
Perceptions of Organic and Biodynamic Wines in Different Generations - Evidence from Bulgaria

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Please cite this paper as:

Dimitrova, V., Boshnakov, P. and Marinov, G., 2021. Perceptions of Organic and Biodynamic Wines in Different Generations - Evidence from Bulgaria. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 519-527
DOI: 10.24818/BASIQ/2021/07/066

Abstract

The goal of this study is to examine whether there are differences in consumption between generations in Bulgaria and what are the main reasons that affect their consumer preferences for organic and biodynamic wines. For this purpose, a survey of 27 questions was conducted among 627 users from Generation Z and Generation Y. P-values of Chi-2 tests are presented to major groups of questions. We discover that the attention to eco-friendly or ethically produced wines is already part of the personal drinking preference of Bulgarians as is the orientation in other European wine-producing countries. Respondents do trust in the EU specification of the wine as “organic” and “biodynamic”. Our study confirms some conclusions of other European studies that the geographical provenance of the wine and local terroir transmits identity, authenticity and is preferable for the consumers. We find also that there is no difference between the Generation X, Generation Y and Generation Z in Bulgaria in the attitudes towards natural wines. To our knowledge, this is the first study in Bulgaria, which draws some basic conclusions about the level of consumer knowledge on organic and biodynamic wines and represents a key future challenge for the production and marketing processes of winemakers in Bulgaria.

Keywords

Organic wine, biodynamic wine, sustainability, generations Z, X and Y, Bulgaria.

DOI: 10.24818/BASIQ/2021/07/066

Introduction

Winemaking is facing important environmental challenges during the last decades such as high water and energy consumption, use of fertilizers, cumulation of acids, emissions of greenhouse gasses and CO₂. Biodynamic and organic wine productions are the natural response due to the desire for wider environmental sustainability. Both are strongly affected by damaging risks as sustainable branches of agriculture. Undoubtedly, the ecological orientation of global wine producers towards organic and biodynamic production is an important step in several directions: First, in terms of reducing chemicals in agriculture; secondly, in connection with raising the culture of winemakers and last but not least in the direction of refining consumer preferences for potential health benefits in consumption.

At the same time, there is a confusing terminology about the exact differences between organic and biodynamic wines in their quality as natural wines. There is limited scientific literature and still no serious accumulations of practical experiences with similar confirmatory results for existing significant distinctions in the production of biodynamic wine and organic wine. The questions that arise are: how

consumers can distinguish organic from biodynamic wine?; are there international regulations for organic and biodynamic production such as eco-labels, environmental certifications or does each winemaker independently declare to regional branch organizations or national authorities its responsibility for natural wine production?; how consumers from different generations react to the deepening trend towards the production of natural wines?

In 2012, the European Commission adopted rules on "organic wine", which allow winemakers to label "organic wine". This change is considered to complement the scope of Regulation 834/2007 and now covers the whole wine production chain - from grapes to the final product or in other words organic wine must be produced from organic grapes. The change is made in response to the growing expectations of the European wine consumer to be protected by European logo, in this case with EU-organic-logo with the code number of certifier, as well as in response to the already well-established practices and standards for organic wines in competitive destinations such as the United States, Chile, Australia and South Africa. According to the Regulation 834/2007 on organic production and labelling of organic products the technical characteristics and the allowed substances in the organic wine are: maximum sulphite content set at 100 mg per litre for red wine (150 mg/l for conventional wine) and 150mg/l for white/rosé (200 mg/l for conventional wine), with a 30mg/l differential where the residual sugar content is more than 2g per litre.

As Cravero (2019) mentions unlike organic wine, biodynamic wine production does not comply with any regulations, labels or laws, although some countries apply their own labels - e.g. France ("La Renaissance d'Appellation") and Italy (Demeter/Biodynamic®). The main issue is the cultivation to follow the principles of biodynamic agriculture and to receive certification by private association based on the self-declaration of the individual wine producer. The biodynamic method of production was formulated in 1920 in Austria under the anthropology and lunar calendar influences. Its purpose is to guarantee a fertile and naturally cultivated area, where healthy and high quality crops are developed. Usually, the quantities produced from the respective biodynamic product are limited due also to the lack of producer ability to strictly follow the laws of biodynamics. Long-term observations on controlled production of organic and biodynamic wine do not show any significant differences in the quality of the grapes (Parpinello, et al, 2019, Reeve, et al., 2005). The only exception is found in biodynamic wine in terms of higher sugar content, polyphenols, tannins and anthocyanins, lower alcohol content and lower color saturation (crystals).

Limited research provokes the authors' interest on this topic, mainly in two directions- in terms of empirical research study on natural wines and in terms of behavioral attitude of different generations towards organic and biodynamic wines. Bulgaria is among the world-famous countries for its wine production, but a brief review of scientific papers shows that there are still no significant achievements in the field of research related to the knowledge for organic and biodynamic wines in Bulgaria. Moreover, the statistical information for Bulgarian wine producers is not accumulated according to their production method.

The focus of our study are consumers in Bulgaria with their attitudes towards various economic, environmental and social aspects related to the consumption of organic, biodynamic and conventional wines. The goal of this study is to examine whether there are differences in consumption between generations in Bulgaria and what are the main reasons that affect their consumer preferences. For this purpose, a survey was conducted among 627 users and its results were subjected to statistical analysis, verification and data processing. In order to analyze better the specifics of the generations, we mainly focus on generation Y and generation Z. Generation Z is expected to represent the largest consumer base through to 2030. According to Hodgson (2018) Generation Z is quite environmentally concerned generation which prefers innovative and sustainable products with high value. In comparison, Generation Y which represents 22 percent of the world population according to Euromonitor international (2020) includes socially conscious and environmentally responsible consumers, attracted by products that are considered less harmful to the environment. In a specific way both Generation Y and Generation Z are expected to have a strong behavioral attitude towards wine sustainability and terroir.

The paper is structured as follows: general review of current publications related to the topic, research methodology used for this study in Bulgaria, discussion of some significant results and summaries of the most important conclusions for the generations and recommendations to be implemented by wine producers towards consumers.

Literature review

Studies on biodynamic and organic wines show that consumers do not have strong preferences for one or the other wine. This finding is associated with the similar and lower health risk that organic and biodynamic wine have compared to conventional wine. Nevertheless organic wine with its characteristics and consumers requirements is much more studied by researchers than the biodynamic wine. Organic wine production is becoming a better known type of sustainable wine production which focuses on the avoidance of agrochemical vineyard inputs as synthetic fertilizers, pesticides and herbicides. According to Lernoud and Willer (2018), this specific winemaking created in the period 2010-2016 only a small and stagnating market of 5 % in comparison with the conventional one.

Many research studies and programs of international vine and wine institutions recently started to calculate the environmental impact of winemaking and production as a Life Cycle Assessment (LCA) approach, environmental footprints (as carbon, water, land, etc.) in order to find good examples in wine sustainability. Technical study in Romania by Soceanu, et al. (2021) analyzing three different types of grapes in the Murfatlar area, confirms the encouragement regarding recovery of viticulture by-products and wastes which represent 18-20 % of the amounts of processed grapes. Hence, wine producers can increase their potential to administrate sustainable processes by converting by-products and wastes in natural fertilizers. Furthermore, they can avoid the significant EU disposal costs and penalties, often reaching 30 000 – 40 000 euros. Another technical study analyzes the negative effects of global warming for winemaking. Morales, et al. (2020) announce that the damaging global warming affects the high level of ethanol content in wines (regardless of the proximity of two geographical regions) which is in contrast with the consumer perceptions of quality wine tasting. Their study in six different wineries in Spain reveals the significance of new biotechnological experiments regarding the biological aging of flour yeast and its ability to reduce the ethanol content by 2 % for one month, as well as other acid and acetic acid esters contents.

Indeed the consumers are becoming more and more interested in environmentally friendly products and foods regarding health, naturalness and high quality. Different studies confirm that the positive preference of the consumers towards organic wine production depends on the geographical origin, price level and quality label (like terroir). A part of these studies confirm that “quality” is an equivalent of appropriate geographical origin and good price, as well. A study of Janssen, et al. (2020) in the framework of the German Federal program to organic agriculture and the other forms of sustainable agriculture, with a sample of 600 consumers in Germany, shows that the organic wine production method has a relatively strong influence on the wine choice of organic food consumers. The analysis reveals that organic wines at medium price levels are strongly preferred and the purchasing choice is based on the country of origin, i.e. Germany. At the same time, the total rate of organic wine purchases in the country remains low. This fact draws attention to further recommendations and consideration of additional influence factors.

According to Wen and Leung (2021) sustainability preferences in wine tasting are different for younger and older generations as Generation Y and Generation Z. From one hand, the consumers of Generation Y demonstrate favorable wine purchases as a part of their social experience. From another perspective, the consumers of Generation Z perceive willingness for a wine as a part of their multisensory experience (including appearance, aroma, taste). This conclusion has a crucial impact on future marketing strategies of those organic wine producers that examine the opportunities of gastronomic and organic wine tourism (including also virtual reality tours) as a significant promotion tool. The current experiment of Wen and Leung confirms some previous studies of Eustice, et al. (2019) and Barber, Taylor and Strick (2009) that the higher is the consumer knowledge of sustainable winemaking, the greener and better is the consumer approach for wine purchases. A research funded by the Italian region Veneto (Capitello, et al., 2021), focused on consumers’ wine choice of Generation Y in Italy

applies five attributes and their nineteen levels of sustainable experimental design as “Quality label” (carbon reduction label, PDO label, producer’s association label), “Label style” (natural, sophisticated, contrasting, minimal), “Brand” (winery brand, product brand, winery name, social media name), “Back label information” (soil, family history, grape variety, production process) and “Price” (all in euro: 8.90, 13.90, 18.90, 23.90). The results show that Generation Y is mainly driven in its choice by terroir cues on the back label and visual content. The young females are looking for original terroir wines while the young males are more price-sensitive and are looking for traditional wine production. Future research study on Generation Z perceptions is programmed in Italy.

The sustainability assessment of wine products is often related not only to experiences, but also to international or national initiatives and fund programs. The results of one of these initiatives based on Italian TERRITORY framework (a part of National Viva- Sustainability culture program), show that when environmental, social and economic dimensions are well-identified within the wine strategies, the wine producers are more orientated to environmental issues and have higher engagement to their consumers implementing carbon level programs or circular economy initiatives. One of the most critical points mentioned in the TERRITORY framework is the lack of effective communication with consumers about the producer's commitment to sustainability, including health, risks, wine tasting, agrochemical treatment etc. (Luzzani, et al., 2021).

Research methodology

The instrument we use is an online questionnaire with 27 questions (we use the snowball method for respondents), covering several aspects of the perceptions about wine - environmental (biodiversity, balanced use of resources, clean technology etc.), social (health and wellbeing, taste etc.) and economic (frequency of purchases, overpricing etc.). The questionnaire contains mainly multiple-choice questions, but there are also few questions with twin comparisons. We deliberately avoid questions with a quantitative dimension, because of the primary design of the study - we attempt to explore some less known aspects of perceptions of wine, and in such situations respondents are more inclined to have only vague ideas about the exact nature of the terms and therefore they are quasi unable to make precise assessments. Thus we limit our scientific interest to exploring mainly the differences in answers between generations.

We explore the confusing terminology in biodynamic and organic wines, as well as the behavioral attitude of different generations towards biodynamic and organic wines. Therefore our choice of statistical measuring is limited to the chi-square tests, as we envisage to obtain more robustness in the results.

Our sample consists of 627 Bulgarians, aged 18-75, of which 411 women and 216 men. 44 of the respondents live abroad, 449 live in cities in Bulgaria and 134 in small towns and villages in Bulgaria. Of our sample, 234 respondents belong to the "X" generation, 89 to the "Y" generation (millennials), and 264 to the "Z" generation. For our purposes, we stick to the most widely used limits of these generations: "Z" being formed of people born after 1996, "Y" of people born between 1981 and 1996, and "X" of people born between 1965 and 1980.

The survey was conducted in February-March 2021.

Results and discussion

General tests (Table no.1) show that differences in income and drinking habits between younger people (generation "Z") and the other two generations do exist, whereas there are no differences between generations "X" and "Y", and this is a plausible result - we can expect younger people to have more modest income and to share non matured drinking habits, i.e. are more likely to experiment with drinks.

Table no. 1. P-values of Chi-2 tests about generational slices of the sample

	Z vs X	Z vs Y	Y vs X
Income	0	0	0.61
Household	0.13	0.62	0.17
Drinking preferences	0	0.01	0.07

Source: Personal elaboration of the authors

Our most important results emerge from the tests on possible differences in the answers on the main questions about wines. The p-values from chi-square tests presented in Table no.2 show that no significant differences exist between the structure of the answers of Generation Z and the other two generations studied, with practically no exceptions, if we don't take in consideration the small differences in views about trusting the labelling.

Our initial expectations were that the young generation will be more demanding in their green preferences and will know better the European policy for organic products, however this could not be confirmed within the study. Therefore we claim that being part of a specific generation in Bulgaria does not imply a difference of views about organic wines. We reckon that taking the whole population as a relatively homogenous group in concern with the attitudes towards organic or biodynamic wines is a plausible assumption. It can be added that obviously the weaker awareness in Bulgaria about sustainable winemaking confirms the slower orientation of Bulgarian consumers towards green wine purchases, which is in line with the conclusions of Eustice, et al. (2019) and Barber, Taylor and Strick (2009) about the general trends. As a direct outcome from our findings, elaborating common marketing strategies on organic and biodynamic wines directed to different generations in Bulgaria seems to be an appropriate strategy.

Table no.2. P-values of Chi-2 tests on major questions and groups of respondents

	Z vs X	Z vs Y	Y vs X	BG vs. abroad	BG small vs. others	Income	Sex
Do you buy wine?	0.98	0.06	0.07	0.03	0.03	0	0.94
How often do you buy organic wine?	0.21	0.57	0.24	0.41	0.15	0.78	0.71
What is the main reason for you to buy organic wine?	0.71	0.15	0.33	0.10	0.53	0.03	0
What is the main reason for you to buy biodynamic wine?	0.23	0.11	0.19	0.01	0.81	0.11	0.51
What is the main reason for you to buy conventional wine?	0.69	0.06	0.14	0.35	0.13	0.14	0.04
Production of organic wine mostly... (several options)	0.37	0.55	0.98	0.25	0.84	0.44	0.14
Production of biodynamic wine mostly... (several options)	0.58	0.90	0.93	0.96	0.01	0.45	0.38
Do you think the following wine has an advantage towards the others (conventional vs. organic vs. biodynamic)?	0.64	0.53	0.94	0.01	0.34	0.70	0.04

If you compare two organic wines, the one from Bulgaria and the other from Germany, which one do you trust more?	0.57	0.59	0.18	0.94	0.94	0.75	0.46
Willingness to pay more for organic wines vs. conventional wines	0.13	0.24	0.83	0	0.93	0.12	0.06
Willingness to pay more for biodynamic wines vs. conventional wines	0.77	0.66	0.65	0.75	0.47	0.24	0
Willingness to pay more for biodynamic wines vs. organic wines	0.47	0.71	0.90	0.08	0.19	0.74	0.11
It is believed that the taste of the organic wine can not be "tailored"... so that taste strongly depends on the terroir and the meteo conditions of the respective year. How important is it for you that the taste of wine matches your prior expectations?	0.10	0.22	0.49	0.01	0.04	0.32	0.02
Organic wines and biodynamic wines are believed to be more healthy. How important is this to you?	0.19	0.03	0.26	0.14	0.88	0.04	0.11
Do you trust the notification of "organic"?	0.06	0.03	0.13	0.50	0.38	0.18	0.03
Do you trust the notification of "bio-dynamic"?	0.10	0.29	0.89	0.63	0.76	0.69	0

Source: Personal elaboration of the authors

A closer look on several questions from the questionnaire sheds further light on views about organic labelling and consumer preferences in general.

From the result of the question on the main reason to buy biodynamic wine we can conclude that it is very common for respondents who live abroad to consume biodynamic wine compared to Bulgarian consumers, who are not that much aware of the difference between those two types. The reason for this could be that there is no specification as "biodynamic" for the products sold domestically or there is no import of such products at all (Table no.3).

The question on preferences about country of origin reveals that the respondents do trust in the specification of the wine as "organic" and "biodynamic" no matter the country of origin. This means that they do trust the system of certification for the whole EU.

Only respondents from abroad as a contrast of local ones show preference for organic instead of conventional wines as far as the taste is concerned. This is an additional evidence that the local market and consumers are not too much aware of the features of natural production and taste. They would rather consume wine because of the taste and to a lesser extent because of the logo, be it "organic" or "biodynamic" and the possible advantage from this label.

Over 2/3 of our respondents claim organic and biodynamic wines are better or rather better than conventional wines, 1/4 of the respondents treats all types of wines as equal, and only about 1/6 of the

respondents have their preferences towards conventional wines. These results are strongly in line with the views about trust, only ca. 1/6 of the respondents distrust organic labelling, with ca. 2/3 expressing trust (Table no.4). This finding is in line with the conclusion of Janssen et al. (2019) that for the consumers the organic origin is an important attribute and "organic" is socially desirable as a label.

Table no.3. Percentage of answers to the question "What is the main reason for you to buy ... wine?" (organic/biodynamic/conventional)

	Superior taste	Lower price	Trusted geography	Healthier	Better promoted	Superior method of production
Organic	16.4	4.0	15.5	25.7	8.5	30.0
Organic (F)	17.0	4.4	13.1	24.8	6.6	34.1
Organic (M)	15.3	3.2	19.9	27.3	12.1	22.2
Bio-dynamic	17.1	4.5	18.0	25.2	8.0	27.3
Conventional	15.2	37.0	18.3	5.3	13.9	10.4

Source: Personal elaboration of the authors

Table no. 4. Percentage of answers to the question "How much more are you willing to pay (ceteris paribus) for ... vs. ... wine?"

	0%	10%	20%	30%	50% and more
Organic (vs. conventional)	19.5	30.8	27.9	15.0	6.9
Bio-dynamic (vs. conventional)	20.4	30.1	25.2	16.4	7.8
Conventional (vs. organic)	31.3	32.1	20.4	12.1	4.2

Source: Personal elaboration of the authors

Only few of our respondents (8.8%) reject the mere idea of organic products, although there are 18.3% who find the "bio" ideas being exaggerated because of the same effect on health, and other 27.9% who think that "bio/organic" is just another marketing move and that there is no difference to conventional products.

One of the questions which still remains unanswered in society's agenda is the perception of organic products as products of luxury. Willingness to pay more for organic and biodynamic wines supports the perception that these products are luxury products (Table no. 5).

Table no. 5. Percentage of answers to "Do you consider organic products as luxury products?"

	Yes, definitely	Rather Yes	Rather No	No, definitely
All	19.1	45.0	27.4	8.5
Women	20.7	46.0	25.5	7.8
Men	16.2	43.1	31.0	9.7
Never buying wine	23.1	28.8	19.2	28.8

Often buying wine	24.0	44.8	24.4	6.8
Considering health aspects of bio wine as not important	14.3	27.0	27.0	31.7
Trusting to organic logo	20.0	54.9	20.8	4.3
Trusting to biodynamic label	21.9	51.2	23.6	3.3
Not willing to pay more for organic wine	18.8	32.0	28.7	20.5
Not willing to pay more for biodynamic wine	18.0	37.5	26.5	18.0

Source: Personal elaboration of the authors

The chi-square tests did not reveal the existence of differences among different groups of respondents, with the exception of the comparison between respondents who declared that they never buy wine and the rest of the sample.

Clearly visible is that in general organic products are considered to be luxury products. Respondents who trust the organic logo express stronger views to organic products as luxury products. On the other hand respondents who are not willing to pay more for organic wines consider these products to a lesser extent to be luxury products.

Conclusions

In Bulgaria, consumers' preferences for wine production change over time as the ecological focus becomes an important part of the final purchase decision. The attention to eco-friendly or ethically produced wines is already part of the personal drinking preference of Bulgarians as is the orientation in other European wine-producing countries. Definitely the environmental aspects of organic and biodynamic winemaking, studied with this research, have a leading role for the consumers in Bulgaria in contrast to the incomplete knowledge about social and economic aspects of the natural winemaking such as health effects and price positioning on the Bulgarian market. Furthermore, we arrive at the conclusion that the confidence in the geographical origin as a part of ecological environment and biodiversity, is high enough - Bulgarian wine is preferred by generations, by males and females.

Our study confirms some conclusions of Capitello, et al. (2021) that the geographical provenance of the wine is more than a "sense of place" and already the local terroir transmits symbols, identity, distinctiveness and authenticity. Another conclusion of Capitello, et al. (2021), related to the consideration that a consumer can only handle a limited amount of information, is also confirmed for Bulgaria. Bulgarian consumers do not know the complexity of the wine making process associated with organic wine production - costs, prices, technical issues etc. The same conclusion can be applied to biodynamic wines. For Bulgarian consumers the pursuit of natural wine production is not directly linked to additional economic costs or competitive advantages. Therefore, much more extensive information on sustainability-related attributes and terroir-related attributes of organic and biodynamic wines is needed. We can add that there is no difference between the Generation X, Generation Y and Generation Z in Bulgaria in their attitudes towards natural wines, despite our expectations that the young generation will be more demanding in their green preferences and will know better the European policy for organic products.

Although this study suffers some limitations, the originality of this research is to shed light on the preferences of the different generations in Bulgaria towards conventional and natural wines. To our knowledge, this is the first study in Bulgaria, which draws some basic conclusions about the level of consumer knowledge on organic and biodynamic wines and represents a key future challenge for winemakers in Bulgaria.

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