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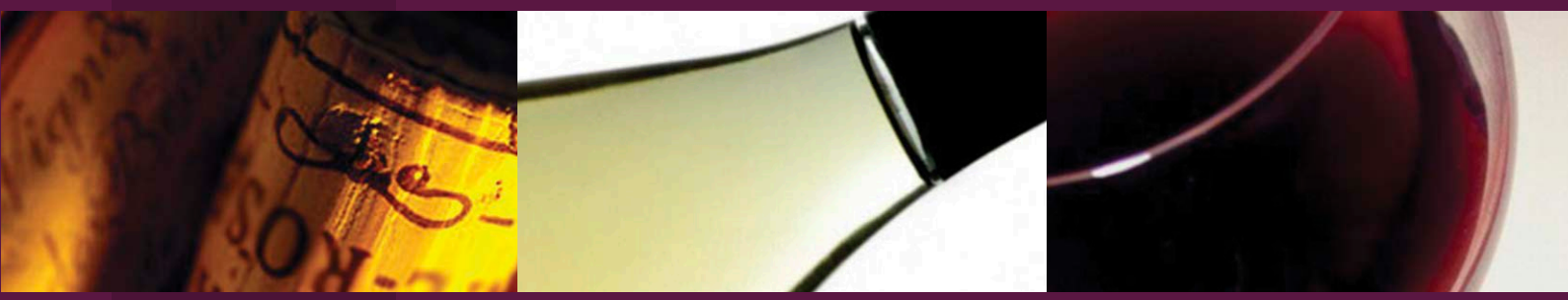

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Wine Economics and Policy

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Discussion

Creating Opportunity from Crisis, Progress from Research: Redefining the Wine Sector

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Change, for some, is reluctantly accepted, yet, for others, it's welcomed and embraced.

This decade shall likely entail even more changes in our world and the wine sector than has ever been experienced, requiring a significant reliance on the knowledge, experience, resilience and innovative capacity of colleagues, academic and professional in securing a sustainable and prosperous future.

Perhaps, in its own way, the transfer of this journal from hosting by Elsevier to the Florence University Press signifies a preparedness for timely adaptation to the pressures facing, in this case, the publication of peer-reviewed research.

A decade on from the founding of this journal, and having been invited to contribute this editorial comment, I reviewed the editorial we prepared for the first issue*; Editorial / Wine Economics and Policy 1 (2012) 87–88*. It is evident that many of the issues noted at that time remain relevant, albeit now accompanied by additional emerging and important themes.

Back in 2012 the issues we identified spanned the gamut of economics, finance, business management and policy and identified several key issues which might now, a decade on, be considered even more relevant and topical. These issues include the drivers and facilitators of adaptation and innovation within the sector; adequacy and timeliness of data collection, analysis and interpretation, now much more broadly developed with "big data" and artificial intelligence; and the restructured and alternative distribution pathways, now reinforced by innovation in IT, e-commerce and social media.

Without ignoring the relatively recent and substantial development of China, the wine industry is a mature industry in much of the producing and

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consuming world. Growth opportunity in such markets appears limited as do the prospects of new markets, notwithstanding the frequently expressed potential for such candidates as China and India.

Addressing the future of the wine world, what then might be some of the key themes warranting R&D, adaptation and innovation to assist in securing a viable and prosperous sector?

First, the consumer: We observe and see commentary on the dramatic changes in consumer demographics, consumer preferences and behaviours, the influence of novel and evolving models of communication, and the role of competing products, services and experiences. Attention to the publication and promotion of insights, models and adaptive strategies to recruit and retain a rejuvenated and enduring consumer base and to frame the appropriate development of innovative wine and wine-based products should be highly valued.

Second, the supply or (preferably), the value chain: Although likely to be contested by some, the current supply or value-chain arrangements encourages excess supply in the interests of access to "cheap" supplies, fails to deliver reliable, predictable supply, poorly allocates risk and reward and imposes considerable stress on natural resources and social licence. Global economic and public health crises or conflicts, as arise from time to time, impose further uncertainty in securing inputs to the production process, visitation by tourists and in delivering products and services. This situation offers considerable challenges to both the wine sector and to others concerned with food security and resource use accountability. To retain and enhance legitimacy of trade in wine (and other foodstuffs), the industry shall require improved models of supply-demand balance, value allocation, food security and risk mitigation, along with development of transparent, credible resource -use accounting (perhaps a "resource -return quotient") and reporting systems, their validation and promotion, accompanied by policy development to facilitate their adoption.

Third, just what is "The Wine Industry"? Is it a supplier of commodity or product, cultural or lifestyle experience, hospitality or tourism destination or some combination thereof? A range of market and commercial factors in combination with economic policy, social and resource pressures shall likely see further diversification and specialisation in strands of wine-business and related activity. Considerable potential and value lie in describing, devising and validating alternative models to meet the pressures for commercial adoption and adaptation across the future decade.

In closing, there remains enormous potential for the academic research & development community to engage with the professional sector for the benefit of each of the parties, the broader community and the environment. Assessment and reporting on effective models for such engagement, the related investment funding and evaluation of system and process improvements would be much welcomed. This should provide a solid foundation for adapting this journal, and assisting the industry itself, to meet forthcoming challenges and opportunities.

Since 4th March 2020, when I first drafted this discussion for the Journal, much has changed with whole societies severely disrupted, the wellbeing of individuals and families under considerable stress and national and international economies and trading in turmoil. The future of the many business enterprises and employment of many individuals within the sector is clearly threatened, as is the financial security and confidence of its consumers, and broader society; this prompts the question of what could and should be the nature, form and scale of the wine sector of the future?

My view is reinforced that R&D, and its publication and promulgation, must actively adapt to better envisage, project, and analyse prospective scenarios, to inform future policy, planning and strategy at all levels. This shall demand better interaction and integration with, and recognition by, other elements of the sector and society, and is especially crucial given that under the anticipated economic conditions, financial support for R&D is likely to be further constrained.

For all players to plan and secure their future relevance, legitimacy, efficiency, and effectiveness from which a prosperous future may be attained, demands a serious reorientation of focus.

A successful reorientation would create opportunity from crisis, greater progress from research, and would substantially contribute to redefining the wine sector, globally.

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Original Research Article

US Wine Industry Preparedness For Unforeseen Crises And Disasters: An Empirical Test

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Abstract. Natural disasters and human-created crises have thrust the topic of strategic preparedness into management conversation around the world. Following recent fire, flood and earthquake disasters, this paper assessed perceived organizational preparedness and resilience as related to four key characteristics: the size of the firm through annual case production and number of employees, the age of the firm, and the organizational hierarchy. Data were gathered via an online survey, where 81 representatives of the western US wine industry responded. Data are analyzed using descriptive statistics, factor analysis, and analysis of variance. Results of this research indicate that wine firms with larger annual case production perceive greater resilience to disaster and crisis than firms with smaller annual case production perceive. Wine firms with more employees perceive greater resilience to disaster and crisis than firms with fewer employees perceive. Significant differences were found among managerial level perceptions of preparedness, in contrast to earlier studies. This study, which is based on exploratory empirical research and leads to a conceptual framework, can shed at least some light on what motivates wine firms to engage in strategic preparedness activities, as well as deepen our understanding of how communities would benefit from those actions.

Keywords: black swan events, organizational resilience, strategic preparedness.

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1. INTRODUCTION

Growing interest in the strategic preparedness of organizations (van der Vegt et al., 2015) has led to extensive study of this subject among scholars. Given its social and economic impacts, many scholars have investigated the drivers/antecedents of strategic preparedness (e.g. Larson and Fowler, 2009; Haimes, 2012; Rao and Greve, 2018; Wang and Wu, 2018; Williams et al., 2017). Despite increasing research, strategic preparedness in the agricultural industry, the wine industry in particular, remains underexamined. Areas of insufficient wine busi-

ness research include how managerial and institutional factors influence strategic preparedness.

The aim of this study is to examine the impact of managerial and institutional factors influence motivations to prepare for and bounce back from the unexpected crisis or disaster. Previous studies have taken an isolated approach to the examination of managerial and institutional factors, treating them separately, and failing to address their combinative effects.

How strategic preparedness for weather-related and other natural disasters, as well as human-created crises) fits into the equation has been thrust into the conversation. Strategic preparedness not only can mitigate the impact of adverse weather and other natural disasters on organizations, but also enable them to sustain or at least quickly resume production or services in order to sustain the economic vitality of the communities in which these organizations operate.

In the past decade alone, catastrophic events have become too numerous (and too frequent) to document. These include earthquakes in California, Indonesia, Japan, and New Zealand; hail and frost losses in Burgundy and Piedmont; hurricanes and flooding in the southern US and Puerto Rico; devastating wildfires in the western US and the Iberian Peninsula; drought in the Western Cape of Africa; data breaches at major corporations and government agencies around the globe; and numerous mass shootings at US and European public places such as tourist attractions, businesses, schools, churches, military installations, and entertainment events, to name just a few.

Strategic preparedness denotes proactive management processes to cope with crises (Augustine, 1995; O'Rourke, 1997; Schroder, 1989). Gruman, Chhinzer, and Smith (2011) found that the providers in the Canadian hospitality industry perceived low levels of disaster preparedness overall. Absent said processes, a firm or an entire industry sector may struggle to maintain its legitimacy (Massey, 2001). When firms or industries cease to operate, even temporarily, organizations, along with the community in which they operate, may be in peril (Kahneman, 2011; Rao & Greve, 2018).

1.1 Recent threats to the global wine industry

Fire and earthquake disasters in California, New Zealand, and Northern Spain resulted in damage greater than an estimated $5 billion to the global wine industry and their surrounding communities from 2014 to 2017. See Table 1 for a partial list of recent natural disasters from 2014 to 2017, and their attendant economic impact on several wine regions.

Table 1. Economic Impact of Natural Disasters on Wine Regions, 2014-2017.

Event	Region	Date	Economic impact
Earthquake	Napa Valley	8/2014	>US$500 million
Earthquake	Kaikoura (South Isl.), New Zealand	11/2016	>NZ$500 million
Fire	Napa Valley & Sonoma	10/2017	>US$9 billion
Fire	Portugal & Northern Spain	10/2017	>€1 billion

Sources: Compiled by authors from Bridges, S., 2017; Kasler, D., 2018; and Macau News Agency. 2018.

Given the monumental impact of natural disasters have imposed on businesses (see Table 1), this paper aims to empirically inquire the effect of certain attributes of wine businesses on their disaster preparedness and resilience strategy. We use a survey methodology to establish an empirical relationship between three primary attributes of a business and its preparedness policy from the perspective of a survey respondent. More specifically, we explore the impact of a firm's size (defined by production and number of full-time employees), its age and the role of the survey respondent in a given wine firm across various perception-based preparedness and resilience measures.

For the rest of the paper, we proceed in the following manner. The next section presents a brief review of previous literature on strategic preparedness in organizations. Section three elaborates upon the exact research questions and our hypotheses based on previous research work. Section four elaborates upon the survey instrument used, the data collection process, the survey response rate and the definition of constructed variables. Section five discusses the empirical findings and the final section offers conclusions, guidance for practitioners, the limitations of this investigation, and suggestions for future research.

2. LITERATURE REVIEW

Prior researchers have investigated how managers perceive and prepare for mitigating the impact of exogenous shocks, e.g. on large and on small-to-medium sized firms alike. Swaminathan (1995) examines whether or not wine businesses that were founded during shocks have longer lives than firms founded under more munificent conditions. Rao and Greve (2018) report the effect of an exogenous shock — a flu epidemic — on small, entrepreneurial start-ups in Norway, and opine that researchers also ought to look at

whether such shocks impact the mortality rates of such organizations. Duquesnois et al. (2010) compare the market responses of two long-established producers in the Languedoc-Rousillion region in response to declining market demand. Abel and Bressan (2015) categorize adaptation and resilience strategies from a sample of 273 micro- and small Italian wine firms, all facing systemic crises such as globalization, increasing competition, and declining domestic demand. Wang and Wu (2018) explore motivations in crisis planning and implementation of hotel managers in China and Australia. However, none of these studies deal directly with asymmetric, exogenous shocks.

The literature review is divided into three primary sections: definitions, managerial perceptions, and organizational preparedness. Table 2 provides a compilation of pertinent research in the strategic preparedness arena.

Table 2. Prior Research into Strategic Preparedness.

Strategic preparedness topic	Author(s)
Definitions of threats to an organization's well-being	
1. Low-probability, high consequence events that could threaten the sustainability of the firm	Shrivastava (1987)
2. Characteristically ambiguous events in terms of cause, effect, and resolution	Pearson & Clair (1998)
3. "'Black swan' events: highly improbable but might nonetheless happen"	Taleb (2007)
4. Exogenous events that threaten an individual firm or cluster of firms' competitiveness	Duquesnois et al. (2010); Abel & Bressan (2015)
Managerial perceptions	
1. Crisis planning: clear benefit or environmental value	Penrose (2000); Marchall et al. (2010)
2. Mitigation of risk or confirmation of fear response behavior	Bourgeois & Eisenhardt (1988); Leonard-Barton (1992)
3. Effects of crisis response strategies on firm legitimacy	Massey (2001)
4. Perceived likelihood of different crises: natural disasters were perceived most likely to occur while terrorist attacks were perceived as the least likely to occur	Larson & Fowler (2009)
Planning and preparation for responses	Greening & Johnson (1997); O'Rourke (1997)
1. Process models for crisis preparedness	Marra (1998); Ullmer (2001)
2. Crisis communication planning	Fowler, et al. (2007); Lankoski (2016); Haimes (2017)
3. How firm size, age, managerial level, and other variables impact preparedness planning	

Source: prepared by authors for use in this investigation.

2.1 Definitions of threats to an organization's well-being

Strategic preparedness for unpredictable crises and disasters, which seem rare but appear predictable in hindsight, are known as "black swan" events. These events have become a crucial topic in our global society today, and there are numerous opportunities for empirical research in this domain (Taleb, 2007). Firms across numerous industries need to develop proactive enterprise-wide crisis plans in order to mitigate the prospective and possibly uninsurable damage from disasters (Lankoski, 2016; Marra, 1998; Penrose, 2000; Shrivastava, 1987).

Fear of negative events, such as an economic downturn or increasing network competition in a mature industry, however, also indices or paralyzes a firm to enhance its strategic preparedness for consequential changes in its task environment (Abel & Bressan, 2015; Duquesnois et al., 2010; Weber et al., 2015).

2.2 Managerial perceptions

Penrose (2000) and Marchall et al. (2010) opine that expectations for proactively addressing social concerns are rising from employees, trade associations, retail groups and customers. Furthermore, according to Marchall et al. (2010), the normative expectations formed by employees and trade associations appear to be felt most significantly by managers. Fowler et al. (2007) suggest that managers' perceptions of strategic preparedness are contingent upon organizational characteristics as well as an employee's status within a firm. Yet many CEOs and senior-level management teams worry that, as their companies improve strategic preparedness for social sustainability, their competitiveness deteriorates (Nidomolu et al. (2009). Still, companies that are proactive in preparing for unanticipated events are more likely to rethink their business models, products, technologies and processes. In doing so, these companies may foster innovations that lead to renewed and sustainable competitive advantage (Nidomolu et al., 2009).

Haimes (2012) defines strategic preparedness as "a proactive phase of risk management…for emergent forced changes, whether originating from natural or human sources" (pg. 1842). Fowler et al. (2007) suggest that differences in perception of disaster and crisis preparedness may be contingent upon an individual's level of standing within the firm, i.e., top-level managers and owners claim to have a higher level of perceived preparedness than their employees claim. People are the most important assets for businesses. A critical source of

capacity for organizational resilience is contained in the characteristics of employees (Lengnick-Hall et al., 2011; Luthans et al., 2007).

2.3 Planning and preparation for responses

Firms that properly plan and prepare for environmental and social challenges are more resilient (Ortiz-de-Mandojana, 2012). Evaluating prior research on the topic of resilience of businesses to crises and disasters, Linnenluecke (2013) opines that: (1) research on organizational resilience is highly fragmented with sparse conceptual development; (2) resilience has been studied mostly through case examples in a wide variety of contexts and settings, yet findings are often not integrated; (3) existing attempts to detect resilience (or absence thereof) have employed retrospective analyses after an adverse impact has occurred, but provide little insights into predictive factors leading to future resilience.

Despite numerous theoretical investigations into crisis management and disaster preparedness, there is scant prior research on proactive activities such as institutionalized processes, executives' and employees' perceptions of risk, and adoptions of firms' crisis management preparations, considered as part and parcel of pre-event preparedness (Pearson & Clair, 1998). Greening and Johnson (1997) indicate that there are some basic criteria for ranking the relative merits of a firm's options to respond to crises and disasters. These criteria may include: (1) Cost: can the company afford to respond? (2) Corporate public relations: can the company make a prompt, full disclosure, assume responsibility, express concern and make efforts to correct mistakes in the long run; and (3) Corporate values: are they expressly oriented towards Corporate Social Responsibility (CSR), i.e. is there a track record of acknowledging responsibility and maintaining existing commitments to stakeholders' well-being? (cf. Greening & Johnson, 1997). Haimes (2012) identifies a model to explain the relationships among vulnerability, resilience, risk, the states of a system, and the specific emergent forced changes. In sum, resilience may be defined as the ability of a firm to anticipate trends and potential threats, to cope effectively with unexpected events and to learn from these events to foster dynamic capabilities to facilitate change (Weick & Sutcliffe, 2007; Duchek, 2014).

Taken together, crisis management and resilience are manifestations of the pre-event preparedness for the challenge of adversity, in that resilience is viewed as an interaction between the organization and the environment and comprises pre-adversity capabilities, in-crisis organizing and adjusting, and post-crisis resilience responding (Williams et al., 2017). Further investigations are clearly needed to uncover institutionalized processes for coping with unexpected events (Ullmer, 2001); managers' perceptions of risk (Bourgeois & Eisenhardt 1988; Leonard-Barton, 1992); and adoptions of organizational crisis management preparations (Pearson & Mitroff, 1993; Pearson & Clair, 1998).

3. RESEARCH QUESTIONS AND HYPOTHESES

A firm's age and size are important variables that are said to lend themselves to liabilities of smallness and newness (Stinchcombe, 1965). Managerial perceptions and strategic preparedness of firms in different kinds of industries have also been shown to wield considerable influence over firm performance in prior studies. Arend (2014) opines that,

> *The firm characteristics of newness and smallness…also provide a solid basis for building upon in future work because they proxy for more sophisticated factors such as: scale economies, market power, bargaining power, resource slack, specialization, experience, and so on.* (Arend, 2014, p. 36, f 2)

Our research questions are organized around firm size, firm age, and level of managerial hierarchy or role.

3.1 Firm size

Firm size can be advantageous for implementing planned change (Ford, 2009). Newer and smaller firms have lower survival rates in the absence of growth (Freeman et al., 1983; Steffens et al., 2009), while survival rates increase as firm size and age increases (Gilbert et al., 2006). Firm size also appears to explain the variance in strategic preparedness in response to environmental threats (Smith et al., 1989). A larger firm will possess greater resources and potentially more market knowledge to identify and implement strategic responses that are not available to smaller firms to mitigate adverse environmental changes. Smaller organizations may be limited in terms of available resources, including human and social capital (Lumpkin, et al., 2010). Large firms also show a higher propensity to innovate than smaller firms, while a firm's innovation practices do not depend upon its age (Duchek, 2014; Moohamad et al., 2014). Case production and number of employees are acceptable proxies for estimating the size of a wine business (Delacroix & Swaminathan, 1991). This leads to our first research question.

RQ_1 – Are larger wine businesses better prepared for "black swan" events than smaller wine businesses?

To investigate this research question, Fowler et al.'s (2007) propositions regarding organizational character-

istics related to disaster preparedness are modified and applied. See hypotheses 1 and 2 below.

H_1 – Larger firms will exhibit a higher proactivity towards strategic preparedness than smaller firms (firm size determined by annual production).

H_2 – Firms with more employees will exhibit a higher proactivity towards strategic preparedness than firms with fewer employees.

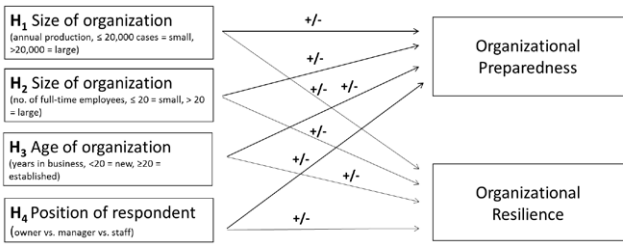

Figure 1. Proposed Variables Impacting Preparedness and Resilience. Source: prepared by authors for use in this investigation.

3.2 Firm age

Firm age has been posited to be a significant determinant of an organization's ability to conduct environmental scanning activities (Mengistae, 1996; Mohan-Neill, 1995; Thomas & Ramaswamy, 1996; Yasuda, 2005). The age (in years since founding) of a firm can be associated to its strategy (Grinyer & Yasai-Ardekani, 1981). Newer entrants in the wine industry tend to pursue an "aggressive" strategy aimed at niche market definition and penetration via "entrepreneurial" behaviors (Brown & Butler, 1995). Established, growing businesses in an industry, by contrast, tend to experience diminishing efficacy of entrepreneurial behavior and need to pay greater attention to building management systems and market share (Jordan et al., 2007; Mora, 2006).

Whereas long-established firms tend to be strategic in implementing planned change (Ford, 2009), the size of an organization, measured by researchers using assets accumulated, production capacity, and/or employees as proxy variables, can explain the variance in strategy and performance (Smith et al., 1989), or its movement toward or away from diversification (Grinyer & Yasai-Ardekani, 1981). A newer, more entrepreneurial organization might also have a different view of its environment in terms of its views for success (Lumpkin et al., 2010). An organization's longevity can negatively impact knowledge acquisition and entrepreneurial growth (Naldi & Davidson, 2014). This leads to our second research question.

RQ_2 – Are established wine businesses better prepared for "black swan" events than newer wine businesses?

How organizational age is related to disaster preparedness is conceptualized in hypothesis 3 below.

H_3 – Older firms will exhibit a higher proactivity towards strategic preparedness than younger firms.

3.3 Level of responsibility within the firm

Prior literature on organizational preparedness for an unexpected disaster or crisis has tended to focus solely on top management responses (McLean & Power, 2014, Trainor & Velotti, 2013). Identification of the performance effects of the manager-strategy orientation mirrors prior research into those managerial characteristics said to be associated with organizational success (Child, 1974; Norburn & Birley, 1988; Sambharya, 1989; Thomas & Ramaswamy, 1996). Among these investigations, Sambharya (1989) notes that firms led by CEOs with longer tenures tend, on average, to outperform other firms. Our third research question seeks to broaden understanding of preparedness at both level of responsibility and organization-wide.

RQ_3 – Are owners and top-level managers of wine businesses better prepared than lower-level staff for "black swan" events?

Again, Fowler et al.'s (2007) proposition regarding managerial hierarchical impacts on perceptions of preparedness is adapted for hypothesis 4.

H_4 – Upper-level managers and owners will perceive better strategic preparedness than lower-level employees.

Figure 1 represents the proposed variables that impact preparedness and resilience. The independent variables (IV) to be tested are organization size, organization age, and managerial hierarchy against perceptions of strategic preparedness and resilience, the dependent variables (DV). While the focus of Fowler et al.'s (2007) study was to test crises preparedness, we have attempted to extend its framework and investigate both preparedness and resilience.

4. METHODOLOGY

4.1 Survey instrument

We adapted Fowler et al.'s (2007) questionnaire using the same end choice points (1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree) for the questions; however, we added one question, "My organiza-

tion has provided every employee with access to a text message or other digital notification system in the event of an emergency," in order to reflect changes in communications technology in the decade or so since Fowler et al.'s earlier study. We found Fowler et al.'s original 21-item scale to have a reliability (α = .815); whereas the 22-item scale with the added question to have a reliability (α = .819).

From May – June 2018, a pilot survey via Qualtrics Survey Software was sent to 400 Northern California university wine business program alumni (undergraduate, MBA, and EMBA), resulting in a response rate of 12.5 percent. The resulting sample was too small for meaningful analyses; therefore, excluded from the study. Follow-up qualitative interviews to verify, refute, or amplify quantitative responses and clarify the understanding of questions were conducted with eight individuals representing four different wineries during August-September 2018.

As there appeared to be little or no confusion about the 22 questions from the pilot study and interviews, the same survey via Qualtrics Survey Software was sent to a larger sample of 3,775 winery executives in the *Wines & Vines* database during a one-month period from October-November 2018. The intent of obtaining a larger sample was to permit higher-level statistical analyses to provide a more balanced viewpoint not easily obtainable from the exploratory cross-sectional pilot survey data (Patton, 2002). Of the 3,775 email addresses in the database, 3,425 turned out to be valid. After three mailings as per Dillman (1991), 108 responses were received, but only 81 responses were sufficiently complete for further analyses. Probable causes of such high non-response include an over-surveyed industry, sensitivity over the 2017 Sonoma/Napa fires, concern over the concurrent November 2018 Camp Fires in Northern California, or respondents' general lack of interest in participating in surveys. As to a comparison of those who didn't complete the survey to those who completed the survey, sufficient demographic information to analyze for non-response bias via Chi-square tests found no significant differences.

Because of the sensitivity of the questions, the topical event, the criticality to time (lapse to the event), and memory details, we chose to move forward with the small sample in line with other small sample research (Köhr, Malorgio & Aragrande, 2017; Williamson et al., 2012).

4.2 Demographics

Demographic information was obtained from self-report. Of the 81 respondents, forty-five percent (n=37) were winery executives (Owner/CEO/President), while the respondents had been employed an average of 14.3 years. Fifty-nine percent (n=48) of the wineries were considered established, having been in business 20 years or more. Wineries, of which 60 percent were located in Northern California, had been in business an average of 28½ years and had an average of 38 full-time employees. Forty-eight percent (n=39) of the wineries were considered large where its annual production was greater than 20,000 cases of wine.

4.3 Analyses

The IV to be tested were organization size, organization age, and managerial hierarchy. Organization size was defined two ways: annual production in cases and the number of full-time employees. Dichotomous variables were created for annual production in cases, where small was ≤ 20,000, and large was > 20,000; and for number of full-time employees of the firm, where small was ≤ 20, and large was > 20. A dichotomous IV was created for organization age, where new or young had < 20 years in operation, while established organizations had ≥ 20 years in operation. The respondent's level of responsibility defined the IV managerial hierarchy using three levels - executive (Owner/CEO/President), management, or staff.

SPSS Statistics, Version 26 was used to analyze the data. Content review of the literature and study questions resulted in our conducting an informal confirmatory factor analysis using the principal components' extraction method and varimax rotation method, permitting evaluation of the correspondence between the measurement items in the survey while extracting two factors theorized from Fowler et al.'s (2007) questionnaire: organizational preparedness and organizational resilience. The first factor (organizational resilience) had an eigenvalue of 4.95 and the second factor (organizational preparedness) had an eigenvalue of 2.22, where greater than 1 is considered significant; and both accounted for 34.13% of the total variance explained. While the total variance explained was low, the sample observations per variable to be analyzed minimum was met for conducting factor analysis, and thus it was deemed satisfactory to move forward (Hair et al., 1998). Results of the initial analysis with factor loadings with corresponding item questions are presented in the Table 3. One question from Fowler et al.'s original 21 questions ("It would be easy for a potentially threatening nonemployee to gain access to my workplace") was reverse-coded and omitted after initial factor analysis and reliability analyses revealed insufficient loadings and unsatisfactory

Table 3. Factor Analysis Loading with Question Items.

Question Item	Factor R	Factor P
I am very familiar with our workplace evacuation plan.	.075	**.692**
If my organization suffered a serious crisis or disaster, I might be in danger of losing my job. [Reverse-coded]	-.075	**.450**
If my organization suffered a serious crisis or disaster, I would still be paid until we could reopen.	**.570**	-.002
If my organization suffered a serious crisis or disaster, I would still have my job.	**.484**	.160
If my organization suffered a serious crisis or disaster, I would still be covered by my organization's employee benefits (e.g. health insurance.	**.490**	.053
My organization has provided every employee with access to a text message or other digital notification system in the event of an emergency.	.208	**.412**
My organization has provided every employee with a crisis or disaster preparedness kit (e.g. smoke mask, flashlight, etc.).	**.617**	.053
The security at my workplace is adequate.	.122	**.514**
In the event that my organization suffered a serious crisis or disaster, I am familiar with the plan for how family members can receive notification on the status and safety of their relatives.	.262	**.609**
In the event that my organization suffered a serious crisis or disaster, I am familiar with my organization's plan to continue its operations at another location.	**.629**	.086
All organization members are required to rehearse potions of our emergency preparedness plan, e.g. evacuation.	**.575**	.161
Security at my workplace has significantly increased since the most recent crisis or disaster.	**.501**	.118
I know where the nearest fire extinguisher is located near my desk or workstation.	.044	**.669**
If a serious crisis or disaster were to occur at my organization, I am familiar with our plan on how to communicate with my fellow employees at scattered or remote locations (such as mobile phone numbers, websites, or e-mail lists.	.336	**.627**
Most of our organization's employees are familiar with our crisis and disaster preparedness plan.	.220	**.681**
As part of our emergency preparedness plan, customers and suppliers would know how and still be able to contact our organization for information.	**.423**	.378
If a serious crisis or disaster were to occur at my organization, I would still have access to the data that I need to do my job (e.g. backed up at a remote site.	**.373**	.279
My organization offers to pay volunteer employees to be trained in basic life support techniques (e.g. CPR, first aid.	**.570**	-.019
My organization has a contingency plan in place so that our customers would be covered if we were to suffer a disaster.	**.651**	.083
I know where the nearest emergency exits are to my desk/workstation.	-.105	**.542**
My organization's emergency preparedness plan has been coordinated with local agencies, such as the fire and police departments.	**.483**	.100

reliability. The reliability, again using Cronbach's (1951) alpha of the Factor R – organizational resilience items was 0.780 and the Factor P – organizational preparedness items was 0.765.

5. RESULTS AND DISCUSSION

Hypothesis testing was accomplished using analysis of variance (ANOVA). Following Fowler et al.'s (2007) study, we calculated the sum from each respondent's scores for each variable, thus the higher scores suggested the higher perception of organizational preparedness and organizational resilience. Results of the hypothesis tests are shown in Table 4.

Hypothesis 1 proposed that firms with higher annual wine production would exhibit a higher proactivity towards organizational preparedness than firms with small annual case production. Hypothesis 1 was not supported for the DV – Preparedness, but was supported for DV – Resilience, with the F score of 4.553 and significance level of .036 using an alpha cut-off of .05. Although respondents from firms with larger annual case production reportedly did not feel more prepared for black swan events than those from smaller firms, the larger producers perceived themselves to be significantly more resilient in the face of change than smaller producers, which is consistent with earlier findings from Maurel (2009).

Hypothesis 2 proposed that firms with more employees would exhibit a higher proactivity towards organizational preparedness than firms with fewer employees. Similar to Fowler et al.'s (2007) findings, Hypothesis 2 was not supported for DV – Preparedness, but was supported for DV – Resilience, with the F score of 6.916 and significance level of .010 using alpha cut-off

Table 4. Analysis of Variance Results.

H	IV	N			Variable Means		DV	F	Sig
H1	Firm Size-Prod#	Sm-41	Lg-39		Sm-20.1	Lg-19.8	Preparedness	0.092	.762
		Sm-41	Lg-39		Sm-28.2	Lg-30.8	Resilience	4.553	.036*
H2	Firm Size-Empl#	Sm-45	Lg-34		Sm-20.1	Lg-20.0	Preparedness	0.014	.905
		Sm-45	Lg-34		Sm-28.2	Lg-31.4	Resilience	6.916	.010**
H3	Firm Age	Yng-33	Est-48		Yng-20.0	Est-19.9	Preparedness	0.005	.944
		Yng-33	Est-48		Yng-29.3	Est-29.6	Resilience	0.077	.782
H4	Employee Level	S-10	M-33	O-37	S-20.5	M-18.5	O-21.1	Preparedness	5.843	.004**
		S-10	M-33	O-37	S-32.4	M-29.1	O-29.1	Resilience	1.555	.218

Significance at *p<.05, **p<.01.

of .05. While respondents from firms with larger numbers of employees did not feel more prepared than smaller firms for black swan events, those same firms did feel significantly more resilient, that they could get back to business quickly, consistent with Gil and Mataveli (2017).

Hypothesis 3 proposed that older firms would exhibit a higher proactivity towards organizational preparedness than younger firms would. This hypothesis was not supported for both DV – Preparedness and Resilience. Respondents from the more established firms did not perceive preparedness for a black swan event, nor did they perceive greater resilience to overcome a black swan event over the smaller firms, confirming Galbreath et al. (2016).

While Fowler et al. (2007) found top and middle level managers perceived a higher level of preparedness compared to employees, this study also found significant differences between the three employee levels (executive (Owner/CEO/President), management, and staff). Hypothesis 4 was supported for DV – Preparedness with the F score of 5.843 and significance level of .004 using alpha cut-off of .01, but was not supported for DV – Resilience. Significant differences in perceptions of preparedness were found between responding executives and management (sig. = .005; mean difference 2.539 at .05 level) in the Scheffe) *post hoc* tests, as well as staff employees and management (sig. = .085; mean difference 1.985 at .10 level) in Fisher's Least Significant Difference (LSD) *post hoc* tests. Those respondents who described themselves as executives and staff employees reported feeling much more prepared than responding managers. These findings reflect those of an earlier investigation into wine firms' environmental preparedness (Cordano et al., 2010).

6. CONCLUSIONS

Environmental disasters and human-created crises have increased the complexity, disruption and interconnectedness of a broad range of threats and hazards to which firms are expected to respond (van der Vegt et al., 2015). Effective responses and recovery processes are crucial in addressing the aftermath and saving lives and livelihoods. Proactive investment in prevention and mitigation have become necessities to reduce the short- and long-term negative social and economic impacts (van der Vegt et al., 2015). A large percentage (86%) of respondents felt confident that if a disaster struck, employees at the company could carry out the disaster preparedness plan, which is in line with Gruman (2018) at 75% of respondents.

Based on our exploratory findings, owners and managers of wine businesses must find the right balance between planning and remaining operational. No matter how well a plan has been thought out, unexpected events — "black swans" —will happen (Taleb, 2007: 203-4). One of the hallmarks of a successful business is adaptability, regardless of what its business plan. For some wine businesses, the environment is too turbulent for extensive planning to be beneficial (Conz et al., 2017). When a crisis occurs, managers may find that there is not enough information to allow them to follow a comprehensive plan. In this case, a manager's ability to adapt may be more important than following a careful plan for the future. Earlier investigations into preparedness in the wine industry have largely been concerned with adaptive responses by firms to climate change (Bernetti et al., 2012; Galbreath et al., 2016; Merloni et al., 2018). Prior researchers have likewise investigated the motivations of senior-level managers and owners that deliber-

ately ignored opportunities to grow their firms, motivations including concern for employee well-being, loss of the positive "small" business atmosphere, less involvement and job satisfaction, and fear of negative events, such as an economic downturn (Wiklund et al., 2003). On the other hand, for incumbent firms in the wine industry, organizational characteristics such as size can drive profitable growth (Sellers & Alampi-Sottini, 2016).

While the organizational preparedness instrument proposed by Fowler et al. (2007) has been adopted in the management literature for over a decade, no study has since attempted to unpack the different constructs included within this instrument. We have explored and proposed organizational preparedness and organizational resilience as two constructs within this instrument, which can further our understanding of organizational preparedness in the wine industry, and extended Fowler et al.'s (2007) study through analyses of two factors: Preparedness and Resilience. Organizational resilience may also possess interactive effects on perceived strategic preparedness. We will assess that interaction in a separate, forthcoming investigation (Bhamra et al., 2011; Kantur & Iseri-Say, 2012).

Preparedness and resilience are generally viewed as desirable characteristics of organizations that are able to contend with various types of unexpected, abrupt and/or 'extreme' changes in their environments. However, despite the growing utilization of the concept in the popular press and academic research, there have been few insights into the conceptualization, operationalization and empirical assessment of the resilience factor (Linnenluecke, 2013). Success or failure to innovate in the face of unexpected events has been attributed to the knowledge base of the firm (Leonard-Barton, 1992; Tellis, 2006). To weather those events, wine business owners, executives, and their employees must foster serendipity and resilience to prepare for emergencies, i.e. by adopting new technologies, procedures, or employee-centered services (McCann et al., 2001). That is, not only is the contribution of a proactive, healthy organizational culture to good strategy implementation certainly positive, but also the main benefit of a healthy culture is organizational resilience in the face of setbacks. (Kahneman, 2011: 263). To make processes work efficiently and effectively, however, managers must have the knowledge of disparate values, cultures, and attitudes when pursuing innovations in different nations or regions (Wilkins & Ouchi, 1983).

In summation, this exploratory study has a number of contributions. First, this study contributes to strategic preparedness literature by suggesting combinative effects of managerial and institutional preparedness. Second, this study contributes to an understanding of how the characteristics of the organization affect social entrepreneurship by highlighting the moderating roles of firm age and size. Third, our findings corroborate the earlier studies of strategic preparedness initiatives undertaken by organizations, suggesting the need for policy-makers to be aware of these unique characteristics in their efforts to encourage both sectoral and community preparedness. Fourth, our findings found significant differences among managerial level perceptions of preparedness, in contrast to earlier studies.

6.1 Implications for practice

Communities in which wine business operate and to which those businesses provide economic benefits nevertheless face the future prospect of more extreme, frequent and damaging natural disasters and possible resilience failures (McKnight & Linnenluecke, 2015). Firms are crucial stakeholders in building the resilience of the communities in which they operate, and play a central role in supporting communities impacted by natural disasters, e.g. by delivering essential products and services during a natural disaster, and supplying inputs crucial for disaster recovery (Ballesteros et al., 2017). Nevertheless, a gap remains to be crossed between the public policy literature that focuses on community-level resilience (Ballesteros et al., 2017; McKnight & Linnenluecke, 2015; Weick, 1977; Weick & Sutcliffe, 2007), and disaster-oriented management research, i.e. that focuses on firm-centric reactions to natural disasters (Larson & Fowler, 2009; Lengnick-Hall et al., 2011).

Businesses must not only operate in conformity with their legal and regulatory environments, but they also require a more tacit 'license to operate' from the local community in which they reside. Surprisingly, few studies have investigated corporate social responsibility (CSR) in the wine industry *per se*, and none has examined disaster preparedness and response as a focal topic. Firms in the wine industry typically encounter both support and opposition in the communities where their operations are based, and as wine firms attempt to build out the event-based and tourism sides of their businesses, they may be viewed as generators of economic development (i.e., wealth creation, jobs, and tax revenues), yet concomitantly remain vulnerable to community opposition (McCuan & Hertz, 2018). Earlier investigations examined whether or not a firm's environmental practices influence wine consumers' attitudes towards wine firms (Forbes et al., 2009; Nowak et al. 2008) and whether or not philanthropy as a voluntary component of CSR positively impacts external stakeholders, at least

in the short term (Forbes et al., 2018). Managers of firms who engage in CSR resource allocation can create value at times for their shareholders through the creation of insurance-like protection (Godfrey et al., 2009). How would suppliers, customers, communities, regulatory agencies, even insurers, among other external stakeholders, respond to the withdrawal of a wine firm's voluntary support from these capability-building activities? Would external stakeholders allow wineries to continue production and distribution of products, conduct 'cellar door' sales, open their tasting rooms to the public, and host special events?

Marchall et al. (2010) note that expectations for proactively addressing social concerns are rising from employees, trade associations, retail groups and customers. Furthermore, it is the normative expectations formed by employees and trade associations that appear to be felt most significantly by managers. In contrast to traditional risk management approaches taken by firms and their insurers, i.e. that focus on the identification of risks and alleviating the level of vulnerability to external disturbances, adopting a resilience approach to disturbances requires developing capabilities and capacities that create or retain resources and capabilities that are of necessity flexible, storable, convertible, and malleable to permit firms to contend with and learn from the unexpected (Sutcliffe & Vogus, 2003).

Viewed through the lens of the resource-based view of strategy, resources and capabilities for preparedness, particularly in the face of environmental turbulence, is considered to be a potential core competence for the firm (Racherla & Hu, 2009). Ameliorating the preparedness and resilience of firms and creating value for internal stakeholders, including owners, can help mitigate organizational deficiencies, overcome organizational rigidity, and forestall lost opportunities (Barney, 1991; Wernerfelt, 1984). Firms said to be able to develop proactive social and environmental practices (SEP) may use those as a buffer against shocks and return more quickly to their pre-crisis status (Ortiz-de-Mandojana & Bansal, 2016). Over the longer term, firms that invest in SEP may emerge even stronger: they can experience lower financial volatility, have higher rates of survival, and grow faster than rivals that are less responsive to social and environmental issues (Ortiz-de-Mandojana & Bansal, 2016). In practice, good deeds and careful long-term planning appear to enable some firms to 'pay it forward.'

One might well consider an opposing viewpoint, namely, that preparedness should be viewed as detrimental to the sustainability of a wine firm or any other business (Hamel & Valikangas, 2003). For example, preparedness for disruptions of a producer's supply chain may be considered by some to be excess organizational slack, i.e. a sign of inefficiencies. In that view, voluntary actions to contend with crises and disasters, while potentially leading to innovations in supply chain management, could be neutral with respect to or even have adverse impacts on a firm's financial and social performance (Akgün & Keskin, 2014). That there appears to be a trade-off between the costs and benefits in the short term relative to the long term is a central issue for achieving both business and societal sustainability (Ortiz-de-Mandojana & Bansal, 2016).

6.2 Limitations and future research

First, any research such as ours that analyzes unverified cross-sectional data that are not verified by secondary or other sources of data can have questionable reliability. Second, while Fowler's (2007) survey instrument has proven validity, we may have missed some important questions specific to the nature of the wine industry in an attempt to keep the survey short and minimize technical terminology in order to increase response rates. Along these lines, due to the fact that the wine industry may be suffering from being over-surveyed, or due to the sensitive nature of some of the questions in our instrument, our sample size was limited. Thus, results obtained may or may not be representative of all US wine businesses, wine regions, or attributes of these businesses.

Despite these limitations, future wine industry research studies should test whether these two constructs can explain greater variance in firm- and employee-level predictors and outcomes across different groups of wine businesses and employee groups in different regions of the US as well as in other countries. Furthermore, research studies in industries other than wine should test whether the validity of our construct factors holds in other industries, as well as the extent to which there are differences between the results of our study and those of studies based on firms in other industries.

Additional work is also needed to quantify the relationship between an employee's sense of trust in the organization, perception of empowerment and cohesive organization culture and perceived preparedness and resilience and identify key indicators of this potentially mitigating force.

Although ours is an inconclusive cross-sectional investigation into preparedness behaviors that has been conducted in the aftermath of natural disaster events in Northern California, strategic choices to engage in long-term strategic preparedness activities within the wine firm to cope with adversity are of great importance to

understanding firm behavior. Future researchers might well consider conducting longitudinal studies of strategic preparedness. We hope that our investigation, which is based on exploratory empirical research and leads to a conceptual framework, can aid future researchers and shed at least some light on what motivates wine firms to engage in strategic preparedness activities, as well as deepen our understanding of how communities would benefit from those actions.

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Original Research Article

A Cross-Cultural Comparison of Wine Consumption and Purchasing Behaviour in Germany and Hungary

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Abstract. Both the German and the Hungarian wine markets belong to the "old world" European winemaking heritage and each have long winemaking traditions; however, since the 1950s, they have gone through completely different changes as political and economic circumstances greatly influenced the development of these wine markets. This paper, based on a representative survey of 2,000 participants in Germany and 1,500 participants in Hungary, investigates the differences in consumer behaviour and sales channel structures in both countries. The results indicate that, despite some similarities, there are large differences between German and Hungarian wine consumers in not only wine preferences but also in the use of sales channels. The two countries differ especially in the number of heavy drinkers and in the socio-demographic background of wine drinkers. These results shall provide important information and insights for producers and marketers about the wine markets of these two European countries.

Keywords: wine, wine market, consumer behaviour, Hungary, Germany, cross-cultural comparison, sales channels.

1. INTRODUCTION

While most wine growing countries in Europe are considered part of the "old world" winemaking heritage, the differences between those countries can be substantial. With singular political and economic circumstances as well as unique cultural backgrounds that influenced the development of their wine markets, Germany and Hungary are excellent examples of how the wine markets in two "old world" heritage countries differ significantly. These two countries, both with a long wine tradition and similar per capita consumption, will be compared within the framework of this study in terms of consumers' preferences and sales channel usage.

Germany's winemaking tradition has a 1,000-year history [1]. More recently, Germany has become one of the most important marketplaces of the European wine business; it is the world´s largest wine import market by volume, with annual per capita consumption of 24.2 litres of still and sparkling

wines [2, 3]. Trade structures that include very effective discount stores have encouraged this volume growth as they promote additional sales and thus contribute to what has been a rapid change in demand volume [4].

Hungary also has a more than 1,000-year wine tradition. Unlike Germany, however, wines by domestic Hungarian producers dominate the market and this pattern is expected to continue [5]. The average annual wine consumption has been decreasing since 2010 and is currently around 24.0 litres per capita [6]. The sales channel structure also differs from the German model; in Hungary, super- and hypermarkets are the leaders in selling wine [7].

Two representative surveys have been conducted in order to describe the current situation of consumer preferences, to analyse the differences between these two markets, and to model the total wine market in Germany and Hungary.

The paper begins with a general description of the German and Hungarian wine markets, followed by the materials and methods of the representative survey. Then, in the "Results" chapter, data analyses using various statistical methods show the differences between German and Hungarian wine consumers. At the end of the paper, the "Discussion" chapter summarises the results, gives some managerial implications, and provides some information on the limitations of the research.

1.1 The German wine market

German viticulture land area has remained constant during the last ten years [3]. Germany currently has 102,000 hectares of vineyards, which makes it the 14th largest wine growing country globally. The total wine production from the 13 official registered wine regions averages approximately 9.0 million hectolitres annually. Germany imports another 15 million hectolitres each year, making it the largest importer of wine by volume globally and one of the most important sales markets in the world [8]. This has gradually led Germany to become the primary wine marketplace of Europe. While this market is not considered very attractive due to the high degree of competition and saturation [9], the German wine market has one significant advantage and opportunity in its consumers' willingness to purchase foreign wines.

The overall still wine market consists of 60 per cent imported wine and 40 per cent domestic wine [3]; further, this market composition is expected to remain stable on a long-term basis. This enthusiasm for foreign wines represents a critical aspect of the German market. Also, the lack of impairing trade barriers makes the market easily accessible for wine exporters all over the world. The limited production capacity of the domestic German wine business results in a high level of imports, consisting mainly of bulk wine, primarily from Mediterranean countries [10].

Due to extremely low costs, Germany is an important bottling hub in the international wine trade; 2.6 million hectolitres are imported annually as bulk, repackaged into 341 million 0.75 litre bottles, and then exported as low-priced wine, mainly to neighbouring European countries such as the Netherlands, Belgium, and Scandinavia [12]. Net exports of German wine remained at a low level of about 1 million hectolitres [3].

This business has been particularly lucrative for large food retail groups, which dominate the domestic market. Discounters have been especially successful, overtaking the sales of large food retail chains due to their strong emphasis on private labels. Their success has also contributed to the high price sensitivity in the German retail market [13].

The on-trade sector accounts for approximately 18 per cent of all wine sales in the country and is often guided by the nationality of the businesses in Germany [9, 11]. This sales channel shows the highest average sales price per bottle as 25 EUR [13]. A general trend of premium wines, priced above 5 EUR, is gaining popularity in Germany [9, 14]. The market demand for German quality wine is relatively constant at about 7.5 million hectolitres [3]. Quality wine represents a high share in the German wine market; only about 3 per cent of German wine production is marketed and bottled as table wine [12].

The German market is liberal in terms of sales channel structure for wine, and this liberality is related to both the huge import component of the market and to the peculiar structure of German retail stores. German consumers have several possibilities when deciding where to buy a bottle of wine [15] as the structure and diversity of the distribution channels offers a broad range of points of purchase. Globally, Germany is one of the few countries with such enormous diversity in wine distribution options. Direct selling and specialised wine stores reach a higher average price, though their share is significantly lower than that of discount stores or super- and hypermarkets. Online sales have been increasing annually, although their market share is still below 5 per cent [16].

1.2 The Hungarian wine market

The Hungarian wine sector has undergone several serious political and economic changes over the past 150 years – from the dual monarchy of Austria-Hungary to communism after the second world war to a democratic state with a free economy after the Iron Curtain fell.

After the political change in 1989 to a democratic state, the Hungarian wine industry changed significantly – vineyards of co-operatives and state wineries were privatised, thousands of new wineries were founded, and quality winemaking dominated instead of mass production [17, 18]. At the same time, however, by 2017, vineyards shrank from 130,000 to 65,000 hectares [19], and production has decreased to approximately 2.5 – 2.9 million hectolitres as of last year [5]. Export volume has remained stable the past five years, reaching a volume of 0.7 – 0.8 million hectolitres, with a substantial share as bulk wines (60 per cent) [19].

The order and importance of export countries has changed for the Hungarian market; former communist countries of the Warsaw Pact, especially Slovakia and the Czech Republic, have increased their wine import from Hungary in the last two years and become the two most important export destinations for Hungarian wines. Germany, which had been the primary market for exported Hungarian wines for many years, fell to third [20].

Domestic consumption of Hungarian wines is high. Therefore, wine imports do not play an essential role in the Hungarian wine market. Although there were some peaks above 0.6 million hectolitres before 2011, during the past three years wine imports have stabilised at a volume of 0.2 million hectolitres, primarily from Italy and Germany [21].

The market for sparkling wines was estimated for 2017 at 6.5 per cent of the total volume, while on-trade has a share of approximately 20.0 per cent [5].

Regarding sales channels, discount stores do not have the same hegemony as in Germany. Instead, the market is dominated by super- and hypermarkets such as Auchan Hypermarche SAS, Tesco PLC, and SPAR. Also, small grocery shops are the main distribution centres for food products in villages [21], increasing sales venue diversity in Hungary.

Table 1 summarizes the main differences and similarities of Germany and Hungary in terms of wine production, trade and consumption.

Table 1. Wine related statistics in Germany and Hungary 2018.

	Germany	Hungary
Vineyard areas (ha)	102,000	65,000
Annual wine production (million hl)	9.0	2.5
Wine import (million hl)	15.0	0.2
Wine export (million hl)	1.0	0.7
Sparkling wine (share in %)	16.0	6.5
On-trade (share in %)	18.0	20.0

Source: [3, 5, 8, 9, 11, 19, 21].

1.3 Objectives and research questions

Both the German and the Hungarian wine markets have been previously studied, though in limited amounts. Previous scientific papers about Germany range widely on their topics, including: cooperatives [22], consumer segmentation [16], wine price analysis [23, 24], winery structure [25], wine tourism [26], social media usage in the wine business [27], and on the German wine production sector [28]. In addition, the popular German scientific magazines Weinwirtschaft and Meininger´s Wine Business International also publish articles on the German wine market [9, 10, 14]. There has also been some research into Hungary's consumer segmentation [29], consumption and purchasing behaviour [30, 31], innovation processes [32, 33], general overview of the wine sector [34], wine tourism [35], and a comparison of French and Hungarian wine producers [36].

These two countries represent two different worlds. Germany symbolises the wealthy Western Europe, while Hungary, as one of the formal communistic countries in Middle-Eastern Europe, is at the border between Europa and the Balkan. Due to the completely different development, both on political and on economic level, of these two countries, there is a certain scientific interest to investigate wine consumers with various cultural backgrounds. We suppose that differences in culture, economic and politic have their influence also on wine consumption behaviour.

There has not, however, been a comparative study on the German and Hungarian wine markets nor on consumer behaviour in these two countries. Therefore, for the purposes of this study, representative surveys were conducted in Germany and Hungary. Based on the assumption that German and Hungarian wine consumers and markets differ significantly, this article examines the following questions:

RQ1: What are the main differences between German and Hungarian wine consumers in their basic characteristics and preferences?

RQ2: How do the wine market sales channels differ in Germany and Hungary?

2. MATERIALS AND METHODS

2.1 Consumer sample

Representative consumer surveys were conducted in May 2017 in Germany and Hungary. The random sampling of 2,000 and 1,500 participants respectively is representative of the basic socio-demographic structure of the German population from age 16 and of the

Hungarian population from age 18 (the legal drinking ages in each nation). Therefore, the provided information was generalised for the total population of each country. In order to increase the validity and reliability of the results, the survey was carried out in the form of a personal interview (face-to-face survey) in the households of the interviewees by using quota sampling [37]. The interviews were conducted by a professional market research company, GfK (Nürnberg, Budapest). For quotas, we used official statistics from Federal Office of Statistics on national level. In Germany, it was on the basis of data from Statistisches Bundesamt, Wiesbaden [55] and in Hungary from Köszponti Statisztikai Hivatal, Budapest [56]. The quote for gender, age and social class are reported in Table 3. Regarding the selected quota criteria, the German sample corresponds to the German total population and the Hungarian one to the Hungarian total population. For the determination of the respondents, the external employees of GfK received the characteristics gender and age of the respondents as well as occupation of the head of household and household size directly; the characteristics town/city size and federal state were indirectly specified. The questioning of the respondents was based on a structured questionnaire. The external employees of GfK had to follow the question formulation and the order of the questions. A total of 400 interviewers in Germany and 200 interviewers in Hungary were involved in this investigation. For the interviewer an automated software was used.

2.2 Methodical approach

The questionnaire, based on the study by Szolnoki and Hoffmann [16], included identical questions in both countries regarding wine consumer behaviour as well as socio-demographic profile information. Consumption of still wine, sparkling wine and beer was measured by using six frequency categories such as "many times a week", "once a week", 2-3 times a month", "once a month", "less than once a month" and "never". For wine type preference (white, rosé and red wine), sweetness preference (dry, semi-dry, semi-sweet and sweet wine), preference of origin (German and imported wine) and sales channel usage (discount shop, supermarket, hypermarket, wine shop, cellar door and online sale) constant sum scaling was used [38]. Considering the results of Friedmann and Amoo's study on rating scales [39], the questionnaire utilised a seven-point interval scale for gauging involvement. This was measured by asking consumers for their interest for and knowledge about wine. For the socio-demographical variables gender and age, we applied the same response categories in both countries, while social class was calculated from education level, net-income and current profession.

The questionnaire was designed in German and back-translated (German-Hungarian) so that the native language of each country was used during data collection.

Data from the survey were analysed with SPSS 23.0 (SPSS IBM) using mean, frequency, cross tables and ANOVA. Like Mueller et al. [40], we used the $\chi 2$ test as an ordinal penetration measure to test the differences between the segments in terms of socio-demographic and behavioural profiles combined with Cramer´s V for cases with more than four cells [41]. For metric responses, factorial analysis of variance was used, and post-hoc effects (Tukey-b test) were estimated, allowing analysis of the significant differences between the segments.

3. RESULTS

3.1. Consumption frequency of alcoholic beverages

First, the consumption frequency of three alcoholic beverage types (still wine, sparkling wine and beer) was determined in order to provide preliminary insight into differences between German and Hungarian consumer behaviour. Table 2 shows that there were significant consumption differences in all three beverage types. The consumption pattern reflects that Hungarian frequent wine drinkers (at least once per week) is significantly higher than in Germany (22 per cent vs 12 per cent). According to this, the share of occasional drinkers and non-wine drinkers in Germany is higher than the Hungarians'.

Germany's annual per-capita sparkling wine consumption is number one in the world with a value of 3.4l [3]. This is reflected in the Table 1 results, especially when comparing the first frequency categories. In Hungary, sparkling wine is also popular; however, the drinking frequency is lower than in Germany.

Beer consumption in Germany exceeds that of Hungary [3, 42]; comparing frequent beer drinkers, 45 per cent of the German population consumes beer at least once a week, while in Hungary, this share is only 24 per cent.

3.2. Socio-demographic profile of wine drinkers

To evaluate the socio-demographic makeup of wine drinkers, we employed cross-tabulation to determine any significant differences between the two countries (Table 2). For this analysis, we only involved wine drinkers

Table 2. Consumption frequency of selected alcoholic beverages in Germany and Hungary.

	Sparkling wine		Sparkling wine		Beer	
	Germany n=2,000	Hungary n=1,500	Germany n=2,000	Hungary n=1,500	Germany n=2,000	Hungary n=1,500
Several times per week	6%	11%	1%	0%	28%	13%
Once a week	8%	11%	3%	1%	17%	11%
Two or three times per month	13%	14%	9%	3%	11%	15%
Once a month	10%	12%	12%	6%	6%	8%
Less than once per month	24%	19%	49%	54%	13%	19%
Never	39%	34%	27%	37%	25%	35%
$\chi 2$	68.421*		144.739*		177.311*	
Cramer-V	0.198		0.284		0.302	

* significant differences between Germany and Hungary, $\chi 2 = p < 0.05$.

Table 3. Socio-demographic profile of wine drinkers in Germany and Hungary.

	Germany n=1,237	Hungary n=988	$\chi 2$	Cramer-V
Gender				
Male	44%	50%	15.587*	0.105
Female	56%	50%		
Age				
16/18-29 years[a]	15%	17%	31.209*	0.165
30-39 years	13%	20%		
40-49 years	20%	18%		
50-65 years	28%	26%		
Older than 65 years	24%	18%		
Social class [b]				
Upper	37%	17%	210.455*	0.325
Middle	45%	40%		
Lower	17%	43%		

[a] Legal drinking age in Germany is 16 years, while in Hungary 18 years; [b] Social class is based on education level and net monthly salary; * significant differences between Germany and Hungary, $\chi 2 = p < 0.05$.

from both countries, therefore the investigated number of cases reduced on 1,237 in Germany and 988 in Hungary. Comparing first the gender of wine drinkers, it becomes clear that in Hungary, there is an even distribution of male and female wine drinkers at 50 per cent each, while in Germany, wine preference is slightly higher among women than men.

Age seems to be a more significant indicator of drinking frequency. Table 3 shows that while the consumer drinking behaviours are similar in both countries between the ages of 40-65 years, younger generations in Hungary are more likely to consume wine than their German peers. However, these statistics reverse for the oldest generation, with more German consumers over age 65 drinking wine than their Hungarian counterparts.

The largest socio-demographic difference between German and Hungarian wine drinkers is related to social class. In Germany, wine drinking seems to be strongly correlated with higher social status; more than one-third of wine drinkers in Germany are wealthy and well-educated consumers, while the lower social class makes up only 17 per cent of the wine drinking population. The exact opposite is observed in Hungary, where wine drinking is popular among the middle and lower social classes but has significantly fewer upper-class participants.

3.3. Wine consumption behaviour

Factorial ANOVA was applied to analyse significant differences in the metric responses of wine consumption behaviour (Table 4); origin, wine type, level of sweetness, and place of consumption were measured with a constant sum scale. Involvement was evaluated by looking at self-reported interest in and knowledge about wine on a scale from -3 to +3.

A main distinction between the German and Hungarian wine markets is the preference of origin of wine: domestic or foreign. Germany is considered the largest import market internationally [3], while the Hungarian market is dominated by domestic wines; German consumers stated a 59 per cent preference for their domestic wines, but 94 per cent of Hungarians favoured a native vintage.

Wine type preferences show some differences; however, they are not substantial. Both countries produce more white wines than red [3, 19], which also reflects

Table 4. Wine consumption behaviour of German and Hungarian wine drinkers.

	Germany n=1,237	Hungary n=988	F-value	Sign.
Origin				
Domestic wines	59%	94%	1124.27*	0.000
Imported wines	41%	6%	1124.27*	0.000
Wine type				
White wine	44%	53%	44.09*	0.000
Rosé wine	12%	12%	0.00	0.989
Red wine	44%	34%	43.15*	0.000
Level of sweetness				
Dry	43%	23%	150.18*	0.000
Semi-dry	34%	18%	152.99*	0.000
Semi-sweet/sweet	23%	58%	477.95*	0.000
Place of consumption				
Home	46%	53%	25.87*	0.000
Dining establishment	18%	13%	27.66*	0.000
Visiting friends or relatives	25%	25%	0.02	0.963
Events	11%	9%	14.55*	0.000
Involvement				
Interest	-0.31	-0.65	18.68*	0.012
Knowledge	-0.83	-1.22	22.42*	0.002

* Significant differences at $p < 0.05$, ANOVA-test.

the consumer preference structure. Yet, the above-mentioned imported wine share contributes to higher red wine consumption in Germany. In Hungary, the preference level for white wines is above 50 per cent.

One of the greatest differences in this study was sweetness preference. The majority of German respondents prefers dry wines, which comprise 43 per cent of their total consumption, while sweet wines account for just 23 per cent. Hungarian wine drinkers demonstrated nearly inverse choices, with strong preferences for wines with a higher level of residual sugar and only 23 per cent consumption of dry wines. One explanation for Hungary's inclination for sweet wine may be that one of the most popular wine growing regions in Hungary is Tokaj [21], where the focus is on sweet wine production.

As for consumption location, two categories have meaningful differences: drinking wine at home and at exterior dining establishments. In Germany, restaurants are a more popular choice for drinking, at 18 per cent compared to 13 per cent in Hungary, while at-home consumption in Hungary is significantly higher at 53 per cent.

With respect to involvement, Hungarian consumers indicated a lower value; however, the differences on a seven-point scale, even though they are significant, are marginal.

3.4. Usage of sales channels for purchasing wine

Germany and Hungary have entirely different landscapes regarding wine sales channels. Therefore, in the questionnaire, the inquiry about sales channels differed according to the retail structure of each country. In Germany, the categories "supermarket" and "hypermarket" were not separated and "purchasing wine abroad" was an added option. In Hungary, the category "small grocery" was included as small groceries are still of enormous importance in terms of selling wine, especially in the countryside, where there is not significant super- and hypermarket coverage.

Table 5 summarises the results of sales channel usage in Germany and Hungary. Discount shops such as ALDI Einkauf GmbH & Co. and Lidl Stiftung & Co. have huge popularity in Germany when it comes to purchasing food and beverages. Accordingly, the share of the discount shop channel is 37 per cent followed by supermarkets and hypermarkets at 36 per cent. Discount shops are not unknown in Hungary, but they are not as widespread as in Germany. Therefore, based on the survey data, we estimate their share at 12 per cent. The greatest piece of the total wine market in Hungary is controlled by hypermarkets, such as Tesco PLC or Auchan Hypermarche SAS, with a 33 per cent market share. Supermarkets follow at 20 per cent, and then small groceries, with a significant 18 per cent share. Specialty wine stores also having large differences in market share; in Germany, wine stores perform far better than those in Hungary (11 per cent versus 5 per cent market shares respectively). Winery-direct sales have a similar share in both countries at 12 per cent. Online wine shops sales, however, differ significantly between Germany (2 per cent) and Hungary (0.1 per cent).

Table 5. Usage of sales channels of German and Hungarian wine drinkers.

Sales channels	Germany n=1,237	Hungary n=988	F-value	Sign.
Discount shop	37%	12%	314.276*	0.000
Small grocery	n.a.	18%	n.a.	n.a.
Supermarket	36%	20%	n.a.	n.a.
Hypermarket		33%	n.a.	n.a.
Wine store	11%	5%	51.983*	0.000
At the winery	12%	12%	3.709	0.054
Online wine shops	2%	0.1%	29.732*	0.000
Abroad	2%	n.a.	n.a.	n.a.

*Significant differences at $p < 0.05$, ANOVA-test.

When analysing the usage of sales channels by comparing different sub-segments, we have found significant differences. In Germany, there are proportionally more females than males, who buy their wines in discount shops. In Hungary, due to the fact that discount shops play a less important role, super- and hypermarkets have a higher proportion of female consumers. This phenomenon can be tracked back to the fact that in both countries mainly females do the everyday grocery shopping, which, obviously, is combined with purchasing wine. In terms of age, older consumers in Germany buy more frequently in wine stores, while in Hungary younger generations have a significant higher share of purchasing wine in hypermarkets. One of the main influencing factor among socio-demographic and –economic characters is social status – regardless of the country. German wine consumers with higher income and social status purchase very little wine in discount shops and spend more money on wines form wine stores or directly at the winery. In Hungary, we a similar situation can been seen regarding purchasing wine in wine stores and cellar door. There is a higher proportion of Hungarian wine drinkers from lower social class, who buy wine in small groceries [1].

Additional questions about consumers' activity and attitudes towards online wine sales were asked to analyse the potential and to forecast the development of this market in the future. As already stated, German online wine sales cover two per cent of total purchases and have an active consumer group of seven per cent (see Table 6).

In Hungary, only one per cent of all wine drinkers purchased wine online in the last year. Wine drinkers in both countries that have not already purchased wine online are to the same extent (13-14 per cent) interested in ordering wine online in the future. However, the share of those who do not want to consider online wine purchases is still substantial at 79 and 86 per cent, respectively.

Table 6. Active and potential online wine buyers in Germany and Hungary.

	Germany n=1,237	Hungary n=988
Have purchased wine online	7%	1%
Have not purchased wine online but willing to do so in the future	14%	13%
Have not purchased wine online and unwilling to do so in the future	79%	86%
Chi-square	53.447*	
Cramer-V	0.189	

3.5. Market structure of wine

There are official statistics of wine sales in terms of total volume by the Federal Statistic Offices in both countries. According to these, in 2016, Germany had sales of approximately 20 million hectolitres and 2.2 million hectolitres were sold in Hungary. Even the total proportion of sparkling wine consumed can be defined precisely – 16 per cent in Germany and 6.5 per cent in Hungary [3, 43, 44]. When deducing the volume of the total wine market by the share of sparkling wines, 16.8 million hectolitres remain in Germany, while in Hungary the volume changes to 2.06 million hectolitres. However, there are limitations when trying to quantify the value of the total wine market due to the very raw estimates appearing in different media. According to Euromonitor [5, 44], the total value of the German wine market was estimated at 13 billion Euros, and the Hungarian one at 315 billion Forint. Other sources, however, show a significantly lower value of 9 billion Euros in Germany [45]. Attempting to determine the value share of the on-trade wine market in each country is even more complicated. For that reason, this study only calculated the volume, but not the value, of the retail market. The study considered the on-trade share to be 18 per cent in Germany and 20 per cent in Hungary, which then converts to approximately 14 million hectolitres in the German off-trade wine market and 1.64 million hectolitres in Hungary [5, 44].

Tables 7 and 8 indicate the importance of different retail sales channels in Germany and Hungary. As already discussed above, the structure of the channels in Germany and Hungary differs substantially, especially when comparing the share of discount shops as well as super- and hypermarkets. Weighing the shares by volume, winery-direct sales in both countries gain in importance while discounts and super- and hypermarkets become less significant. This can be traced back to the fact that consumers in discount stores and super- and hypermarkets have below-average consumption rates while those who buy their wine directly from the winery tend to have a higher average consumption.

Table 7. Retail market structure of still wine in Germany.

	Discount	Food retails	Wine store	Cellar door	Online	Abroad
Average price (€/l)	2.92	3.20	10.00	6.72	10.00	8.00
Unweighted share	37%	36%	11%	12%	2%	2%
Volume share	33%	34%	12%	16%	2%	3%
Value share	20%	23%	26%	22%	3%	5%

Table 8. Retail market structure of still wine in Hungary.

	Discount	Small grocery	Super-market	Hyper-market	Wine store	Cellar door	Online
Average price (Ft/l)	800	870	1,000	1,000	3,300	2,000	3,300
Average price (€/l)*	2.51	2.73	3.14	3.14	10.34	6.27	10.34
Unweighted share	12%	18%	20%	33%	5%	12%	0.1%
Volume share	11%	20%	19%	30%	5%	16%	0.1%
Value share	8%	15%	17%	27%	14%	20%	0.2%

* Average price in € was calculated based on the official exchange rate on 15. February 2019.

For the value share, this study used official statistics [3] and, in some cases - especially in Hungary, where no statistics were available - conducted short qualitative interviews with wine market experts. Based on the official statistics and the results of the expert interviews, the average price for each sales channel was defined. Although the German and Hungarian average prices were calculated separately, there are definite similarities in terms of price in certain sales channels.

Due to the lower average price and lower volume share, discount shops in Germany have a 20 per cent value share, while the share of wine stores and wineries rises strongly above 20 per cent. In Hungary, too, wine stores and wineries increased their value share massively compared to discounts, small groceries, and super- and hypermarkets.

4. DISCUSSION

This study sought to identify differences between German and Hungarian wine drinkers, to provide insights into their wine purchasing and consumption behaviours, as well as investigate the structure and importance of sales channels in these countries. The results indicate that major differences appear in wine purchasing and consumption behaviours in Germany and Hungary.

Social class is the strongest differentiating factor for wine consumers in these two countries. Wine in Germany is trendy among consumers from the higher and middle social classes, but it still attracts quite a few consumers in the lower class. In Hungary, however, the main wine drinker population comes from the lower and middle social classes. The positive correlation between wine consumption and higher social status in Germany verifies previous research by Mortensen et al. [46], Lockshin et al. [47], and Thach and Olsen [48]. There were also significant differences in terms of age of the consumer. In Hungary, wine drinkers are evenly distributed across all ages examined; however, in Germany, wine consumers are generally older (above 40 years). In other studies, age was also recognized as a robust variable influencing wine consumer behaviour [40, 49, 50, 51, 52, 53]. Preference of origin is also a substantial behaviour difference; Hungarian wine consumers greatly favour domestic wines [21], while imported wines are of great importance in Germany.

Sales channels in the two countries are also entirely different. In Germany, more than two-thirds of the total wine volume is sold in discount shops and other food retailers [37], while in Hungary, hypermarkets, supermarkets, and small groceries are the leading wine distributors.

The above-mentioned significant differences between Germany and Hungary underline the hypothesis that countries with different cultural, political and economic background have a different consumption pattern of alcoholic beverages. In Hungary, wine consumption is distributed more homogeneously within the different segments. As stated above, the differences in wine consumption between younger and older consumers as well as wine drinkers from lower, middle and higher social classes are much lower than in Germany. Due to this fact, wine in Hungary can be seen as an alcoholic beverage, which goes beyond social and age borders, while in Germany, socio-demographic and –economic characters influence consumption of wine more significantly.

4.1 Practical and managerial implications

From a managerial perspective, these results contribute to more profound insights and better understanding of German and Hungarian wine markets and consumers.

Germany, with its 15 million hectolitres of imported wine, is one of the most important and popular wine markets worldwide [3]. In addition to the approximately 8,000 German self-marketing wine estates, large wine bottler operations and cooperatives, international wine

companies compete for German buyers. In Hungary, the pressure of imported wines is not as great as in Germany, however, the diminishing geographic area of vineyards as well as the decreasing per-capita-consumption in the country [43] challenges producers and wine market experts. For the reasons mentioned above, detailed information and data about consumers in these countries is crucial in order to understand their behaviours, needs, recent market trends, and the importance of various sales channels.

With the help of this study's results, sales channel target groups can be identified which may lead to better positioning for wine suppliers and offer the opportunity for promotional campaigns. In addition, wine producers and specialty wines stores, as well as discount shops and other retail channels, will be able to quantify the market share of their respective channels and also better position themselves in the German and Hungarian wine markets.

The market structure presented in 3.5 summarizes the importance of different sales channels. The German retail landscape differs significantly form the Hungarian one, especially in volume and value of discount shops and wine stores. This overview shall support wholesalers, exporters as well as importers of wines from Hungary to Germany and vice versa, to identify the target market and its sales channels and to position their products in the right channel.

This study also analysed trends for future developments in the wine sales landscape. Although online sales currently only make up 2 per cent of total wine sales in Germany and 0.1 per cent in Hungary, per study results, e-commerce will become an increasingly important and substantial portion of the future sales markets. This fact is essential for retailers to prepare their business for the future.

4.2 Limitations and further research

Academically, this study enhances existing research into wine consumers´ behaviour in two wine growing countries. As the framework of this study included two representative surveys (one in Germany and one in Hungary), the results can be generalised for the total populations. While this article shares new results, there are also limitations of the research that should be considered.

The current study outlines a snapshot of the German and Hungarian wine market in 2017. Although other representative studies from Germany [16] and Hungary [54] can confirm the results about consumer behaviour and structure of the sales channels, only a long-term investigation would give a complete picture on the development of both markets.

The authors of this paper, therefore, recommend continuing data gathering and comparing Germany and Hungary again in the future. Furthermore, we also encourage other researchers to adopt this way of investigation to compare other wine markets and their consumers.

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Original Research Article

Assessing the Effects of the Environment on Consumers' Evaluations for Wine

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Abstract. In the wine sector, experiential marketing is becoming increasingly important since the success of a wine hinges on "experiential" attributes that include hedonic and symbolic values associated with emotions. An aspect not yet fully explored in the scientific literature concerns the extent to which emotions aroused by the environment where wine is consumed are able to influence consumers' evaluation of wine. To this end, we conducted an economic experiment in Italy in the territory of Mt Etna, Sicily and through a non-hypothetical experimental auction we assessed the effects of 10 emotions related to the environment of Mt Etna on consumers' Willingness to Pay (WTP) for Etna wine. The results of this study show that the values of consumers' WTP for wine are affected by emotions aroused by the experiential environment of Mt Etna.

Keywords: wine, experiential consumption, experimental auction.

1. INTRODUCTION AND PURPOSE OF THE STUDY

Recently, companies operating in the agro-food industry have adopted business models related to environmental, economic and social sustainability (Schimmenti et al., 2016; Galati et al., 2019a). The wine industry has implemented initiatives aimed at both sustainability and changes in consumer behaviour, as purchasing decisions are increasingly influenced by environmental and social aspects, and at identifying web-marketing behavioural models (Galati et al., 2017; Iaia et al., 2017; Capitello et al., 2019). Consumers' willingness to pay for wine has increased for products that offer greater sustainability guarantees (Di Vita et al., 2019; Galati et al., 2019a).

Until recently, scientific literature has focused its attention on the main factors influencing the behaviour of wine consumers. Reference literature is quite extensive and has focused on the consumer's willingness to pay more for wines with particular characteristics of healthiness and environmental sustainability. Consumer interest in both the quality and healthiness of the wines as well as the social and environmental impact of their consumption, has given rise to increased attention to the information displayed on the label

as a tool to reduce the risk associated with wine purchasing (Galati et al., 2019b).

In this context, marketing strategies used in the wine sector by businesses are diversified by selling experiences, feelings and values that involve consumers on a personal level (Goode et al, 2010; Santini et al, 2013). From the perspective of 'experiential marketing' (Pine and Gilmore, 1999; Schmitt, 2010), these new strategies aim to satisfy a new demand from wine consumers towards intangible services related to tradition and the environment where the wine is produced and consumed (Pomarici et al, 2017). In the wine sector, experiential marketing is becoming increasingly important since the success of a wine hinges on 'experiential' features that include the hedonistic and symbolic values associated with emotions (Santini et al, 2011; Alebaki et al., 2015).

Emotions play an important role in many aspects of food consumption and have been widely analysed in scientific literature (Kotler, 1973; Mehrabian and Russell, 1974). Emotions, broadly defined as a complex state of feelings that translate into physical and psychological changes that can influence thinking and behavior (Spinelli, 2017), are important for marketing organizations as they help them understand consumer behaviour and have some control over post-purchase behaviour. In the wine sector, an interesting aspect regards the effects of emotions related to the environment wine is consumed in as evaluated by consumers. These 'environmental' emotions are important factors when experiential marketing is put into practice and can be expected to influence consumers' decision-making (Platania et al., 2016a). Stimuli from the place of consumption can influence the sensory and psychological markers associated with wine consumption (Orth and Bourrain, 2005). The characteristics of wine destinations also affect consumers' intentions to revisit wine regions (Bonn et al., 2016). Motivations as a basis for segmenting tourism markets have provided information on why consumers desire to visit wine destinations and regions (Bruwer et al., 2018).

One aspect that has not been fully explored yet in scientific literature concerns the extent to which the emotions aroused by the environment where wine is consumed are able to influence consumers' evaluation of it. To our knowledge, no study has examined whether the emotional state aroused by the environment consumers evaluate food in persists after the consumer has experienced visiting a place capable of arousing such emotions. This is an important topic for both companies and marketers since marketing practices related to the environment can lead to an increase in consumer demand for wine. For this purpose, in this study we assess whether the emotions related to the environment wine is consumed in affects consumers' WTP for wine.

In the wine sector, previous studies have shown that the environment wine consumed in can stimulate behavioural responses among consumers that can lead to wine purchases (Platania et al., 2016a, Sturiale and Scuderi, 2017). Environmental attributes that influence the consumption of wine can be related to the place of consumption (Orth and Bourrain, 2005; Platania et al., 2016b), region of origin (Lange et al., 2002; Alant and Bruwer, 2004; Yuan et al., 2005; Vecchio, 2013) and cultural attractions of the production site which are capable of developing emotions in highly motivated consumers who come from places far from the production area (Getz and Brown, 2006). Understanding how the environment affects wine evaluation and consumption remains an unresolved issue. Specifically, one interesting issue that has not been fully explored yet which we analysed in our study relates to the emotions aroused by attractive environments (Voss et al., 2008; Candi et al., 2013; Creusen et al., 2018) which can enhance the hedonic and symbolic value of a product (Chitturi et al., 2008; Teng et al., 2007; Reimann et al., 2010; Candi et al., 2017).

With the purpose of observing whether the emotions related to attractive environments affect consumers' wine evaluation, we conducted a non-hypothetical experimental auction in Italy to estimate the experiential effects of the emotions on consumers' WTP for wine. The experiment involved recruiting people to blindly evaluate three types of wine in conditions of emotions aroused by the environment of Mt. Etna in Sicily, the largest volcano in Europe and one of the most well-known wine areas in Italy.

2. BACKGROUND TO MT ETNA

The environment of the volcano can arouse a wide range of emotions in visitors mostly because the semi-lunar like landscape creates attraction mixed with fear. Numerous studies have proven the existence of emotions aroused by potentially hostile yet at the same time attractive environments such as volcanoes (Zube et al, 1975; Kaplan, 1987; Purcell et al, 2001; Böhm, 2003; Bird et al. 2011; Ruiz and Hernández, 2014).

Etna is Europe's largest volcano attracting millions of visitors from all over the world every year. Furthermore, in June 2013, Etna was inscribed in UNESCO's World Heritage List.

Over the course of centuries, a rich agriculture has developed around the volcano mostly made up of fruit,

Table 1. Experimental treatments.

Design	Groups	Treatment denomination	Experiential consumption	Location of treatment	Wine tasting	Rounds in the auction
Pre-test	Control group	TC1	NO	Sensory lab	Blind	5
	Treated group	TT1	NO	Sensory lab	Blind	5
Post-test	Control group	TC2	NO	Sensory lab	Blind	5
	Treated group	TT2	YES	Winery	Blind	5
Follow-up test	Control group	TC3	NO	Sensory lab	Blind	5
	Treated group	TT3	NO	Sensory lab	Blind	5

olive and vine production. Most of these crops can boast of EU recognition as 'Protected Designation of Origin' (PDO). Man's presence has left a profound imprint on Etna's agricultural landscape through the building of terracettes, barns, mill, wineries and other architectural structures.

As a consequence, Mount Etna is a force of nature potentially capable of augmenting the experiential component of the environment and context consumers evaluate food products in and in particular wine.

3. METHODOLOGY

3.1 Experimental design

To evaluate the effects of the emotions on consumers' evaluation of wine, we conducted an economic experiment in the Mt. Etna area (Italy). A sample of 140 students participated in a non-hypothetical experimental auction which is a well-established method of assessing the WTP for food products (Lusk and Shogren, 2007; Pappalardo and Lusk, 2016; Wongprawmas et al. 2016; Pappalardo et al. 2017; Pappalardo et al., 2018; Selvaggi et al., 2018a and 20181b). This type of experiment offers the advantage of providing an incentive for participants to truly reveal their preferences. Indeed, an experimental auction simulates a real market where consumers can make the decision to buy or not to buy a product through a real money transaction providing researchers with an accurate estimate of product values (Lusk and Shogren, 2007). Moreover, each participant will be provided with a gadget at the end of the auction protocol.

Few studies have used non-hypothetical methods to estimate the effects of intangible factors in consumers' WTP for wine (Bradley et al., 2015). In this study, we used the random *nth* price auction method (Shogren et al., 2001; List, 2003) since this method is incentive-compatible and widely used in many empirical evaluation studies (Huffman et al., 2003; Capra et al., 2010; Chern et al., 2013). Participants do not know the winning position until all the bids have been submitted, thus removing the competitive biases that might exist in other experimental auction mechanisms, such as the second-price auction (Shogren et al., 2001).

The novelty of this paper is combining a non-hypothetical evaluation method with an evaluation of emotions to identify a consumer's WTP for wine.

In the first step of the study, we recruited people for the experimental auction, and at the same time, people were asked questions on the emotions aroused by Mt Etna. We conducted our experiment in Sicily, Italy, in May 2017. A total of 140 people were recruited from a pool of students attending the 3rd year of the Degree in Food Science and Technology at the University of Catania (Italy). Students were recruited by using a recruitment questionnaire in which they declared to be wine consumers and to have the minimum age (18 years old) required by the Italian legislation authorizing the consumption of alcohol (Law 30 March 2001 No. 125 "Framework Law on alcohol and related problems").

In the second step of the study, WTP for wine was elicited through a non-hypothetical *nth* price auction method. Participants were randomly assigned to two groups: 'control' and 'treated' (Table 1). Each participant in the control group took part in three treatments called Treatment Control 1 (TC1), Treatment Control 2 (TC2), and Treatment Control 3 (TC3). Similarly, each participant in the treated group took part in three treatments called Treatment Treated 1 (TT1), Treatment Treated 2 (TT2), and Treatment Treated 3 (TT3). The three treatments within each group (six treatments in total) were carried out at intervals of one week during May 2017[1].

[1] Unfortunately, it was not possible at the end of the experiment to have equal numbers in the control and treated groups. Of the 140 participants initially recruited and who participated in the first treatment (70 in the treatment TC1 and 70 in the treatment TT1), only 118 (66 in the control group and 52 in the treated group) participated in all three treatments. The study only considered data concerning the participants in all three treatments.

The three treatments for the participants in the control group (TC1, TC2, and TC3) were carried out in a sensory lab, while participants in the treated group received the first treatment (TT1) in the sensory lab, the second treatment (TT2) in a winery on Mt. Etna, and the third treatment (TT3) in the same sensory lab. Finally, we implemented a mixed design divided into three phases: 'pre-test', 'post-test' and 'follow-up test' where the repeated criterion within the two groups was the WTP for one 0.75litre bottle of wine. In our experiment, the experiential environment was represented by a winery located on Mt. Etna.

Participants were informed in advance that they would take part in three treatments as part of an economic experiment using experimental auctions. Participants in the control group were informed that they would undergo all three treatments in a sensory lab. Those participants in the treated group were informed that they would undergo the first and third treatments in the sensory lab, while the second treatment would be held at a winery located on Mt. Etna.

More specifically, participants in the treated group carried out the second treatment (TT2) in a winery on Etna which produces Etna PDO (Protected Designation of Origin) wine. As soon as the participants arrived at the winery and before the auction started, they were invited to take a guided tour of the winery. The guided tour not only allowed participants to observe the premises of the winery but also to appreciate the architectural, and emotional journey catalysed by the majesty and elegance of the winery as well as by the links between it and Mt. Etna. After the 90-minute tour, participants were taken to the elegant premises of the barrel cellar where the experimental auction took place.

Participants were also informed that before the experimental auctions both in the sensory lab and in the winery, they would taste three types of red Etna wine. The wines used in our survey were 1) Etna Rosso "Femina" PDO, 2) Etna Rosso "Sensi" PDO, and 3) Etna Rosso "Vulcano" PDO, and they were produced by the winery that students toured. The wines were similar in terms of organoleptic characteristics and production year but were only distinguishable nominally as 'A', 'B' and 'C'. We used blind tastings to ensure impartiality and to avoid product-related experiential effects, that is, potential bias effects in participants' judgments due to product-related attributes. Three types of Etna wine were used to test the consistency of the results across different types of wine in the region. Participants were not informed that the wines they tasted originated from Mt. Etna.

3.2 List of emotions

The survey investigated whether the emotional factors related to Mt Etna affected consumers' willingness to pay (WTP) for wine. By reviewing past literature (Böhm, 2003; Bird et al. 2011; Ruiz and Hernández, 2014), 10 emotions related to volcano environments were identified (Table 2) and for each emotion the participants in our survey were asked to classify them on a scale of 1 to 5, where 1 is equivalent to 'no important' and 5 'very important'.

Participants were asked to evaluate their emotional reactions immediately after each treatment to assess WTP.

3.3 Auction procedure

In all the treatments, the participants took part in a random *nth* price auction with five rounds of bidding in each treatment according to the procedure described below.

Step 1: Upon arrival at the venue, after signing the consent form, each bidder received an ID and was invited to sit in a specific seat. We then proceeded to blind tasting a 30 ml sample of each of the three wines.

Step 2: At the end of the tasting, the coordinator clearly explained in detail the random nth price auction mechanism to participants.

Step 3: To ensure participants understood how the auction mechanism worked, we conducted a practice

Table 2. List of emotions aroused when visiting or thinking about Mt Etna.

Emotions	Meaning
Tranquil	The state of being calm and peaceful without noise, violence, worry, etc.
Ecstatic	A state of being extremely happy and feeling or showing ecstasy.
Inner peace	A state of being mentally and spiritually at peace. Being 'at peace' is to be healthy and the opposite of being stressed or anxious.
Nostalgia	The feeling of pleasure and also slight sadness when you think about things that happened in the past.
Excited	The state of being or feeling very happy and enthusiastic.
Frightened	The feeling or condition of being afraid.
Fascinated	A state of being extremely interested by something.
Enchanted	Being affected by magic or seeming to be affected by magic.
Amazed	A state of being extremely surprised by something.
Surprised	The state of being or showing surprise because something has happened that you did not expect.

session with three different 1 kg generic pasta packages. This auction was only a trial session to familiarize the participants with the auction mechanism, and at the end of this, nothing was bought. Since the real auction was for three wines in five bidding rounds, we conducted the trial auction with three different types of pasta and with five bidding rounds.

Step 4: After completing the trial auctions, the real wine auction began, and each participant simultaneously submitted bids for each of the three wines. The bids were for a 0.75L bottle of wine 'A', 'B' or 'C'. To avoid any issues of bias or affiliation, participants did not receive any kind of feedback between rounds, such as who was the winner or if the winning bid represented the market price (Corrigan et al., 2012).

Step 5: At the end of each round, bids were collected and arranged from highest to lowest.

Step 6: At the end of the fifth bidding round, one of the three wines was randomly drawn and chosen as the bidding wine.

Step 7: The bidding round was randomly drawn, which the price for the bidding wine would be chosen from.

Step 8: The random *n*th price (market price), whose value was between 2 and *n*, where *n* was the number of bidders in the auction's session (ranging in our survey from 7 to 8), was randomly drawn.

Step 9: The random *n*th price was announced; the bidders who submitted a bid higher than the *n*th price won the auction. Winning bidders paid the *n*th price to buy the randomly chosen bottle in the randomly chosen round.

Step 10: All bidders who had bid a price equal to or lower than the market price did not get anything.

Step 11: All participants filled out a follow-up questionnaire containing a series of questions related to emotions aroused by Mt. Etna and its demographics.

Each participant was given €20.00 at the end of all three treatments for their participation.

4. RESULTS

4.1 Descriptive analysis

Summary statistics of the participants are shown in Table 3. The average age of the subjects was 21.71 years in the control group and 22.27 years in the treated group. Most of the subjects were female. The yearly average household income ranged from €20,000 to €29,999. Most of the participants (91%) indicated that they had already been to Mt. Etna. As shown in the *t*-test *p*-value column, no significant differences were found between the control and treated groups regarding the variables used in our analysis except for age.

Table 4 reports the average bids for the three wines across the treatments. Consumers' WTP for each wine in the treated group was higher than the WTP in the control group both in the post- and follow-up tests. On average, for wine A, subjects in TT2 were willing to pay €2.98 for this bottle of wine in the experiential environment (winery) while those in TC2 were willing to pay €1.90 in the non-experiential environment (sensory lab). These results signify the effect Mt. Etna has on consum-

Table 3. Participants' socioeconomic characteristics.

Variables	Categories	Control group (66 Units)		Treated group (52 Units)		*p*-value
Age	Years	Mean	%	Mean	%	
		21.71		22.27		0.0868 *
Gender	- Male		19.7%		24.5%	0.2592
	- Female		80.3%		75.5%	
Income	- less than €20,000		37.9%		32.7%	0.2855
	- from €20,000 to €29,999		31.8%		26.5%	
	- from €30,000 to €39,999		18.2%		16.3%	
	- from €40,000 to 49,999		4.5%		8.2%	
	- from €50,000 to 59,999		3.0%		8.2%	
	- more than €60,000		4.5%		8.2%	
Visits to Mt Etna	- Yes		90.9%		91.8%	0.7887
	- No		9.1%		8.2%	

Table 4. Mean bids of all five rounds across the treatments.

Treatments	Wine A		Wine B		Wine C	
	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.
TC1 (pre-test)	2.02	2.06	2.09	1.48	2.73	2.90
TT1 (pre-test)	1.85	1.54	2.11	2.02	2.00	1.69
TC2 (post-test)	1.90	1.74	1.71	1.54	1.97	1.97
TT2 (post-test)	2.98	1.78	2.70	2.11	2.92	1.76
TC3 (follow-up)	1.80	1.55	1.69	1.09	1.95	1.62
TT3 (follow-up)	2.38	1.50	2.53	1.71	2.85	1.81

Sample size = control group: 66 units; treated group: 52 units.
Note: TC1: Treatment Control 1; TC2: Treatment Control 2; TC3: Treatment Control 3; TT1: Treatment Treated 1; TT2: Treatment Treated 2; TT3: Treatment Treated 3.

ers' evaluation of wine. Interestingly, WTP in TT3 was higher than WTP in TT1 for all three wines, reflecting the effect of having previously visited the winery.

Referring to the emotions aroused by Mt. Etna, the mean values for each emotion at the end of each treatment are shown in Table 5 where all the emotions were valued more highly than the mean values on the scale except for 'Frightened' and 'Nostalgia'.

4.2 Effects of the emotions on consumers' WTP for wine

To estimate the effects of the emotions aroused by Mt. Etna on consumers' WTP for wine, we developed a regression model in which we pooled the data from all six treatments carried out by participants in the control and treated groups. A random effects regression model was then estimated with the time dimension being the total number of rounds performed by each participant in the three treatments, i.e., 15. The regression model is specified as

$$BID_{ij} = \alpha_0 + \beta_1\ TDum + \beta_2\ A_2 \times TDum + \beta_3\ A_3 \times TDum + \beta_4 \text{Tranquil} + \beta_5 \text{Ecstatic} + \beta_6\ \text{Inner peace} + \beta_7\ \text{Nostalgia} + \beta_8\ \text{Excited} + \beta_9\ \text{Frightened} + \beta_{10}\ \text{Fascinated} + \beta_{11}\ \text{Enchanted} + \beta_{12}\ \text{Amazed} + \beta_{13}\ \text{Surprised} + \beta_{14}\ X_j + u_j + \varepsilon_{ij}$$

where BID_{ij} is individual i's WTP for each wine (A, B, or C) in round j in both the control and treated groups; A_2 is a binary variable = 1 in treatments TC2 and TT2 and 0 otherwise; similarly, A_3 is a binary variable = 1 in treatments TC3 and TT3 and 0 otherwise; $TDum$ is a binary variable = 1 if participants belong to the treated group and 0 otherwise. Consequently, $A_2 \times TDum$ is an interaction term between A_2 and $TDum$, while $A_3 \times TDum$ is an interaction term between A_3 and $TDum$. Tranquil, Ecstatic, Inner peace, Nostalgia, Excited, Frightened, Fascinated, Enchanted, Amazed, Surprised are the emotions aroused by Mt Etna as described in Table 2. X_i denotes a vector of control variables that include general sociodemographic factors, X_i is random effects which controls for hidden individual characteristics; and ε_{ij} is the i.i.d. component.

Overall, the results of the random effects model (table 6) show that participants WTP for wine is influenced by the interactive effect between treatment and membership of the Treated group ($A_2 \times TDum$ and $A_3 \times TDum$), by certain emotions which change depending on the wine and by certain socio-demographics of the participants. In particular, the results show that during the second treatment (TC2 and TT2), the Treated Group participants showed a higher WTP compared to those in the Control Group.

Table 5. Summary statistics of emotions.

Emotions	Control group			Treated group		
	1st auction Mean	2nd auction Mean	3rd auction Mean	1st auction Mean	2nd auction Mean	3rd auction Mean
Tranquil	3.77	3.77	3.70	3.69	3.96	3.81
Ecstatic	3.03	3.27	3.24	3.31	3.54	3.69
Inner peace	4.00	3.89	3.89	3.98	4.02	4.19
Nostalgia	2.14	2.14	2.38	2.23	2.52	2.48
Excited	3.58	3.65	3.68	3.79	3.83	3.88
Frightened	1.83	2.00	1.92	1.87	2.02	1.88
Fascinated	4.14	4.09	3.80	4.33	4.23	4.10
Enchanted	3.94	3.91	3.88	4.10	4.19	4.15
Amazed	3.58	3.73	3.59	3.58	3.71	3.79
Surprised	3.05	3.32	3.32	3.25	3.50	3.65

Table 6. Random effects regression results.

Variables	Wine A		Wine B		Wine C	
	Coefficient	*p*-value	Coefficient	*p*-value	Coefficient	*p*-value
Treated (T*Dum*)	-0.355	0.152	-0.048	0.851	-0.891	0.003 ***
Interaction (A_2 x *TDum*)	1.316	0.000 ***	1.056	0.000 ***	1.780	0.000 ***
Interaction (A_3 x *TDum*)	0.763	0.000 ***	0.902	0.000 ***	1.625	0.000 ***
Tranquil	-0.052	0.335	-0.021	0.663	0.128	0.046 **
Ecstatic	0.047	0.320	-0.018	0.681	0.020	0.725
Inner peace	0.054	0.423	-0.112	0.074 *	0.055	0.490
Nostalgia	-0.111	0.048 **	-0.118	0.024 **	-0.334	0.000 ***
Excited	0.222	0.001 ***	0.157	0.011 ***	0.249	0.002 ***
Frightened	-0.001	0.984	0.027	0.623	0.005	0.938
Fascinated	-0.061	0.322	0.099	0.076 **	0.061	0.393
Enchanted	-0.167	0.026 **	-0.189	0.006 ***	-0.263	0.003 ***
Amazed	-0.158	0.016 **	-0.217	0.000 ***	-0.170	0.028 **
Surprised	0.159	0.009 ***	0.160	0.005 ***	0.244	0.001 ***
Gender	-0.958	0.000 ***	-0.812	0.004	-0.944	0.003 ***
Age	0.090	0.133	0.016	0.800	0.067	0.364
Visits to Mt Etna	-0.213	0.673	-0.636	0.234	-0.205	0.739
Income	-.0520	0.400	-0.014	0.824	-0.062	0.409
cons	1.531	0.292	3.603	0.018 **	2.196	0.214

*, ** and *** denote significance at 10%, 5% and 1% levels, respectively.

The same result was observed during the third Treatment (TC3 and TT3). These results would seem to indicate that the experiential effect of visiting the winery during Treatment TT2 lasts over time and effects the subsequent treatment.

Table 6 also shows the parameters estimated for the emotions which influence WTP the most significant of which vary between wines and the relative coefficients showing both positive and negative signs. The positive parameters indicate there is a positive correlation between emotion and WTP. For example, with wine A, if the value of 'excited' increases by one point then WTP increases marginally by €0.22. Or with wine C, if the value of 'surprised' increases by one point then WTP increases by €0.24.

Instead, some statistically significant emotions have negative coefficients. For example, wine A's 'nostalgia' is negative representing a negative correlation with WTP. In marginal terms, this means that if 'nostalgia' increases by one point then WTP for wine A drops by €0.11.

Negative or positive correlations between emotions and WTP may be linked to the emotions aroused by the experiential environment used in our experiment (winery) which might have positively or negatively influenced WTP values. However, it would be better to confirm such conclusions with further research.

5. DISCUSSION

Our results confirm those obtained by previous research (Kotler, 1973; Orth and Bourrain, 2005; Alant and Bruwer, 2004; Yuan et al 2005; Getz and Brown, 2006; Galloway et al., 2008; Jang and Namkung, 2009; Muruganantham and Bhakat, 2013; Menini 2017) which are that experiential marketing strategies influence the willingness to pay for wine guaranteeing an increase in profits for wineries.

Nevertheless, all the previous research analysed how to identify and measure emotions in the consumption process (Richins, 1997; King and Meiselman, 2010; Kergoat et al, 2010; Prescott, 2017; Spinelli, 2017), whereas the methodological approach in this study measured the effects of emotions directly aroused by the environment of the consumption on the willingness to pay for wine. In particular, this study observed that the emotions aroused by Mt. Etna and referred to by experiential techniques can influence consumers' WTP. Specifically, these results reflect the relevant role played by environmental features not directly pertaining to the wine products. It seems remarkable that in contrast to previous studies (Creusen et al., 2018), our results suggest that the emotions aroused by the environment wine is consumed in, such as a winery recalling a high-value environment like Mt. Etna, significantly affects consumers' WTP even in

the absence of product-related attributes such as brand or product packaging.

On this latter issue, this study highlighted a twofold aspect yet to be explored in current scientific literature. Above all, the emotions explicitly correlated to an environment with strong cultural and naturalistic ties are able to influence consumers' WTP for wine. Secondly, the emotions aroused by experiential marketing strategies which refer to places with strong cultural and naturalistic ties last over time as shown by the WTP values obtained in the follow-up test.

In particular, this study has highlighted that certain emotions aroused by Mt. Etna significantly influence consumer WTP to buy wine produced on the volcano. Those experiential marketing strategies, which refer to the Mt. Etna environment, produce an increase in WTP for the wine compared to the WTP of the same wine obtained in a non-experiential context (sensory laboratory). This is potentially important for those in the wine sector. The experiential marketing strategies, which refer directly to the emotions aroused by places with strong cultural and naturalistic ties, could provide a level of competitivity for wine sector players which others, not having such high levels of cultural and environmental factors, cannot compete with. Moreover, the competitive advantage could be amplified by effects deriving from experiential consumption which lasts over time.

6. CONCLUSION

This research focused on assessing the effect of emotions directly related with a high-value environment where consumers evaluate and consume wine. In our study, results suggest that emotions aroused by visiting a winery recalling the environment of Mt. Etna was positively related with wine evaluation. The results have shown that the values of consumers' WTP for wine seem to be coherent with the goal of this study regarding the effect of emotions aroused by the experiential environment of Mt Etna on consumers' WTP for wine. In fact, the WTP in the treated group was higher than that in the control group for all the wines. Moreover, the results of the random effects model showed that participants' WTP for wine is affected by different emotions aroused by Mt. Etna. The significant emotions varied between wines and the relative coefficients showed both positive and negative signs. The positive coefficients indicate that some emotions aroused by Mt Etna such as 'excited' positively affect participants' WTP for wine, and conversely some emotions such as 'nostalgia' or 'enchanted' negatively correlate with WTP.

Our findings suggest that to implement effective experiential marketing practices related to the environment, an important role is played by those 'emotions' that influence consumer buying behaviour. This aspect is potentially significant for the players involved in the wine sector such as cellar managers or wine producers since the emotions directly aroused by the environment where wine is consumed can affect consumers' WTP for wine. Ultimately, from the perspective of 'experiential marketing', the results generally suggest that emotions related to the environment could be a tool that wine producers and marketers could use to differentiate their products and increase consumer demand for their products.

Results of our survey could have relevant implications for the stakeholders involved in the wine sector. For cellar managers, experiential marketing practices explicitly related to the emotions aroused by high-value environments wine is consumed in could increase consumers' evaluation of the wine products. For wine producers, environment and related emotions can lead to an increase in wine demand that could enhance winery income. Generally, the results suggest that the environment could be a tool that wine producers and marketers could use to differentiate their products and increase consumers' demand for their products.

This study recommends that experiential marketing practices be pursued as a product differentiation tool, especially for wineries and vineyards which are located in areas with high environmental relevance. This strategy can achieve a greater acceptance from consumers and thus a competitive advantage, especially among consumers who are more aware of environmental issues. Experiential marketing strategies related to the emotions aroused by the environment wine is consumed in should not be overlooked. Therefore, the industry could exploit more effectively environmental values such as quality labels of the wine produced, compared to what has been done so far in order to enhance the organoleptic qualities and designations of the origin of the wine.

Nevertheless, it is important to remember the limitations to this study. Above all, since this study was only limited to the case of Mt. Etna, it would be necessary for future research to verify such results in other geographical contexts with strong environmental ties. Another limitation was the place of origin of the participants in the sample which was formed only by Sicilian students who are already likely to be familiar with Mt Etna and its geographical characteristics. Moreover, the study should be performed on a much wider sample of participants not just undergraduates.

Nomenclature

Symbol	*Description*
EU	European Union
ID	Identification
PDO	Protected Designation of Origin
Random nth-price auction	Type of experimental auction
TC	Treatment Control
TT	Treatment Treated
UNESCO	United Nations Educational, Scientific and Cultural Organization
WTP	Willingness To Pay

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Original Research Article

The Speed of the Internationalisation Process and the Institutional Networks of Family SMEs in the DOC Rioja Wine Industry

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Abstract. Institutional networking is a key element in businesses' internationalisation processes and is an important strategy for promoting the long-term growth and survivability of family SMEs in the DOC Rioja wine industry. We hold that the proportion of family members in the TMT plays an important role in strategic decision-making and helps to explain the speed of their internationalisation process. This paper contributes to the scant research on the influence of family involvement in the TMT by analysing the moderating effects of two diversities on the relationship between institutional networking and the speed of internationalisation: the family TMT ratio and generational involvement. Using a broad sample of 77 family wineries in DOC Rioja, the results obtained indicate that institutional networking plays a significant role in explaining the speed of internationalisation in family firms and that this relationship is weaker when a larger proportion of family members serve as top managers. The empirical results also have interesting implications for the managers of family firms as it may help them to identify the effective composition of TMTs to be considered when deciding on the process of internationalisation.

Keywords: institutional networking, speed of internationalisation, DOC Rioja wine.

1. INTRODUCTION

Institutional networking of the firm, the firm's network relationships with institutional actors (e.g., research institutions, advisory and support offices, independent export assistant organisations, export promotion councils, etc.), is a key element in businesses' internationalisation processes (Séror, 1998; Bateman, 2000).

In the specific case of Rioja Certified Designation of Origin (DOC Rioja) wineries, institutional networking has been identified as a key success factor in their bid to expand their business to international markets. To overcome the barriers that family SME wineries encounter when accessing international markets, many have been able to count on and benefit from collaborations with institutions. One example is the Family Winery Association of Rioja PROVIR, which represents Spanish family wineries in the European

Confederation of Independent Winegrowers, with 8,000 independent European winegrowers.

Previous and recent literature has acknowledged that the presence of family members chairing the board and their experience are important determinants in the internationalisation of family SMEs (Pukall & Calabro, 2014). However, most research on family business internationalisation has largely ignored the possible effect of individual managerial levels of knowledge and experience on the speed of internationalisation for SMEs.

According to Zahra (2003), when family members are in top management team (TMT) positions, which is very common in family SMEs (Speckbacher & Wentges, 2012), they may approach internationalisation with caution. This involvement of family members in management prompts unique strategic behaviours, influences the decisions that manage resources, and may influence internationalisation strategies and practices (Abdellatif et al., 2010). The influence of family involvement in SMEs offers a unique environment in which to analyse whether and to what extent a firm's family character affects the speed of the internationalisation process.

To address this gap, we examine the moderating role of family involvement in the institutional networking-internationalisation relationship. According to previous literature (Arzubiaga, Maseda, & Iturralde, 2019), the identity of the TMT (the diversity between family and non-family managers) and the involvement of multiple generations (the diversity among two or more generations of family members that work together in the TMT) are the two main forms of TMT diversity created by the family's involvement. We consider that there could be a relation between TMT diversity and the firm's speed of internationalisation and that a more fine-grained examination of family influence, using these two family involvement measures, is needed to gain a clear and precise understanding of how they affect the process.

To the best of our knowledge, this is the first study concerned with how institutional networking's effect on the speed of the internationalisation process may be moderated due to family-related factors. The context of the DOC Rioja wine industry is particularly noteworthy because DOC Rioja wine producers, as members of the European wine sector, are making efforts to increase export volumes due to declining consumption in the domestic market (Köhr, Malorgio, & Aragrande, 2017; Köhr, Camanzi and Malorgio, 2018). Our study also aims to contribute with new knowledge regarding how strategic behaviour and the speed of internationalisation process may differ, not only between family and non-family firms but also between family firms with different attributes, showing that family firms are heterogeneous (Sharma, Melin, & Nordqvist, 2014). One important differentiating attribute is the varying level of family involvement in the TMTs, which can be a more important driver of variation, in terms of success, when turning institutional networking into internationalisation among family SMEs than was suggested by previous literature. Moreover, the study contributes to understanding the heterogeneity of the family firm internationalisation processes, highlighting the importance of effects of the family business governance dimensions (Baronchelli et al., 2016).

2. THEORETICAL BACKGROUND AND DEVELOPMENT OF THE HYPOTHESES

Although family firms have mainly tended to focus on domestic markets, they increasingly focus on foreign markets as a survival strategy due to global competition and slow growth domestically (Pukall & Calabrò, 2014).

It is well known that family firms suffer from inherent constraints to international growth (Fernández & Nieto, 2005; Abdellatif et al., 2010). To overcome the limitation of internal resources for internationalisation, family firms can develop network associations with institutional partners such as governments, agencies for international development, research institutions, and so on. These institutional networks can help family SMEs gain knowledge of international markets and the current rules and regulations (Kontinen and Ojala, 2011a,b). In particular, they provide a variety of support services aimed at reducing risks and providing access to required resources and capabilities when these firms enter international markets (Séror, 1998). A key objective of this type of network association is to help family firms to build international contacts and allow them to assess their abilities to identify and exploit international opportunities (Szyliowicz & Galvin, 2010; Bateman, 2000). In the specific case of the Rioja wine industry, an example of recent institutional collaboration by the Board of the Rioja Designation of Origin was its participation in the background work for establishing and implementing an internationalisation strategy for La Rioja (Annual Report of DOC Rioja, 2018)

Using these institutional networks not only creates opportunities for family firms to internationalise but also provides them with links to accelerate their internationalisation process.

Recent literature recognises the diversity in family firms in several areas, such as family involvement in ownership and management (Beck, Janssens, Debruyne, & Lommelen, 2011; Nordqvist, Sharma, & Chirico, 2014). According to Pukall & Calabrò (2014), family firm het-

erogeneity could help to understand behaviours in their internationalisation. This study focuses on the level of family involvement in the firms' TMTs; which seems to be an important determinant of the speed of the internationalisation process and whose relevance has been underestimated (Alayo et al., 2019).

Following Alayo et al. (2019), we focus on two sources of TMT diversity: generational involvement, i.e., whether there are multiple family generations simultaneously involved in the firms' TMTs (Sciascia, Mazzola, & Chirico, 2013), and the proportion of family members inside the TMTs, which may be important in explaining variations in performance. Generational involvement can be conceived as a proxy of knowledge diversity in multigenerational family TMTs (Sciascia et al., 2013). Within the family business literature, there exist some theoretical discussions arguing in favour and others against the degree of presence of family members in the TMT (Minichilli, Corbetta, & MacMillan, 2010).

Internationally experienced management teams have a greater ability to process information and face intense competition, and thus have a greater propensity to develop higher levels of internationalisation. However, family firms do not have the capacity to succeed and endure in the global competitive market due to a lack of the knowledge and management skills needed to run them (Banalieva & Eddleston, 2011; Gómez-Mejía, Makri, & Kintana, 2010). This can be important when developing international markets, because non-family managers tend to expand from domestic to international markets through existing relationships (Liang, Wang, & Cui, 2014). Specifically, non-family managers in TMTs have a greater diversity of specialised skills and knowledge than family members that often have the same background and lack international experience. Taking into account that more diverse management teams tend to be more creative and innovative, including non-family managers may strengthen the positive relationship between social capital and a family firm's speed of internationalisation. Thus, TMSs with family managers, whose composition reflects a weak diversity of backgrounds, knowledge, experience and abilities, are expected to reduce the positive relationship between institutional networking and a firm's speed of internationalisation. Building on this line of reasoning, we propose the following:

H1. A greater proportion of family members in the TMT will negatively influence the effect of institutional networking on family SMEs' speed of internationalisation.

According to Chirico, Sirmon, Sciascia, & Mazzola (2011), experiences and knowledge tend to differ more across generations than within a single generation (Chirico et al., 2011), because family members from different generations achieve different levels of formal education and experience outside the business before joining the firm (Talke et al., 2011) and have different social relationships (Arregle, Hitt, Sirmon, & Very, 2007). While later generations are characterised by more formal education, older generations have more tacit knowledge and experience in the business. Thus, the involvement of several generations in TMTs provides a synergistic combination of capabilities that are useful for intensifying social capital's effect on family firms' speed of internationalisation.

Some studies do argue, however, that maintaining family management of the business across generations can increase complexity (Sciascia et al., 2013), because it is easier to share interests and understand the intentions and actions of actors within a generation rather than across several generations. This may lead to control and coordination problems as each family member is trying to protect his or her own personal interests in the firm (Ling & Kellermanns, 2010; Sciascia et al., 2013). Therefore, managing the transgenerational orientation of TMTs in family firms makes conflict particularly pervasive, which makes it difficult to achieve consensus around strategic decisions (Michie, Dooley, & Fryxell, 2006). Therefore, some of the elements that intergenerational involvement brings to the management of family firms are positive and some are negative. When there are several generations in the TMT, family firms benefit from it in terms of expertise diversity, but relationships can be more complex and communication more difficult (Sciascia et al., 2013).

From the above, we might conclude that the impact of institutional networking follows a different pattern for family firms with several generations than for those with a single generation in management. Therefore, we posit the following:

H2. Multigenerational family in the TMT will positively moderate the effect of institutional networking on family SMEs' speed of internationalisation.

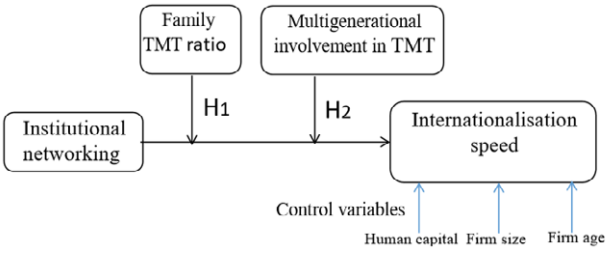

Figure 1. The proposed model.

3. METHODOLOGY

The main data sources used to obtain the list of wineries in the target population were the directories drawn up by the Regulatory Council of the Rioja Designation of Origin (the number of wineries in this directory numbered 580). The data for this study were collected using a structural survey. The data collection period ended in September 2017. The population from which the sample is drawn consists of wineries that fulfil the following requirements: (1) they belong to the Rioja Designation of Origin, (2) they manage the full winemaking process from grape to bottle, and (3) they are obliged to present accounting information to the authorities. In total, 123 valid questionnaires were obtained. For the purpose of this research, we focused on exporting firms and family firms. Although a consensus around what is exactly meant by family businesses is still missing in the literature, academics recognise that family involvement in ownership and management play a decisive role. Therefore, firms in this study are considered family-firms if they meet three requirements: (1) majority ownership is controlled by a single family; (2) the family actively participates in firm management; and (3) they were self-classified as family businesses by answering the questions related to generational transfer. Seventy-seven firms that fulfilled all the conditions were identified in the sample. All of them were considered as SMEs because they have fewer than 250 employees.

We examined previous literature to measure all variables. The dependent variable, internationalisation speed, is measured by analysing international market expansion strategies in terms of the timing and scope of the foreign markets entered (Lee and Yang, 1990; Ruzo et al., 2011). In keeping with the approach used by Lee and Yang (1990), we first divided the sample into firms with less or more experience in international activities with five years selling abroad as the cut-off point. Those firms placed in the group with less international experience and operating in up to five countries were categorised as the low speed group. Firms with more international experience, and operating in up to 12 countries, were also placed in the low speed group. The rest of the firms were classified as the high-speed group. In total, 48 wineries were classified in the low speed group and 29 wineries in the high-speed group.

Institutional networking includes the network of relationships with formal institutions. In the context of this study, an important institution is PROVIR (Asociación Bodegas Familiares de Rioja). Belonging to this association allows family wineries to be affiliated with a global brand "Independent Family Wineries". This allows them to become familiar with the global business environment (e.g., by launching marketing campaigns abroad), including knowledge about their competitors and an awareness of international standards, requirements and quality. Other important formal institutions in this context are ARAEX (Asociación de Exportadores de Rioja Alavesa), ARBOR (Agrupación de Artesanos Bodegueros de Rioja), ABC (Asociación de Bodegas por la Calidad), FECOAR (Federación de Cooperativas Agrarias de La Rioja), ABRA (Asociación de Bodegas de Rioja Alavesa), AEVZR (Asociación de Empresas Vinícolas de la Zona Rioja), Instituto de Ciencias de la Vid y del Vino, Estación Enológica de Haro, Grupo de Empresas Vinícolas de Rioja, Proyecto Europeo Wine Tech, El Grupo Rioja, University of La Rioja, University of Basque Country-Campus Álava, University of Navarra, etc. The questionnaire provides a list of institutions and we count the institutions chosen.

The study analyses two moderating variables. To compute the family TMT ratio, respondents were asked to indicate the number of family members holding managerial positions and the total number of TMT members. This percentage is measured as a continuous variable. To measure multigenerational involvement, respondents were asked to indicate which family generation, at present, is in charge of ownership and management. We created a dummy variable, which takes value 1 when there are two or more family generations involved and 0 otherwise.

In addition to the above measures, two control variables were included: human capital and size. We used the proportion of employees with a university degree as a proxy for human capital (Fernández-Olmos, 2011). Company size was operationalised using the natural logarithm of the number of employees (e.g., Hessels and Terjesen, 2010).

We also control for family firm age in the analysis. Following prior empirical studies (e.g., Majocchi et al., 2005), we measure experience as the number of years that a family firm has in the winemaking activity.

4. EMPIRICAL TESTING

Since the dependent variable (the speed of internationalisation) is a binary variable, a binomial logit model is applied as the means of estimation (Greene, 2003). In table 1 we present marginal effects from this model. The choice of the binomial logit model for the estimation of our model is appropriate, since the model presents satisfactory indicators of overall significance.

The effect of institutional networks on the speed of internationalisation is positive and statistically signifi-

Table 1. Binomial logit model (average marginal effects).

Independent variables	Marginal effects (dy/dx)	P> I z I
Institutional networking	0.536	0.054
Institutional networking*Family TMT ratio	-0.006	0.048
Institutional networking* Multigenerational involvement	0.118	0.423
Human capital	0.006	0.008
Size	0.120	0.073
Age	-0.164	0.093
N	77	
McFadden's R^2	0.202	
Likelihood ratio Test	20.57	
Chi-square statistic	0.002	

cant at the 0.10 level; the results suggest that family wineries in DOC Rioja can greatly improve their internationalisation speed by effectively generating network ties.

The moderating effect produced by the family TMT ratio is negative and significant and hypothesis 1 is thus not rejected. It is suggested that the effect of institutional networks on the speed of internationalisation is lower in family wineries with a higher proportion of family members in the managerial team. However, the moderating effect produced by multigenerational involvement is positive but not significant, thereby rejecting our second hypothesis.

Other control variables remain statistically significant. In particular, variable human capital is positive and significant, suggesting that firms that hire talented employees are more likely to have a greater speed of internationalisation. The coefficient indicating size was also marginally significant, indicating that size is a significant feature for a rapid process of internationalisation. Finally, there is evidence that age only influences very slightly the speed of internationalisation.

5. DISCUSSION

The purpose of this paper was to analyse the extent to which family TMT involvement influences the relationship between institutional networking and the speed of internationalisation of family SMEs. It advances our understanding of how family involvement in firms (in particular, the family TMT ratio and multigenerational family) affects the role of TMT. Interestingly, the literature review of the upper echelons theory revealed the idea that firms will be a reflection of the composition of their top management team, in particular their heterogeneity (Hambrick, 2007).

The relative heterogeneity or diversity of the characteristics (e.g., training, abilities, aptitudes, etc.) of team members may influence the speed of internationalisation. Our empirical analysis improves our understanding of family firms' institutional networking and the speed of internationalisation in three ways. First, it extends the literature on upper echelons theory, showing empirical evidence of the impact of TMT heterogeneity on family SMEs' speed of internationalisation. Our results support our first hypothesis that the family TMT ratio has a negative effect on the relationship between institutional networking and the speed of internationalisation, as the relationship is weaker when a larger proportion of family members serve as top managers. This is due to the low availability of diverse perspectives and knowledge in decision-making processes when family involvement is excessive. In this respect, Dyer (2006) suggests that family firms are constrained by their limited pool of human capital and their TMTs often lack qualified employees. For this reason, hiring non-family members for the TMT may transform the family firm into a more professional business (Dyer, 1989), bringing specific skills, formal training and idiosyncratic knowledge, and thus, help them overcome the inherent limitations of family management (Segaro et al., 2014). Thus, our results suggest that family firms that wish to quickly penetrate international markets must hire and maintain experienced and skilled non-family members for their TMTs to improve the institutional networking effect on the speed of internationalisation.

The present study contends that a multigenerational family presence in the TMT positively influences the effect of institutional networking on family firms' speed of internationalisation. The underlying idea is that generational involvement is conceived as a proxy of knowledge diversity in multigenerational family TMTs (Sciascia, 2013). However, our results do not support this second hypothesis. Rather, they show that involving a larger number of generations generates a positive but not significant moderating effect. This lack of evidence of the effect of generational involvement allows us to propose the following interpretation. Multigenerational family businesses involve hierarchical and asymmetric relationships among members of different generations (Wade-Benzoni, 2002), where communication problems, different priorities and anachronistic mentalities are factors which create a negative climate. This would reduce the benefits of having a more heterogeneous TMT with the presence of multiple generations.

6. CONCLUSIONS

This paper aims to make several contributions to the under-researched and poorly understood phenomenon of the internationalisation process in family firms (Arregle et al., 2019).

First, our findings contribute to recent research on family firm heterogeneity, which has been insufficiently examined when studying the internationalisation of family firms (Arregle et al., 2019). Ignoring this could lead to an inaccurate understanding of the process (Melin and Nordqvist, 2007).

Family firms are heterogeneous as they differ in terms of the extent and mode of family involvement in the TMT. Dimensions of family firm governance are discussed, and our study focuses on how governance influences the speed of internationalisation, moderating the effect of institutional networking.

Second, our study contributes to the scant research on the influence of family involvement in the TMT and the internationalisation process in family firms (Arregle et al., 2019) by showing how family TMT heterogeneity, as a distinctive characteristic of family firms, does influence the relationship between institutional networking and the speed of internationalisation. This knowledge contributes to the upper echelons theory on family firms by increasing our understanding of the impact of two diversities that are found specifically in family firm TMTs: the family TMT ratio (i.e., the proportion of family members in the TMT) and generational involvement (i.e., presence of multiple generations in the TMT). We choose these two family firm-specific diversities, which are found only in family firms, because they have been previously analysed in research on entrepreneurial orientation (Alayo et al., 2019) or innovation (Kraiczy et al., 2015; Arzubiaga et al., 2019) in family firms, but not in the relationship between institutional networking and speed of internationalisation.

Based on the upper echelons theory, we show that the proportion of family members in the TMT plays an important role in strategic decision-making and moderates the existing positive relationship between institutional networking and the speed of internationalisation. Our results also suggest that generational involvement in the TMT is a double-edged sword with advantages and disadvantages. On the one hand, with the presence of diverse younger generations may benefit from the experience and different knowledge backgrounds of older generations. On the other hand, older generations tend to be more risk-averse than previous generations when it comes to expanding to foreign markets. This can explain why the expected positive effect was not significant. Therefore, future research efforts should validate our findings with regard to these two family firm-specific diversities by using larger and more heterogeneous samples.

Third, we contribute to the literature combining international business and family firms by providing a potential explanation for why family firms are able to internationalise quickly. Little research exists on family firms' institutional networking and the internationalisation of family firms, and in particular, on the dimension of the speed of internationalisation. To the best of our knowledge, this is the first study to analyse how the effect of institutional networking on the speed of internationalisation may vary because of family influence.

Specific family firm characteristics (i.e., family involvement in TMT) can facilitate a set of strategic decisions related to internationalisation. Thus, this paper argues that the relationship between a family firm and the speed of internationalisation is a highly complex issue that needs further research.

Fourth, our study aims to serve as a turning point in the investigation of the family wine sector. Family firms are the most common type of business in the wine industry, but their gradual or accelerated process of internationalisation has not been investigated in depth although it has become significant. Our results are based on a comprehensive new data set on institutional networking, family firm characteristics, and internationalisation, for a broad sample of 77 family wineries in DOC Rioja, a context where almost 90% of wineries are considered family firms according to AREF (Asociación Riojana de Empresa Familiar, https://www.aref.es/). It would be interesting for future studies to analyse other dimensions of internationalisation of family firms and their variations due to the influence of family-related factors in other settings.

The results obtained also have interesting implications for the managers of family firms, because it may help them to identify the effective composition of TMTs to be considered when deciding on the process of internationalisation. Our findings suggest that the presence of family managers in TMT positions can be an obstacle as regards increasing the speed of the internationalisation process. To overcome these barriers, it non-family members should participate in TMTs because they accumulate, develop and transfer external market knowledge and experiences that can enhance the effect of institutional networking during the process of entering an international market. Non-family managers can also mitigate problems among family members by infusing a broader, organisationally rational perspective into their practices (Alayo et al. 2019).

With regard to the presence of multiple generations in TMT positions, the effect is ambiguous. Each gen-

eration of a family business tends to have different priorities related to management and future strategies. This can affect their internationalisation business interests if there is a lack of coordination and mutual understanding amongst family members. Consequently, and in line with the work of Alayo et al. (2019), family firms should try to align the interests of business for non-family and family members of different generations involved in the TMT to lead to a valuable collaboration regarding knowledge transfer and decision-making.

However, our results must be viewed in the light of the study's limitations. Empirical data were obtained only from DOC Rioja wine family businesses. Therefore, the findings may not be generalizable to other environments. However, we consider that this sample is valuable in explaining why some family firms exhibit divergent behaviour with regard to the speed of internationalisation for two reasons. First, the use of this homogenous, industry-specific sample permits us to concentrate on the more firm-specific variables, and second, the research on family businesses in the wine sector is practically non-existent (Soler et al., 2017). Moreover, we conduct a cross-sectional study due to a lack of longitudinal information, which presents the disadvantage of not capturing the dynamic nature of the hypotheses tested in this study. Therefore, future research should take a dynamic approach into account to gain more insight into the relationship between institutional networking and the speed of internationalisation.

In spite of these limitations, this paper sheds light on the process of decision-making with regard to the internationalisation process in family firms. It could help guide policy makers in designing stimulation programmes to motivate family firms, particularly wineries, to organize their TMTs depending on their internationalisation needs.

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Original Research Article

The Impact of Changes in Regulatory and Market Environment on Sustainability of Wine Producers: A Structural Equation Model

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Abstract. We explore the farmers' perception of how different external drivers of changes in farming activities could lead to sustainability practices among wine producers. The general assumption is that regulatory and market forces can change the production strategies of wine producers, which could eventually lead to the adoption of sustainability practices. We presented the percentage sustainability practice (PSP) as a novel way of measuring sustainability. We developed a structural equation model (SEM) with 13 hypotheses to test our assumption for the wine supply chain in Tuscany (Italy). Among the market forces, we found that wine growers perceived access to credit to have a significant positive association with sustainability practices. We also found that the perception of change in regulatory instruments such as environmental regulation and Common Agriculture Policy can lead to sustainable practice if they improve access to credit. Our research provides evidence for medium-large scale wine producers, emphasising their role as carriers of innovation in the movement towards sustainable wine production.

Keywords: sustainability, wine, Structural Equation Model.

1. INTRODUCTION

Wine sustainability seeks to balance economic viability, social equity and environmental soundness on the whole production and processing of wine, from grapes to wine and spirits (OIV, 2016). A review of the literature on wine sustainability show a growing interest in the drivers of sustainability in the wine industry that has mainly focused on the internal drivers (Dodds et al., 2013; Flores, 2018; Gabzdylova et al., 2009; Gilinsky et al., 2016; Merli et al., 2018; Pullman et al., 2010; Santini et al., 2013; Szolnoki, 2013). Indeed, the key drivers of sustainability in wine industries can be sufficiently divided into internal and external drivers. The internal drivers are the farm-level fac-

tors, including the managerial attitude and human capital required for the change to sustainable production. The production cost and yield impact of switching to more sustainable practices. The strategic advantages that come with sustainability labels such as improving new market penetration, competitive advantages, corporate images and reputations are farm-level internal drivers of sustainability. The external drivers that may influence the decision of whether to adopt wine sustainability are pressures from outside. These include market pressure such as consumer demand, climatic pressures such as changes in weather, and regulatory pressures and incentives such as environmental policies and credit incentives from the government.

Despite the existence of multiple relationships among the internal and external drivers and their relevance to wine sustainability, the research with evidence on how farmers perceived these drivers is still poor. Our research explores how different perception of external drivers of changes in farming activities could lead to sustainability practices among wine producers. We used a Structural Equation Model (SEM) to visualise the type of relationships existing among the drivers and their significances from the winegrowers perspective. We concentrate on external drivers because only a few researchers have quantified the drivers of wine sustainability beyond the internal factors (Santini et al., 2013). This strategy also allows a more concise evaluation of multiple variables. Our study contributes to the current literature on wine sustainability on three fronts. First, it constitutes an innovative attempt to employ an SEM in explaining the relationships of the external drivers of the sustainability practices of wine producers. Second, our study provides a unique way of measuring sustainability using the Percent Sustainability Practice (PSP). Third, we provide robust evidence, testing the model reliability and the main research hypotheses through an empirical case study of wine producers in Tuscany (Italy).

2. THE STRUCTURAL EQUATION MODEL: CONCEPTUAL FRAMEWORK AND HYPOTHESES

SEM is used to describe the conceptual framework for the relationship between the perceived external drivers of changes in farming practices and the level of sustainability practised by wine producers. The SEM measures unobserved latent construct by using several observed or subjective variables and imputes the relationships among them. The main advantage of the SEM is that it allows multiple and simultaneous testing of the magnitude and significance of the complex relationships between a set of variables. In Figure 1, the SEM is made up of circles which are connected by arrows. The single-headed arrows define a causal relationship caused by the variable at the tail of the arrow, while open headed arrows indicate correlations, without a causal interpretation (Hox & Bechger, 1999). We categorised the external drivers of sustainability into two levels: the market forces and the regulatory factors. We make a general assumption that these two groups of external forces are capable of causing a change in the production strategies adopted by wine producers, which could eventually lead to the adoption of sustainability practices (Rocchi & Gabbai, 2013). The market forces are the changing institutional arrangements that offer advantages to wine producers when they adopt sustainability practices. For example, the provision of a credit facility, changing consumer behaviour for sustainable wines, and the changing market prices of wine (Bianchi, 2015; Santiago & Sykuta, 2016). According to Santini et al., (2013), these three variables are considered to have a much closer influence on farmers' decision to engage in sustainability practices in the wine industry. Hence, we developed the first set of our hypotheses.

Hypothesis 1: Access to credit to influence sustainability practices positively.
Hypothesis 2: The increase in the market price of sustainable wines will influence sustainability positively.
Hypothesis 3: The change in consumer behaviour towards sustainable wine will influence sustainability practices positively.

The regulatory factors are perceived to influence sustainability practices indirectly through their effects on the variables of wine market forces. They include climate change, changes in environmental regulations, and changes in international policy. Kertész & Madarász (2014) observed that environmental policies and climate change would probably be the major driving forces defining the direction of sustainability practices. Climate change may compel policymakers to change regional policy and local environmental regulations. For instance, in the European Union, the need to meet climate goals was the antecedent for introducing Greening in the 2013 Common Agricultural Policy (CAP) reform (Merino, 2012). The CAP could influence farmers' adoption of sustainable practices in several ways: a) by promoting investments aiming at speeding the modernisation process of the wine producers (first pillar payments). b) by ensuring a minimum environmental standard (greening and conditionality) or transition towards more sustainable farming systems (integrated or

organic productions). c) diversifying the farming strategies with the inclusive engagement of local knowledge and territorial capital (Wine CMO reform)[1]. Emerging studies have shown that CAP policies have led to farmers' adoption of climate-friendly behaviour by curtailing chemical use and increasing crop diversity (Cortignani & Dono, 2015).

Climate change may also be perceived to cause changes in wine regulations in the EU. According to Gaeta & Corsinovi (2013), the EU has changed its wine legislation in response to climate change. Some regulations help to check farmers oenological practices and treatments to ensure quality wines (Vergamini et al., 2019). Climate changes also may influence farmers to access credit facilities. For instance, Fraga et al., (2012) observed that the increasing evidence for erratic changes in the climate called for adaptation and mitigation measures which often require additional financial resources on the wine producers. In recognition of this, the EU through the Greening policy has committed up to 30% of the 2014–2020 budget providing non-repayable financial incentives for actions that improve climate change mitigation and adaptation measures at the farm level (Rossi et al., 2017). Climate change may also influence the market prices of wine. Relevant studies have shown that this could occur through its effect on the quantity and quality of the wine (Ashenfelter & Storchmann, 2016).

Finally, some literature connects changes in wine regulations with changes in consumers' behaviour towards sustainable wine (Malorgio & Grazia, 2007; Pomarici & Vecchio, 2014; Sogari et al., 2016). These studies tend to suggest that regulations on sustainability labelling may offer quality signals to wine consumers, increasing their knowledge about sustainability and improving their willingness to pay for wine with sustainable labels (e.g. the recent spread of organic wines). More so, the price of wine is an essential driver of consumers' willingness to pay for sustainable wine (Pomarici et al., 2016; Schmit et al., 2013). Hence, we propose the next set of hypotheses which look at the interaction between the farmer perception of the regulatory forces and market forces.

Hypothesis 4: Changes in CAP policy could correlate with changes in environmental regulation.
Hypothesis 5: Changes in CAP influence wine farmers to access credit.
Hypothesis 6: Changes in CAP influence the market prices of wine.

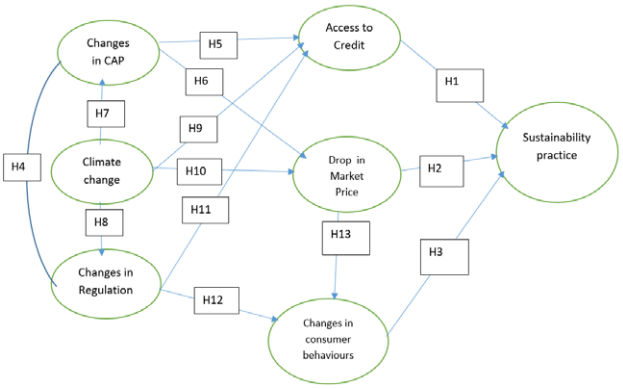

Figure 1. Hypothesized Model.

Hypothesis 7: Climate changes could influence adjustments in CAP policies.
Hypothesis 8: Climate changes influence changes in environmental regulation.
Hypothesis 9: Climate change influences access to credit.
Hypothesis 10: Climate change influences the market prices of wine.
Hypothesis 11: Changes in environmental regulation influence farmers' access to credit.
Hypothesis 12: Changes in environmental regulation influence consumer behaviours.
Hypothesis 13: Changes in market price will influence consumers' behaviour.

3. METHOD

3.1 Data

We tested the hypothesised model with a sample of Tuscan wine producers who completed the producer's survey of Sustainable Finance for Sustainable Agriculture and Fisheries – SUFISA[2] – A project which investigates the wine sector in Tuscany (Italy). The SUFISA survey collected quantitative data at the farm level for Tuscan wine producers[3] . The survey drew respondents from a producer list collected by the Tuscany Region during the 8th edition of an international Business-to-Business (B2B) meeting event in Florence in 2017 (Buy-

[1] See the proposal for wine CMO reform http://www.krir.pl/files/analiza_reformy_rynku_wina.pdf

[2] The purpose of SUFISA was to identify sustainable practices and policies in the agricultural, fish and food sectors that support the sustainability of primary producers in a context of multidimensional policy requirements, market uncertainties and globalisation. The project has received funds from the EU's Horizon 2020 research and innovation programme under Grant Agreement No 635577.

[3] For a more detailed picture of the Case study analysis (Italian National report, deliverable D2.2) here https://www.sufisa.eu/publications/

Wine Meeting). Most of the participants are medium-large wineries from the Chianti Area, Siena and Montalcino. The questionnaire was triangulated during a stakeholders meeting and tested through six pilot phone call interviews to improve data quality. We called a sample of 110 respondents: 80 of them responded to the questions on sustainability. After eliminating one case with excessive missing data, 79 cases remaining was used in the model.

3.2 The Respondents' Characteristics

All the respondents are wine producers, representing vertically integrated wine farmers who participate in grape growing, wine production and marketing. The descriptive statistics of the respondents are shown in Table 1. It shows that different farm enterprises were represented in the analysis. These include individual farms (34.2%), family farms (35.4%), and private company farms (29.1%). The majority of the farm owners are male (69%), above 40 years (63.9%), and attended at least higher secondary education (97.1%). Considering that data was collected from wine producers who took part in a B2B meeting in Tuscany, we assume that our respondents are interested in exporting wines to other countries. The survey shows that the respondents produce at a relatively medium to large scale. For instance, about 58% of the respondents have either a medium-size grape land of 10 to 25 ha or large grape land size of more than 25ha. In terms of wine yield, about 73% of the respondents either produce at a medium scale (200 to 500 hl per annum) or a large scale (above 500 hl per annum). These findings, therefore, represent market/export-oriented wine producers in the Chianti Area and Siena and Montalcino in Tuscany who wishes to sell their wine in larger quantities. Following the SUFISA definition of the small primary producer, it is, however, worthwhile to note that most Tuscan wine producers are small and medium-scaled.

Table 1. Respondents' Characteristics (n = 79).

Item	Definitions	Percentage (%)
Farm Legal Status	Individual farm	34.2
	Family farm	35.4
	Private Company	29.1
	Public Company	1.30
Age of producer (Years)	Up to 40	36.1
	41 – 50	31.9
	51 – 65	26.4
	Above 65	5.60
Gender	Male	69.0
	Female	31.0
Education	Lower Secondary	2.90
	Higher Secondary	44.1
	University	52.9
Type of Wine	Conventional	65.8
	Organic	34.2
Total yield (hl)	Small (less than 200hl)	26.5
	Medium (from 200 to 500hl)	25.3
	Large (more than 500hl)	48.1
Grapeland (ha)	Small (1 – 9)	42.3
	Medium (10 – 25)	30.8
	Large (Above 25)	26.9

3.3 Regulatory and market issues that are influencing farming strategies.

We identified the critical variables of regulatory and market issues perceived to influence the management decision and farming strategies of wine producers. The six main variables selected during the stakeholders' interviews include changes in market price, changes in consumer behaviour, and access to credit for farm inputs for the market forces; and adverse climatic conditions and pests; changes in environmental regulations, such as pesticide regulation; and changes in the CAP policy for the regulatory forces. These variables had been identified in the literature to be among the external drivers of sustainability practices. The producer's survey asked to what extent these issues have influenced the farming strategies adopted by the wine producers. We used a 5-point Likert scale in the measurement. The Likert scale ranges from not at all (1) to strongly (5). For convenience and ease of explanation, the analysis was done by rescaling the 5-point scales to binary. The first three Likert scales: Not at all, Partly and Somewhat was recorded as No (0), and the last two, considerable and strongly were recorded as Yes (1). Hence, a Likert score of 4 or 5 shows that the underlying variable is a determinant of the choice of sustainable farming practices of the wine producer.

3.4. Calculating Percentage Sustainability Practices of Wine producers

The complexity associated with the sustainability framework, with its three symbiotic components (environmental, social, and economic) present difficulties in its assessment. According to Hayati (2017), there are two ways of assessing sustainability. The first is by evaluation at the component level that enables comparisons of the

three components of sustainability, and the second is a systematic approach which was expressed as a function or aggregate of the different sustainability components. In our case, we analysed the aggregate sustainability of our respondent using the Percentage Sustainability Practice (PSP). The PSP represents the wine producers' opinions and perception of the extent to which their choice of production practices helped them maintain sustainability. Unlike Zahm et al., (2008), who used count number index, our percentage scale approach is to increase the variability of the sustainability score. It also helped to satisfy the underlying assumption of SEM, requiring that the endogenous variable must be continuous (Streiner, 2005). Instead of providing a dichotomous score for the sustainable and non-sustainable farm as done by Casas-Cazares et al., (2009), we assume that sustainability is a systemic process that should be measured in percentage level. The selected indicators for measuring sustainability are in line with the literature (Zahm et al., 2008). It includes 11 disentangled variables covering the three pillars of sustainability–i.e. environmental (n=3), social (n=4) and economic (n=4) (Table 2). For instance, the producers were asked whether the production choice (farming strategy) they adopted help them to maintain biodiversity. A Likert scale approach was adopted to retrieve responses ranging from 1 (strongly disagree) to 5 (strongly agree). Following Bianchi, (2015), a reliability test was conducted to check the internal consistency of the indicators on the three components, and confirmatory factor analysis (CFA) was conducted for measurement validity. Furthermore, the Percent Sustainability Practice (PSP) is given as:

$$PSP = \sum_{n=1}^{11} \left[\sum_{i=1}^{3} \frac{X_i}{n_x}, \sum_{j=1}^{4} \frac{Y_j}{n_y}, \sum_{k=1}^{4} \frac{Z_k}{n_z} \right] \frac{100}{T}$$

where PSP = Percent Sustainability Practice
n = Number of indicators
X_i = Value of the ith indicator in the Likert scale of Environment component
Y_j = Value of the jth indicator in the Likert scale of Social component
Z_k = Value of the kth indicator in the Likert scale of Economic component
T = Maximum absolute value in the Likert scale

3.5 The Structural Equation Model: Assumption and Modelling

The variables of marketing and regulatory forces and the variable of PSP were combined for the final SEM modelling. The assumption of the SEM includes that there should be no missing value, the variables are to follow a normal distribution, they must be well correlated and have satisfactory goodness of fit (Streiner, 2005). We conducted exploratory statistics to ensure that the first three assumptions were satisfied, while the goodness of fit was assessed through the SEM analysis. The SEM was performed using STATA 13.1GUI. The Maximum Likelihood Estimation method was adopted. The goodness of fit of the model was evaluated using the significant level of the Chi-square (Chi2), the value of the Root mean square error of approximation (RMSEA), Standardized Root mean square residual (SRMR), the Comparative fit index (CFI), and the Tucker-Lewis index (TLI) as suggested by Schreiber et al., (2006) and Streiner, (2005). Hence, a model with good-fit should have non-significant Chi2 test, the RMSEA and SRMR should be very close to 0, while the CFI and TLI values should be very close to 1.

4. RESULTS AND DISCUSSIONS

4.1 The Marketing and Regulatory Drivers of Farming Strategies

The summary of the market and regulatory drivers perceived to be influencing the farming strategies of wine producers is presented in Figure 2. Here, we considered the underlying factor as recognised essential driver of change in farming strategy if the respondent selected a score of 4 or 5 in the 5-point Likert scale. A summation result showed that the majority (62%) of the participants considered adverse climate conditions as a significant factor influencing their farming practice. This is followed by changes in consumer behaviours (57.7%). Others in rank order include a severe drop in market price (30.1%), changes in environmental regulation (21.8%), and access to credit (20.5%).

On the other hand, changes in CAP policy seem to play the least role in the choice of farming practices adopted by the participants (12.8%). As expected, all six factors are important drivers of change in wineries behaviour. However, the level at which the factors influence the producers varied, with changes in the climate perceived to be the most critical driver of change in the winery industry in the study area. As previously mentioned, changes in climate conditions often trigger several series of changes both in the other regulatory and market environment that influence a decision towards the adoption of sustainability practices. Another vital factor is changes in consumer behaviour, which could motivate farmers to improve their farming practices to

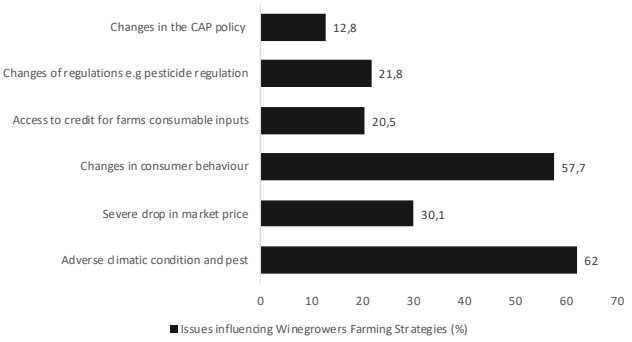

Figure 2. Drivers of Wine producers Farming Strategies.

maximise profit and remain competitive in the wine industry.

4.2. The Percentage of Sustainability Practiced by the Wine Producers

Using the PSP formula, sustainability was analysed as a function of the environmental, social and economic components. The description of the indicators of the components, their mean, reliability test, and coefficient of the CFA is found in Table 2. The standardised Cronbach's alpha ranged from 78% to 92%, indicating a relatively high internal consistency (reliability). The results from the CFA showed that all the standardised regression on the factor loading was significant (Chi2= 283.07, $\rho > 0.000$). This finding confirms that the indicators selected for measuring sustainability are consistent with the measurement model, providing robust support for the validity of the indicators. Generally, the mean PSP is 70.62%, implying that on average, 71% of the farming strategies of the wine producers in the study area was perceived to help maintain sustainability.

4.3 SEM: Linking Drivers of Farming Strategy with Sustainability Practices.

In this section, we examined the relationship between the drivers of the farming strategy and the adoption of sustainability practices. Table 3 shows a significant correlation between changes in consumer behaviour and access to credit on PSP. Changes in consumer behaviour have a negative correlation; access to credit has a positive correlation. Although none of the regulatory factors has a significant association with PSP, our analysis showed a significant correlation between some market factors and regulatory factors. This result provides the first base to support our claim that there exist interconnectivity among the external drivers of sustainability. Moreover, almost all the constructs have skewness and kurtosis value between -2 and +2, being a sign of univariate normality of the variables, providing a basis for testing the significance of this relationship using an SEM.

The goodness-of-fit estimation of the SEM showed a good overall fitting. The result of the SEM standardised

Table 2. Percentage Sustainability Practiced (PSP) by the Participants.

	The production choice you made help you to:	Mean	S. Dev	β (CFA)	Reliability	Component Mean	PSP (Total)
Environment	Maintain biodiversity	3.86	1.21	0.94***	0.92	3.72	70.62
	Maintain water quality	3.44	1.31	0.77***			
	Maintain soil organic matter	3.89	1.14	0.99***			
Social	Create a good connection with buyers and input providers	3.94	0.97	0.82***	0.78	3.37	
	Connect with other farmers	2.67	1.29	0.61***			
	Achieve societal recognition of your farming activities	3.10	1.50	0.70***			
	Secure a successor	3.77	0.74	0.55***			
Economic	Maintain profitability	3.52	0.95	0.56***	0.81	3.58	
	Invest in the farm business	4.03	0.77	0.75***			
	Sell the products in periods of greater difficulty where prices were low	3.41	0.84	0.65***			
	Cope with changing market conditions	3.38	0.76	0.91***			

Note: Mean is based on Likert Scale response: strongly disagree =1, agree = 2, neutral = 3, agree = 4, strongly agree = 5.
*** is significant at the 0.01 level; **significant at the 0.05 level, *significant at the 0.1 level.
Chi^2 value = 283.07, p >0.000.

Table 3. Correlation Statistics between Drivers of Changes and Sustainability.

	PSP	I	II	III	IV	V	VI	Skewness	Kurtosis
PSP	1	-0.05	0.04	-0.22**	0.24**	0.11	0.12	0.10	-1.15
I	-0.05	1	0.38***	0.11	0.39***	0.28**	0.30***	-0.51	-1.79
II	0.04	0.38***	1	0.17	0.32***	0.22**	0.30***	0.74	-1.49
III	-0.22**	0.11	0.17	1	0.25**	0.33***	0.18	-0.29	-1.97
IV	0.24**	0.39***	0.32***	0.25**	1	0.43***	0.38***	1.51	0.28
V	0.11	0.28**	0.22**	0.31***	0.43***	1	0.45***	1.41	-0.004
VI	0.12	0.30***	0.30***	0.18	0.38***	0.45***	1	2.29	3.32

I = Adverse climatic conditions or pests, II = Severe drop in market prices, III = Changes in consumers behaviours, IV = Access to credit for farms consumable inputs, V = Change of the regulations, e.g. pesticides regulation, VI= Changes in the CAP. ***. Correlation is significant at the 0.01 level (2-tailed); **. at the 0.05 level; *at the 0.10 level.

coefficient and their level of significance is presented in Table 4 and Figure. 3. Table 4 showed that the p-value of the Chi2 is 0.627; the RMSEA is 0.00, SRMR 0.039, CFI 1.00, and TLI 1.062. The final column of Table 4 shows the hypotheses that were supported by the model, while this was represented with bold lines in Figure 3. Out of the 13 hypotheses, the path coefficients of 9 were found to be correctly predicted.

4.4 Market Drivers of Sustainability

We consider the hypothesis of a positive relationship between the perception of market drivers of change in farming practices and sustainability adoption (Hypothesis 1-3). The results supported the hypothesis 1 by showing that having access to credit has a positive and significant association with sustainability practices ($\beta = 0.312$, $\rho = 0.003$). The model did not support hypothesis 2, as there was no significant relationship between changes in the market price and sustainability practices ($\beta = -0.011$, $\rho = 0.916$). The model also shows that changes in consumer behaviour have a significant negative relationship with farmers sustainability practice ($\beta = -0.295$, $\rho = 0.004$).

To discuss why access to credit has a significant positive impact on the adoption of sustainability practices, we consider the higher cost of shifting towards sustainability practice. Hence the wine producers that have adequate liquidity through credit access are more likely to a change in behaviour towards sustainability adoption (Goodhue et al., 2004; Santiago & Sykuta, 2016).

Market prices are an economic feature that determines farmers supply, and it seems not to be a significant factor considered by farmers in the adoption of sustainable wine production in our study. The reason for this is that wine is an experience good mostly influenced by reputation, customer loyalty, and recommendation, minimally affected by price (Ashton, 2014). Without a good reputation, premium wine even if it is sustainable may not attract high demand.

Surprisingly, the result shows an inverse relationship between the producers' choice for sustainability and the attitude of consumers towards sustainability. This is probably because of the disparity in what the society or consumers attribute to be sustainability and the farmers' perception or vision of sustainability (Vergamini et al., 2019). Regional producers in Tuscany associate sustainability with a value intrinsically linked to the territory expressed by the umbrella brand "Tuscany", which consequently reflects its dynamics. If treated as an external factor, out of their control - as consumer behaviour - this is perceived as inversely related to their choice. Regardless of how the market and therefore the demand will align with this value, the producers perceive that their choices currently in the direction of greater sustainability could be upset by such a change. Consequently, hypothesis 3 partially confirms the importance of demand but also the vision of producers as actors capable of stimulating demand and therefore, a change towards greater sustainability of wine consumption.

4.5. Regulatory Drivers of Sustainability

On the regulatory side (Hypothesis 4 – 12), our hypothesis specifies that the changes in climate, changes in environmental regulation, and changes in CAP policy would have an indirect impact on sustainability through a change in the market environment. The result of the SEM showed that changes in CAP policy significantly correlated with changes in environmental regulation ($\beta = 0.398$, $\rho = 0.000$), supporting Hypothesis 4. While changes in CAP policy were found to positively influence the market price for wine ($\beta = 0.205$, $\rho = 0.05$), it did not have a significant relationship with farmers credit access ($\beta = 0.175$, $\rho = 0.103$). Therefore,

Table 4. Path Analysis Result from the SEM for Testing the Hypothesis.

Item	Statement	β	ρ	Hypothesis supported?
Hypothesis 1	Credit access → Sustainability	0.312	0.003***	Yes
Hypothesis 2	Market price → Sustainability	-0.011	0.916	No
Hypothesis 3	Consumer behaviour → Sustainability	-0.295	0.004***	No
Hypothesis 4	CAP ↔ Environment regulation	0.398	0.000***	Yes
Hypothesis 5	CAP → Credit access	0.175	0.103	No
Hypothesis 6	CAP → Market price	0.205	0.05*	Yes
Hypothesis 7	Climate → CAP	0.298	0.003***	Yes
Hypothesis 8	Climate → Environment regulation	0.283	0.005***	Yes
Hypothesis 9	Climate → Credit access	0.265	0.006***	Yes
Hypothesis 10	Climate → Market prices	0.320	0.001***	Yes
Hypothesis 11	Environmental regulation → Credit access	0.272	0.010**	Yes
Hypothesis 12	Environmental regulation → Consumer behaviour	0.308	0.003***	Yes
Hypothesis 13	Market price → Consumers behaviour	0.105	0.331	No

*** is significant at the 0.01 level; **significant at the 0.05 level, *significant at the 0.1 level.

Hypothesis 6 was supported, but Hypothesis 5 was not. Changes in climate conditions were found to significantly influence all the paths connected to it within the model. It has a significant direct relationship with changes in CAP policy (β = 0.298, ρ = 0.003), with environmental regulation (β = 0.283, ρ = 0.005), with access to credit (β = 0.265, ρ = 0.006), and with changes in market price for wine (β = 0.320, ρ = 0.001). Hence our model correctly predicted Hypothesis 7, 8, 9 and 10. In addition, changes in environmental regulation significantly influence wine producers' access to credit (β = 0.271, ρ = 0.010), and changes in consumers behaviour (β = 0.308, ρ = 0.003), hence supporting Hypothesis 11 and 12. Finally, a change in the market price of wine was not found to influence consumers behaviours, significantly rejecting hypothesis 13.

Generally, the results show that the regulatory drivers could impact on sustainability adoption if they lead to an improvement in access to credit. In line with the literature, our model predicts that changes in climate could be a factor influencing the introduction of instruments that promote sustainable practices in both CAP and environmental regulations. Studies have shown that introducing the greening component in the CAP policy and other environmental laws is a direct reflection of the need to manage climate change (Gaeta & Corsinovi, 2013). Climate change also has a significant positive association with access to credit. This may indirectly lead to farmers' adoption of sustainability practices. For instance, during erratic climate change, maintain adequate agricultural practices requires the provision of financial support for wine producers. In many cases, they might rely on financial aid for adopting more restrictive and sustainable practices than mandatory ones (Cortignani & Dono, 2015).

Our model also showed that changes in environmental regulations have an indirect influence on sustainability by improving farmers to access credit and consumer behaviour. While environmental regulation may encourage governments to provide credits to farmers, it could also enhance environmental awareness and concerns of consumers, which may result in a shift in consumer behaviour favouring a higher demand for sustainable wine (Joshi & Rahman, 2015).

Finally, changes in the CAP policy is explicitly perceived to cause changes in market prices, but these changes do not influence farmers' adoption of sustainable practices. Surprisingly, our results also show that changes in the CAP policy have no significant direct impact on farmers' access to credit. It, therefore, seems

Figure 3. Result of the Path Analysis of the Hypothesized Model.

that the CAP policy does not improve sustainability practices, yet considering that there is a significant correlation between changes in CAP policy and changes in environmental regulation, it becomes plausible to assert that the CAP policy could only influence farmers' adoption of sustainability if the policy is related to environmental issues, e.g. the greening policy. This explanation carefully means that non-greening direct payment policies may cause poor sustainability practices among wine producers.

5. CONCLUSION AND POLICY RECOMMENDATION

This study explored a visual path representation of the relationship of perception about the external drivers of changes in farming strategies, and how they could lead to sustainability practices for wine producers. The SEM model used in the study linked perception with stated behaviour, which is quite an innovative way of understanding the enabling factors of transition towards sustainability. A growing literature recognises perception about external drivers and signals as a critical element to explain transition towards the adoption of sustainable practices (see, for example, Dessart et al., 2019). The main findings showed that among the market factors that were hypothesised to drive sustainability, access to credit is perceived by farmers to drive wine sustainability significantly. The changes in market price and consumer behaviours do not. Our result also shows that farmers perceived that environmental regulations could significantly drive the adoption of sustainability practices if they lead to the improvement in access to credit.

However, some limitations of the study should be stressed. First, the study draws information from Tuscany medium-large scale, export-oriented wine producers. We, therefore, cannot claim that the result is representative of the Tuscan region nor could generalise the results to other areas or countries. Moreover, we adopted broad questions in our analysis, limiting our assessment to selected external drivers of sustainability. Furthermore, the model itself has a limited ability to explain or legitimise the nature of the relationship that we evidence through the analysis. However, the tool can be usefully integrated with more qualitative analysis in order to generalise some of the evidence we provided with their relevant policy implication. We refer to Vergamini et al. (2019) and the SUFISA deliverables concerning the Tuscan case study for a more in-depth qualitative and quantitative analysis of the sector.

Nonetheless, some policy implications can be drawn from the study. To influence the adoption of sustainability practices, it is essential to strengthening environmental regulations with credit incentives which could offset the additional cost associated with sustainability practices. The research results apply to medium and large wine producers, who may have adopted sustainable production to be competitive at the international level. They are crucial for innovation dissemination in the industry and may help trickle down the sustainable practices to smaller wine producers. Therefore, establishing a channel of communication between the export-oriented and small scale local producers is critical towards the achievement of sustainable wine production. We recommend that B2B meetings for wine producers should be all-inclusive and open to small farmers.

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Original Research Article

Emerging Consumer Preference for Wine Attributes in a European Transition Country – the Case of Kosovo

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Abstract. This study analyzes consumer preferences for wine in Prishtina, Kosovo – a transition country in the Balkans, which is making efforts to withstand to the competition pressure from the traditional neighboring wine producing countries. With the changes in life style and consumer behavior, and incomes rising rapidly since the last conflict, it is imperative to survey the changing demand for producers to compete in the domestic markets. Conjoint Choice Experiments were used to evaluate wine consumer preferences based on wine type (white vs. red), origin (domestic vs. imported), taste (sweet vs. dry) and price. Four distinct classes of consumers were identified. The top two important attributes in the choice of wine are the type and origin but preferences vary across groups – type of wine and origin appear far more important when compared to price, especially for the richest identified segment, whose consumers prefer more expensive wines.

Keywords: consumer preferences, wine, Conjoint Choice Experiment, latent class choice model, Kosovo.

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1. INTRODUCTION

There is a vast literature on wine consumer preferences with focus on traditional wine consumption and production countries, especially EU. Previous research about matured market countries such as Spain, Australia and Chile identifies various wine attributes preferred by consumers. These are both of intrinsic and extrinsic nature, such as price, wine aging, and grape variety (Barreiro-Hurlé et al., 2008; Lockshin et al., 2006; Mtimet and Albisu, 2006; Mueller and Szolnoki, 2010; Palma et al., 2013; Sánchez and Gil, 1998), packaging and label (Loureiro, 2003; Mueller and Szolnoki, 2010), taste (Jarvis et al., 2007), certification of origin (Mtimet and Albisu, 2006;

Scarpa et al., 2009) and also environmental or organic label equipment (Remaud et al., 2008;Scarpa et al., 2009).

There are fewer consumer studies on developing markets or transition economies, such as Western Balkans countries, compared to the first group. Some of the studies are focused on basic attributes such as origin, type and aroma (Zhllima et al., 2012), alcoholic level (Palma et al., 2013), color (Mehta and Bhanja, 2018) and in few cases on region of origin (Jantzi and McSweeney, 2019). The socio-demographic factors such as age, gender and income have been explored vis a vis with the product attributes (Gjonbalaj et al., 2009; Zhllima et al., 2012) reflecting the benefit of collected evidences for helping wine producer to follow market segmentation based strategies.

Contribution to the existing literature is especially important for small neighboring countries of EU, which face strong competition from the single market. The objective of this study is to analyze consumer preferences for wine in Kosovo, which is a small country aspiring to join EU. Kosovo is a typical case of a country lacking competitive advantages for exporting large quantities of wine to EU (at least at medium term). However, export to niche markets, such as the Albanian Diaspora and gradual import substitution, is a potential considering the government efforts and the production trends in the post-conflict decade. Overall, the local market is and will remain crucial for the local industry as increasing competition in the export market prevails.

The study provides recommendations for the sector's stakeholders, with focus on wine market operators relying on consumer segmentation. Last but not least, since wine is an important agrifood sector in Kosovo (as shown in the following section) the study offers empirical evidence for policy makers to orient their policies to national/local food and agricultural systems, designing a concept for consumer-driven agriculture that is innovative and responsive to consumer expectations. In order to contribute to the existing literature, the study estimates the willingness to pay for domestic over imported wine. This is of relevance for the local industry which is struggling to keep its presence in the export market, while grow its share in the small but growing local market too.

The study is based on a structured survey that took place in Kosovo's capital city, Prishtine, in year 2016. Prishtine is the largest urban community in the country, with highest concentration of income and purchasing power, therefore a driving market for quality products such as wine.

The outline of the paper is structured as follows: in the following sections of the paper is provided an overview of the vineyard and wine sector in Kosovo. The third section describes the methodology followed by a separate section of results. The final section presents the conclusions of the study.

2. BACKGROUND – VITICULTURE AND WINE MAKING IN KOSOVO

Kosovo is situated in the Western Balkans, with a population of 1.8 million, dominated by ethnic Albanians, and it shares similarities with Albania (ethnic, cultural, language, etc.). Almost half of the population lives in rural areas. Kosovo belonged to a centrally planned economy under Yugoslavia until late 1980s, while it underwent a notorious conflict and emerged as an independent country in the following decade. The conflict resulted in human losses as well as devastated economy – the production capacities were damaged, including agriculture and specifically vineyards. Despite economic growth since independence, Kosovo remains one of the poorest European countries. Because of the troubled past, Kosovo has been facing many challenges such as weak institutional framework, which have affected also the agri-food markets and value chain organization (FAO, 2016).

Agrifood sector is considered key for economic development in Kosovo – most people live in rural areas and are engaged in the agriculture sector. Agriculture importance in Kosovo's economy remains high– its contribution to the annual GVA is 11.4% (Volk et al., 2019). The sector still suffers of many structural, organizational and capacity problems. Difficulties to recover capital and governance conditions during the post-conflict period have negatively influenced the sector, in particular the agro-processing node (including wine processing, which is the focus of this paper).

Wine production and vineyards growing is one of the most important agri-food sectors in Kosovo in terms of production and international trade, since wine is one of the main exported agri-food products. Suitable agro-ecological conditions combined with tradition of wine making have been key factors for the growth of wine production in the past. After achieving a production peak in the 1980s, namely 100 million liters of wine per year with strong export orientation, the sector faced a remarkable setback in the following decade. During the late 1990s conflict many vineyards were destroyed and production of grape and wine were reduced drastically. After the conflict, there was growing attention by private business, government and donors for the agriculture sector in general, and vineyard and wine specifically, which resulted in growth and renewed investments in the sec-

tor. The government has been supporting the sector by using coupled support (Volk et al., 2019). Vine growing and wine making continues to provide a significant contribution to the Kosovo economy (Bytyqi, 2015).

In Kosovo there are cultivated more than 40 types of grapes. The total area of vineyards in 2017 was 3,199 ha, which compared with 2016 marked an increase of 3% (KAS, 2015). Out of the total area of vineyards in 2017, 25% of the surface was planted with table grapes, while 75% with wine grapes, of which 1,583 ha is destined for red wine, which is also the dominant wine produced in Kosovo. From the cultivated area with red wine production varieties, leads the Vranac variety with 477 ha cultivated, followed by the Prokupe variety with 368 ha, Game variety with 254 ha and Black Burgundy with157 ha. Whereas grape varieties for white wine production constitute the cultivated area of 816 ha. The majority is cultivated with the Smederevka variety with a surface area of 369 ha, followed by Italian Rizling with a surface area of 220 ha, and Shardone variety with a surface area of 91 ha, while the rest of the area of 136 ha is planted with varieties such as: R. Rhaine, Zhuplanka, Rrakacitel, Semion, White Burgundy, Zhillavka, Melnik and the white of Kladova (MAFRD, 2018).

The production of wine consisted of 3.3 million litters red wine and 2 million liters white wine in 2017. The company "Stone Castle Vineyards & Winery" leads with the highest wine production in the amount of 16,061 hl. Also this year after "Stone Castle", the second company is the "Sunny Hills" with a total of 13,568 hl, followed by "Haxhijaha" company with 8,767 hl (ibid).

Historically, Kosovo's wine industry has had a strong export orientation. Its average wine consumption is about 1 liter per capita per year according to the official estimates, which is very low compared to neighboring Balkan Countries such as Albania (ca. 6 liters per capita per year), Serbia and Macedonia (ca. 20 liters per capita per year), and much lower than the average Southern and Western European consumption (ca. 30 liters per capita per year) (FAO, 2016). One reason behind the low consumption of wine and alcohol in general is religion – the largest religious community in Kosovo is Muslims. Although many Muslims are secular (and do also drink alcohol), on the other hand, many are practicing, implying alcohol abstaining. Another reason for the low level of wine consumption is low income. Raki (so far, the main alcoholic drink consumed in Kosovo which is a brandy like Grapa, which is mostly locally produced and can be found at relatively low prices) is widely used as a less expensive substitute, often produced by households for self-consumption. With the increase of income, consumption of wine is expected to increase. The domestic wine industry, which exports a large share of its production, is keen to increase its presence or share of the production in the domestic market (aiming at substituting imports, which are strongly present especially in the upper end market segments), as part of market diversification and risk reduction strategy (FAO, 2016). However, that requires better understanding of Kosovo consumer preferences for wine, which is also the focus of this paper.

As a country in transition, a crucial problem is the lack of a proper link between the local vineyard production and processing practices and the needs and expectations of wine consumers in the domestic market. This is particularly important, given that income and lifestyles are changing fast in the context of economic growth– such changes may affect the demand for wine. Therefore, it is important to explore the consumer preferences, especially among urban consumers which are the main purchasing segment for the domestic wine in Kosovo.

3. METHODS AND DATA

3.1. Overview of the approach and selection of product attributes

While in the introduction we discussed previous studies findings on consumer preferences for various wine attributes, in this sub-section we focus on methods used by previous studies. The methods for exploring consumer preferences are typically based on panel data or large datasets of sales (as on Cortez et al., 2009) or by surveying the stated consumer preferences. The first approach provides powerful evidence of what consumers actually purchase but it is criticized for not allowing exploration of new attributes or combinations of attributes that can be realized through stated preferences (Goodman et al., 2005). One of the most commonly used methods for stated preferences in exploring consumer preferences are Choice Experiments (Barreiro-Hurlé et al., 2008; Jantzi and McSweeney, 2019; Mehta and Bhanja, 2018; Mtimet and Albisu, 2006; Rodríguez-Donate et al., 2019; Sánchez and Gil, 1998; Zhllima et al., 2012). Other authors used means-end chain approach (Barrena and Sanchez, 2009) and scale method (Joveret al., 2004; Barreiro-Hurlé et al., 2008; Bernabéu et al., 2012). In this study, a Choice Based Conjoint analysis (CBC) is used to estimate how levels of different attributes combined affect overall preference of consumers for wine in Kosovo. CBC permits respondents to choose between full product combinations against each other instead of rating or ranking the product based on the attributes.

The CBC derives from the theoretical basis established by Lancaster (1966) according to which the utility of a product is based on the bundle of attributes it has (quoted at Mtimet et al., 2008). It was earlier developed by Louviere and Woodworth (1983) and was originally used in the market research and transport literature (Hensher, 1994). It has also been used widely as a method for conducting surveys on consumer preferences for environmental amenities. The utility of any good is derived from the characteristics of the good rather than the good itself (Lancaster, 1966). The analysis is based on the idea that a good can be described by its attributes or characteristics and by the levels of those attributes.

Majority of the authors following these experiments used face to face interviews while some have used web-based experiments (see Palma et al., 2013). Experiments can also include sensory tests (see Jarvis et al., 2007). In this study, choice experiments have been applied face to face (see Bytyqi et al., 2015), similar to Zhllima et al. (2012) in Albania. In order to implement this approach, there are five stages for developing a CBC, namely selection of attributes, assignment of their level, design of choice sets, collecting data and conducting analysis (Cattin and Wittink, 1982; Green and Wind, 1975). The stages for this study are shown in Table 1 below.

Attributes in a conjoint design are fundamental characteristics of the product that describe and differentiate it from others in the market. We chose attributes and their level based on literature review, market observations and expert consultations. To validate the attributes and the levels chosen in this early stage, a focus group was organized with different categories of wine consumers in Kosovo. The attributes chosen for this study's objective are price, type, origin and taste. Attributes in this paper are chosen by considering the importance, relevance and parsimony criteria (Simmons and Esser, 2001). They are important in describing the wine market in Kosovo, to differentiate various types of wine and take also into account the complexity of the conjoint design. To generate an optimal conjoint design, the levels of the attribute were chosen to be independent from one another, clearly defined along one dimension to avoid misinterpretation of the consumers, realistic as they represent the wine market in Kosovo and balanced as the number of levels does not vary too much between attributes. The type and level of attributes selected to analyze wine preferences in Kosovo are represented in Table 2.

Price attribute is typically present in wine conjoint studies (Joveret al., 2004; Lockshin et al., 2006; Mtimet and Albisu, 2006; Sánchez and Gil, 1998; Zhllima et al., 2012). Some studies use equally distant price levels while others identify price segments which are more representative to certain product groups. In our study we have defined the price levels (from 2.2 Euro to 7.5 Euro) based on the focus group with consumers and observations in the market.

Another important attribute is type. The industry of wine has been prone to produce more red rather than white wine, due to technology constraints, while the focus group with consumers has identified type as a key factor in their choices. Given the low diversity of wines in the Kosovo market and based on the literature for developing country markets (see Barreiro-Hurlé et al., 2008; Mehta and Bhanja, 2018) two main categories for wine were chosen to be explored through the experiment, namely red and white.

Discussions in the focus group with consumers identified also taste as a very important variable. Therefore, similar to Joveret al. (2004), Jarvis et al. (2007), and Zhllima et al. (2012) it was decided to select two levels of taste, namely sweet and dry wines. Participants in the

Table 1. Stages of a Conjoint Choice Experiment and Analysis.

Stage	Description
1. Selection of attributes	Attributes and attribute levels were selected based on a focus group with stakeholders and an extensive literature review
2. Assignment of attribute levels	
3. Construction of choice sets	The SSI Web program using the Random Method that incorporated orthogonal array was used to create the profiles in the survey
4. Data collection	Survey was conducted via face-to-face interviews in different week days
5. Data analysis	Data is analyzed with latent class approach

Source: Chan-Halbrendt et al. (2010).

Table 2. Wine Attributes and Levels chosen for the CBC experiments in Kosovo.

	Attributes			
	Price (liter)	Type	Origin	Taste
Level of attributes	7.50 €	White	Domestic	Sweet
	5.50 €	Red	Imported	Not sweet (dry)
	4.00 €			
	2.20 €			

Source: Authors.

focus group expressed difficulties to express and explain other taste attributes.

Origin is another important attribute. Some studies (Barreiro-Hurlé et al., 2008; Lockshin et al., 2006; Zhllima et al., 2012) are more interested to understand the consumer preferences toward domestic product while other studies, especially in recent years (Jantzi and McSweeney, 2019; Mueller and Szolnoki, 2010), are focusing more on the region of origin and other intrinsic signals linked with it. Considering the fact that wine production in Kosovo is focused on a homogenous and relatively narrow area, authors chose to follow the example of the earlier studies. Moreover, study findings in this direction are more relevant for the local industry and the policymaking institutions, strongly focused on import substitution.

3.2. Experimental design and construction of choice set

Sowtooth Software SSI Web was used to design the experiment, prepare and analyze the data. To ensure an efficient design of the survey seven versions of the questionnaire were generated. For each version, attributes and levels of the product were combined into 12 hypothetic market scenarios (choice task) each composed of four subsets of product alternatives (concept). Each respondent was shown one version of the questionnaire and was asked to choose between four alternatives of the product with the specific attributes proposed in a hypothetic market scenario for all the 12 scenarios of the questionnaire. Table 3 represents an example of hypothetic market scenarios.

The Complete Enumeration method[1] was used to combine the various attributes and levels to develop potential products choices for the respondents. This approach ensures orthogonal concepts within each version of the questionnaire and balances the two-way frequency of level combinations between attributes (Green and Srinivasan 1978). Moreover this method generates combinations with the minimum overlap of attributes making the alternatives in a choice task as different as possible. The quick test[2] was used to test the efficiency and integrity of the CBC design. It provides a good approximation of the relative efficiency of the CBC design with respect to each attribute level.

[1] The Sowtooth Software was used for the analysis in this work

[2] The quick test, for each attribute and level, makes an approximation of the relative standard error of each main effect under aggregate analysis and assuming that each version is seen just once across the total observations. The quick test uses ordinary least squares efficiency. It provides a good approximation of the relative efficiency of the CBC design with respect to each attribute level. (https://www.sawtoothsoftware.com/help/issues/ssiweb/online_help/hid_web_cbc_designs_6.htm)

Table 3. Example of a product task with four product concepts in the questionnaire.

If these were your only options, which wine would you choose (to buy)?			
7.50 €	5.50 €	4.00 €	2.20 €
Red	Red	White	White
Imported	Imported	Local	Imported
Not sweet(dry)	Sweet	Not sweet(dry)	Sweet
☐	☐	☐	☐

Source: Authors.

3.3. Data collection

Green and Srinivasan (1978) suggest a minimum sample of 100 respondents for conjoint analysis types of studies – in our case there were 215 valid questionnaires. Interviews were administered during 2014 by trained graduate students. The interviews were carried out at various sites (e.g. shopping malls, open markets, streets) in Prishtina – people were approached randomly and after completing each face-to-face interview, interviewers would approach the next closest person who walked by.

Table 4 shows the gender and age structure of survey respondents compared to Prishtina population statistics. While gender wise, the sample structure is similar to that of the population, elderly people are slightly under represented in the sample when compared to the population.

3.4. Data analysis method: Latent class analysis

Latent class method is used to analyze the data of our experiment. This approach is used extensively in

Table 4. Socio- demographic comparison of survey respondents with Prishtina population.

		Survey Respondents (%)	Prishtina Population (%)
Gender	Female	52.3	50.0
	Male	47.7	50.0
Age*	18-35	40.7	43.5
	36-50	43.1	30.6
	51 and up	16.2	25.8

Source: Own calculations for the survey respondents and Kosovo Statistical agency for the Prishtina population.

* Note: the survey targeted adult consumers (consumers below 18 years were not considered for interview). Thus, to make the structure comparable between the sample and the population, only the structure of adult population is shown.

recent years to group consumers based on their preferences. The model segments respondents into finite groups with homogenous preferences expressed in the experiment, even though the population is presumed to have heterogeneous preferences. This way the preferences are relatively homogenous within segments but differ from one segment to another.

Latent class model allows the estimation of part worth utility for each homogeneous group based on the choices of the respondent in the conjoint experiment. According to McFadden (1974) the probability that individual n chooses profile *i* in the CBC experiment can be described as follows:

$$P_{ni} = \frac{\exp(\mathrm{h} X_{ni})}{\sum_{h=1}^{I} \exp(\mathrm{h} X_{hi})} \quad (1)$$

where P_{ni} is the probability of respondent *n* choosing profile i, η denotes a scale parameter, and X_{ni} is the deterministic component that is assumed to be a linear function of explanatory variables.

LCA approach assumes that the sample of individuals is drawn from a population that consists of a finite number of latent classes, say *m*, and that each element in the sample can be regarded as a draw from one of these m latent groups.

Equation 1 can be rewritten for LCA to give the following equation:

$$P_{ni \mid m} = \frac{\exp\left(\eta_m \beta_m Z_{ni}\right)}{\sum_{h=1}^{I} \exp\left(\eta_m \beta_m Z_{nk}\right)} \quad (2)$$

where $P_{ni\,|m}$ means the probability of individual *n* who chooses profile *i* belongs to class *m*, η_m means the class-specific scale parameter and β_m is the class-specific estimated utility parameter, Z_{ni} are explanatory variables of X_{ni}.

This approach assigns to any respondent a probability of membership in each segment that sum to unity, differently from a cluster analysis where respondents are assigned to each class in a discrete manner. The sum of the probabilities of membership across respondents for each group defines the total weight (class size) of that segment.

In LCA respondents are segmented based on their choices in the CCE experiment. In our study we take into account only the product of wine as parameters to group the preferences of consumers. Due to software limitation the respondents were segmented based only on their choices of the wine attributes.

Table 5. Summary statistics of latent class analysis.

Groups	Cert	CAIC	Chi Sq	Rel Chi Sq
2	29.3	5155.8	2107.7	234.2
3	35.4	4768.2	2539.6	181.4
4	39.2	4537.9	2814.2	148.1
5	42.4	4352.9	3043.5	126.8
6	45.2	4196.4	3244.3	111.9

Source: Authors calculations based on field survey.

The estimation of the model was carried out using maximum likelihood method. Estimated parameters vary for different classes. In maximum likelihood methodology the starting point is important since the model can estimate local maxima. To avoid local maxima we conducted 100 replications for each segment starting from different points. The results shown are the best fit for a 4 class segmentation considering the relative change of Consistent Akaike Info Criterion (Table 5).

4. RESULTS

Results of the CBC experiments are shown in Tables 6 and Table 7. Table 6 shows sample size and the importance of the attributes for each of the identified classes, whereas Table 7 shows the estimated parameters and the level of significance. All attribute levels coefficients, except for taste in the case of class 1, are statistically significant.

The wine consumers in Kosovo are grouped in 4 (four) distinct classes that differ in their preferences for the attributes of wine. Almost one fourth of the respondents are in Class 1 (27%) who give over 50% of the importance to the type of wine (approximately 55%), followed by the origin of the wine (26%). These respondents prefer white wine from Kosovo (ethno-white wine

Table 6. Class sizes and importance of attributes.

Description	Class 1	Class 2	Class 3	Class 4
Class Size	26.60%	27.00%	36.10%	10.30%
Attribute	Importance of attributes (%)			
Price	17.09%	11.52%	3.36%	6.46%
Type	54.64%	67.08%	45.34%	34.29%
Origin	25.66%	13.01%	26.41%	28.63%
Taste	2.61%	8.39%	24.89%	30.62%
Total	100%	100%	100%	100%

Source: Authors calculations based on field survey.

Table 7. Latent class model parameter estimates.

Indicator	Class 1		Class 2		Class 3		Class 4	
Attribute	Utility	T-ratio	Utility	T-ratio	Utility	T-ratio	Utility	T-ratio
Price	**-0.194**	-4.803	**-0.191**	-4.458	**-0.094**	-2.094	**0.199**	2.363
Type								
White	**0.932**	16.627	**-1.669**	-16.779	**-1.904**	-21.728	**1.583**	10.618
Red	**-0.932**	-16.627	**1.669**	16.779	**1.904**	21.728	**-1.583**	-10.618
Origin								
Domestic	**0.438**	9.489	**-0.324**	-6.554	**1.109**	16.295	**-1.320**	-9.309
Import	**-0.438**	-9.489	**0.324**	6.554	**-1.109**	-16.295	**1.320**	9.309
Taste								
Sweet	-0.04	-1.03	**-0.21**	-4.63	**1.05**	16.14	**1.41**	9.86
Not sweet	0.04	1.03	**0.21**	4.63	**-1.05**	-16.14	**-1.41**	-9.86

Source: Authors calculations based on field survey.

Table 8. Income levels by identified consumer class.

Income range	Class	Class 1	Class 2	Class 3	Class 4	Total
0-300 €	Count	8	12	23	1	44
	Percentage	13.8%	20.7%	29.9%	4.5%	20.5%
301-600 €	Count	33	29	31	4	97
	Percentage	56.9%	50.0%	40.3%	18.2%	45.1%
601-900 €	Count	11	12	15	**8***	46
	Percentage	19.0%	20.7%	19.5%	**36.4%***	21.4%
Above 900 €	Count	6	5	8	**9***	28
	Percentage	10.3%	8.6%	10.4%	**40.9%***	13.0%
Total	Count	58	58	77	22	215
	Percentage	100%	100%	100%	100%	100%

*Chi square = 0.000.
Source: Authors calculations based on field survey.

lovers). Class 2 (27%) predominantly prefer red wine with 67% importance placed on this attribute. This group also prefers competitively priced imported wine (cheap foreign red wine lovers). Class 3 (36%) placed the most important attribute on the type of wine (red) followed equally by the attributes of domestic and sweet tasting wine (ethno-red and sweet wine lovers).

The last group with the smallest share of respondents (10%) placed almost equal importance to the type (white) and origin (imported) sweet wine (richwhite sweet foreign wine lovers). This class is the only segment of consumers that has a preference for high prices wine, implying that high price is perceived as a signal of quality guarantee.

Several tests were run to assess possible socio-demographic variable differences across groups - not statistically significant differences were found for education, gender and age. The only variable which appears to differ significantly across groups is income – class 4 has a stronger presence of higher income households. Indeed, class 4 consumers, as shown above, being also the wealthiest class, are first and foremost interested in quality, reflected by their preferences for higher price wines.

Regarding willingness to pay, class 1 has a strong preference for domestic wine - they would consider imported wine only if it were 4.5 EUR cheaper. On the contrary, Class 2 consumers prefer imported wine - they would switch to local wine, if it were 3.4 EUR cheaper. Class 4 has a positive price coefficient - thereby calculation of WTP is meaningless. For class 3, which is also the largest class, price is the least important factor; thereby they would not switch from domestic to import or from red to white wine, even for significant price difference.

5. CONCLUDING REMARKS

The paper explored consumer preferences for wine in Prishtina, Kosovo – a transition country in the Balkans, which has been overcoming major transformations in the vineyard sector and remains under continuous market competition from traditional wine consumer countries in both Western Balkans and EU market. Considering these conditions, it is imperative to observe the changing demand for producers to compete in the domestic markets. CCE were used to evaluate wine consumer preferences. Following a latent class choice model there are identified four distinct classes of consumers. More than ¼ of the market are classified as ethno-white wine lovers. Together with Class 3, the ethno-red and sweet wine lovers, they constitute more than half of the existing market. These two classes are the main current segment for which local producers should carefully drive a promotion using ethnic oriented promotion, using strong signals through label information, design and story-telling which recall the countries tradition for both local and diaspora consumers.

Local producers should keep considering various instruments for targeting the remaining classes, namely the cheap foreign red wine lovers as well as white sweet foreign wine lovers. These classes are very different, and cannot be targeted using the same price policy since the first is cost oriented while the second is the only segment of consumers that has a preference for high prices wine, implying that high price is perceived as a signal of quality guarantee, similar to Jarvis et al. (2007) and Zhllima et al. (2012). The producers in this case should create a divided production basket. On one hand they can create sub-brands for which they have to invest on better technologies and know-how for improving wine quality, and compensate increased costs with higher prices. This is an important step considering the majority of consumers (more than 60%) can accept price increase, since they are expressing positive willingness to pay for domestic wine or are not price sensitive. For instance, classes which are not price sensitive and oriented to domestic wine, such as the case of ethno-white wine and ethno-red and sweet wine lovers found respectively in Class 1 and Class 3. On the other hand, a separate share of the product portfolio should be focused on price sensitive consumers, such as the case of cheap foreign red wine lovers. They expressed a willingness to convert their preferences toward domestic wine in case of price reduction. This class, providing more than ¼ of the market, might be the short term goal of the wine processing industry in Kosovo.

The most important attribute in the choice of wine in Kosovo is the type. Two consumer classes, including the biggest one, prefer red wine. This is very similar to Albania where majority of the consumers prefer red wine (see Zhllima et al., 2012). The consumption of red wine is also related to food life style and previous experiences on local white wines. Thus, when considering the vineyards investments, red wine grape cultivars should be considered in order to match the general preferences related to type.

Similar to Jarvis et al. (2007) the taste of the wine is important too. This is an evidence for reaching the consumer interests by adding information on labels on regards to wine taste characteristics, especially for the sweet oriented consumers such as those found in class 3 and class 4. Moreover, producers should make efforts for strictly controlling the postharvest and processing protocols in order to control the alcohol content, by emphasizing the flavor and sweetness of the wine.

Considering these results, wine processors can strategically opt for competitive lower price wines in larger urban markets. A diversification strategy may be created where a small portion of the production of high quality wine may compete for a space on upper shelves where also imported wines are shelved. This strategy would target Class 4 consumers who prefer white, imported wines. Particular attention should be given to ethnic oriented consumers by focusing efforts on certification, promotion of regional origin differences, labelling and packaging which are important in other studies. To produce quality white wine, additional investments are required to improve the production technology in addition to a better vertical coordination with raw material suppliers. Consumer education and tourism can be explored to increase wine consumption and strengthen the image of the local producers. In this way, product should be part of culinary offers and be strengthened with description of natural amenities of the production areas.

The study is based on urban consumer preferences and as such it has limitations in understanding wine production potentials - future research should explore also rural consumer preferences. Moreover, future research can rely on sensory testing method which would be an added value for understanding consumer preferences related to taste. Other attributes are necessary to be explored in the future. For instance, recent decade studies (see Lockshin et al., 2006; Mueller and Szolnoki, 2010; Remaud et al., 2008) have explored the area of origin as an attribute to attract selected market segments. In addition, choice experiments have been developed in order to understand consumer WTP for missing attributes such as Protected Designation of Origin (PDO) and Protected Geographical Indication (PGI).

Studies in this sphere are crucial for casting light to new product strategies for local producers in relevance with local and native varieties. Moreover, research is utilized to evaluate the feasibility of adoption of GI certification schemes for wine producers, which is a viable instrument for reducing the pressure of international wine market, especially in the case of an EU neighboring country.

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Original Research Article

Price Determinants of Sparkling Wine in Poland: Does Reputation Really Matter?

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Abstract. Due to the important worldwide growth of the sparkling wine sector in the last years, this research aims to explore the Polish sparkling wine retail market by applying a hedonic price model. Poland is the most important market in Eastern Europe, with a noticeable increase in wine consumption in recent years. Few researches have investigated the price premium of wine attributes in this area, while none of these concentrated their analysis on sparkling wines. The aim of this research is to apply a hedonic price model to estimate the effects of credence attributes and quality signals on sparkling wines sold in the Polish capital. Data were collected from 35 retail stores in Warsaw. Findings suggest that collective reputation linked to designation of origin is the variable that most affects the price, followed by brand reputation and characteristics of the point of sale. The type of retailer has a significant effect on price: discounts and supermarkets imply a price decrease with respect to hypermarkets, whereas specialised shops charge a premium. Moreover, we explore the presence of wine with Italian sounding names: this positively affects wine price, confirming the role of imitations stressed in the recent literature.

Keywords: hedonic price model, Poland, sparkling wine, premium price.

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1. INTRODUCTION

The European Union is the world's biggest wine producer, with around 60% of the total (European Commission, 2015). Although global wine production in 2018 reached its highest value since 2000 (292 million hectolitres, representing a 17% increase compared to 2017)[1] it should be noted that 2018 marked a halt of the global growth in wine consumption precisely because of a stabilization in the main European producing countries, which are traditional consumer countries, as well as a slight decrease in China and the United Kingdom [1].

Considering the world wine trade, 2018 showed a modest growth in terms of volume (+ 0.4%) and value (+1.3%) compared with 2017 (Table 1). The spar-

[1] In 2017 very difficult weather conditions affected wine production in many countries.

Table 1. World wine trade.

Typology	2018		Var. 2017-18	
	volume	value	volume	value
Bottled	53%	70%	-8.0%	-0.9%
Sparkling	9%	20%	3.7%	+6.3%
BiB(a)	4%	2%	5.0%	+15.7%
Bulk (>10L)	34%	8%	-5.0%	+3.8%
Total	107.6 mln hl	31.3 billion €	+0.4%	+1.3%

Notes: (a) BiB, namely Bag in Box wines, identifies wines in containers holding more than 2 litres but not more than 10 litres.
Source: OIV, 2019.

Table 2. Wine consumption.

	2013	2014	2015	2016	2017	2018	Var. 2013-18
Total volume (millions of hl)							
Poland	0.9	1.0	1.1	1.1	1.2	1.2	+33.3%
Europe [(a)]	119.2	117.8	119.5	120.1	121.5	121.3	+1.8%
World [(a)]	242	241	243	244	246	246	+1.7%
Per capita (l)							
Poland	2.9	3.1	3.2	3.4	3.5*	3.8*	

Notes: (a) Countries with a wine consumption of more than 1 million hectolitres are included.
Source: OIV, 2018; OIV, 2019; * per-capita consumption data for 2017 and 2018 are estimated based on OIV, 2018; OIV, 2019.

kling wine market, once again, saw the biggest growth in terms of both volume and value. Indeed, in 2018 the world sparkling wine trade accounted for 9% of the volumes traded and continued to increase in both volume (+3.7%) and value (+6.3%) compared with 2017. From 2013 to 2017, the value of sparkling wines traded on the international market gained 1.4 billion € (+32%), more than double the rest of the wine sector (+14%). Sparkling wines represent a significant share of exports, in terms of value, especially for Italy and France among EU countries, reaching 20% and 13% respectively in 2018 [1].

1.1 Polish wine sector

Nowadays, statistics show that non-traditional wine producing countries are experiencing a relevant increasing wine demand. Among EU countries, Poland has witnessed a significant increase in consumption in the last decade, with a variation of 33.3% from 2013 to 2018 (Table 2), due to a rising demand for wine and the growing culture of this beverage [2,3].

According to Euromonitor [4], wine shares the alcoholic drinks market with two other product categories: beer (39.2 million hl in 2018) and spirits (2.9 million hl in 2018). Compared to wine, these categories have shown slower growth, of respectively +5.4% for beer and +3.2% for spirits compared to 2013. In the same period, sparkling wine grew 43.3% with a sales increase of +11.8% in 2018, stronger than expected. This growth is related to the fact that consumers tend to choose it not only for special occasions but also throughout the year as a regular drink. The wine market in Poland can therefore be described as a growth sector, with a forecasted growth to 2023 (CAGR%) of +4.8% for still grape wine and +11.5% for sparkling wine.

In addition, Poland is the largest economy in Eastern Europe and the second biggest importer in the area, accounting for 22.3% of total wine imports [2,3].

Considering the trade channels, it emerges that the Polish retail sector has been very dynamic in the last decade, with a remarkable growth in the number of hypermarkets and supermarkets, even if the presence of small retail stores is still relevant. Indeed, alcoholic drinks' off-trade consumption in Poland is 6.3 times higher than on-trade consumption in 2018 [4]. The discount sector has the predominant share of wine sales, with wine imported from Portugal, Italy and Spain: these channels ensure sufficient quality products at a cheap price, thus encouraging their purchase by Poles. From 2010 to 2015, off-trade channels grew their share in Poland from 52.1% to 72.8%, while the on-trade channel had the smallest share of total volume sales of wine in Poland. This is due to the lack of tradition in consuming wine in foodservice outlets, such as bars, restaurants and hotels [4].

Seeking the reasons behind the growing interest of Poles in the wine sector, it emerges that it is due to the consumers trend of moving away from spirits towards lighter alcoholic drinks; indeed, after a period of decline in consumption, the purchase of wine has started to grow [5]. In particular, it is worth noting that the sparkling wine market is the most dynamic in the sector (as in many other countries) and has grown by 29.5% in volume from 2012 to 2017, greater than other wines (+19.1%).

In this scenario, it might be interesting to understand the contribution of product attributes in creating sparkling wine value on the Polish market; Poland not being a grape producer makes it an important case study to investigate. This could allow it to be understood how such a consolidated product category develops in a new market such as the Polish one (it should be remembered that the fact that Poland is not a grape producer leads to a not very strong wine tradition).

This paper aims to explore the sparkling wine market in Poland; in particular, this study applies a hedon-

ic price model to investigate the effects of quality signals on the wine price. Due to the relative novelty of sparkling wine in Poland, taken as a mass product, we expect that credence characteristics, including reputational cues, will largely explain retailers' price variability. Various studies adopt this method in the wine sector, estimating the price effect both on the label information and sensorial evaluations [5, 6, 7, 8, 9, 10]. However, from the literature analysis it emerges that there are limited applications of a hedonic model on sparkling wine [11]. This research, to the best of our knowledge, is the first application of a hedonic price model for sparkling wine in Eastern European countries. These countries can be defined as a "New buyers" and can be considered among the "New World" countries because they have little tradition of wine consumption and no tradition of its production [12].

1.2 Hedonic research in the wine market

Walking through an ordinary supermarket, a consumer may be surprised and, at the same time, confused by the huge number of different wines on the shelves. Wine, in fact, can be considered as a set of different characteristics, both sensory and objective and it is widely known that, for consumers, the purchase of this product is more complex than the choice for many other food goods, due to the large amount of different cues that can influence the purchase decision [12, 13]. However, consumers use the attributes mentioned on the label, such as colour, vintage, appellation etc., (*sensory* and *objective* attributes) in addition to wine *reputation* when they wish to buy a product [14, 15]. Thus, considering the wide variability in both types of wine and their prices, it could be interesting to understand how prices and wine characteristics are related: What are the specific effects of the different features mentioned on the bottle label, such as brand, vintage or different type of technology utilized for the production, on the prices? All these attributes have been used as the main variables in different studies on hedonic price models, pioneered in the early 1990s by Golan and Shalit [17] and by Oczkowski [18], precisely for answering to this question. Consumers can consider diverse sets of attributes at the time of purchase or they can assign different weights to product characteristics [19]. Orrego et al. [20] classified these attributes as intrinsic and extrinsic. The former can be considered as the essence of the product, such as vintage, grape variety, colour etc., while the latter are those characteristics that influence consumers' appreciation of the product but do not belong to the good itself (such as jury grade and cellaring potential, etc). Generally speaking, consumers more familiar with a specific product tend to use more intrinsic characteristics, such as wine style, aroma, flavour and taste, whereas less familiar individuals mainly use extrinsic characteristics to evaluate the quality, such as price, packaging, labelling and brand name [21]. Consumer experience and the different type of information provided may influence the consumer's willingness to pay (WTP) a premium price for the quality signal; Poland being a young market, credence attributes [22] are going to be relevant in explaining wine prices.

Since obtaining information on quality is expensive for consumers [20] and the quality of a product cannot be known *a priori* (i.e., before purchase), customers can use other ways to infer it and, especially for wine, they can use reputation as a guarantee of quality [22, 23]. Reputation is an essential tool especially on the "Old World" market; indeed, it is common in the literature to divide the world into "Old World" countries, i.e. the traditional producers such as France, Italy, Spain etc., and "New World" countries, i.e. new producers, such as the United States, Australia, New Zealand etc. [12]. Orrego et al. [20] found that most hedonic research on the wine market was conducted for "New World" wines sold in "New World" countries; it emerged that, for these wines, rating (jury grade), vintage and place of origin have a strong and positive price premium (see for instance Manesme et al. 2019). Instead, on the "Old World" market the most important attributes that influence price are place of origin and reputation index. Many authors have studied the impact of *reputation* on wine price and linked them with consumers' choice. Among others, Schamel and Anderson [25], Schamel [26] and Costangiro and McCluskey [27] pointed out how producer's reputation plays a decisive role in determining the price of wines, by applying a hedonic price model on premium wines sold in Australia/New Zealand and the US, and on red wines in California. Caracciolo et al. [28] investigated, through a hedonic price model, the effect of private and collective *reputation* on wine price, analysing the wine purchases made by a panel of representative Italian families. Estimates based on quantile regression reveal that the effects of the two reputation strategies (private and collective) have different weights depending on the price range of the wines. While private reputation plays an important role in both low-priced and high-priced wines, collective reputation in terms of geographical denominations appears to be particularly important for high-priced wines. This is confirmed by Rossetto and Gastaldello [29] who found that wines in the higher-price range benefit from strong consumer loyalty. Verdonk et al. [30] highlighted that brand image and rep-

utation play an important role in purchasing decisions, as well as advice, recommendations and expert reviews, and consumption occasion. To this extent Oczkowsky et al. [31] found that experts rating has an important effect in explaining prices.

Trestini et al. [11], instead, examined the impact of different product characteristics on sparkling wine price on the German market. They found that an Italian sounding name positively affects consumers' WTP just because of brand reputation. Within this context, the influence of the reputation of the iconic "Champagne" was bound to be studied. Lee and Sumner [32] investigated the effect of the term "Champagne" on sparkling wine in the US market. Their study evidenced that when the term "Champagne" is reported on the label of French wines (sold in the US) the price is much higher than other wines in the category, *ceteris paribus*. And when "Champagne" is reported on the label of American wines, without reflecting the region in France, the price is much lower than other comparable wines.

From the literature analysis on hedonic price, it emerges that, as previously reported, *sensory* and *objective* characteristics also play a role as explanatory variables of the model in order to evaluate the effects of quality attributes on wine prices. With regard to the former ones, which derive from the chemical components of wines such as aroma or acidity and bitterness levels etc. – i.e. strongly influenced by the production methods [32; 33] –, it should be noted that the first studies on this topic were conducted twenty years ago (see for instance Nerlove [10]). Combris et al. [8] highlighted that consumers are more likely to use objective features as quality signals, by applying a hedonic price model to different Bordeaux wines, while the quality of a particular wine can be explained by wine jury members on the basis of its sensory characteristics. Jones and Storchmann [35], Schamel and Anderson [25] and Benfratello et al. [36], among others, supported the central role of sensory variables on the price, thanks to the evidence derived from their hedonic price studies on different types of wines. Within this framework, certainly noteworthy is the article of Lecocq and Visser [37] that aimed to explore the effect of sensory and objective features on three different data sets (two on Bordeaux wines, and one on Burgundy wines). They found that the objective characteristics, directly revealed to the consumers on the labels, explain the major part of the price differences, while the subjective ones seem not to play an important role. Furthermore, wine prices are hardly affected by the jury grade assigned by professional wine tasters, which are closely linked to the sensory characteristics, as previously reported.

2. MATERIAL AND METHODS

2.1 Data collection

Data were collected by recording prices and wine attributes that a free-service customer could observe directly from the bottle on the shelves. The dataset contains observations on white sparkling wines and Champagne with and without geographical indication. Prices are identified in the currency that is used in Poland (PLN). It should be noted that the average monthly exchange with the euro was around 4.43 PLN in December, 4.36 PLN in January and 4.38 PLN in February. The current exchange with the euro (September 2019) is 4.26 PLN.

Since numerous studies reported that distribution channels have a significant effect on wine price (see for instance Rebelo et al. [14]), we selected different kinds of distribution channels (supermarkets, hypermarkets, discounts, specialised shops), both local and foreign, in order to understand wine premium price according to location, type and size of retailer. It was expected that the price in specialised shops would be higher than the others, while other aspects, such as the premium price in different areas of the city was unknown. It was otherwise supposed that the central area of the city (Środmieście) would have the highest prices in comparison to other locations.

Data were collected from December 2016 to February 2017. We interrupted the survey in the Christmas period (from December 15th to January 10th) to avoid a biased effect on product selection and price promotions. The shops had been randomly chosen among the 18 districts of the city of Warsaw (Figure 1). A sample of 35 retailers were selected for the survey: 10 supermarkets, 10 hypermarkets, 12 discount stores and 3 specialised shops. This distribution takes into account the market share of different types of retailers[2], with the aim of ensuring at least one observation per district. The list of shop types and their distribution among districts are reported in table 3. The survey collected information on 1,095 references to sparkling wine.

2.2 Model specification

The hedonic price model is based on the hypothesis that each good is characterized by the entire set of attributes that define it in a unique way. Given that wine

[2] According to Euromonitor data, discounts have 33% of wine market share in store-based retailing, hypermarkets have 16%, supermarkets 40% and specialist shops 7.1%.

Table 3. Number of retailers by category distributed among districts.

Districts	Retailers category				
	Super-markets	Hyper-markets	Discounts	Special-ized shops	Total
Żoliborz	1	1			2
Bemowo			2		2
Białołęka	1		1		2
Bielany		1			1
Mókotów		1		1	2
Praga Północ		2	1		3
Praga Południe	1	1			2
Rembertów			1		1
Śródmieście	4			1	5
Turgówec	1		1		2
Ursus			1		1
Ursynów		3	2	1	6
Włochy			1		1
Wawer	1		2		3
Wilanów	1				1
Wola		1			1
Total	10	10	12	3	35

Source: analysis on own sources.

Figure 1. The 18 Districts of the city of Warsaw.

is, by nature, a widely differentiated product it follows that it is a suitable candidate for this particular type of empirical study, but it is difficult to identify the specific characteristics that affect prices [36].

According to Lancaster [38], consumers' purchase choice is guided by the set of extrinsic and intrinsic characteristics that maximizes their utility. The hedonic price model hypothesis asserts that goods can be valued through their utility attributes or characteristics. According to Rosen [39], the hedonic price function can formally be written as $P_i = f(z_i)$, where P is the given price of the i^{th} product and z is the vector of attributes of the i^{th} product. Hence, hedonic prices are described as implicit prices of attributes and their analysis involves the regression of price with respect to the product characteristics. The partial derivative of the price function represents the marginal price of that attribute. Furthermore, the hypotheses of Rosen [39], which guarantee that observed price is the result of market equilibrium are: i) each level of z attribute is used interchangeably to designate commodities of a given quality or specification; ii) there is a sufficiently large number of differentiated products available so that choice among various combinations of z is continuous. We thus assume that this hypothesis is satisfied for wine by looking at price and attributes in the retail market.

Although there is no theoretical basis for the functional form that should be applied, it should be remembered that the most used are the linear [39, 40], semi-logarithmic [41, 10] and Box Cox linear [43].

As reported by León [43] in his comprehensive literature analysis of hedonic price, the Box Cox transformation [44] can be useful not only as a flexible functional form, but also as a tool to choose the best functional form among those applicable.

Following this method, also applied by Ferro and Benito Amaro [45] and Rossetto and Galletto [46], the transformation of the dependent variable, Y>0, is:

$$Y(\lambda) = \begin{cases} \frac{(Y^{\lambda}-1)}{\lambda} & if\ (\lambda \neq 0) \\ \ln(Y) & if\ (\lambda = 0) \end{cases} \quad (1)$$

λ being the transformed parameter of the dependent variable (Y).

As specified by Box and Cox [44] it should be noted that since an analysis of variance is unchanged by a linear transformation (1) is equivalent to:

$$Y(\lambda) = \begin{cases} Y^{\lambda} & (\lambda \neq 0) \\ lnY & (\lambda = 0) \end{cases} \quad (2)$$

By applying an OLS regression the log-linear functional form was shown to be preferable, in line with many

other applications [46, 5, 47]. The OLS regression has to satisfy the hypothesis of homoscedasticity and no multicollinearity. Multicollinearity was checked through the VIF (Variance Inflation Factor): no variable in the model showed VIF greater than 5 [49]. The presence of heteroscedasticity was verified applying the Breusch-Pagan [50] and White tests [51]. We found a violation of the hypothesis of homoscedasticity with OLS regression. In order to solve the heteroscedasticity issue, we re-estimated the model with robust standard errors applying a Generalized Linear Model with the MLE estimator performed through IBM-SPSS 26.0. We then looked for the best functional form regression by evaluating McFadden's pseudo R^2 after repeating the Box-Cox transformation. After application of the MLE estimator with robust standard error, the log-linear function form was confirmed to be the best one (McFadden's pseudo R^2 = 0.744):

$$\ln(P) = \beta_0 + \Sigma\beta_i z_i + \varepsilon \quad (3)$$

where ln(*P*) is the log of the price, z_i is the *i* attribute of the wine, β_i are the estimated coefficients of the z_i variables and ε the random error. This form allows the percentage variation of the product price to be explained that is independently attributable to a specific characteristic.

The variables included in the model refer to objective and reputational characteristics of sparkling wine together with attributes linked to the retailer type and location. In order to understand the reputation effect on wine it was necessary to include in the model the variables of the main wine brands[3] (*Martini*, *Henkell* and *Moët Chandon* are the principal brands on the shelves. In fact we took into account only the brands that have been observed at least 30 times during the data collection) and the collective brand of Designation of Origin (DO), namely the Appellations, (*Asti, Champagne, Cremant, Cava, Prosecco DOC*[4]*, Prosecco DOCG* are the most frequent in the dataset).

Our hypothesis is that the price is higher in central Warsaw: we considered *Center* as a variable that describes how important the location of the store is. As previously reported, the type of retailer can also influence the price, hence *supermarket, spec_shop, hypermarket, discount* variables have been attached.

Because of the recent expansion of foreign hypermarkets in Poland, we inserted the variable *Nat_R*, to express the nationality of the shop. From our survey, all the specialised shops are Polish, as are 80% of supermarket brands, 20% of discount and no hypermarkets.

Cembalo et al. [52] describe the so-called "Italian sounding" as a false evocation of the Italian origin of the products and, according to Trestini et al. [11], this phenomenon may have a positive effect on the wine price due to a misleading reputation perceived by consumers. Thus, *Italian sounding* variable was included in the model, considering also that this item is always measured when wine names include terms associated with Italian culture (e.g. Michelangelo, Raffaello, Veneziano).

Other quality attributes, such as *Vintage* (i.e. when 85% of grapes used to make the wine were harvested in the same year) and *Traditional method* (i.e. when the second fermentation took place in the bottle) are considered as dummy variables. We expect that these variables raise the price of wine. Indeed, from the study conducted by Vecchio et al. [34] it emerged that detailed information on the Champenoise, which is just another name for the Traditional method, is perceived as positive and increases WTP especially by young consumers. *Brut, Dry* and *Sweet* taste variables are also included to describe attributes. Furthermore, *Promotion* variable (i.e. when wine is sold at a discount price) had to be added, as well as *Alcohol* content. Finally, the variable *Volume* considers the effect of different bottle sizes. Table 4 reports descriptive statistics.

2. RESULTS AND DISCUSSION

The dependent variable of the model is represented by the log-price of a bottle (0.75L in volume) of a sparkling wine with an alcohol content equal to 11%. Reference baseline is assumed to be a wine without designation of origin or vintage specification, produced without second fermentation in bottle. This wine is sold in Warsaw, in a foreign-owned hypermarket (non-Polish) outside the central district. In addition, it is sold without any price discount. The wine format is 0.75L, at an average price of 32.77 PLN (around € 7.70). Estimates are summarised in Table 5.

The estimated model well explains the observed price variability (Pseudo-R^2 = 0.744); all the variables are statistically significant, with a p-value lower than 0.05, except for *Henkell*, *Asti*, *Cava*, *Traditional method* and *Sweet*.

As supposed, due to their reputation, brands like *Martini* and *Moët & Chandon* have a relevant and sta-

[3] We chose to use the term "wine brand" to refer both to winery and company brands. Indeed, some companies may have different product lines and show either the company or winery name on the labels. The aim is to report the brand used by consumers to make their choice.

[4] Prosecco is classified as a white wine produced from Glera grapes that are grown in a specific area of two Italian regions (i.e. Veneto and Friuli Venezia Giulia). For the description of DOC and DOCG Prosecco see Trestini et al. [11].

Table 4. Sample descriptive statistics.

Variable	Description	Type	N. obs	%
Bottler nationality				
Italy		D	310	28.3
France		D	260	23.7
Poland		D	22.6	22.6
Spain		D	150	13.7
Germany		D	54	4.9
Other_or	Other Origin	D	73	6.7
Wine Brand	Company or winery brand, depending on the reported brand in the label.			
Martini		D	73	6.7
Henekell		D	47	4.3
Moet	Moet&Chandon	D	37	3.4
Point of Sale				
Special	Specialised shops	D	55	5.0
Super	Supermarkets	D	310	28.3
Disc	Discounts	D	88	8.0
Nat_R	Polish retailer	D	232	21.2
Center	Store located in Central district	D	160	14.6
Appelations				
Asti	Asti	D	47	4.3
Champagne	Champagne	D	175	16.0
Cremant	Cremant	D	22	2.0
Cava	Cava	D	118	10.8
Prosecco_docg	Prosecco Conegliano, Valdobbiadene, DOCG	D	25	2.3
Prosecco_doc	Prosecco DOC	D	170	15.5
Other_ita	Trento, Franciacorta, Oltrepò Pavese	D	4	0.4
Other_fr	Clariette Die, Saumur	D	7	0.6
Method				
Traditional Method		D	134	12.2
Type				
Vintage	Wine with grapes coming from the same harvest year	D	20	1.8
Dry	Dry, Demi sec, Demi sweet, Extra dry	D	305	27.9
Brut	Brut, Brut Nature, Brut Alb, Extra Brut	D	323	29.5
Sweet		D	239	21.8
Sounding				
Italian sounding	Bottle with wine name sounding as Italian	D	200	18.3
Promotion				
Promotion		D	82	7.5
			Mean	Std. Dev.
Volume				
Volume		C	0.76	0.19
Alcohol				
Alcohol	Alcohol content	C	10.76	1.45

Notes: D= dummy variable; C= continuous variable.

tistically significant premium price equal to 36.9% and 49.6% respectively, while *Henkell* has no significant effect on wine price. This price premium is calculated in comparison with the other brands (different from Martini, Henkell and Moët & Chandon). It is widely reported in the literature [26, 52, 25, 10] that brand reputation has a

positive and significant effect on wine purchase decision. Especially for those consumers who have scarce information about the quality of wine, the brand plays a positive and decisive role and consumers are willing to pay a higher price, because they trust brands, due to their reputation as a guarantee of high quality.

When it comes to the shop location, we find that a central position (*Center*) has a premium price (+10.4%) if compared to those that are located in the periphery. These results seem to be mainly linked to the retailers' costs, which are higher in the central district and small specialised shops. Findings demonstrate that the type of shop can affect the product price: the *specialised shops* have higher prices (54.7%), whereas *Supermarkets* (-5.1%) and *Discounts* (-35.0%) offer a discount when compared to hypermarkets, according to what was found by Trestini et al. [11]. Our results are consistent with those of Di Vita et al. [54]: they found that wine shops have a direct impact on price fixing, highlighting the presence of a premium price for high quality wines. Indeed, Cerjak et al. [55], who investigated sparkling wine purchasing and consumption behaviour among Croatian consumers, found that there are differences between consumer groups. Older consumers with good economic status are the staunchest sparkling wine consumers and often choose specialised shops and direct sale for their purchase, even if the price is higher. The higher price is largely explained by the different type of information provided. Boatto et al. [6] have shown that consumers are willing to pay for "tailor-made" information supplied by the retailer during the purchasing process in the specialised shops. They found that this premium is nearly 200% for wines without relevant quality signals and lower for quality wines. Polish specialised shops guarantee a premium price lower than that estimated in traditional wine consumer countries (i.e. Italy), perhaps suggesting a lower quality of service and product selection. The nationality of the retailer has a significant and positive effect when it is Polish (*Nat_R*), with a premium price of 16.5% compared to the non-Polish ones.

Poland variable is referred to the Polish nationality of the bottler of some wines, not produced with Polish grapes but made in Poland. Findings show that these products have a price discount of 61.6% when compared to other wines. Muller [56] assessed the effect of local brands on the premium price in Germany, rarely finding positive effects. In the case of Polish consumers, they cannot recognise Polish wine, and the discount price can be mainly related to low production costs. In fact, many of these products (77% of the wines investigated) apply Italian sounding wine names (*Poland*Italian sounding)*, which guarantees these wines a price premium equal to 49.5%. As reported by Trestini et al. [11], even though the wine has no declared origin, attaching an Italian sounding name to the bottle label makes the consumer think about the reputation of Italian quality. As stressed in the literature, Italian sounding can affect consumers' purchasing decision: they may interpret price as a quality signal, due to the asymmetric information [57]. Nowadays, in fact, the presence of Italian sounding names seems to be a confirmed tendency on the international food and beverage market; free riders have the opportunity to profit from the quality associated with this origin, due to the diversified supply of Italian sparkling wines. Indeed, the Italian origin of products does not bring to the mind of consumers an univocal and specific product, as happens in the case of French ones (for which there is a clear reference to Champagne), leaving room for imitations. European institutions do not limit the use of this kind of wine naming, which is regulated under the rules of trademarks. However, this result should be interpreted as an effect of misleading information given to an inexpert consumer, who places value on a name that emulates the positive reputation of the Italian food and beverage tradition. Moreover, we find that, except for *Cava* and *Asti*, all the designations of origin have significant and positive effects on price: as expected, the highest premium is attached to *Champagne* (+ 395.9%), followed by *Prosecco DOCG* (+49.1%), *Cremant* (+31.7%) and *Prosecco DOC* (+13.3%).

In addition, the other French appellations (*other_fr*) (e.g. Clairette de Die, Saumur) show a statistical significance in creating value in the estimated model (+18.7%), as well as the other Italian designations of origin do (+75.9%). DO, as often reported [5, 6, 53] is a source of collective reputation closely related to consumers' perception of the quality of wine. This is particularly true when the place of production is far from the consumption area [58] and consumers have limited connections to wine producers. In this framework, Champagne has the greatest impact on price, but Prosecco DOCG, Prosecco DOC and the other Italian geographical indications, such as Trento, Franciacorta and Oltrepò Pavese, are also considered valued products, considerably increasing the price. As reported by Onofri et al. [59], the different sensitivity to price variations is confirmed by the fact that consumers of Prosecco DOCG express a preference for the product characteristics (brand and taste). This can be explained by a greater "loyalty to the product" of the Prosecco DOCG consumers than the Prosecco DOC purchasers.

Traditional method attribute does not significantly affect the price with respect to the Charmat method of production: this feature being generally linked to specific

Table 5. Hedonic model estimates.

Variable	β	Std. Err.	Sign.	% Price Premium[(a)]
Constant	0.325	0.165	0.050	
Wine Brand				
Martini	0.315	0.038	0.000	+36.9%
Henkell	0.019	0.045	0.677	n.s.
Moet	0.404	0.059	0.000	+49.6%
Point of Sale				
Special	0.439	0.070	0.000	+54.7%
Super	-0.052	0.020	0.008	-5.1%
Disc	-0.429	0.043	0.000	-35.0%
Center	0.099	0.041	0.014	+10.4%
Nat_R	0.153	0.042	0.000	+16.5%
Bottler Nationality				
Poland	-0.954	0.065	0.000	-61.6%
Sounding				
Poland*Italian sounding	0.424	0.064	0.000	+52.5%
Appelations				
Asti	0.077	0.061	0.208	n.s.
Champagne	1.602	0.051	0.000	+395.9%
Cremant	0.277	0.062	0.000	+31.7%
Cava	-0.026	0.066	0.697	n.s.
Prosecco_Docg	0.401	0.058	0.000	+49.1%
Prosecco_Doc	0.125	0.032	0.000	+13.3%
Other_It	0.601	0.269	0.026	+75.9%
Other_Fr	0.173	0.067	0.009	+18.7%
Method				
Traditional method	0.085	0.070	0.227	n.s.
Type				
Sweet	-0.055	0.041	0.183	n.s.
Brut	0.166	0.029	0.000	+18.0%
Vintage				
Vintage	0.204	0.099	0.040	+22.0%
Promotion				
Promotion	-0.100	0.033	0.002	-9.6%
Volume				
Volume	-0.219	0.082	0.008	-15.1%
Alcohol				
Alcohol	-0.037	0.015	0.013	-3.6%
Adjusted R^2			0.744	
N. Obs			1,095	

Notes:(a) Adjustments made according to Kennedy [60].

DO, we can argue that on the Polish market it does not affect retail price.

Euromonitor [4] reported that the tastes of Polish consumers have changed significantly in the last period: in line with the growing wine culture, consumers are moving from sweet and herbal wines to dryer ones. The results are thus in line with expectations. *Brut* type increases the price by 18.0%, if compared to the dry categories (Dry, Demi sec, Demi sweet, Extra dry). This is in line with what was found by Rossetto and Galletto [46] and justified by a general trend in modern consumption.

Vintage wines have an important premium price (+22.0%), as also found by Menesme et al. 2019. As expected, wines with *Promotion* have a statistically significant discount, equal to -9.6%.

Regarding the *Alcohol* content, we found that it is negatively correlated with the price: a 1% increase in alcohol content (e.g. passing from 11 to 12%) brings a 3.6% price decrease. This result is contrary to and with a lower estimated effect to what was found by Rossetto & Galletto [46] for rosé wines on the Italian market. Our opposite results may be justified by the young wine consumers in Poland who, *ceteris paribus*, may prefer wines with slightly lower alcohol content.

3. CONCLUSIONS

This paper aims to estimate the hedonic price model by comparing the impact of different characteristics on sparkling wines' prices in Poland, also including the point of sale, with specific attention to reputational attributes.

The results confirm that the retail wine market in Poland assigns a price premium to quality attributes coherently with the estimated model in a traditional wine consumers market. The point of sale plays an important role in affecting the price, confirming the expected signs: central areas of Warsaw have a small but relevant and positive influence on price; discounts and supermarkets imply a decrease of price with respect to hypermarkets. Specialised shops have a price premium that is lower than that observed in traditional consumer markets (e.g. Italy) where service at the point of sale can add a price premium that is four time higher than in Poland.

Despite the fact that Polish consumers still choose low-priced wines [4], reputational variables – wine brand (brand reputation) and DO (collective reputation) – have a big impact on price. Well-known wine brands guarantee a relevant price premium at retail level, because of huge investments made by private companies. At the same time, Polish consumers are starting to pay more attention to collective brands, above all sparkling wines with DO from Italy, France and Spain. A new wine mar-

ket, like Poland, is characterised by a relevant presence of quality wines, with a growing importance of New World wines and a high number of medium range prices. International sparkling wine in a new wine market is currently dominated by Old World producers, but the access to these new markets is introducing new forces that justify the fact that the market for sparkling wine is gradually changing, both in Poland and Europe. Sparkling wine is increasingly competitive in the overall wine sector, and exports of Italian, Spanish and French wines prove this trend. Almost all the DO obtain a relevant price premium that justifies the efforts towards the achievement of a specific quality and identity that allows the /building of a collective reputation with a recognised value on the market. In this context, the attempt to profit from other collective reputations, like using Italian sounding names, finds room for growth when consumers have limited knowledge about how to select quality wines. Information asymmetry is relevant in evaluating this market situation, as well as confirming that the majority of consumers are non-experts and risk-averse and tend to look for reputational signals to make their choice.

The estimated hedonic model can be useful for determining the opportunities for sparkling wines in this new wine market, especially for producers and all operators in the supply chain. These results, in fact, may support producers and retailers in defining the price at which sparkling wines can be placed on the Polish market. Moreover, they may be useful for understanding the dynamics within this market category, thus allowing producers to pay more attention to the features most appreciated by consumers; generally speaking, in the Polish wine market most sales are off-the-shelf, while sales in wine shops are marginal, despite representing the most prestigious sales share. This implies a lack of consultation during the purchasing process – because there is no one who explains the particular characteristics of the product to you –, so brand reputation becomes very important in this context [61].

Producers should therefore focus their attention on the reputational attributes such as DO and brand. These characteristics should be stressed on the label to guarantee a direct connection with the consumer, because they are considered higher price features.

Since brand reputation is the critical success factor in this market, both the single and collective brands must enhance their prestige in order to increase sales volume. As also reported by Ferro and Benito Amaro [45] it is necessary to apply some collective action and public policies to improve terroirs' reputation.

In conclusion, despite the effectiveness of the hedonic model in explaining price diversification among products, few insights can be inferred about consumers' preferences. Further efforts should be made to outline the profile of possible buyers of sparkling wines in the Polish market.

A limitation of the results could be the restricted area of investigation, just the off-trade channel, being the main channel for wine in Poland. In fact, the dataset doesn't take into account wines sold through the HoReCa channel that could further moderate the value of reputational attributes [6] and gain additional insight on the premium price in this iconic wine sector. Further research should be conducted in order to better understand consumer behaviour in the on-trade channel.

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