

Innovation in Rioja wines

Innovación en los vinos de Rioja

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Abstract—Innovation is not only based on the work done in the vineyard, such as different locations, duct systems, types of irrigation, protection against pests and diseases, but also on the management to be given to the wineries, for example, carbonic maceration which is used for storage of a white wine. These techniques are applied to seek improvements cupping mouth and nose. Then, the question arises: what is most important for winegrowers, maintaining traditional production practices or changes (innovation) that may occur in different processes? This paper explains the different techniques and methods used in order to allow for innovation in the production and distribution of wine in the region of La Rioja, both with traditional strategies such as the use of technology in the wineries, and innovation in production processes of wine, wine Agro industrial District, the sustainability of Rioja wines and Clusters. The Triple Helix is also used as a method to analyze the relationships between the government, the wine industry and the university. The main result says that is more relevant the use of innovation in the production and distribution of wine in the Rioja region, although for the Spanish winemakers is important to preserve their traditional practices in the cultivation and marketing of wines. Finally, this paper enable winemakers and the audience have a clear idea about the different benefits for innovation in the various production processes in Rioja wines.

Keywords—Spain, Strategy, Innovation, Rioja Wines.

Resumen—La innovación no solo está basada en el trabajo realizado en el viñedo, tales como diferentes localizaciones, sistemas de conducción, los tipos de riego, las protecciones contra plagas y enfermedades, sino también en el manejo que debe darse a las bodegas, por ejemplo, la maceración carbónica que se utiliza para el almacenaje de un vino blanco. Estas técnicas son aplicadas para buscar mejoras en la catación en boca y nariz. Entonces, surge la pregunta: qué es más importante para los viticultores, el mantener las prácticas tradicionales de producción o los cambios (innovación) que se puedan producir en los diferentes procesos? Este artículo explica las diferentes técnicas y métodos utilizados con el fin de permitir una innovación en la producción y distribución del vino en la región de la Rioja, tanto con las estrategias tradicionales como con la utilización de la tecnología en las bodegas, la innovación en los procesos de producción del vino el Distrito Agroindustrial Vitivinícola, la sostenibilidad de los vinos de la Rioja y los Clústeres. La Triple Hélice también es utilizada como un método para analizar las relaciones entre el gobierno, la industria de vino y la universidad. El principal resultado muestra que es más relevante el uso de la innovación en la producción y distribución del vino en la región de la Rioja, aunque para los viticultores españoles es importante conservar sus prácticas tradicionales en el cultivo y comercialización de vinos. Finalmente, este artículo permite a los viticultores y a la audiencia tener una idea clara sobre los diferentes beneficios obtenidos por la innovación en los varios procesos de producción de los vinos en La Rioja.

Palabras clave—España, Estrategia, Innovación, Vinos de Rioja

INTRODUCTION

When discussing wine, best refer to the Rioja Denomination of Origin (DOC Rioja). This is one of the most important wine areas in the north of Spain which has been considered as one of the areas that has the necessary conditions for growing grapes since the mid-nineteenth century. In addition, with the advent of oidium and phylloxera to France, the Rioja wine began to be sued by the neighboring country, reaching even to note buyers in the most important towns in the region (Gobierno de la Rioja, 2012). At this stage the great wineries were born last century and also re-discovered the native strains, especially Tempranillo that gave excellent results with new methods. Thus, a new stage appears in the history of this wine region, one of the five most prestigious in the world (Pérez A, 2012).

On the other hand, 89 percent of Rioja wines are red and 86 percent of them are made with Tempranillo, variety on which still bears much of the relevance of the wine from this designation of origin in all world markets. However, the changes in recent decades have overcome the difficulties presented both in the vineyards and wineries. All these changes have been positive thanks to the participation of producers such as Guillermo Eguren, Isaac Muga and Jose Palacios, who have been concerned about improving the functionality of its vineyards in terms of administration and technology, but should not outrun Abel Mendoza and Telmo Rodriguez who they have experimented with several varieties of Tempranillo (Rodríguez J., 2011).

It is noteworthy that in the late fifteenth century, one of the biggest problems faced by winegrowers was the distribution of wines from the big productions (Peñín, 2008) who regularly came to Bilbao by wineskins on mules, which increased import of La Rioja in the Basque Country wines. In the late eighteenth century villas Briñas, Haro, Briones and the province of Alava

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(General Meetings of Alava, 1786 and 1792) agreed to the opening of a road, with the purpose of promoting trade with its surroundings through a set input. Fixing a wine tax allowed the improvement of these pathways and opened the opportunity to export wines to America through the port of Bilbao and Santander. Unfortunately, the wines arrived in poor condition, this is why the sale was focused on the peninsula.

Previous research shows that the improvements made in the vineyards, are reflected in the bodegas, this due to different winemakers have been concerned about the harvest and sorting fruit and by fermentation and color to obtain all this has been achieved by the use of traditional winemaking processes, for which use French oak of vanilla and sweet balsamic that provides American oak. Moreover, during the process of making wine, cellar management must consider not only the realization of practices and technologies necessary to ensure that the finished product complies with standards stipulated quality, but also to provide a new image and modern that make it attractive to all consumers. Innovation is an added value of the company and the predisposition to that is the key to successfully meet the new challenges that are presented (Mínguez, 2012).

The problem discussed in this paper, which in turn is the research question, lies in what is most important for winegrowers, maintaining traditional production practices or changes (innovation) that may occur in different processes? Innovation is not only based on the work done in the vineyard, such as different locations, duct systems, types of irrigation, protection against pests and diseases, but also the management to be given to the wineries for example carbonic maceration used for storage of a white wine. All this applies in order to seek improvements cupping mouth and nose. Changes in development that have taken place over the last decade are showing more optimal results. The new generations are betting on the renovation of its facilities, with new barrels and steel tanks and a careful selection at harvest and later aging of the harvested fruit ("Zonas y regiones vinícolas," 2012). All these changes by winemakers have allowed them to consolidate their prestige among consumers of Spanish wines worldwide. The great development of the productive and commercial structure of Rioja and the prestige attained by their wines have placed him in the elite historical European denominations of origin, being the mark Rioja one of the five most notoriety among wine regions more prestigious in the world ("Zonas y regiones vinícolas," 2012). In international wine markets, two different commercial strategies coexist: one of the emerging countries, based on grape varieties, and the other traditional countries based on designations of origin (DOS) (Martinez-Carrasco et al., 2005). La Rioja is a sector with a long tradition in wine production and the important thing is to analyze whether the two strategies complement each other.

The objective of this paper is to explain the different techniques and methods used in order to allow for innovation in the production and distribution of wine in the region of La Rioja, both with traditional strategies such as the use of technology in the wineries, innovation in production processes of wine, wine Agro industrial District, the sustainability of Rioja wines and Clusters.

The interest of this work focuses on that it will enable winemakers have a clear idea about the different benefits for innovation in the various production processes in Rioja wines.

METHOD

The secret of success of the wines of Spain, is that each variety has its own personality, and should be handled differently (Rodríguez J., 2011). The conception is that like the great wines like the right thing in the right place. Thanks to the blend of tradition and technology, Spain is at the forefront in growing and winemaking.

This paper will discuss the different techniques and methods used in order to allow the innovation in the production and distribution of wine in the region of La Rioja, both with traditional strategies such as the use of technology in the wineries, innovation in production processes of wine, wine Agro industrial District, the sustainability of Rioja wines and Clusters.

In addition, the Triple Helix model, created by Etzkowitz et al. (1995), is used in order to analyze and explain the relationships between the three sectors: Government, University (Academic) and the wine Industry. See Figure 1.

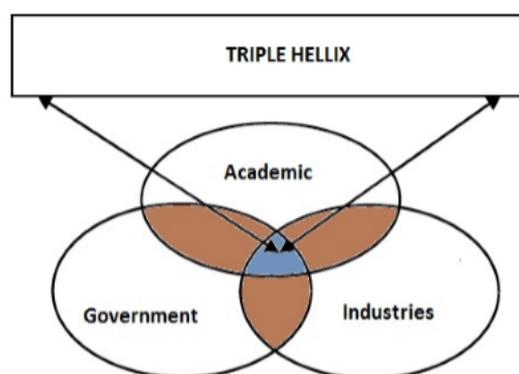


Figure 1. Triple Helix model
Source: (Etzkowitz et al., 1995)

RESULTS

1. Government - Industry relationship

The Government - Industry relationship can be explained focusing their actions on the Sustainability of Rioja wines and Clusters as a strategy to foster this business. Besides, the government has regulated the wine sector from the beginning in the 20th century through the Wine Statute of 1932 which has been modified many times until the latest Law of the Vineyard and Wine of 2003 (BOE, 2003).

According to Sanchez, Alonso (2012), vinegrowers were encouraged by the Spanish government to join in cooperatives in order to provide the supply outside their production zones. In this way, these cooperatives work collectively by natural and social resources with the ability for adaptation to circumstances, as their role in later worlds of production (WPs). The

term WPs was suggested by Sánchez-Hernández et al. (2010) in their article in order to conceptualize the movement across food WPs as an innovative process.

Additionally, the Stabilization Plan was approved by the Spanish government in 1959. This plan liberalized foreign trade which allowed a period of rapid growth based on industrialization and foreign tourism. At that time, there was a transition towards an industrial WP caused by the geographic separation between production and consumption, the growth of income and the reduction of jobs in the countryside, even though the wine regions local WP remained with few changes (Sánchez-Hernández et al., 2010).

Sustainability of Rioja wines

Due to the lack of incentives and sustainability are two factors affecting tourism in Spain and therefore the region of the Rioja sector. A study of 46 wineries in Spain resulted in the use of 4 strategies that can help sustainability. This study indicates that to achieve sustainability, there are companies that help financially and government agencies that are responsible for providing information on wine production to this industry in the sector of Rioja, with this it is possible to reduce information costs that were hitherto assumed by wine producers, another important point is the recovery of the credibility of customers in the consumption of wine, they are quality and worldwide recognition (Sánchez-Hernández et al., 2010).

Gázquez-Abad et al. (2015) proposed the following four broad strategies:

1. Reduce waste and toxicity.
2. Highlighting the sustainability of products and regulations.
3. Sustainability in energy consumption.
4. Development of new business opportunities related to sustainability.

Clusters

Clusters are geographic concentrations of interconnected companies and institutions, which act in a particular field. Bring together a wide range of industries and other related entities that are important to compete (Porter, 1999). The Government of La Rioja is encouraging to the wine industry to use clusters due to their many advantages, such as:

1. Access providers and specialized services so that the companies focus on those aspects of the value chain in which they are efficient and outsource other services.
2. Clusters are able to achieve sufficient critical mass capable of attracting skilled human resources.
3. Efficiency and productivity increases.
4. Transfer of technology and knowledge is favored.
5. Economies of scale to cope with large projects.

2. University - Industry relationship

The University - Industry relationship focuses on the innovation in the production processes of wine which was possible thanks to the University's investigation.

Innovation in the production processes of wine

In order to improve the quality of the wines they have been made various investigations in order to achieve this, for that traditional techniques have been used since ancient times that come with today's new techniques.

The composition of wines by a number of factors, such as the grape variety, geographical region, growing and production conditions, the development of technical and oenological practices (Troost, 1985) is determined. This research has been important since the composition unlike wine, besides preventing fraud, especially those who come from specific regions such as the designation of origin (O.D.). This study was conducted by the Department of Biotechnology and Food Science at the University of Burgos. The aim of this study was to determine the most significant of the physico-chemical variables that could contribute to the differentiation of young red wines and rosés different Spanish Denomination of origin. This study aimed to make new contributions to the wines studied, but not for the parameters analyzed or mathematical techniques used. In addition, this paper wines made from "similar" varieties of grapes with similar climatic conditions, with only a few exceptions, and similar wine systems were used.

Thus, the objective was to evaluate the discriminative power of the variables studied in the worst possible conditions (Pérez-Magariño and Jos, 2001). To check the results, they analyzed the wines for three months after being placed on the market. The parameters studied were: classic oenological parameters: acidity, pH measurements, reducing sugars; color parameters: color intensity, tone color, percentage of yellow, blue and red; phenolic compounds: polyphenols, anthocyanins; Statistical analysis: linear discriminant analysis step (SDA) was applied for selecting the statistical technique used variables F. See Figure 2.



Figure 2. Grapevine and vineyard
Source: (ICVV, 2017).

The results of this study showed that the quality of the wines was closely related to the production area, this means that there is much influence either by the type of soil, climate, hydrography, etc.

3. *Government - University relationship*

The efficiency of the wine sector has increased thanks to regional authorities, including the Government, and private actors which have built a complementary network of specialized organizations, such as technical, commercial, training (universities and institutes, consultancy, professional or entrepreneurial representation). Although the Designations of Origin (DOs) are their central axis, this system has assumed functions and costs unattainable for the individual actors. This system also generates the specialized knowledge demanded by this industry and applies it to the production level in order to help these groups (wineries, farmers, retailers and clients). Their practices have been adjusted to the new conventions from the changing social and cultural values, which have arisen from the mutual interaction along the value chain (Morrison and Rabellotti, 2007). As a result of a previous study, 60 % of wineries kept regular relationships with the regional Wine Research Institute, while 69 % are engaged with DO marketing campaigns and only 15 % belong to an exportation partnership subsidized by the regional government in 2007 (Sánchez-Hernández et al., 2010).

On the other hand, as Bush (1945) explained, scientific advancement is needed to achieve technological innovation and economic development. (Balconi et al., 2010) claim that innovation can be represented as a continuum, ranging from new scientific discovery to applied research and product development, throughout more applied forms of innovation (Cassi et al., 2012). Some forms of innovation, such as technology in warehouses, Wine Agro industrial District strategies and clusters, help to explain the Government - University relationship, focusing on the University's (and Institutes') investigation efforts.

Investigation on Viticulture and Oenology

The Investigation on viticulture and oenology was conducted by the Instituto de Ciencias de la Vid y del Vino (Institute of Grapevine and Wine Sciences, ICVV). This Research Center was created as a result of an agreement between the Regional Agricultural Ministry of the Government of La Rioja, the Spanish National Research Council and the University of La Rioja. The purpose of the ICVV is the generation of new knowledge and technologies in viticulture and oenology for technological development and innovation in the wine industry in order not only to promote the transference of scientific and technological results to the society but also to support the university post graduate education focused on viticulture and oenology. The ICVV aims to become a reference center for grapevine and wine research and development at international level.

Technology in warehouses

The continuous development of information and communications technology (ICT) has allowed companies to improve the management of their processes with greater speed and flexibility, which has led to increased profits and different distribution processes (Alonso, 2012). One of the support

tools are web pages through which you can offer a variety of related information with their products helping to improve opportunities for business growth. Establishing relationships and networks of continuous contact with customers is becoming the key goal of much of the marketing efforts of companies. This is important information gathering and creating an atmosphere of trust, satisfaction and commitment through advertising programs, cooperation between users, clubs of users, customer magazines, etc. (Marzo-Navarro et al., 2010).

Among the objectives that companies seek to use websites have direct sales of its products, knowledge of the products they offer, and create an interest and promote customers visit their vineyards, which makes them better front its competitors. New technologies that can be implemented in the winery can arise with the following objectives: ensuring food quality, development of new products, development of new technology, respond to new economic, social, cultural, climatic conditions, and serve environmental requirements (Mínguez, 2012).

Wine Agro industrial District strategies

Given the conditions of the region, Rioja there are not only wineries and grape growers, but all a real cluster around wine production. There is an added value that comes from generation to generation, and is the transfer of knowledge in the process of winemaking, which has yielded some gains and profits in the sector, all with participation of external entities, which do not It is speaking only of a cluster because it goes further, forming what is known as a wine industrial district, being the backbone of the economy of Rioja. A cluster analysis of Rioja wine very partially explain the identification is made between wine and territory as a guarantee of the suitability of the product; the industrial district can explain that identification of a much more complete way, being the history and social relations are essential elements in the emergence of the industrial district (Enópolis et al., 2005). It follows from the above the idea that there is a close correspondence, reproductive whole, between a given block spatially located and circumscribed economic-productive relations and a particular block of socio-cultural relations also located and circumscribed (Becattini, 2002).

Clusters

The wine of Rioja in Spain the sector are considered as one of the best in the world. This place is occupied due to several factors, among which are the prime location for the type of soil, climate and river sources, plus the interest have wine producers, both in management processes, processing, storage and distribution, stressed about finding new techniques and strategies in order to be at the forefront, seeking the best methods for both the young wine to one who is already mature. To achieve this are responsible for conducting studies since the time of harvest, sorting fruit, fermentation processes, to storage in its warehouses, the same which are suitable for the wine smells, colors and flavor appropriate and that are commensurate to the taste of consumers. All innovations are the fundamental basis traditional processes that come from ancient times.

Among the new techniques used are: clusters, Wine Agro industrial District and the technology used in the cellars. There have been several studies on the subject, the results have defined the use of oak in the aging process has achieved the expected results. Clusters are understood as geographic concentrations of interconnected organizations that compete in a particular field. Bring together a wide range of industries and other related entities that are important to compete (Porter, 1999).

The creation of clusters and Wine Agro industrial Districts have been one of the factors that allowed the success won by the wine of Rioja, since not only producers and wineries involved in the process, but external entities that support different internal and external processes, but the important thing is that the traditions that have been taking place from generation to generation are the foundation for the success. These companies, despite having different activities seek to promote high-tech programs, the same to be applied in the industries of the Rioja wine sector, since between them there is only one objective, to promote progress in this area. In order to compete in the world market, ten companies from Rioja have reached an agreement to form the first cluster of the wine sector in Spain.

Promoter firms-Avanzare, Dolmar, Intranox, Talleres Ruiz, Estucheria Vargas, Tonelería Magreñán, Micalanda, Vinomio, Testing and Analysis Center and Interquímica-billed together 23 million euros per year and employ 220 workers. Companies of Rioja wines have joined to form what is known as clusters, as they have considered that the most enduring competitive advantages have to do with local factors, including relationships, knowledge, and motivation of distant rivals. Bring together a wide range of industries and other related entities that are important to compete (Porter, 1999). These companies, despite having different activities, seek to promote high-tech programs. Something similar can be applied in the industries of the Rioja wine sector, since between them there is only one objective, to promote progress in this area.

Some economic sectors can be also incorporated in this subject, such as: construction and architecture, oenological products, transportation, labor viticultural work and hostel activities, restaurant and specialty shops, which in previous cluster studies were omitted and yet are becoming increasingly important in Rioja (Enópolis et al., 2005).

DISCUSION

In the area of the Rioja, there are two important strategies, the one based on ancient traditions and the other innovations imposed by designations of origin (DOS). The research question initially raised was: What is most important for winegrowers, maintaining traditional production practices or changes (innovation) that may occur in different processes? The answer is that although for Spanish winemakers is important to preserve their traditional practices in the cultivation and marketing of wines, it is more relevant for them the use of innovation in the production and distribution of wine in the Rioja region.

One of the best innovative techniques used is the creation of clusters, which constitutes one of the factors that have facilitated the Wine Agro Industrial Districts to obtain the success

won by the wine of Rioja. In addition, not only producers and wineries involved in the process, but also external entities support different internal and external processes. The most important thing is that the traditions that have been taking place from generation to generation are the foundation for the success.

These events are those that have driven the continued development, modernization and innovation with new products and new forms of production and distribution, adapting to the needs and consumption patterns of people. If the last decades of the nineteenth century were the starting point of the modern history of Rioja wines, thanks to the birth of a fledgling winemaking industry and the improvement of production techniques, the decade premiered with the legendary 1970 harvest would mean a revolution of production and marketing structures, leading to Rioja wines to its undisputed leadership among quality Spanish wines (Rioja, 2012).

Research conducted in the field of wine, have formed the basis for the improvement in performance and quality and hence vineyard wines. During the process, the cellars where it is stored properly should know how to manage this because they are dedicated only to meet quality standards requested. They should provide a renewed and modern image that is appealing to all consumers. Innovation is an added value of the company and the predisposition to that is the key to successfully meet the new challenges that are presented (Mínguez, 2012). The perception that there has been a sharp change in the Rioja wine is shared by all players in the three sectors analyzed and is based on the changes in its key figures (protected area, wine production, price of grapes, wine volume marketed, billing wineries ...) (Enópolis et al., 2005).

CONCLUSIONS

The following conclusions emerged based on the analysis of the Triple Helix:

1. The first helix, Government - Industry relationship, establishes that the government regulates the wine sector throughout the Law of the Vineyard and Wine (of 2003) and the wine industry uses clusters as a strategy to foster this business.
2. Clusters are able to achieve sufficient critical mass capable of attracting skilled human resources.
3. The second helix, University - Industry relationship, shows that the University's investigation made possible the improvement on the innovation in the production processes of the wine sector.
4. The third helix, Government - University relationship, illustrates that the agreement between the University with the Government has facilitated the investigation on Viticulture and Oenology throughout the creation of the Institute of Grapevine and Wine Sciences (ICVV) which uses technology and clusters to promote development, innovation and transference of scientific and technological results to the wine industry.

Research with the aim of improving wine production have had the desired success, since they have focused on harvesting, storage, ripening and marketing. All this has been achieved

with new techniques used in the various processes of winemaking, all aimed at improving the quality, color, smell and taste that reach consumers. The key features of Rioja wine, and especially their growth during the nineties and the relationships between thousands of families from Rioja and the district associated with wine, are key to understanding the differences between what you expected could expect from Rioja in these indicators and the value that actually gets (Enópolis et al., 2005).

This has allowed to distribute wealth among many families in the area that are part of the production process of the Rioja wine. The key features of Rioja wine, and especially their growth during the nineties and the relationships between thousands of families from Rioja and the district associated with wine, are key to understanding the differences between what you expected could expect from Rioja in these indicators and the value that actually gets (Enópolis et al., 2005). This has allowed to distribute wealth among many families in the area that are part of the production process of the Rioja wine.

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