliers.

Suppliers operating in the wine sector are suppliers of bottles and label designers. In this sector, suppliers do not have a great deal of power because, although the design of the bottles and their labels have gained importance in selling the wine to attract more attention of the customers, they take more into account the quality of the wine. Wine that the design of their bottles. At the moment there are diverse forums where the consumers opinion and punt the quality of the wines, and these opinions are highly

valued by the society. There are also scales such as Parker points that rate the quality of wines from around the world.

The sales of the wines are related to the quality of the same and not the design that their bottles and labels can have, although in some cases helps increase sales, is not the main condition. Therefore, suppliers in this sector have a low bargaining power.

5.3. SWOT of the wine sector

The SWOT analysis we are going to carry out analyzes the internal situation of the sector, and the current and future situation of its environment. The internal situation is analyzed with the Strengths of the wine sector and its Weaknesses, and the situation of its environment analyzes the Opportunities and Threats. Then we will explain in detail each of the four points of analysis.

5.3.1. Strengths

The Strengths currently possessed by the wine sector in Spain are as follows:

- Production growth. After the hardest years of the crisis the sector has managed to increase its production, which translates into more sales and higher revenues.
- Increase in price per liter abroad. The price paid for Spanish wine has increased, so that Spanish wineries will gain greater benefits.
- Leader in wine export. Spain is the country with the highest volume of wine exports[16].
- High bargaining power over suppliers. Suppliers in this sector do not enjoy a high bargaining power, because what matters to consumers is the quality of the wine and not the bottle or the label containing the product.
- Adequate climate. The climate of the Iberian peninsula is ideal for the production of wine, for this reason they export to many countries, because in few areas of the world can be properly cultivated the grape.
- Great extension for the vineyards. In our country there are large tracts of land for the cultivation of the vineyards.

[16] https://www.vinetur.com/2016070724633/los-10-paises-que-mas-vino-exportan.html.

- Recognized quality. The quality of wines made in Spain is superior to that of wines made in other exporting countries.
- High competitiveness in the sector. The number of competitors in the sector is very high and this causes that the wine companies continually develop improvements to be more competitive and this affects positively in the quality of the wines.

5.3.2. Weaknesses

The wine sector has some weaknesses that must be addressed in order to eliminate them or, at least, to reduce them.

- High negotiating power of customers. The customers of this sector have a high power when negotiating the prices of the product.
- Dependence on exports. In spite of being the leading country in exporting wine, in our country the consumption of wine is not high. Therefore, the sector is based on a high percentage of exports to countries around the world.
- Unattractive for young people. Wine consumption is concentrated in a niche where consumers are found between the ages of 30 and 60. Young people are not usually wine consumers.
- High fixed costs. Maintaining a winery is a high cost due to the great complexity of the tasks to maintain the vineyards.

5.3.3. Opportunities

The environment offers this sector the following opportunities that must be exploited:

- State aid and subsidies. The State is offering grants and subsidies for the application of innovations in traditional sectors. In this way it will be easier for the wineries to implement new technologies that will improve their production.
- Eco-innovation in the sector. There are currently companies that are designing machinery that will help wineries to modernize and be more environmentally sustainable. These innovations will add value to the product.
- It came within the Mediterranean diet. Society is becoming aware of changing bad habits by healthy living habits. The Mediterranean diet is considered the healthiest diet in the world and wine is included in this diet, so it is considered a beneficial product for health.

- Increase in the adult population. The wine is consumed by adults, over 30 years. The low birth rate of these last decades is causing an aging in the population, which benefits to the consumption of wine because there will be a greater number of adult population.

5.3.4. Threats

The threats to be taken into account by the sector are as follows:

- Climate change: Climate change has negative consequences for the cultivation of grapes. In our country the temperatures have increased, the season of heat each year is longer and, in addition we have experienced a decrease of the rains[17]. Therefore, the cycle of growth of the plant is affected and will be necessary to change some processes to adapt to the climatological changes.
- Substitute products: The wine has a large list of substitute products. This can negatively affect wine consumption and, consequently, reduce the benefits of the sector.
- Concurrent countries: At the moment Italy and France have a volume of production very similar to the one of Spain. These two countries can take our share of the foreign market.

Once the three analyzes on the wine sector have been completed: the analysis of the general environment, the analysis of the specific environment and the SWOT analysis, we can assess the grade of attractiveness of the wine sector. First, we highlight the economic growth that the country is experiencing, as we have seen in Figure 13 that shows the growth of GDP. This growth is positive for all sectors, specifically for the wine sector, since our country has managed to position itself as the leading country in exports around the world and is among the top three countries with greater wine production.

The attractiveness of the wine sector is very great, for this reason the Government bets by this one offering him aid to promote the sales in new markets. Technological companies have also detected a great opportunity in this sector and have begun to create new innovations and eco-innovations that favor growth and efficiency. Another variable in favor of this sector is the high bargaining power it has over suppliers, so that

[17] https://noticias.eltiempo.es/afecta-cambio-climatico-la-produccion-del-vino/.

it does not have high costs in the materials that are needed for the bottling of the product.

And to conclude with the analysis of the attractiveness of the sector, it is essential to name the climate of the Iberian Peninsula, the climate is ideal for growing grapes, and this differentiating factor adds value to the national product, since some other producing countries Of wine do not have such a good climate and the quality of wine is inferior to that of Spanish wine. Therefore, this sector in our country has great potential and this should be enhanced.

6. THE NEED TO ECO-INNOVATE IN THE WINE SECTOR

In order to understand the latent need to innovate in this sector, it is necessary to take into account the needs or deficiencies that this one presents. These deficiencies have been drawn from the sectoral analysis carried out previously, and also from a survey[18] that we have carried out to the owner of a winery in the Utiel-Requena area, which appears in Annex 1. Therefore we have extracted both the analysis and the survey, the main problems that the wine sector has that do not let this sector realize its full potential. The main problems detected are the low level of wine consumption in our country, the high costs to maintain the plantation and the difficulty of controlling the quality of the entire cultivated area in the face of possible climatic adversities. The last two problems have in common that they are in the "first" stage of wine production, that is to say, in the field and not inside the warehouse where the manufacturing process is performed.

In the second part of the production process, part of the winemaking, has already been applied eco-innovations, we have as an example the company Freixenet, which belongs to wine sector, which made eco-innovations that contributed a series of benefits that he had not previously obtained. Another example of the use of eco-innovations in the manufacturing process is the National Innovation and Design Awards of 2016[19], where Mr. Carlos Moro González won the National Innovation Award in the "Innovating Trajectory" modality for the introduction of new processes and products in

[18] The survey was made to the owner of the Cerrogalliga winery located in Requena, to make sure that the results of the analysis correspond to the results of a company that operates in the sector.

[19] http://www.idi.mineco.gob.es/portal/site/MICINN/menuitem.8ce192e94ba842bea3bc811001432ea0/?vgnextoid=2fe932bba2d44510VgnVCM1000001d04140aRCRD.

the wine sector. Therefore, we note that there is eco-innovation in the wine sector, but this has only reached the manufacturing side, leaving the first phase of production obsolete.

The problem of low consumption of wine in the national market is related to the traditional and even obsolete image of the wine sector. If eco-innovation has not yet been strongly implemented in this sector, it is necessary to make a change in the vision of what "to eco-innovate" means by the sector's entrepreneurs in order to achieve the change of image that consumers need. In order to be able to innovate, changes must be made so that eco-innovations can be implemented successfully (Schilling, 2008). In this sector it is clear that it has not been innovated at all stages of the production process, taht is to say, they have been "half-eco-innovated" and for this reason they present the problems listed above.

The solutions that appear to the problems presented by this sector are related to the reduction of costs in the cultivation process, to create a model of cultivation that is sustainable and lasting in time, independently of the climatic changes, and to obtain to increase the consumption internal. Thus, the wine sector needs eco-innovations in order to achieve sustainable sustainability and better acceptance of the product by consumers.

6.1. What eco-innovations can be applied to the sector?

Problems related to vineyard costs, control and sustainability can be solved with eco-innovations such as drones. At the end of last year, the leading manufacturer of drones launched a specific drone for the spraying of pesticides and fertilizers, the Agras MG-1[20]. With this drone eliminates the current high spraying costs. The traditional method that is used to spray large areas of culture is by small planes. This method has two negative aspects, firstly its high cost, because it includes the rental of the plane and the pilot's fees. Second, it is a method that is not environmentally friendly because the plane uses fuel for its operation and emits pollutant emissions. With the drone Agras MG-1 a reduction of costs is achieved and a sustainable practice is being carried out for the environment.

[20] https://www.dji.com/es/mg-1.

For the control of the vineyards also would be used drones that have incorporated an infrared camera that allow the elaboration of maps that collect the light that reflect the plants. This light varies depending on whether the grapevine is healthy or not. This technique is much more efficient than traditional techniques such as eye inspection, and is also more economical than floor sensors. Drones' eco-innovations would thus reduce costs and use sustainable techniques that are beneficial to the environment.

The problem of the low level of consumption in Spain is due to a confused image of the product. It is classified as a very traditional product that only adults of advanced age take. This image is the result of the little innovation that exists in this sector. When the country's wineries begin to apply the previous eco-innovations, the young population will begin to be interested in this product, since it will go from being a traditional and boring product to being a "fashionable" product because of its beneficial properties for health, which also invests in new technologies and is concerned with the sustainability of the environment.

7. CONCLUSIONS AND FUTURE LINES OF RESEARCH

The environment and concern for it is a highly topical issue in society as a whole, reaching not only institutional levels but also reaching particular levels and also the business world. This new mentality on how to take care of the environment has led to the creation of the term "sustainable development". Focusing on the business field, companies have for some time begun to carry out sustainable actions that result in the creation of a new business management model, Corporate Social Responsibility (CSR). With this objective, companies need innovations to be able to carry out this sustainable management. Innovations with specific characteristics focused on the care of the environment but without forgetting the own business objectives. Thus, innovations and sustainable management went in parallel paths and it was necessary to unite them to obtain new results that adapted to the change in the mentality of society. So eco-innovation has proved to be the factor that has linked sustainability with innovation.

By reviewing the state of the issue to be analyzed, eco-innovation has been implemented in multiple companies from different sectors and has shown that it brings real benefits. The benefits of eco-innovation to businesses are economic benefits and environmental benefits. The companies managed and directed with eco-innovation as a base, manage to improve their image as a company or as a brand, as society

increasingly demands products and services from companies that have a real concern for the environment. The need to care for the environment is globalized, and companies must adapt and change their structure and management model to meet this need, or else they will not have a long-term future. Public institutions must also take action to encourage eco-innovation in companies by offering grants and subsidies. In short, we believe that eco-innovation is the future path for companies, and that it will be those that bet on it that will obtain a superior competitive position in the markets.

The review of the literature has also shown us that these newer concepts have been given less in traditional sectors, and this fact has driven us to try to unite the latest in innovation, eco-innovation, with a traditional sector that is reluctant to changes, as is the wine. The analysis of the sector has shown that the wine sector in Spain is a sector with great potential, for its level of production worldwide and for the volume of exports it makes abroad. But despite its great potential and growth, within the country the product remains not so attractive to the younger segment of the population. Although the sector is already experiencing certain innovations and adaptation to the "new times", in some areas, it is considered a traditional sector obsolete. This obsolescence causes that the warehouses have high fixed costs, for not implanting eco-innovations, and that also they do not sell, at national level, the amount of product that they should sell. These problems, from our point of view, could be solved through eco-innovation and, in addition, we could achieve a change of philosophy in this sector, by increasing environmental concern, so linked to the very idiosyncrasy of the sector, which will lead to the need to continually eco-innovate in order to not fall into obsolescence

Although the work has tried to show how eco-innovation can have a direct relationship with the company's results, there are still limiting constraints that overcoming would lead to new research. The first one stems from the need to carry out a more comprehensive study on these issues, conducting a qualitative and quantitative study in the sector that confirms the conclusions obtained.

The second one would focus on the theoretical level, where the level of impact of each of the drivers of eco-innovation should be studied. That is to say, to analyze which factor influences more in the companies to eco-innovate. Between society, the regulation of political entities and financial markets, it is not at all clear who is most influential. Do companies choose to meet the needs of society because they really care about the environment? Or do they only implement eco-innovation because in this way they will not pay sanctions and get bigger investments ?. We understand that each

company will innovate for a few reasons, but it is necessary to know what factor "pushes" towards eco-innovation.

A possible third line of research in this field, would come from the emergence of other concepts related to eco-innovation. The literature shows us that eco-innovation could be one of the main routes to be followed by industries to achieve their permanence in the long term. However, eco-innovation does not come alone, new terms such as eco-design have emerged. Eco-design can be defined as Rieradevall (1999): "These actions are oriented to the environmental improvement of the product in the initial stage of design, through the improvement of the function, selection of less impacting materials, application of alternative processes, improvement in transportation and use, and minimization of impacts in The final stage of treatment". Eco-design is the part of eco-innovation that applies directly to the design phase of a product. Concern for the environment is not only found in the management part of a company must also be present in all departments or phases. Eco-design would be part of eco-innovation strategies. If there is no eco-innovation in an entity, an ecological design that is innovative can not be realized. Thus, we can point out that eco-innovation has generated other new concepts that are part of it and it is necessary to know and study them in order to apply them, thus achieving a wider scope of eco-innovation effects.

Finally, we would like to point out that with this work we hope to have contributed as much as possible to the need to implement eco-innovation in all sectors, even in the most traditional sectors, but also hopes to open new lines of research In the environmental part of innovation.

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9. ANNEX

Anexo 1. Cuestionario sobre el sector vitivinícola.

Company: Cerrogallina
Person of contact: Santiago Vernia (Managing director)

Study of wine sector for the accomplishment of a final project of the Degree of business administration of "Universitat Jaume I".

We appreciate your collaboration by answering the questions detailed below, whose objective is to analyze the possible lines of improvement in the winemaking process through eco-innovación. The information that we obtain with this questionnaire is totally confidential and anonymous. Finally, this study is not for profit or commercial purposes, but merely academic and its dissemination will only be done in magazines and academic publications.

1. **How many liters of wine does it produce, approximately, in a season?**
   _____

2. **Do you export part of your production ?**

Yes ☐ No ☐

If so, can you indicate, approximately, which percentage of your production?_____

In which countries?

Italy ☐ France ☐ Germany ☐ U.S. ☐

Others ☐ Which?_____

2.1. Analyzing the level of exports, indicate in which of these cases you feel identified.

☐	My level of exports has increased in the last two years.
☐	In the last two years, I have exported in countries where I had not exported before.
☐	My level of exports has decreased in the last two years.
☐	I don't have enough production to export for all countries that are interested in my product.

2.2. Indicate in what degree you believe the following factors are valued in foreign markets.

Factores	Very Low	Low	Medium	High	Very high
Calidad					
Diseño del embotellado y etiquetado					
Precio					
Innovación					

3. In the nacional market, ¿What percentage, approximately, of your production sells in this market?_____

3.1. Indicate, in which of these situations you feel identified.

☐	Sales in the Spanish market are lower than sales in the foreign market.
☐	Sales in the Spanish market are greater than sales in the foreign market.
☐	Price of wine sales in Spain is higher than the price I sell the exports.
☐	Price of wine sales in Spain is lower than the price I sell the exports.

3.2. Indicate in what degree you believe the following factors are valued in national market.

Degree of importance	Very Low	Low	Medium	High	Very high
Quality					
Bottling and labeling design					
Price					
Innovation					

4. What degree of competitiveness and rivalry do you consider that exist in the Spanish wine sector?

	Low level of rivalry.
	Medium rivalry level.
	High degree of rivalry and competition in the sector.

4.1. What factors serve as barriers to entry into this sector, according to your opinion?

	The high fixed costs required for production.
	The low profitability of the sector.
	The high degree of knowledge needed to create a quality wine.
	The little terrain that exists for the cultivation of the grape.

4.2. Do you consider that the wine sector has an image "outdated" and /or "obsolete" by society?

Yes ☐ No ☐

5. Have you implemented new technologies in your warehouse in recent years?

☐

Yes ☐ No

If so, indicate in which process you have implemented them:

- ☐ In the countryside, where the vineyards are.
- ☐ In the process of destemming.
- ☐ In the process of maceration and fermentation
- ☐ In the process of bottling and labeling.

5.1. New technologies have brought benefits to the company?

Yes ☐ No ☐

If so, what have been the benefits?

☐	Cost reduction.
☐	Increase profits.
☐	Higher product quality.
☐	Improvement of corporate image.

5.2. What factors do you consider when implementing new technologies?

☐	Investment cost.
☐	The future benefits it can bring.
☐	The cost of employee training.
☐	The level of efficiency it can bring.

6. Do you think that your company, and the sector in general, should be modernized with new innovations?

Yes ☐ No ☐

7. Do you know the term eco-innovation?

Yes ☐ No ☐

8. Companies from various sectors have applied eco-innovation in their companies and all have achieved positive results. Some of these results are detailed below. Indicate the degree of importance you give to each of these results.

Degree of importance	Very Low	Low	Medium	High	Very high
Cost reduction					
Increased efficiency					
Improvement of the brand image					
Increase in the number of consumers					
Reduction of pollutant emissions					

9. List from 1 to 5, the priority that your company has for each of the following objectives, where 1 is the highest priority and 5 is the least priority.

	Reduction of pollutant emissions
	Cost reduction.
	Increased efficiency.
	Improvement of the brand image.
	Increase the market share.

10. Taking into account the results that other companies have obtained through eco-innovation, would you implement it in your company?

Yes ☐ No ☐