Sustainable wine tourism in a non-sustainable world

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Abstract - The 6th Conference of Wine Tourism, organized by the United Nations World Tourism Organization (UNWTO, 2022), dealt with very important questions regarding the future of wine tourism. It is obvious that the rapidly growing and increasingly complex social-economic-political and natural environmental challenges create a chaotic (non-sustainable) world in which the answers are possible through broad cooperation and radical innovations. This is the case with tourism, including wine tourism, because they are especially sensitively affected by these changes. (UNWTO, 2022) All of this goes far beyond the boundaries of the sector but, at the same time, creates broad opportunities for the active participation of all members in the value chain of wine tourism. Innovation in services, marketing, and partnerships creates broad opportunities for all value chain members, including travelers, companies, authorities, and locals, at a critical moment when active participation and conscious thinking can increase the value of wine tourism destinations and their environment. Failure to do so can significantly weaken the competitiveness of a given region. The work aimed at this may be the key to the future development of wine tourism and the survival of those interested who have lived from it until now. The last two years have brought significant changes in wine tourism and transformed travel logistics, wine experience planning, and consumer behavior. In addition, a number of challenges that had already appeared came to the fore - from digitalization to sustainability and network cooperation. Sustainability increasingly determines the services offered by wineries and vineyards and travellers' attitudes and purchasing decisions. Meanwhile, digitization and e-commerce have become vital tools in the hands of producers, distributors, and wine tourism businesses, as well as destinations. Necessary innovations in experiences, marketing, and partnerships create broad engagement opportunities for all value chain members. We are focusing on looking for answers to the following research questions, especially taking into account the Hungarian specialities:

- On a global level, how important is it to consider sustainability in the wine tourism services of wineries, and to what extent is this differentiated depending on local conditions?
- Globally and per country, what aspects do wineries consider in relation to the implementation of sustainable wine tourism?
- How do the various sustainability aspects appear as a complex system in decisions about sustainable wine tourism services?

Based on the analysis of international experiences and surveys, we try to provide local answers for Hungarian wineries to these questions.

Keywords: wine tourism, sustainability, innovations

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INTRODUCTION

The concept of sustainable tourism emerged in the 1980s as a response to the negative impacts of mass tourism on the environment and local communities. The United Nations World Commission on Environment and Development published the report "Our Common Future" in 1987, which defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." (…) This report led to the development of the concept of sustainable tourism, which seeks to promote sustainable development through tourism.

"Sustainable tourism is a type of tourism that aims to promote economic, environmental, and social sustainability while providing travelers with an enjoyable and authentic travel experience. It involves traveling to and enjoying
natural and cultural attractions in a way that conserves their
natural and cultural heritage and promotes sustainable development.” (World Commission on Environment and
Development, 1987)

The main characteristics of sustainable tourism are: (Mora,
2022)
- Environmental Sustainability: Sustainable tourism seeks
to minimize the negative impacts of tourism on the
environment and promote the conservation of natural
resources and biodiversity. This involves implementing
practices such as reducing waste, conserving water and
energy, and promoting eco-friendly transportation.
- Economic Sustainability: Sustainable tourism aims to
contribute to local economic development and support the
well-being of local communities. This involves promoting
local products and services, creating job opportunities, and
supporting local cultural heritage and traditions.
- Social Sustainability: Sustainable tourism seeks to
promote social sustainability by respecting the cultural,
social, and economic diversity of the communities and
individuals involved in tourism. This consists of promoting
fair and equitable access to tourism benefits and minimizing
negative social impacts, such as exploiting local
communities and cultural commodification.
- Education and Awareness: Sustainable tourism promotes
education and awareness about sustainable development
and responsible tourism practices. This involves providing
travellers with information about tourism’s environmental,
social, and economic impacts and promoting responsible
behavior and sustainable travel choices.

Overall, sustainable tourism is a form of tourism that seeks
to promote sustainable development and responsible travel
practices while providing travelers with a unique and
enjoyable travel experience.

"Sustainable wine tourism, as a special segment of tourism,
refers to a form of tourism that aims to promote the
production and consumption of wine in a sustainable and
responsible manner while also providing visitors with an
enjoyable and informative experience. It involves visiting
wine regions, vineyards, and wineries and participating in
wine-related activities, such as wine tasting, wine pairing,
and wine-making classes, all while promoting and
supporting the local economy, culture, and environment.
(UNWTO, 2022)" (Sekhniashvili, 2020)

The main characteristics of sustainable wine tourism are
adopting the characteristics of sustainable tourism to the
specialties of the wine industry: (UNWTO, 2022)
- Environmental Sustainability: Sustainable wine tourism
involves environmentally sustainable practices such as
organic and biodynamic farming, renewable energy, water
conservation, and waste reduction.
- Economic Sustainability: It promotes the growth and
development of local economies by supporting local
businesses and creating job opportunities.
- Social Sustainability: Sustainable wine tourism promotes
social sustainability by respecting local cultures, traditions,
and heritage, as well as supporting the well-being and
development of local communities.
- Education and Awareness: It provides visitors with an
educational experience, including learning about the
history, culture, and science of wine production, as well as
promoting awareness of environmental and social issues
related to wine production.
- Responsible Consumption: Sustainable wine tourism
promotes responsible consumption by encouraging
moderate drinking, offering non-alcoholic alternatives, and
promoting a culture of responsible drinking and driving.

Sustainable wine tourism seeks to balance economic
development, environmental conservation, and social
responsibility in the wine industry while providing a unique
and enjoyable experience for visitors, customers, and
stakeholders. All of this is linked directly or indirectly to
rural development, food consumption, demographic
changes, and, of course, the wide range of tourist services.
The main challenges of the latter are analyzed annually by
the most prestigious trade journals, see the travel and
hospitality global outlook: (Economist Intelligence Unit,
2022).

- Rising prices may tempt consumers to stay home and focus
on virtual experiences, which positively impacts the
environment.
- Consumers are also opting for greener travel. About 25%
chose at least one sustainable feature compared to 75%
selecting mass-market options like packaged holidays or
shopping destinations.
- Though the latter remains dominant, the gap is narrowing.
- More consumers are now willing to pay extra for eco-
friendly options too.
- Travel professionals stated that 58% of their customers
were likely to spend more on sustainable products and
services.

So, the demand for sustainable tourism (within the focus of
our research, sustainable wine tourism) appeared in public
opinion shortly after the well-known Bruntland report. In
our analysis, we show that while the latest report of the
IPCC clearly reports large gaps in the field of sustainability
(IPCC, 2023), wine tourism has taken significant steps in its
own way and is currently taking steps to expand sustainable
solutions. Within the global trend, we focused on how
Hungary performs in this field in an international
comparison.

Our purpose in the research was to summarize the main
challenges of sustainable wine tourism and its answers to
these challenges trying to bridge the widening gaps among
them.

**METHODODOLOGY**

A primary database was created during a survey conducted
by an international research group in 2021 based on the
opinions of 1,579 wineries in 42 countries. (Szolnoki, G. et al., 2022). We tried to use this database to create a multivariable statistical analysis of how wineries perceive and manage sustainability challenges in their operations, including wine tourism. We involved indicators like the general importance of sustainability, sustainable wine tourism operations, the contribution of wine tourism activities to the sustainable development of wineries, and many other topics. This research established a comprehensive database, which offers great opportunities for more detailed and deeper statistical evaluation and comparisons for further research. We also aimed for this by applying the methodology of our previous domestic (Hungarian) research (the multivariable statistical analysis) to this database (Dinya L. - Némethy S., 2012).

The methodology of our own research was as follows:

- Based on the primary database (collected by Szolnoki, G. et al., 2022), we created our own (secondary) database to be suitable for our investigation. On the one hand, we have selected the most important, traditional wine-producing countries with a sufficiently representative number of wineries in the global sample (11 main countries, plus the rest of the less meaningful countries classified into a single "mixed" category). This way, we avoided an excessively large standard deviation of the country-level data (Figure 1).

- We highlighted those wineries that were also interested in wine tourism (altogether, 1232 wineries, which is 78% of the total sample, were affected).
- We highlighted the indicators that are directly or indirectly related to the sustainability of wine tourism (57 indicators). (Figure 2)

- In addition to the simple statistical characteristics (averages, standard deviations, distributions, graphs), multivariable statistical correlation investigations (factor analysis, regression analysis, cluster analysis) were performed on our selected database created in this way. The multivariable analysis was made by the SPSS-22 software. The results of these analysis are shown in Figure 6, 7 and 8, and they are explained in the next chapter (Results).
- The findings, conclusions, and proposals were formulated in the knowledge of all these results.

The 57 investigated indicators are divided into seven main categories, which on the one hand, cover the importance of three main dimensions of sustainability (main pillars), and on the other hand, characterize the components of the various (7) affected operational areas. These represent the various services of wine tourism, the natural environment, economy, business, social priorities, and the factors that encourage or hinder wine tourism at the wineries (Figure 2). The numerical data were provided by the wineries when filling out the questionnaires and have been collected by the research team of Geisenheim University and WineTourism Stockholm (Szolnoki, G. et al., 2022).

RESULTS

In the first approach, by analyzing traditional statistical distributions, we wanted to create an image of how the wineries deal with sustainable wine tourism in the 11 prominent wine-producing countries and the "other" (mixed) category comprising the other less meaningful countries (altogether hereafter referred to as the 12 "countries"), and which of the pillars (the three main areas) of sustainability do they prefer with more or less weight in this service.
For the wineries, the environmental dimension of sustainability is slightly more important than the economic and social aspects (N=1,232 wineries, Figure 3). The global average shows that 40% of wineries prioritize natural environmental sustainability and consider economic and social sustainability secondary (31% and 29%). Within this, a certain dispersion can be seen: in the case of Hungary and the USA, this ranking appears sharper, while in the case of Chile, it is more balanced.

It is also important to see how often sustainability is mentioned in the communications of the wineries concerned. Interestingly, with the exception of one country (Hungary), the wineries that deal with sustainable wine tourism but do not (rarely or never) communicate about it, are present in other countries (even if not in a large proportion). The two extreme cases are Chile (intensive communication: 80%) and Hungary (least intensive communication: 46%).
Figure 4: Sustainability in communication by country (N=1,232; in %) (Own editing, based on Szolnoki, G. et al., 2022).

The highest percentage of wineries that always include sustainability in communication about wine tourism can be found in Chile (43%), and the lowest percentage in this regard can be found in Hungary (10%). (Figure 4)

Figure 5: Overlapping between sustainable wine production and sustainable wine tourism (Own editing, based on Szolnoki, G. et al., 2022).

The overlapping between sustainable wine production and sustainable wine tourism in the country can be seen in Figure 5. Wineries in the US see the biggest overlap between sustainable wine production and sustainable wine tourism (mean=3.4):
- Spain sees the lowest overlap with a mean of 2.2.
- The global mean is 2.9 – at the moderately important level.

Following some of the main characteristics of the overall picture, we wanted to make it clear with the help of cluster analysis, which clearly distinguishable categories the 12 countries represented in terms of sustainable wine tourism in terms of the 57 examined indicators. By carrying out the classification in several steps, it is worth monitoring the change in the classification of the countries (Figure 6).

If we divide the sample of 12 elements into 2, then 3, and 4, and finally 5 significantly different clusters, a few categories with a constant composition can be observed:
- Italy, Portugal, and Hungary consistently appear in the same cluster (together with the mixed group). That is, the characteristics of sustainable wine tourism in these countries are most similar to each other and most different from other investigated countries.

- At the most nuanced resolution (5 clusters), France, Spain, Greece, and Austria also appear as separate clusters. But in the less nuanced classification (in the case of 4, 3, or 2 clusters), these two categories no longer separate, but merge. In other words, they are somewhat closer to each other than to other countries.
Australia and the USA represent a significantly different “world” (cluster) from the rest, and Chile and South Africa are different from them and from each other. All of this means that local (climatic, geographical, cultural, technological, maybe regulation) conditions at the regional level and traditions significantly influence the characteristics of sustainable wine tourism locally. In other words, instead of globally uniform solutions, wineries prefer local solutions. This is in line with the general guidelines of sustainability and draws attention to the importance of local innovations.

Since, based on our previous similar research experience, we believed that the 57 individual indicators characterizing the global situation of sustainable wine tourism are probably not completely independent of each other, we also performed a more detailed analysis of this using factor analysis. In short, the purpose of factor analysis is basically to show, when analyzing objects characterized by many individual indicators (such as countries in our case), whether these indicators have (connected) groups that vary synchronously with each other. These are called factors, and when such groups are found, they can be used as complex indicators to replace the connected individual indicators to them. In this way, we can reveal a much more characteristic picture of the common and different features of the objects. Factors that contain the most information (i.e., variables) are the main factors; the rest are called residual factors.

The factor analysis of the 57 individual indicators characterizing the 12 countries resulted in the following: (Figure 7)

<table>
<thead>
<tr>
<th>F1</th>
<th>WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social sustainability</td>
<td>.547</td>
</tr>
<tr>
<td>Environmental sustainability</td>
<td>.586</td>
</tr>
<tr>
<td>Guided tours (cellar or vineyard)</td>
<td>.841</td>
</tr>
<tr>
<td>Events at the winery (wine party)</td>
<td>.787</td>
</tr>
<tr>
<td>Virtual wine tourism experiences</td>
<td>.568</td>
</tr>
<tr>
<td>Organic production methods</td>
<td>.638</td>
</tr>
<tr>
<td>Keeping the CO2 footprint small</td>
<td>.602</td>
</tr>
<tr>
<td>Other measures</td>
<td>.707</td>
</tr>
<tr>
<td>Developing a long-term strategy for the company</td>
<td>.661</td>
</tr>
<tr>
<td>Developing ecological products or services</td>
<td>.506</td>
</tr>
<tr>
<td>Earning / loss calculation on a regular base</td>
<td>.763</td>
</tr>
<tr>
<td>Other measures</td>
<td>.644</td>
</tr>
<tr>
<td>To build trust and reputation</td>
<td>.711</td>
</tr>
<tr>
<td>Lack of human resources</td>
<td>.514</td>
</tr>
<tr>
<td>Lack of infrastructure</td>
<td>.772</td>
</tr>
<tr>
<td>Lack of interest</td>
<td>.871</td>
</tr>
<tr>
<td>16 indicators</td>
<td>9+ &amp; 7-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>F2</th>
<th>WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic sustainability</td>
<td>.577</td>
</tr>
<tr>
<td>Events outside of the winery</td>
<td>.480</td>
</tr>
<tr>
<td>Accommodation (hotel, rooms for rent)</td>
<td>.731</td>
</tr>
<tr>
<td>Using regional products</td>
<td>.849</td>
</tr>
<tr>
<td>Using green energy</td>
<td>.653</td>
</tr>
<tr>
<td>Using wine tourism as profitable business unit</td>
<td>.822</td>
</tr>
<tr>
<td>Using new technology in the production process</td>
<td>.519</td>
</tr>
<tr>
<td>Dealing openly and honestly with employees</td>
<td>.548</td>
</tr>
<tr>
<td>Hiring local residents</td>
<td>.829</td>
</tr>
<tr>
<td>Providing flexible working hours</td>
<td>.708</td>
</tr>
<tr>
<td>Providing professional training for employees</td>
<td>.548</td>
</tr>
<tr>
<td>To make the world to a better place</td>
<td>.605</td>
</tr>
<tr>
<td>To demonstrate corporate social responsibility</td>
<td>.628</td>
</tr>
<tr>
<td>To improve operations</td>
<td>.712</td>
</tr>
<tr>
<td>Lack of financial resources</td>
<td>.595</td>
</tr>
<tr>
<td>Lack of collaborator involvement</td>
<td>.754</td>
</tr>
<tr>
<td>17 indicators</td>
<td>10+ &amp; 7-</td>
</tr>
</tbody>
</table>

Figure 6: Classifying the 12 countries based on similarities & differences of their approach to sustainability in wineries (Own edition).

Figure 7: These 16 of the 57 indicators are included in the first main factor (F1) and 17 indicators in the second one (F2) (Own edition).
More important findings are the following:
- The two main factors (F1 and F2) contain a total of 33 individual indicators (about 60% of the 57 indicators and 43.1% of the information content of the indicator system, see the sum of information contents). With these two complex indicators, a sufficiently clear picture of the situation of the countries can be seen, which would be almost impossible to find out from the multitude of individual indicators. It is important to know that these two groups of individual indicators change completely independently of each other, which is why they are included in two separate main factors.
- The professional meaning of the two main factors (complex indicators) can also be determined on the basis of the related indicators; specifically, F1 primarily summarizes indicators of long-term environmental sustainability and adaptation, while F2 includes indicators of short-term business sustainability and social responsibility.
- It is important information that the pairwise correlations of the individual indicators serve as the basis for determining the so-called factor weights, depending on which they are assigned to one of the factors. These are listed in the column called "weights" (Figure 7). Does the positive or negative sign of the factor weights show that the indicators that vary synchronously within the given group are positively or negatively correlated with each other? For example, within factor F1, the positive factor weight of the indicator "importance of environmental sustainability" is paired with the negative factor weight of social sustainability. This means that among the 12 countries, the two priorities prevail to the detriment of each other: where wineries prioritize environmental sustainability, social sustainability is consistently pushed into the background. This is also reflected in the name of this fact. Similar principles also apply to the name of the F2 factor.

In addition, the factor analysis determines the indicator values (factor values) of the factors (as complex indicators) for each country. On this basis, the countries can be placed in a coordinate system with the help of the two main factors so that we can visually see the main differences and similarities of the countries in relation to the characteristics of wine tourism (Figure 8).

Since different individual indicators have different scales, the values of the complex factors replacing them are represented on normalized scales. That is, the average of the factor values = zero, their standard deviation = 1, the sign of values below the average is minus, and the sign of values above the average is plus.

For the sake of completeness, we have also shown the country groups determined as a result of the previously discussed cluster analysis in Figure 8. In this approach, it is clear that the European countries were not placed in the same category by chance until the division into 4 clusters; they were separated when they were divided into 5 clusters.

In other words, although there are certain differences between European countries in relation to sustainable wine tourism, the USA and Australia, as well as Chile and South Africa, are much further away from each other and from Europe. These differences and similarities are adequately explained by the two main factors (F1 and F2) and the 33 individual indicators belonging to them.

Based on the multivariate statistical analyses (factor and cluster analysis), it is evident that global sustainable wine tourism as a business service is trying to adapt to rapidly changing and growing challenges everywhere. Many factors influence this adaptation; at the global level, the
dominant differences are clearly evident by continent. On this basis, practice differs significantly between Europe, Africa, Australia, and North- and South America. Within Europe, which has the oldest tradition, two further categories of interested countries can be distinguished. The large number of indicators that characterize sustainable wine tourism in detail can be divided into a few independent groups, where the indicators belonging to the same group change synchronously with each other (they are more closely related). Determining the categories of countries following similar practices in sustainable wine tourism is possible.

**DISCUSSION**

We are grateful to the research team of Geisenheim University and Wine Tourism Stockholm, who worked hard to create and make available the global primary database, on the basis of which we were able to perform the in-depth analysis using multivariable statistical methods.

Due to space limitations, we can only present the most important results this time, and we will continue the research with various methods. For example, we have already examined the differences between the European countries belonging to the Mediterranean zone and those outside it. This is important because the cluster analysis performed on the global database covering all countries classifies these countries in the same category, but a detailed examination interprets this in a more nuanced way. All of this is important because it confirms that the adoption of local practices used in sustainable tourism between different geographical locations runs into limitations. We plan to share these results with the public on an ongoing basis.

Our investigations have shown that an in-depth analysis of the global database of each sector (in our case, tourism) and sub-areas (in our case, sustainable wine tourism) is indispensable from the point of view of sustainability. Because the exploration of the detailed relationships behind the overall picture (similarities, differences, patterns between regions) points to the importance of innovations that best fit local conditions and the importance of developing "best local practices" instead of searching for "best practice" at the global level.

In addition to the knowledge and expertise of external experts, this requires significant local innovation potential and experience. This network cooperation is the basis for the flexible implementation of the established best local practices.

**CONCLUSIONS**

For almost two decades, we have been researching global challenges related to sustainable development (Dinya L, 2006, 2010, 2011, 2012, 2016, 2021). We consider the progress in dealing with them to be critical - that is why we highlighted the term "unsustainable world" in the title of this publication. Precisely for this reason, in recent years, we see it as increasingly important to examine the appearance and sectoral and local specialties of these challenges at the level of various sectors.

This time, in relation to one of the important services related to wine-making, wine tourism, we analyzed how this traditional sector responds to these growing challenges. We used the latest databases available in this field and modern, multivariate statistical analysis methods. With regard to the latter, our long-standing experience is that with their application, much more useful information can be obtained from databases created at great expense than through simple, traditional statistical methods.

The most important conclusions that can be drawn based on the results of the multivariable statistical analysis are summarized in accordance with the order of the research questions formulated in the Abstract:

- On a global level, how important is it to consider sustainability in the wine tourism services of wineries, and to what extent is this differentiated depending on local conditions?
  - Sustainability plays a more and more important role for the wineries locally and globally too.
  - Wineries see the overlap between sustainable wine production and sustainable wine tourism very heterogeneously country by country – but the overall overlap appears to be relatively small.
  - For the wineries, the environmental dimension of sustainability is slightly more important than the economic and social aspects.

- Globally and per country, what aspects do wineries consider in relation to the implementation of sustainable wine tourism?
  - Among the measures that wineries plan to implement, using energy carefully, developing a long-term strategy for the company, and collaborating with regional companies/actors are the most important.
  - Recently, 62% of the wineries stated that sustainable practices in wine tourism are essential for visitors; however, 87% of wineries say it will become significantly more important in 5 years.
  - How do the various sustainability aspects appear as a complex system in decisions about sustainable wine tourism services?
  - Due to the diversity of sustainability challenges, it is important to describe the practice of sustainable wine tourism with as many characteristics as possible. But it is also important to be clear: most of these characteristics are closely connected, not independent of each other. Therefore, in daily practice, they must be managed systemically (holistically) and not individually.
  - In this way, the positive (mutually reinforcing) synergies between them can be exploited. Collisions that weaken (cancel) each other can be avoided or minimized. Based on that, the best local practices can be established, and the waste of limited natural, social, and economic resources can be eliminated.
General lessons (not only for Hungarian wineries) are as follows (citing well-known classics like evidence):
- We have to thrive in the grip of never-before-seen megatrends - "No problem can be solved in the same system in which it was created!" (said by A. Einstein, cited by Martin, 1998).
- Long-term focus is essential - "Anyone who insists on continuous firefighting will only have to clean up the ruins in the end!" (Bohn, 2000).
- Continuous innovations are needed in broad cooperation with business, public service, and civil organizations – “Fly in business ecosystems!” (Möller – Halinen, 1999).
- Let's learn from other actors in the sector - but remember: there is no universally applicable "best practice"; local "good practices" have to be invented! (Garfield, 2016).

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UNWTO Tourism Market Intelligence and Competitiveness Department (2022)²: World Tourism Barometer. Volume 20 Issue 5, September 2022

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