




Impact of Çal Vineyard Route on Sustainable Regional Development

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Abstract

Sustainable regional development necessitates planning and application towards employing and improving the local resource base, ensuring long-term protection and improvement of natural, cultural and economic environment of the region, and improving the quality of life of locals and visitors. The research aimed to analyse the impact of vineyard routes on sustainable regional development, based on the case of Çal, adopting a holistic sustainability approach and Keynesian assumptions. “Integrated Sustainable Regional Development Model” was developed to derive research themes. The qualitative research included document analysis, informal and formal interviews and participant observation in Çal, to establish the study context. Later, members of the Route were visited, data was gathered through semi-structured interviews and participant observation. Data was analysed through deductive thematic analysis. Çal Vineyard Route is a local initiative and is in its start-up stage. The regional resource base, institutional support and supporting elements were found to be adequate to consolidate economic activity towards wine tourism. However, a lack of infrastructure and a tourism cluster were also noted. In order to positively impact sustainable regional development, the Route will need to coordinate development and receive an overlap from Pamukkale, to develop its own tourism infra- and superstructure to establish economic clustering and a growth pole to promote interregional development.

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INTRODUCTION

Wine and tourism are strong geographical phenomena and agents of sensually experiencing a region (Correia & Brito, 2016; Dickenson & Salt, 1982). Both induce (rural) regional development (EC, 2024). Beyond an agricultural product, wine reflects regional identity, arts, entertainment, cuisine and tourism (Australian Wine Foundation, 1996). Given these links, wine tourism is a prominent type of tourism product to add value to wine, tourism and regional economy (Brunori & Rossi, 2000). Vineyard routes facilitate the integration of wine and tourism, joint marketing, dissemination of information, creating synergy and visibility for the region (Correia & Brito, 2016; Hall, Sharples, Cambourne, & Macionis, 2000).

Research focusses strategic alliances, (Frochot, 2001; Telfer, 2000), wine tourism's contribution to regional development (Arfini et al., 2002; Brunori & Rossi, 2000; Correia & Brito, 2016; Festa, Shams, Metallo, & Cuomo, 2020; Hall et al., 2000; Hall, 2002), vineyard routes' contribution to destination development (Getz, 2000; Oncel & Yolal, 2019), complementarity of winemaking and tourism clusters (McRae-Williams, 2004) winemaking's impact on sustainability (Süer & Keskin, 2023; Trigo & Silva, 2022; Yıldız, 2024).

The present paper differs from literature by specifically focussing on the impact of a vineyard route on sustainable regional development (SRD), a topic tangentially studied. This relationship is regionally and temporally case-specific; Çal, Denizli – Türkiye was selected, with a settled tradition in (quantitative) winemaking, a start-up vineyard route and a non-existent tourism cluster.

An extensive literature review was conducted, including viticulture, wine tourism, experience creation, vineyard routes, regional development, sustainability and authenticity. A holistic sustainability approach was adopted (Akgül, 2010); for its actuality and suitability, since the topic necessitates a holistic outlook. Keynesian assumptions were adopted (Jin Ahn & Juraev, 2023) for reasons of real-life facts of national economy, necessitating governmental interventions, especially after recent crises. An integrated model for SRD was developed, which further requires governmental support.

Qualitative research design includes field study to establish context and visitation of Çal Vineyard Route to gather data, which was analysed through deductive thematic analysis. Findings were presented under corresponding themes derived from the model. The Route was found to benefit from an adequate local resource base and institutional support, a suitable geography and skilled labour for viticulture, Çal's economic node. There are adequate supporting elements for wine tourism. Main weaknesses were brand image, accessibility and tourism cluster. The research concludes to suggest conditions for the developing Route to positively impact SRD, based on the research and similar cases from the literature.

The following section depicts SRD theories, followed by vineyard routes, in the context of SRD, supported by relevant models. Research methodology, case presentation and research findings are given, discussed and concluded along with suggestions.

Regions and Development

The location where a community occupies is a socially constructed living space (Triandis, 1989), where culture develops. Regions develop, adapt, grow or decline, collectively with the community (Dawkins, 2003). A region implies scale of planning & policy-making, a governmental organisation of place, a cohesive

geographic/spatial/functional economic entity, with characteristic political/administrative, natural and cultural dynamics (Dawkins, 2003; Heisler, 2014; Jin Ahn & Juraev, 2023; Jovovic, Draskovic, Delibasic, & Jovovic 2017). Political or geographical boundaries may not correspond with functional economic areas that contain labour and consumer markets¹, necessitating careful definition (Fox & Kumar, 1994) and resulting in disparate environmental, political and economic regions (Dawkins, 2003).

Regionality implies locality; an abstract value, a territorial imagination, sum of local networks, shared identity, which instigate and coordinate development (Heisler, 2014). Locality is communicated to the members and visitors, through physical landscape and the meaning attached to it (Yıldız & Sarıbaş, 2019).

Different from urban regions, where commuting patterns indicate territorial units, rural regions are self-sufficient, and produce raw materials for adjacent urban consumption. Rural population stability depends on the continuation of production and employment. A major production activity creates a node, to consolidate factors of production in the region (Dawkins, 2003). EU rural development policy advocates tourism as a node and catalyst for growth, inclusivity and equity, improving the environment, which serves as the tourist attraction and local resource base (Skuras et al., 2006). Landscape's authenticity evokes a stronger sense of place and memorable tourist experiences, which instigate return and referral visits, providing a solid foundation for the regional identity and destination image (Cohen, 1988; Skuras & Dimara, 2004; Tuan, 1974; Wang, 1999; Yıldız & Sarıbaş, 2019).

A model for effective employment of local capacity through resource development, cooperation and sustainable competition was proposed by the territorial competitiveness approach². It proposes the evaluation and development of the local resource base, including the physical, human, financial and cultural resources, image, relations and know-how. This capital is positioned in the context of the past and the future as well as internal and external factors. The approach promotes interregional and global cooperation only after fulfilling the developmental potential of local resources (EC, 2024; Yıldız, 2004), to ensure a higher multiplier effect and lower leakages, and to promote regional economic growth (Jin Ahn & Juraev, 2023; Nijkamp, Laschuit & Soeteman, 1991; Roberts, 2006). Further growth will create spillover effects and stimulate interregional development.

Regional Development Theories

Regional development mainly deals with the spatial distribution of economic activity (Jin Ahn & Juraev, 2023). Regional development theories emphasise various regional dynamics and relationships that shape regional resource base and economic development (Storper, 1997). Variations in the concentration and prices of factors of production, per capita incomes etc. will result in unique development scenarios. As various theories are evaluated, some common themes emerge, including prioritising the local resource base, clustering, foundation of networks, location and distances. "Clusters are geographically concentrated networks of interconnected firms, suppliers, and related institutions in specific industries or sectors" (Jin Ahn & Juraev, 2023, p.3074). Some theories and their key emphases are given below:

¹ Under the assumptions of Keynesian macroeconomic equilibrium and circular flow model; labour earns wage, to spend on products. The household spends the money earned by offering labour for production, so an increase in purchasing power will increase aggregate demand and cause economic growth.

² EU LEADER+ Initiative

- Location theory: Costs associated with distance from supply and demand
- Localisation economies: Advantages of external economies, by way of clustering
- Relational geography: Regional relationships and dynamics
- Export bases: Mobility of factors
- Exogenous growth: Growth of regional resource base and interregional convergence
- Cumulative causation: Divergence of regions through clustering
- Growth poles: Developed region initiates interregional networks of mobility and growth
- Stage theories: From self-sufficiency to export producer
- Industrial restructuring: From agriculture to service provision
- Product life cycle: Relocation of production to less developed regions
- New economic geography: Regional clusters and internal economies of scale
- The new institutional economics: Producers create networks to minimise transaction costs, and institutional adaptation should favour this
- Flexible specialisation: Adaptation to changing environmental factors through innovation, localised networks and collaboration (Dawkins, 2003; Jin Ahn & Juraev, 2023; Jovovic et al, 2017; Krugman, 1999; Storper, 1997).

Governmental bodies constitute institutional authority in planning, policy making and implementation, steering resource allocation and the course of development (Olali, 1990) through tax incentives, public service provision, land use regulations etc. Keynesian theory advocates intervention to stimulate growth in less developed regions. Infrastructure investments shape economic geography by changing commuting patterns, accessibility, capital investment decisions etc. Government spending increases regional multiplier effects, influencing spatial distribution of economic development (Jin Ahn & Juraev, 2023).

Investment in human resources, physical capital, infrastructure, education and R&D will be needed for sustained development (Jin Ahn & Juraev, 2023). It is imperative to continuously evaluate any development on the basis of its probable impact on the SRD plan (Nijkamp et al, 1991; Roberts, 2006). A long-term, pro-active planning of these interventions will consider spatial differences and aim sustained, balanced regional development.

Sustainability of Regional Development

Humans realised resources for growth, and the planet, have limits, in the seventies. An urgency to contain problems of inequality and resource exploitation, exacerbated by overpopulation, resulted in ideas including sustainability (Akgül, 2010; Jovovic et al., 2017). Initial, local solutions sought a balance between economic growth and natural resources. Progressive debates constructed more holistic and global approaches. These propose that production is dependent on, and imposes costs (externalities) upon, the external environment(s) (Hopoglu & Sevinç, 2020), which are eventually internalised (Schaltegger, Mueller & Hindrichsen, 1996). A simplified illustration of this process is presented below:

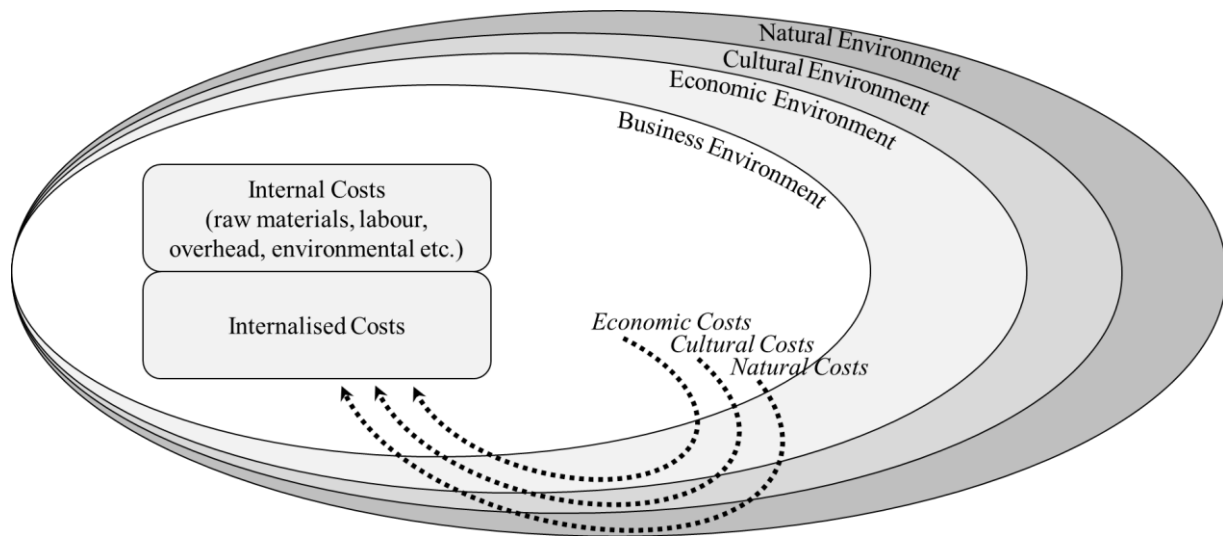


Figure 1. Internalisation of Externalities Model

Source: Adapted from Schaltegger et al., 1996.

A holistic sustainability approach defines development as qualitative improvement of the environment, quality of life, better nutrition, access to proper education and health services, arts, recreation and entertainment, prosperity and equality; on top of quantitative economic growth (Akgül, 2010; Gönel, 2002; Liu, et al., 2022). This will necessitate balance and harmony not only within the environment, but also within and between generations, in the long term (Uras & Acar, 2014). This approach also proposes that sustainable development depends on a sustainable ecosystem (Hopoglu & Sevinç, 2020; IUCN, UNEP, & WWF, 1991; Liu et al., 2022). A holistic solution approach will be global (Nijkamp et al., 1991; UN, 2024a; Whitelegg, 1993). A bottom-up approach means global sustainability strategies should be initiated and implemented locally (Nijkamp et al., 1991).

SRD necessitates planning and application towards employing and improving the local resource base, ensuring long-term protection and improvement of natural, cultural and economic environment of the region, and improving the quality of life of locals and visitors in the region, as well as its neighbours, in the long term. SRD will create a wave of development, creating direct/indirect/induced impacts, synergy with neighbours, resulting in local and global spillover effects (Hopoglu & Sevinç, 2020; Nijkamp, Bergh & Soeteman, 1990).

SRD offers an ideal, rather than a set of universal formulas to achieve, or assess the success of SRD policies; evaluation requires “physical, institutional, financial, cultural, political...” interactions between individual regional elements and shareholders (Roberts, 2006, p.515). The United Nations (UN) devises extensive criteria for evaluation, desired target values, for separate regions and continuously evaluates progress on every Sustainable Development Goal (SDG) (UN, 2024a). Every case will require individual measures based on context and time. The Presidency of Strategy and Budget (PSB) (Presidency of the Republic of Türkiye), published the “SDG Evaluation Report”, where agritourism was given special importance, to add value to agricultural production, improve employment, reduce interregional inequalities and to stabilise rural populations. Sustainability in agriculture and tourism are major subjects in the report (PSB, 2019), as well as Turkish Development Plan. In line with previous EU policies, tourism is favoured for economic diversification, employment and mobility (PSB, 2024). Effective links and management of communication & dissemination of knowledge are required to enable inclusion in decision & policy making

processes, equal opportunities, and intra- and interregional cooperation (UN, 2024b).

An Integrated SRD Model

Integrating various approaches to SRD, with a view to holistic sustainability might seem a complex task. Adopting a realistic viewpoint also necessitates taking growth-oriented Turkish economy into account, with a Keynesian approach. Long-term orientation presents a challenge, since economic growth and stability take priority in the short-term.

a. Efficiency in regional growth drives national economic growth. Initially, developing local resource base takes priority over convergence. This will take advantage of endogenous geographical resources, with a new economic geography approach. Regional clusters and networks will emerge, to enjoy internal economies of scale, and government needs to adapt and direct regional growth through the new institutional economics approach. This cumulative causation of local producers might later create spillover effects for neighbouring regions to create a growth pole, interregional cooperation and convergence. At this stage, crucial innovative knowledge should be disseminated through regional development agencies to improve productive capacity. Producers should follow consumer demands in a flexible specialisation and new institutional economics approach.

b. Equity in regional development complements efficiency. As more developed regions transition stages of production in an industrial restructuring process, tourism offers a diversification alternative, to further enhance regional capacity that encourages factor mobility. While regional clusters and networks will result in disparities in development, government should allocate resources to improve lagging regions to ease congestion in more developed ones. By favouring factor mobility and institutional adaptation, interregional development enables national growth. Ultimately, an overall improvement in quality of life of the population fulfils SRD requirements. Regional communities who adopt sustainable practices through learning and practice will be more effective for long-term SRD than measures imposed from above (UN, 2024b).

The Integrated SRD Model is presented below:

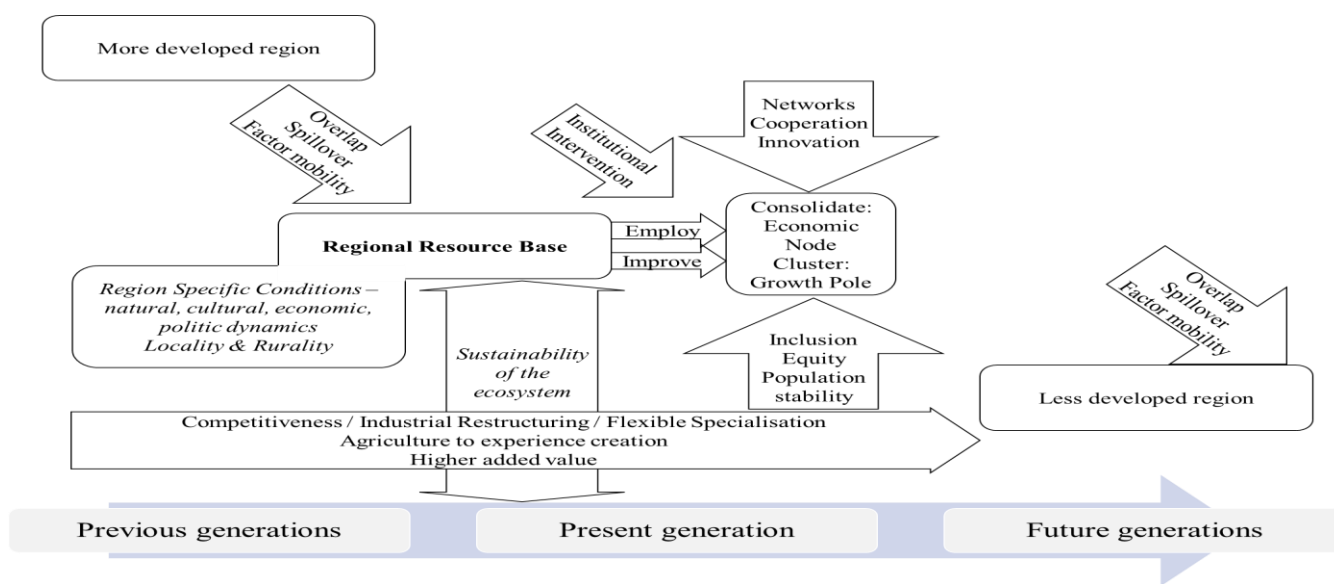


Figure 2. Integrated SRD Model

Source: Adapted by the author

As local resources are employed and their capacities improved, per capita income increases, economic activities are consolidated & clustered. This synergy is fostered by institutional support/intervention, networks, cooperation and innovation. Local resource use improves regional multiplier effect, sense of community and authenticity of tourist experience, reducing leakages and transportation related carbon emissions. The development efforts should aim equity between all shareholders, past and present, inclusion and population stability. Sustainability of the ecosystem links the regional resource base to future generations. The region improves its competitiveness through flexible specialisation to create higher added value. Sequentially, once their local resource base is fully employed, more developed regions as growth poles will create overlaps and spillover effects for less developed ones through factor mobility, reducing costs and improving interregional and national development.

This is the core category of the Integrated SRD Model and the first theme. Resources in production including raw materials, labour, skills and know-how, capital and entrepreneurship etc. should be sourced locally as much as it is feasible. Local resource employment will increase the multiplier effect, added value and sense of community and ownership. Local food supply will reduce transportation related carbon emissions and improve the quality and authenticity of F&B service for the visitors.

Vineyard Routes

A vineyard route is an expression of wine producers' cooperative, and wine tourism. It aims to create a local experience based around wine, to add value to wine, grape, soil, and local people. It is expected to create synergy between members, improve the quality and promotion of the wine, along with the local resource base, create employment and ensure population stabilisation.

Economic Clustering

Vineyard routes emerge as regional economic clusters/networks that improve local resource base. Wine producers habitually form voluntary, (in)formal, strategic collaborations (Gulati, 1998; Telfer, 2001), since competition in wine industry is not monopolistic, as in beer (Ascher, 2012; WSET, 2012). Partnerships offer advantages in joint promotion, networking, dissemination of marketing and technical knowledge, and competitiveness of the whole initiative (Brunori & Rossi, 2000; Hall, 2002; Pavlovich, 2003; Telfer, 2000).

An example is French Wine Brotherhoods (*confréries*), organised in many French appellations. These unions operate on strict foundations, organise regular events, and aim to conduct the marketing of French wines more efficiently (Frochot, 2001). Winemakers' clustering largely depends on geographical factors; vineyards, localisation, infrastructure, distances (between members as well as the supply & demand) etc. Success and competitiveness of the cluster will depend on its ability to capitalise on the local resource base and conduct the cluster innovatively (McRae-Williams, 2004).

Wine Tourism

As a product of wine tourism, vineyard routes involve a much wider scope of shareholders. It is a regional amalgamation of wine producers, tourism service provision, supporting elements, sensory stimulation and attraction, including the natural and cultural landscape, local artistic production, agriculture, commerce, hospitality, event organisation and more (Telfer, 2001; Yıldız, 2004). Unlike commercial unions, wine tourism involves the whole regional economy to cooperatively create value, creating a setting for new institutional economics (Brunori & Rossi,

2000). Because the visitors’ needs are immense, tourism service provision should include a wide network of establishments (Goeldner & Ritchie, 2009).

Wine tourism encompasses wine related main attractions including increasing one’s capital, visitation of vineyards and regions, experience and recreation, in a rural/agricultural tourism setting of aesthetically pleasing open spaces (Hall et al., 2000; Işıldar & Yıldız, 2020; Yıldız, 2009). Wine tourism offers absolute advantage in transferring the unique characteristics of the region, including its story, nature, culture, heritage, traditions, history, mythology, agriculture and cuisine, in a controlled environment (Arroyo, Knollenberg & Barbieri, 2021; Bessièrè, 1998; Brunori & Rossi, 2000; Bruwer & Alant, 2009; Hall, 2002; Mitchell, Charters, & Albrecht, 2012). This creates a co-creative, active tourism setting, resulting in more memorable and transformative experiences (Hamilton & Alexander, 2013; Kruja & Gjyrezi, 2011; Pine & Gilmore, 1999), crucial in repeat/referral visits and destination image formation (Kim & Fesenmaier, 2015; Santos, Ramos, Almeida & Santos-Pavon, 2019). Critical success factors of wine tourism development include the quality of the product, the nature of the experience, winery appeal, effective marketing, coordinated development, on top of quality of the wine, of the wine region experience, the regional cuisine, and of service provided to visitors (Getz, Dowling, Carlsen, & Anderson, 1999)

Wine tourism adds value to winemaking by offering a direct sales channel to lower marketing and distribution costs, and economic diversification (Dunn & Wickham, 2016). It also necessitates a reversal of new economic geography theory, locating the vineyard in the centre of service provision.

Vineyard routes consolidate wine tourism efforts. They boost overall local economy by utilising the leverage effect of tourism and reducing leakages, if local resources are favoured (Hall, 2002). While improving the local resource base and enabling the transition of stages of production, industrial and institutional restructuring, wine tourism further encourages mobility of factors, creating spillover effects, growth poles, interregional cooperation and equity. A vineyard route ultimately adds value to wine tourism, by enabling the creation of a more holistic tourism experience around local wine, multiple winemakers and the wine growing region; just as wine tourism adds value to wine as a commodity and wine adds value to the agriproduct, grape. This sequential value generation is an example of industrial restructuring theory and may be illustrated below:

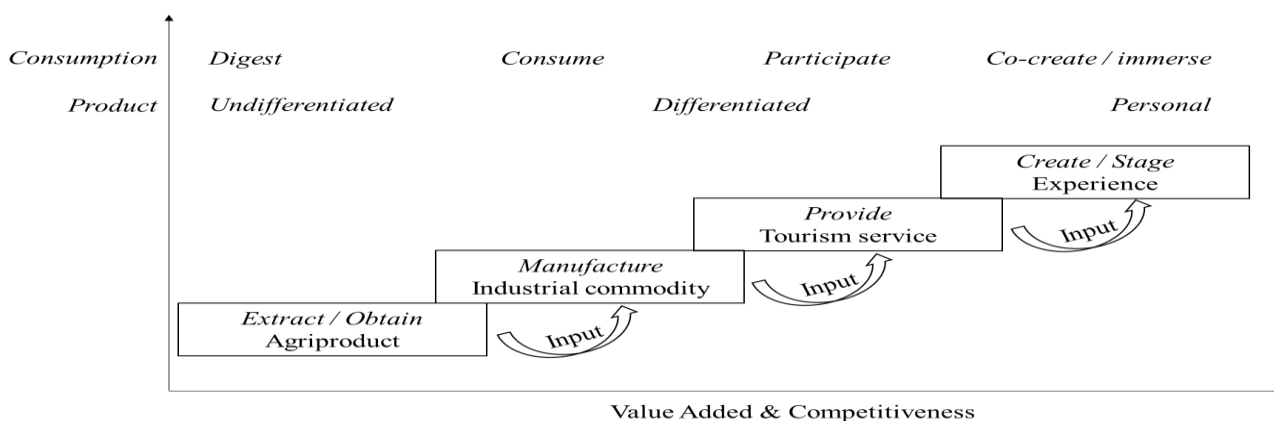


Figure 3. Vineyard route sequential value generation model

Source: Adapted from the experience economy model (Pine & Gilmore, 1999), industrial restructuring theory and the classical production theory

Vineyard Routes and SRD

A sustainably conducted vineyard route is expected to contribute to SRD. Small-scale, special-interest oriented tourism can very well be sustained; however, it depends on numerous factors besides congestion, including a proactive, long-term tourism development plan and implementation, behaviours of visitors, locals and establishments, diversification etc. (Yıldız, 2022).

A number of conditions apply to the vineyard route's impact on SRD. Proximity of members and the geographical unity of the route is essential for the perception of visitors. Cues including road signs, (attendance to) events, maps and brochures add legitimacy to vineyard routes (Brunori & Rossi, 2000). Professional communication links create business networks, disseminating technical knowledge regarding marketing, innovation, sustainable winemaking and tourism service provision (Arfini et al., 2002). An external platform may facilitate communication and prevent withholding of information (Giuliani, 2007).

Another business network between winemakers and tourism industries will improve competencies of the route members (Correia & Brito, 2016; McRae-Williams, 2004; Telfer, 2000). An approach is the overlap of regional wine and tourism clusters. Based on cases in New Zealand wine routes, McRae-Williams (2004) proposes that complementarity of wine and tourism clusters in similar levels of maturity will create the highest benefits.

Regional links are further strengthened by the route's visibility as an agent of regional promotion (Brunori & Rossi, 2000). The existence of a GI and the reputation of the grape growing region/brands support this visibility. Presentation of local values to guests generates appreciation for local heritage, resulting in mutual advantages in publicity (Correia & Brito, 2016). Further, community involvement generates higher synergy and inclusion (Jones, Singh, & Hsiung, 2013). A compatible and cohesive co-existence of the vineyard route and the region creates a "winescape", a holistic regional experience for the guest (Hall et al., 2000).

Vineyard routes may introduce tourism as a leverage for SRD. The resulting branding advantages are expected to create direct benefits for winemaking and tourism and induced benefits for the region and its neighbours in the long run (Hall et al., 2000).

Some case examples include:

- The Western Australia Regional Wine Tourism Development Plan emphasises the potential value tourism may add to the wine industry, through establishing and improving standards, improving employee competence and strengthening links between Australian wine, food and lifestyle all the while maintaining competitiveness and sustainability (Carlsen & Dowling, 2001).
- The Geographe Wine Region (Australia) planned to create an awareness programme to raise the region's visibility, signage and road maps, a regional wine centre, establishment of a regional tourism board to coordinate efforts and wine tourism training for the wineries (Aloysius & Lee, 2001).
- The Niagara Wine Route (Canada) aims to create competitive advantage and a growth pole. Village, town and regional clusters (of 50 wineries) are interconnected along with heritage centres, shopping districts, a theatre, accommodation, which are all connected to the major tourist attractions of Niagara Falls (Telfer, 2015).

Maintaining the Vineyard Route

Maintaining a vineyard route is not without its challenges. First, winemaker ventures in tourism, potentially causing conflict (Domenico & Miller, 2012). While winemaking is mostly arduous manual labour in private settings, tourism requires an opposing openness (Correia & Brito, 2016). This necessitates flexible specialisation, overlap of tourism and winemaking clusters, new networks, new employees and competencies. Strong production orientation, financial and entrepreneurial constraints or reluctance to rely on tourism income impede integration into tourism (Aloysius & Lee, 2001).

Second, the vineyard route should be integrated in the SRD plan. Members should be supported in sustainable practices, including regenerative/organic/natural agriculture, circular economy etc. (Sürer & Keskin, 2023; Yıldız, 2024). Certificates, regulations, geographical indicators (GI), visitor management and education, service provision, meal preparation and ingredients, guided tours, group sizes etc. are areas of concern (Festa et al., 2020; Trigo & Silva, 2022). This will require institutional adaptation.

Finally, maintaining the dynamics, collaboration and network of members, managing knowledge dissemination and conflict, preserving trust, autonomy, commitment, common and competing interests are all challenges brought along by the route (Brunori & Rossi, 2000; Pavlovich, 2003; Telfer, 2001; Watkins & Bell, 2002). A lesson might be taken from the Waterloo-Wellington Ale Trail, which was reported to fail due to quick expansion and competing interests of members. Communication of shared goals and viewpoints failed, and shareholders were not able to reconcile their differences (Plummer, Telfer, & Hashimoto, 2006).

Vineyard Routes do go through stages of development in time. A “Winery Tourism Life-cycle Development” model suggested by Dodd & Beverland (2001) states at start-up, tourism is used as a leverage for direct sales but at later stages of growth and expansion, tourism helps develop distribution channels, brand awareness and brand enhancement.

Study Methodology

The present research set out to analyse the impact of a vineyard route on SRD, based on a case study in Çal, a province of Denizli, Türkiye.

Research Method and Philosophy

To analyse the impact of Çal Vineyard Route on SRD, a combined qualitative research design was constructed for the purposes of the study. After the development of theory through literature review, a field research was conducted in Çal to establish the research context, combining document reviews, participant observation, informal and formal interviews. Later, members were visited, participant observation and semi-structured interviews were conducted. Data was analysed through classical deductive thematic analysis.

This design allowed the researcher to personally engage in the real-life processes that are relevant to the research question and gather first-hand knowledge (Yıldırım & Şimşek, 2021). Instead of denying the subjectivity and bias inherent in qualitative research, postpositivist approach suggests embracing the fact, identifying possible sources of bias and applying proper methods to improve objectivity of the findings (Devers, 1999).

To reduce the effect of observer intervention on the objectivity of the results, the respondents were first asked

broad, general questions to reflect their points of view, upon which the results would be critically analysed. The general aim of the study is masked as much as possible, to prevent guiding the respondents. Sentimental quotes were ignored. Following questions were selected to be more specific and preventive of subjective remarks. Crosschecks were done where necessary (Oswald, Sherratt, & Smith, 2014). Legal and formal assurances were given to gain trust and prevent modification of their answers. Interviews were held at respondents' own environment for their comfort and safety to reduce social desirability bias (Bergen & Labonté, 2019). To reduce observer's bias, every word and observation was noted, to prevent observer drift and simultaneously & iteratively analysed to prevent recall bias. Standard questions were directed to all respondents. The text was semantically analysed to exclude sentiments and personal views (Oswald et al., 2014).

Data Gathering

Throughout the field study, literature and official information on the geography, agriculture, viniculture, culture and history of Çal were reviewed. Unofficial interviews were conducted with locals, including a professor and journalist from Çal, to build the foundation and network for the interviews. Separate question forms³ were devised for the research, after extensive consultations with professors of economy, accounting and environmental engineering, to improve validity and reliability. Overlapping questions were directed for cross-reference and confirmation. Questions and points of observation directly relate to the factors depicted in the Integrated SRD Model.

Necessary ethics committee approval was granted by the Social Sciences and Humanities Scientific Research and Publication Ethics Committee of Dokuz Eylül University, Izmir, Turkey, by the approval paper number 1227817, decision number 8, on 13.12.2024.

A teleconference was held with Denizli Provincial Directorate of Culture and Tourism, where the director, vice director and the Çal Vineyard Route project officer were present. The president of Çal Chamber of Agriculture, and the project coordinator/consultant to the Çal Vineyard Route were interviewed on the phone. Interviews lasted around 45 minutes, replies were noted. The field research ended as data saturation was reached. Later, all four members of the route were visited. Semi-structured, in-depth interviews that lasted around an hour were conducted, and replies were noted. Key observations were also photographed⁴. Data gathering lasted through January & February 2025.

Data Analysis

Classical thematic analysis was employed for the analysis of the data. Themes (SRD Factors) were derived from the Integrated SRD Model, resulting in a deductive nature. The analysis necessitated wording of every observation, respond and note. Simultaneous and iterative analysis continued through writing. Different sources of data were separately written down on paper and re-read to improve familiarity with the data. Recurring keywords were open coded, which were grouped under the themes (Naeem, Ozuem, Howell, & Ranfagni, 2023). To process the large volume of qualitative data, writings were mapped and grouped on paper and Microsoft Excel. No analysis software was needed.

To improve the trustworthiness of qualitative research, prolonged engagement with the study field and members,

³ Question forms are included in Appendix 1

⁴ Some photographs are included in Appendix 2

persistent observation to pin-point critical factors, triangulation of data sources (field notes, interview notes, document analysis, observation notes) and data collection methods and member check to confirm main points at the end of interviews were implemented to improve credibility (Creswell, 2009). An extensive report about Çal is presented to establish research context, in a thick description approach, to improve the findings' transferability. The audit trail is detailed transparently to improve dependability and confirmability. Findings were continually challenged against the researcher's own assumptions and preconceptions to ensure reflexivity (Korstjens & Moser, 2018).

Study Context – Çal Vineyard Route

The description of Çal is essential for the research to establish context. This section includes findings of the document analysis and the field research conducted on Çal, a rural town with a deep-rooted viticulture tradition.

Çal – Viticulture

Türkiye ranks 5th in terms of vineyard surface area, boasting a suitable geography and millennia of heritage, but winemaking and wine tourism potential is gravely underutilised (Gümüş & Gümüş, 2009; OIV, 2021; OIV, 2023; Oncel & Yolal, 2019; Yıldız, 2024). The number of small-scale winemakers is increasing, and vineyard routes may provide these with crucial assistance. (Oncel & Yolal, 2019). While Çal is prominent in viticulture, decline in vineyard area saw its population drop. Today, Denizli produces 20%, and Çal 16%, of all the winegrape produced in the country. ¼ of Çal's surface is covered in vineyards, producing around 15000 tonnes of fresh grapes. Its climate is dry, warm continental on a high altitude (911m), soil is mostly arid, creating a favourable microclimate for viticulture and a shorter vegetation period (Ates & Uysal, 2017). Dry climate reduces the need for pest control. Traditional additives in small doses are utilised, including sulphuric antioxidants, copper sulphate as antifungal and goat manure as fertiliser. ¾ of grapes cultivated in Çal are reserved for winemaking (Barat & Bucak, 2022; Şahinarslan, 2019). ½ of all Denizli and ¾ of farmland is highly suitable for viticulture, where all vineyards lie (Ödeker & Bayar, 2021).

Çal lends its name to the Çalkarası⁵ (Denizli), which was registered as a GI in 2020 (Türk Patent, 2024), offering advantages in winemaking, marketing (Kan, Gülçubuk, & Küçükçongar, 2012). However, genetic authentication of native varieties is problematic (Sen & Tokatli, 2014).

Viticulture is a clear economical node for Çal, generating more than half of its income. As a nodal region, it imports production factors, most notably labour, from its neighbours (Bekilli, Güney etc.). Local labour force (in and around Çal) is reported to be sufficient and highly experienced in viticulture. However, Çal traditionally focusses in bulk table wine, wholesale of grapes to larger producers or contractual mass wine production. consequently, Çal lacks a brand image of reputable, premium wines. Although this is indemonstrably subjective, other Turkish wine regions, for instance Urla (Izmir, Türkiye), demonstrate an inclination to produce smaller amounts of wine that command premium prices.

Viticulturists struggling with rising costs are more short-term oriented, making them less willing to adopt sustainable practices. Lack of innovation was also reported (Şahinarslan, 2019), and lack of soil analysis caused

⁵ The suffix -karası directly refers to the black grape, as in Adakarası, Horozkarası, Papazkarası, Kalecik Karası, Antep Karası black varieties, in the same vein as Pinot Noir or Nero d'Avola. However, the name might also have originated from the Greek word "krasi" (κρασί), meaning simply, wine.

depletion of phosphorus and sodium and toxicities of salt and boron (Güneş, 2009). Inefficiency in marketing and loss of productive population are other problems (Saritaş & Utku, 2017). Recent initiatives aim to improve and modernise viticulture (Kadioğlu, 2008). Organic farming is encouraged by the Chamber of Agriculture. Organic fertilisers are subsidised. Winemakers find proper alternatives for marc re-use. A recent development is the foundation of Çal Cooperative for tourism and agriculture purposes, designed to be integrated with the route.

Çal – Tourism

Çal's sparse population, large vineyards, established traditions and an abundance of ancient sites in and around Çal, including Pamukkale & Hierapolis, Laodicea, Apollon Temple and Dionysopolis offer potential for tourism (Çal Vineyard Route, 2024). Ongoing excavations unearthed viticulture related heritage (grape seeds and winemaking equipment) dating back 7000 years. However, a tourism cluster in Çal is non-existent, with no proper accommodation. New legislation⁶ allows rental of private property, including wine estates, as accommodation units. Wine estate of Lermonos (Route member) has been granted licence.

Highway connecting Denizli and Pamukkale to important cruise ports of İzmir and Kuşadası is highly efficient, but roads to Çal are inadequate, with plans to improve accessibility. There are projects for empowering the town's women and youth, through (vocational) training and the preservation of local food production and cuisine. Another project is developing an audio guide for Çal, including the Route. Rural tourism efforts are directed by the project for rejuvenation of local destinations, by the Turkish Ministry of Culture and Tourism, in collaboration with development agencies, local authorities, sectoral representatives and CSO's.

Çal Vineyard Route

Çal Vineyard Route⁷ is a local initiative, aiming to integrate wine, tourism and promotion. It includes 4 of the 18 vineyards in Çal. Membership requires provisions for tasting and a direct sales outlet, both requiring separate licences from winemaking. Management of the Route, trainings regarding tourism and sustainable viticulture are conducted through members' own means, coordinated by their external consultant. Local institutions have been supporting the initiative in monetary and technical terms.

Members are:

1. Küp: One of the most established and iconic winemakers in the country and the largest member, Küp produces 4500 tonnes annually. Wine tastings are held in the scenic tasting room, and the old winery that contains Roman wine jars⁸ and artwork is to be turned into a museum.
2. Lermonos: Viticulturists for two decades, Lermonos has been producing their own wine since 2021, 200 tonnes annually. They transformed an abandoned stone wine factory into a rustic restaurant, serving local and international menu items, with mostly local ingredients and local cheese.
3. Erdel: A high-volume winemaker that began production of premium wines under the name of the village the factory is located, Hanchalar. Erdel offers wine tastings in their rustic tasting room, with plans of a restaurant and a

⁶ Act nr. 7464 (<https://www.mevzuat.gov.tr/mevzuat?MevzuatNo=7464&MevzuatTur=1&MevzuatTertip=5>)

⁷ Please refer to Appendix 2 for photographs

⁸ The winery is named after the Turkish name for these Roman jars

boutique hotel. The producer explicitly expresses a desire to add value to local viniculturists and to create employment for the local youth.

4. Kuzubağ: The producer has been bottling their wines since 2021, from vines planted in 2007, 350 tonnes annually. The wine estate was built exclusively from exposed concrete based on gravitational/sustainable principles. Wine tastings are held in a spacious tasting room with floor-to-ceiling windows to accentuate the feeling of open air. Some local and international recipes are served as accompaniments.

The case study concludes favourable natural conditions for viticulture and an established tradition based around it. Supporting elements were found to offer potential for a richer and diverse tourism experience based around Çal wine. Support from local institutions and local collaboration towards establishing Çal as a destination are also documented. Inadequacies in transportation, accommodation, brand image and innovation are acknowledged, along with plans of improvement.

Findings

The process of open coding and grouping under the predetermined themes is summarised below. Findings will be evaluated and interpreted in the concluding section, including suggestions for the future.

Theme 1. Regional Resource Base

Keyword	f	Code	Theme
Rural	10	Regionality	Regional Resource Base
Authenticity	5		
Local	21		
Festival/event	8	Networks	
Integration	7		
Development	11		
Labour	10		

Notes: Members prioritise local resources, including labour. All members grow and promote Çalkarası. Menu items include some local recipes, or their interpretations, and utilise mainly local ingredients. Some include sales outlets for local handicraft and food. All members include Çal as an appellation on their labels, along with local heritage, names and motifs.

“All our employees are locals. We prioritise employing the local youth.” (E)

“We participate in the harvest festival. [An] opportunity to bond with local people. It helps our visibility. This year we invited musicians to the festival.” (Ku)

“We try to [conduct viticulture] the way it has been done here for generations. We reflect local values on our labels.” (E)

“As much as we enjoy preserving local stories, we see ourselves as a part of them.” (Küp)

Theme 2. Sustainability of the Ecosystem

Keyword	f	Code	Theme
Organic	7	Natural Methods	Sustainability of the Ecosystem
Ecology / ecologic	4		
Respect	3		
Soil	6		
Sustainability	8		
Waste	6	Resource & Waste Efficiency	
Irrigation	5		
Fertilisers	4		
Pest control	5		
Certification	5	Quality Management	
Quality	3		
Innovation	2		
Vineyard management	4		
Cost	2	Grape Growing	
Production	10		
Agriculture	14		

Research Notes: Two members are acquiring official organic agriculture certification. Certification trainings are provided. Irrigation capacity is extremely limited. One member noted to (double) utilise the drip irrigation system to transport certified liquid organic fertiliser, pheromone traps instead of synthetic pesticides and logical vine planting direction to allow airflow. Manual harvest is preferred.

“We need to respect the grape, nature and people.” ... “The facility uses gravity to transport grapes and wine. This reduces the need for pumping and energy expenditure. Fermentation, storage and aging sections are built underground. This naturally keeps these cool and saves on energy.” (Ku)

“We may have no direction but sustainability” (L)

“The vine is in harmony with the geography. Viniculture will improve overall agriculture. Nature will take care of me. It will nurture me. I trust the soil.” (L)

Theme 3. Clustering & Consolidation

Keyword	f	Code	Theme
Workshop	3	Improving Resource Capacity	Clustering & Consolidation
Consultation	5		
Training	11		
Labour	10		
Sharing	2	Synergy	
Cooperation	11		
Competition	3		
Support	21	Improving Institutional Capacity	

Clustering of winemakers to create an effective and equitable vineyard route is the central focus of this study. This necessitates improving capacities of the regional resource base and institutions.

Research Notes: Members share technical knowledge and resources, co-utilise their laboratories, while maintaining independency. Expansion of the Route is desired, to improve brand image and competitiveness of Çal wine. The route received endorsement and technical assistance from the university and local government in the project phase, in areas of sustainability and tourism. The route consultant provides guidance to members.

“We have high hopes from the cooperative, to support higher quality viniculture and winemaking. This will also generate employment for the locals.” (E)

“We invited [famous food journalist] to provide service training for our employees. We also invited [famous chef] to train our cooks.” (Ku)

“[Various local institutions] offered support for the cooperative. And the route. And we expect more.” (E)

Theme 4. Restructuring

Keyword	f	Code	Theme
Tourism	25	Tourism Cluster	Restructuring
Accommodation	7		
Accessibility	4	Inclusion	
Integration	7		
Promotion	11	Regional Economy	
Landscape	2		
Infrastructure	7		
Value / income	8		

Restructuring implies joint promotion for a more efficient use of capacity, increased sales and visitation. This local synergy may very well create a catalyst and a wave of development, and spillover effects.

Research Notes: Facilities are in harmony with the natural landscape. Structures are low with underground storeys to ensure optimal fermentation and storage conditions.

“Wine tourism and vineyard routes may spread tourism throughout the year. This may redirect tourists to new destinations. These are important issues in the sustainability of Turkish tourism. The vineyard route must create value for the country.” (L)

“Our main building is intentionally low. Our founder did not wish to spoil the landscape. Building material is fully exposed concrete and every possible side is made of glass. That gives an air of freshness and open air.” (Ku)

“We are planning to build a larger tasting room [at the front] and a guesthouse. I believe this will be necessary if there is to be wine tourism in Çal.” (E)

“The roads will be improved. I know there are projects.” (L)

“Rural development will ensure higher agricultural income for the farmers. Tourism will provide economic diversification for them. It will also improve their quality of life and prevent emigration. Increase in visitor numbers to the region will only improve these benefits.” (L)

Çal Vineyard Route, and Çal as a destination, are in start-up phase. This presents an opportunity to be pro-active. While a long-term vision is reported, a plan was not. The Route is open to expansion. Members have reported direct sales to account for a minor share in their total sales. However, as visitation increases, this is expected to shift.

The initiative, in collaboration with the municipality, has been working on improving the local roads, by their own means. The road is reported to include a tunnel to shorten the distance between Pamukkale and Çal. A tour group visiting Pamukkale also visited the Route, and group visitation is expected to increase in time.

Conclusions and Suggestions

This study investigated how a vineyard route may have may impact SRD, based on a case of a start-up vineyard route and a non-existent tourism cluster. Building upon literature in the dynamics of vineyard route formation and management, while touching on the subject of regional development tangentially, the present research differs from, and aims to add value to these. While Correia & Brito (2016) focus on wine tourism's impact on regional economic development and Trigo & Silva (2022) outline how wine tourism may impact sustainable development in their seminal works, this study aims to integrate various approaches to regional development and sustainability to create an Integrated SRD Model, and apply this to ascertain the conditions of how vineyard routes may contribute to it. Four main themes emerged, Regional Resource Base, Sustainability of the Ecosystem, Clustering & Consolidation and Restructuring.

The selected case, Çal Vineyard Route is a recent local initiative, offering potential implications for the future. In line with McRae-Williams' (2004) compatibility of vineyard and tourism clusters approach, conditions for their development were depicted. Further, the wealth of experience in vineyard route formation & management offered by Telfer (2000) were applied, in an industrial restructuring approach, to the transition from agriculture to experience creation (Pine & Gilmore, 1999).

The field study resulted in key strengths for the Route. The regional resource base is an absolute competitive advantage for viniculture, including favourable terroir, skilled and sufficient labour, heritage and a (reported) lack of need for irrigation and pest control. This is reflected in the volume of production and results of residue analyses. Local resources are prioritised, improving authenticity and efficiency. Supporting elements offer potential to enrich & differentiate the budding wine tourism in the region. The enriched wine tourism product offered by Niagara Wine Route clustering may be taken as a benchmark (Telfer, 2015). Members expressed initiative and awareness towards sustainability. Institutional support for the improvement of regional resource base as well as industrial restructuring was noted. Improving local resource base will increase per capita income, aggregate demand and promote regional economic growth.

The study also resulted in key weaknesses. Strategic marketing efforts are needed to build a reputation of a premium wine producing region. The Route may function to improve reputation and recognition for wine consumers. The main obstacle against a functioning vineyard route was found to be a lack of infrastructure. Roads to the route and between the members need improvement. Lack of accommodation and tourism service provision indicates a non-existent tourism cluster.

The Route is in its start-up (Dodd & Beverland, 2001) or potential (McRae-Williams, 2004) stage, and its potential for development, and impact on SRD depend on all critical success factors offered by Getz et al. (1999), most notably coordinated development. A "wine region development plan" (Carlsen & Dowling, 2001), a wine region (promotion) centre and the establishment of a wine tourism board (Aloysius & Lee, 2001) are all realistic recommendations for the coordination of development, based on relevant literature. This coordination may be assumed by an eventual association for the Route, working alongside the local authorities, to ensure inclusion, competency building, joint promotion and industrial restructuring.

Here, based on the literature on interregional development, an overlap can be suggested, as indicated in the

Integrated SRD Model. Pamukkale is a well-established destination, with a variety of unique attraction factors, ample bed capacity, accessibility and decades of tourism experience. As the “more developed region” in the model, overlap of its tourism infra- and superstructure will create spillover benefits for Çal. A tour bus from Pamukkale already visited the Route, however this was an individual event. This overlap still necessitates the improvement of roads. Through the continuation of Çal Vineyard Route, the region may access the resources, support and expertise to develop its own tourism cluster. This will improve the Route’s offer and create a leverage for regional development, offering new opportunities for employment, entrepreneurship, direct & indirect income. Sequentially, mobility of factors will create spillover effects to Çal’s neighbours, to further interregional development.

Sustainability of the ecosystem revealed mainly positive results, owing to the compatibility of Çal’s geography with viticulture. However, use of terms such as organic, sustainable, natural etc. may create oversight, if used as a one-size-fits-all approach. Sustainable production methods necessitate evaluating context, including regular, thorough soil analysis. A study already found persistent depletion and toxicity problems (Güneş, 2009). Applications must be tailored to the terroir. Authentic and traditional methods, as well as innovation also need to be incorporated, for both sustainable agriculture and presentation of regional heritage to guests.

Clustering and consolidation are in early stages. While institutional support was noted, long-term benefits aren’t assured. An inclusive local authority will be more efficient in conducting SRD policy making, planning, management and monitoring. Improving integrated regional plans and projects of sustainable development will necessitate efficient knowledge platforms and cooperation. A collective vision of sustained regional development, including infrastructure, healthier environment and nutrition, training, education, arts, culture and health services will more likely to ensure long-term regional development, than imposed measures. Any development plan will initially need to take the carrying capacity of local elements into account, as evidenced by Trigo & Silva (2022) in the Douro (Portugal) example. Promotion should be geared towards attracting visitors with higher awareness, and preventing congestion. The plan should be devised collectively, and list achievable, sustainable and easy to understand targets. Finally, implementation, monitoring and adaptation of the plan should be an inclusive and transparent process.

The findings conclude, at the early stages of Çal Vineyard Route, several key indicators that may positively impact SRD. Still, it should be reminded that SRD will depend on a complex network of multiple factors, context, and time. Through careful management and possible expansion of the Route and integration with a developing tourism cluster, the Route may add value, identity and competitive advantage to Çal’s main economic node; viticulture, and create opportunities for economic diversification, improving its wine’s reputation and an overall growth of the regional economy. In time, the region may foster interregional development.

It can be concluded that Çal Vineyard Route offers potentially positive impacts for SRD, provided:

- Investments in improving infrastructure, accommodation, human resources, education, R&D take place.
- Employees receive training in tourism service provision, restaurant production and service.
- Efficient integration of local heritage into service provision for a coherent visitor experience is assured, including storytelling, tours that include stops in archaeological sites, local restaurants etc. and events that integrate the locals, visitors and the Route.
- A holistic, inclusive overall pro-active plan is devised to benefit all parties involved, including future

generations.

- Efficiency of existing channels of communication are improved.
- Further, viniculturists are trained, and possibly incentivised, to select and apply sustainable methods and substances, based on analyses of their own plots. Holistic sustainability necessitates all grapes are grown sustainably in the region.

Managerial Implications: SRD requires numerous variables, and guidance of efforts towards common goals. It is highly contextual and temporal. The findings may be useful for destination development and marketing agencies and local initiatives in indicating possible key factors for SRD, in similar conditions. Primarily, assessing the specifics of this case will improve its generalisability.

Research Implications: More research on other cases, and future research in Çal are required for wider generalisation of findings. The findings and conclusions obviously apply on the current state of Çal Vineyard Route. The research was limited by the low number of member winemakers; however, this allowed for a deeper field study. The start-up phase allowed documentation of its emergence to base future research on, as well as suggestions to ensure its sustainability. The “Integrated SRD Model” was devised based on much of the regional development theory, but with a view towards wine tourism.

Declaration

Necessary ethics committee approval was granted by the Social Sciences and Humanities Scientific Research and Publication Ethics Committee of Dokuz Eylül University, Izmir, Turkey, by the approval paper number 1227817, decision number 8, on 13.12.2024.

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Appendix 1. Question forms

Phase 1

- Winemaking as economic activity
 - o How important is winemaking in Çal's economy?
 - o Do we have actual figures?
 - o What are the taxes imposed on winemaking?
 - o Are there any incentives in winemaking or tourism?
 - o Are there plans to increase wine production?
- How is the vineyard route supported?
 - o Is any training offered to winemakers?
 - Training may include sustainable agricultural practices, waste management, water / energy efficiency, wine production process, additives, techniques, labelling, transportation etc., tourism service provision, promotion of local heritage, local cuisine, mythology
 - o Are there any other incentives?
- Is the local workforce promoted?
 - o Is there vocational training available that is related to winemaking or wine tourism?
 - o Are any local resources promoted?
- Landscape protection
 - o How is the landscape managed / improved?
 - o What are the measures taken?
 - o Is the infrastructure adequate for winemaking, transportation, safety & security?
 - o What are the infrastructure investments taking place?
- Tourism planning
 - o Is the vineyard route included in tourist maps, local guided tours, apps?
 - o Is the transportation & accommodation capacity adequate?
 - o Are there any measures to improve transportation?
 - o Are there any measures to increase bed capacity?
 - o Are there any measures against congestion?
 - o Are there any plans to further develop the route?
 - o Are locals included in the planning process?

Phase 2

- Sustainability of agriculture
 - o Use of sustainable practices: Water, energy, waste management, harvesting technologies, pest control, soil management, cleaning, transportation
 - o Are byproducts / waste further processed, reintroduced in production?
 - o Are sustainable practices promoted?
 - o Do you share sustainability – related technical knowledge between members?
 - o Do you possess any certificates?
- Tourism experience
 - o Are there organised tours?
 - o Are supporting factors, outside of wine, included in the route?
 - o How is the cooperation in terms of tourism?
 - o Which elements of local heritage are included in the presentation (local cuisine, history, soil, climate, mythology, culture etc.)?
 - o What is the ratio of direct sales to your total sales?
 - o How important is wine tourism in generating direct sales?
- Local resource use
 - o What is the ratio of local employees (permanent & seasonal)?
 - o How important is it to hire locals?
 - o Is the local workforce adequate?
 - o Are there any measures taken to improve local workforce?
 - o How much local ingredients are used in winemaking or service provision?
 - o How important is it to source locally?
 - o How many of the winemakers are locals?
 - o Are there winemaking practices unique to Çal?
 - o Are the locals included in the management of the route?
 - o Are there events towards locals?
- Clustering
 - o Do you believe the route is beneficial to individual winemakers?
 - o Are there plans to expand the membership?
 - o Do you support each other in areas of marketing, sales, technical issues, consultants, tourism etc.?

Appendix 2. Çal Vineyard Route Photographs



Photo 1. Çal Vineyard Route Signage



Photo 2. Kuzubağ Winery: Construction in line with the landscape



Photo 3. Lermonos Winery – External

Appendix 3. Ethics Committee Permission

Ek-1

T.C.
DOKUZ EYLÜL ÜNİVERSİTESİ
SOSYAL VE BEŞERİ BİLİMLER
BİLİMSEL ARAŞTIRMALAR VE YAYIN ETİĞİ KURULU

ETİK KURUL BAŞVURUSU İNCELEME FORMU

Karar Numarası	8
Toplantı/Karar Tarihi	13.12.2024
İlgili Evrakın Sayısı	1227817
Karar Yazım Tarihi	13.12.2024

Çalışmanın Adı	Impact Of Çal Vineyard Route On Sustainable Regional Development (Çal Bağ Yolu'nun Sürdürülebilir Bölgesel Kalkınmaya Etkisi)
Çalışmanın Türü	Tez çalışması Bilimsel araştırma X Makale Diğer
Araştırmacılar	Dr.Öğr.Üyesi Özay Emre YILDIZ

Gereçli Karar:

<input checked="" type="checkbox"/>	Çalışma etik açıdan uygun bulunmuştur. Karar oybirliği ile alınmıştır.
<input type="checkbox"/>	Çalışmanın etik açıdan geliştirilmesi gerekmektedir. Karar oybirliği ile alınmıştır.*
<input type="checkbox"/>	Çalışma etik açıdan uygun bulunmamıştır. Karar oybirliği ile alınmıştır.
<input type="checkbox"/>	Çalışma bu Kurulun değerlendirme kapsamına girmemektedir.

* Başvurucunun çalışmasının yapılması planlanan Kurum/Kuruluş/Firma vb yerlerden izin alması ve bu Kurum/Kuruluş/Firma vb yerlerin isimlerinin daha sonra üretilecek yayınlarda kodlanarak belirtilmesi şartıyla etik açıdan uygun bulunmuştur.

İMZA TARİHİ / İMZALAR