

Who is buying sustainable wine? A lifestyle segmentation of German wine consumers

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◦*Purpose:* In the global wine business, sustainability has become one of the most widely discussed issues. The efforts of individual wine producers as well as certification programs have made labelling of sustainability claims on wines increasingly visible. However, it is largely unknown to what extent consumers react to these claims and which consumer segments are the most appropriate targets for sustainable wines. The main research objective of this paper is a segmentation of German wine consumers.

◦*Methodology:* To fulfil this objective, we conducted an online survey (N=1,023) on German wine consumers, which included a cluster analysis based on sustainable lifestyles and product involvement. For the operationalization of wine involvement we used several items of former studies. Sustainable lifestyles were identified by the usage of items taken from the New Environmental Paradigm (NEP), Social Responsible Consumer Behaviour (SRCB), Perceived Consumer Effectiveness (PCE), altruism and Lifestyles of Health and Sustainability (LOHAS).

◦*Findings:* The segmentation revealed four consumer clusters. Within those our study identifies target groups with greater or lesser interest in sustainability. One of the four segments indicates a strong interest in both sustainability and wine. This cluster is valuable for sustainable wine producers because of its high consumption frequency and high spending per bottle. With the deeper knowledge about specific consumer behaviour, ambitious sustainable wine producers can improve their chances of business success. Therefore, the results have interesting implications for marketing sustainable wine.

Key words: Sustainability, lifestyle segmentation, involvement, consumer behaviour, wine

1. INTRODUCTION

In recent years sustainability has been making slow but steady gains in societal recognition. An increasing share of producers, retailers and consumers include sustainability in their considerations when it comes to the evaluation of consumer goods and food (Seyfang, 2006). As a consequence, regional food products, for instance, have gained relevance in recent years because many consumers attribute a better environmental performance to them (Banik et al., 2007). This has also attracted growing interest from retailers (Kögl and Tietze, 2010). Despite this emerging trend, there is no common definition of sustainability in the global wine business. Nevertheless, sustainability has become part of corporate and product branding in the world of wine.

Over the past few decades wine producers all over the world have implemented the environmental, social and economic aspects of sustainability at various stages in their business behaviour (Klohr et al., 2012a; Forbes and De Silva, 2012). Furthermore, sustainability has been integrated into their communication strategy. Companies use sustainable actions to reinforce their brand and market positioning. They also focus on their products' claims of sustainability by putting labels on their packaging. In addition, certification programs embody a new extrinsic characteristic for consumers to use when evaluating wine (Mueller Loose and Remaud, 2013; Zucca et al., 2009). Some programs that are gaining national or even international recognition are Certified California Sustainable Winegrowing, Certified Sustainable Wine of Chile, Entwine Australia, Sustainable Wine South Africa, Sustainable Winegrowing New Zealand, and FairChoice (Klohr et al., 2012b). Such a labelling strategy allows more informed consumer choices since it transforms the – at least for some consumers – important but unobservable credence attribute 'sustainability' into an easy-to-detect search attribute, that is the existence of a label (Theuvsen et al., 2013).

Thus, despite the various attempts of wine makers to use sustainability claims as marketing tools, it is largely unknown to what extent the communication of sustainability adds value to consumers' perception of wine. Since the target group for sustainable wines has not yet been clearly defined, this study aims to identify and characterise German wine consumers and to find out how much they consider sustainability aspects when making their buying decisions.

2. LITERATURE REVIEW

Several research projects have already covered the impact of production practices on wine consumers. Most of these studies deal with organic wines (e.g. Brugarolas Mollá-Bouzá et al., 2005; Delmas and Grant, 2008; Mann et al., 2012) or are limited to the environmental aspects of the production process (e.g. Barber et al., 2009; Barber, 2010; Bazoche et al., 2008). Only a limited number of studies consider the three essential pillars of sustainability – environmental, social and economic aspects – as a whole, and most of these focus on a single region or country (e.g. Zucca et al., 2009; Forbes et al., 2009). German wine consumers were analysed regarding their sustainable consumer behaviour within the cross-cultural studies of Remaud et al. (2010) and Loveless et al. (2010). Both studies provide aggregated results and segmentations on a multinational level. Concerning the awareness of sustainability claims, Mueller Loose and Remaud (2013) offer deeper insights into findings on the national level. Loveless et al. (2010) find that sustainability affects the buying decision in all five of the regions they evaluated (UK, Ireland, USA (west coast), Canada, and Sweden). They identify a consumer cluster that values sustainability and encompasses 29% of the consumers in those regions (Loveless et al. 2010). Both Remaud et al. (2010) and Loveless et al. (2010) state that wine markets differ in size and hence in the relevance of the cluster that values sustainability. As the literature shows, further research on the national level is needed.

In order to characterize German consumers of sustainable wine, we took certain research findings into account. In their meta-study, Verain et al. (2012) show that sustainable food consumers could be segmented into 'greens', 'potential greens' and 'non-greens'. Based on Diamantopoulos et al. (2003), who stress the limitation of sociodemographic characteristics, we focused on alternative segmentation approaches in order to identify sustainable consumers. This approach is in line with the suggestion made by Verain et al. (2012), who state that it is favourable to include personality, lifestyle and behaviour when segmenting sustainable food consumers. Therefore, we based our segmentation of consumers both on wine-buying behaviour and involvement and on personality characteristics and lifestyle concerning sustainability.

A number of constructs tested in former studies deal with sustainable lifestyles. Dunlap et al. (2000) revised the New Environmental Paradigm (NEP), which was developed by Dunlap and Van Liere (1978) and focuses the ecological mind-set of consumers. The NEP was used in a large number of studies to identify 'green' consumers (Dunlap et al., 2000). Beyond that the study of Roberts (1996) gives items to measure the social responsible consumer behaviour (SRCB). In its terminology the SRCB provides a counterpart to the role of companies in terms of a sustainable development and the corporate social responsibility (CSR). To which extend consumers take their responsibility for a sustainable development when choosing products is widely discussed (Busse, 2008). This leads to the question if consumers perceive themselves as change makers. The items of perceived consumer effectiveness (PCE) provided by Straughan and Roberts (1999) help to identify this attitude. If changes on the individual level would lead to a sustainable development on the global level, 'good' buying decisions would be based on altruism. Therefore, the items used by Clarke et al. (2003) to measure altruism were taken into account. The scope of interest as well as the perceived effectiveness of 'good' buying decisions is covered by Roberts (1996) as well as by Straughan and Roberts (1999) with the constructs of Social Responsible Consumer Behaviour (SRCB) and Perceived Consumer Effectiveness (PCE). In recent years the concept of Lifestyles of Health and Sustainability (LOHAS) has been discussed in many articles (e.g. Kirig and Wenzel, 2009; Köhn-Ladenburger, 2013). A number of items used to identify such lifestyles are provided by the Institute for Media Research and Consumer Research (IMUK, 2012).

Based on the findings of the named studies dealing with sustainability and in particular sustainable wine consumers we expect several results. First, there will be a consumer segment which values sustainability in the buying decision for wine. This segment will not be that huge in terms of share of the population but quite important in terms of volume and value of its wine consumption. Second, the identification of this segment must be based on criteria others than demographics. Lifestyle and involvement would be suitable factors for the identification consumer segments (Arnold and Fleuchaus, 2011).

3. MATERIAL AND METHODS

Our study focuses on German wine consumers. An online survey was conducted on people who consumed wine at least once in the past 12 months. The participants were recruited by the commercial panel provider Consumerfieldwork. To receive a representative online sample, we set quotas for age, gender and regional distribution, which we adjusted on the basis of the consumer analysis 2012 developed by Springer (2013). We received a dataset of 1,023 relevant respondents (N=1,023).

The benefit of conducting an online survey is the absence of interviewer bias (Van Selm and Jankowski, 2006). The topic of sustainability can be accompanied by social desirability. This bias tends to be smaller in online surveys in comparison with face-to-face surveys (Paulhus,

1984; Duffy et al., 2005; Taddicken, 2009). The weaknesses of online surveys have been widely discussed in the literature (e.g. Fricker and Schonlau, 2002; Evans and Mathur, 2005; Duffy et al., 2005; Van Selm and Jankowski, 2006; Maurer and Jandura, 2009). An online survey can reach only those people with access to the internet (Duffy et al., 2005). During our field phase in February 2013, 74.3 % of the German population above 14 years of age had access to the internet (AGOF, 2013). Furthermore, a detailed look at the online population shows that females and people aged 60 and older are underrepresented (AGOF, 2013). This potential coverage bias was handled by the setting of quotas for gender, age and regional distribution. Online respondents differ in other attributes as well. They tend to be highly educated (AGOF, 2013) and better informed (Duffy et al., 2005). This might affect the results of our research and must be borne in mind during their interpretation.

The consumer segmentation described in this paper sought to determine consumers' involvement and motives in relation to wine consumption. With this concept in mind, we created a statement battery, taking several prior studies into account (e.g. Aurifeille et al., 2002; Brunner and Siegrist, 2011; Ghvanidze, 2012) and adapting their statements. In their meta-study Brunner and Siegrist (2011) included items from a number of other studies such as Dubow (1992), Charters (2006), Lockshin et al. (2006), Bruwer and Li (2007) etc. and transferred them to the Swiss wine market. Therefore, the wine-related statement battery included items that had produced good results in those studies.

In addition, we based the segmentation on lifestyle aspects of sustainable consumption. In doing so, we considered several concepts published in the field of sustainable consumer behaviour. In two statement batteries, items were included from the NEP (Dunlap et al., 2000), SRCB (Roberts, 1996) and PCE (Straughan and Roberts, 1999). LOHAS was represented in the statement batteries through items provided by the Institute for Media Research and Consumer Research (IMUK, 2012). The segments were to be identified based on low or high product involvement in combination with a weakly or strongly sustainable lifestyle.

For the segmentation we first run two separate explorative factor analyses for both, wine involvement and sustainable lifestyle. The resulting factor scores will be part of a K-means clustering. Finally, we describe the identified segments with active and passive variables.

In order to avoid stress for the participants (Grossnickle and Raskin, 2001) in our time-consuming questionnaire, all items were tested using 5-point scales with endpoint labels. The number of response categories used to measure the various statements is widely discussed in the literature. Cox (1980) as well as Preston and Colman (2000) mentioned the popularity of 7-point scales. Nevertheless, 5-point scales are preferred by numerous researchers (Bearden et al., 2011; Grossnickle and Raskin, 2001). Dawes (2008) also stated that limiting the number of scale points has no significant effect. According to Homburg and Klarmann (2006), the data can be used similarly to data from a continuous scale and is therefore suitable for factor analysis and cluster analysis.

4. RESULTS

4.1. Sample description and data quality

From the demographic point of view the data collected are representative in terms of age, gender and regional distribution for the wine-drinking population in Germany above the age of 14. The filter questions that covered these aspects were adjusted to the data of Springer (2013). Barber et al. (2006) point out that the wine-buying behaviour may differ depending on the income level of the consumer. A comparison between our sample and the data of Springer (2013) shows no crucial difference in terms of household income, but does indicate some bias

concerning educational level (Appendix: Table A1). According to Verain et al. (2012), the effect of educational level is ambiguous. Gil et al. (2000) found lower educational levels for organic food consumers, whereas Jain and Kaur (2006) ascribe higher educational levels to green consumers.

With regard to wine-drinking behaviour, Szolnoki and Hoffmann (2013) state that in online surveys the problem of self-selection may occur. This can lead to an overrepresented group of highly involved wine drinkers. Due to the quota sampling done in our research, the problem of self-selection is not relevant (Evans and Mathur, 2005). Still, wine consumers with the two highest consumption intensities – those who drink wine once or more than once a week – are slightly overrepresented in our database compared with the data from a face-to-face survey conducted by Szolnoki and Hoffmann (2013). Moreover, the lowest consumption intensity is underrepresented (26.2% compared to 33.9%), as illustrated in Table 1.

Table 1: Intensity of wine consumption

| Intensity | Own Data* | | Szolnoki/Hoffmann 2013** | | Deviation |
|------------------------------|-----------|--------------------|--------------------------|--------------------|-------------------|
| | n | % of wine drinkers | n | % of wine drinkers | Percentage points |
| More than once a week | 176 | 17.2 | 148 | 12.9 | 4.3 |
| Once a week | 199 | 19.5 | 166 | 14.5 | 5.0 |
| Two to three times a month | 226 | 22.1 | 259 | 22.6 | -0.5 |
| Once a month | 154 | 15.1 | 185 | 16.1 | -1.1 |
| Less often than once a month | 268 | 26.2 | 389 | 33.9 | -7.7 |
| | 1,023 | | 1,147 | | |

Source: Authors' data; * Online survey; ** Face-to-face survey.

4.2. Factor analysis

As a basis for the consumer segmentation, we ran an exploratory factor analysis (EFA) to find expressive constructs for wine involvement and sustainable lifestyles. An EFA is useful for finding relationships between individual items and reducing the complexity of the tested items (Backhaus et al., 2011).

Concerning wine involvement and sustainable lifestyles, we sought to identify the underlying structures of the factors. To do this, we ran principal axis factoring (PAF). PAF is an iterative method that is useful for defining latent variables (Backhaus et al., 2011; Janssen and Laatz, 2013; Moosbrugger and Schermelleh-Engel, 2012). Since the items of thematically affiliated topics had been merged, we performed an oblique rotation using direct oblimin procedure. This methodology is useful when correlations between factors are expected (Backhaus et al., 2011).

The Kaiser criterion and the scree test (Backhaus et al., 2011) support the definition of three factors for the EFA concerning wine involvement. Items that loaded on more than one factor as well as items with a factor loading below 0.4 were excluded from the factor analysis (Backhaus et al., 2011). Out of the 14 items, 12 were included in the final solution (Table 2). In the case of the factor analysis concerning wine involvement, the measure of sampling adequacy (MSA) of the final solution was 0.773, which Backhaus et al. (2011) classify as “middling”.

The internal consistency of each factor was tested using Cronbach's alpha. For the factors *connoisseurship* and *budget drinking*, Cronbach's alpha was 0.673 and 0.632, which indicates that the reliability of the factors is “questionable” in both cases (George and Mallery, 2003), while the internal consistency of the factor *displeasure* ($\alpha=0.554$) is only “poor” (George and Mallery, 2003). We were unable to improve the internal consistency of these factors by excluding individual items. Furthermore, the interpretation the factors *budget drinking* and, in

particular, *displeasure* according to the theoretical framework is delicate. Neither factor necessarily embodies indicators for positive wine involvement. One solution for this uncertainty would be to exclude them from the model in the cluster analysis.

Table 2: Factors of wine involvement and included items

| Factors/Items | Based on | Factor loading |
|---|--------------------------------------|-----------------------|
| <i>Connoisseurship</i> | | |
| When buying wine, I pay attention to quality seals. | New | 0.707 |
| I would like to know more about the production method of the wine I purchase. | Ghvanidze 2012 | 0.529 |
| When buying wine, I trust the recommendations of wine experts. | Ghvanidze 2012 | 0.517 |
| When buying wine, I prefer wine from local producers. | New | 0.432 |
| I drink wine because it is a tradition in my family. | Brunner/Siegrist 2011 | 0.420 |
| I put a lot of thought into the wine I buy. | Aurifeille et al. 2002 | 0.411 |
| <i>Cronbach's Alpha = 0.673</i> | | |
| <i>Budget drinking</i> | | |
| When buying wine, I pay attention to bargains and special offers. | Brunner/Siegrist 2011 | 0.703 |
| I nearly always choose one of the lowest priced wines. | Brunner/Siegrist 2011 | 0.694 |
| When I buy something, I try to get value for money. | Aurifeille et al. 2002 | 0.485 |
| <i>Cronbach's Alpha = 0.632</i> | | |
| <i>Displeasure</i> | | |
| Wine decisions are an annoying duty. | Aurifeille et al. 2002 (inverted) | 0.597 |
| I drink wine because I love the taste. | Brunner/Siegrist 2011 | -0.616 |
| Wine is something I share with friends. | Aurifeille et al. 2002 | -0.424 |
| <i>Cronbach's Alpha = 0.554</i> | | |

Source: Authors' data.

The EFA for the 20 items covering aspects of sustainable lifestyles resulted in three factors (Table 3). Again the Kaiser criterion and the scree test supported the extraction of three factors. Some items were excluded because their factor loading was less than 0.4 or because they loaded on more than one factor (Backhaus et al., 2011). The test of internal consistency also supported the exclusion of another item. Thus, the final solution includes 14 items. In the case of sustainable lifestyles, the final solution earns a “marvellous” classification, with an MSA of 0.912 (Backhaus et al., 2011).

In addition to the high MSA rating, the reliability of the three factors is also on a high level. With a Cronbach's alpha of 0.740 and 0.732 respectively, the factors *environmental concern* and *responsible behaviour* are “acceptable” according to George and Mallery (2003). *Sustainable consumption* attains a “good” valuation due to a Cronbach's alpha of 0.880 (George and Mallery, 2003).

Table 3: Factors of sustainable lifestyles and included items

| Factors/Items | Based on | Factor loading |
|--|-----------------------------------|-----------------------|
| <i>Sustainable consumption</i> | | |
| I don't buy products from companies that act socially irresponsible. | Roberts 1996 | 0.850 |
| When buying products I pay attention that neither humans nor animals were harmed in the production. | IMUK 2012 | 0.730 |
| I don't buy products from companies that disregard environmental protection. | IMUK 2012 | 0.725 |
| I have switched brands because of social reasons. | Roberts 1996 | 0.680 |
| I am more conscious than others of the nutritional value of product ingredients. | IMUK 2012 | 0.578 |
| Given a choice, I always purchase the product that protects the climate. | IMUK 2012 | 0.557 |
| I am willing to spend more money for environmentally friendly products. | IMUK 2012 | 0.548 |
| <i>Cronbach's Alpha = 0.880</i> | | |
| <i>Environmental concern</i> | | |
| When humans interfere with nature it often produces disastrous consequences. | Dunlap et al. 2000 | 0.752 |
| Humans are severely abusing the environment. | Dunlap et al. 2000 | 0.706 |
| If things continue on their present course, we will soon experience a major ecological catastrophe. | Dunlap et al. 2000 | 0.603 |
| The balance of nature is very delicate and easily upset. | Dunlap et al. 2000 | 0.473 |
| <i>Cronbach's Alpha = 0.740</i> | | |
| <i>Responsible behaviour (inv.)</i> | | |
| Each consumer's behaviour can have a positive effect on society by purchasing products sold by socially responsible companies. | Straughan/Roberts 1999 | -0.770 |
| Each consumer's behaviour can have a positive effect on environmental pollution. | Straughan/Roberts 1999 (inverted) | -0.719 |
| Contributing to nongovernmental organizations enhances the life of others. | Clarke et al. 2003 | -0.469 |
| <i>Cronbach's Alpha = 0.738</i> | | |

Source: Authors' data.

We computed the z-standardized regression scores to include the factors in the segmentation described below (Janssen and Laatz, 2013; DiStefano et al., 2009). According to the theoretical framework of the segmentation, the third factor in the sustainable lifestyle factoring pointed in the wrong direction. As all factor loadings of the items in this factor were negative, we inverted the factor score for this factor and called it *responsible behaviour* so that its direction is in line with *sustainable consumption* and *environmental concern*. As a result, for all three factors it can be assumed that higher positive values indicate more sustainable lifestyle.

4.3. Cluster analysis

The factor scores of the constructs *sustainable consumption*, *environmental concern* and *responsible behaviour* as measures for sustainable lifestyles as well as the construct *connoisseurship* as a measure for wine involvement were subjected to a number of K-means clusterings with different numbers of given clusters (Backhaus et al., 2011; Janssen and Laatz, 2013). Based on our theoretical construct, the four-cluster solution provides the best explanatory power (Table 4).

Table 4: Clusters and integrated factors

| <i>Factors</i> | <i>Clusters</i> | | | |
|--------------------------------|--------------------------------|------------------------------|-------------------------|---------------------------------|
| | Unconcerned non-experts | Concerned non-experts | Phlegmatics | Sustainable connoisseurs |
| <i>Connoisseurship</i> | -0.78_a | -0.66_a | .21 _b | .73_c |
| <i>Sustainable consumption</i> | -1.29_a | .01 _b | -.15 _c | .93_d |
| <i>Environmental concern</i> | -.97_a | .50_b | -.48_c | .73_d |
| <i>Responsible behaviour</i> | -1.30_a | .32_b | -.27 _c | .83_d |
| | n=181 | n=220 | n=320 | n=302 |

Source: Authors' data; in each row a, b, c and d are significantly different at the 5% level.

According to the ANOVA (Tukey-B, $\alpha=0.05$) each of the factors showed significant differences across the clusters. Only the clusters *unconcerned non-experts* and *concerned non-experts* do not significantly differentiate with regard to the factor *connoisseurship*. The cluster *unconcerned non-experts* can be described as not interested in wine and sustainability. The *concerned non-experts* display a positive environmental concern but no interest in wine. The *phlegmatics* have an average interest in wine but are not concerned by or interested in sustainability. *Sustainable connoisseurs* are very interested in wine and live a sustainable lifestyle at the same time.

With regard to their demographics, the clusters show no significant differences in gender, regional distribution, educational level, income or household type. This result is in line with the findings of Diamantopoulos et al. (2003), who stress the limitations of demographics for identifying 'green consumers'. Using the chi-square test, we found a significant difference in the age pattern. Therefore, *sustainable connoisseurs* are older than *unconcerned non-experts*. This is contrary to the findings of Mueller et al. (2011) who found a small but positive correlation between younger age groups – namely Generation X and Y – and environmental concern.

Significant differences were identified in the wine consumption within the different clusters (Table 5). The *sustainable connoisseurs* have a higher consumption frequency than the other clusters. Only 19.5% of the *sustainable connoisseurs* drink wine less than once a month, whereas this frequency applies to 27.8% to 31.5% in the other clusters. In addition, high-frequency wine drinkers are underrepresented in the other three clusters.

When it comes to the preferred wine style, *sustainable connoisseurs* most frequently choose dry wines. Together with the *phlegmatics* they tend to dislike sweet wines. Exactly the opposite is true for *unconcerned non-experts*. Concerning preferred wine colour, no significant differences were detected.

Table 5: Clusters and wine consumption

| Characteristics | Clusters | | | | χ^2/df |
|--|----------------------------------|--------------------------------|----------------------|-----------------------------------|---------------|
| | Unconcerned non-experts n=182 | Concerned non-experts n=220 | Phlegmatics n=320 | Sustainable connoisseurs n=302 | |
| Consumption frequency (%) | | | | | |
| More than once a week | 12.2 _b | 16.4 _b | 12.8 _b | 25.5 _a | 37.77* |
| Once a week | 13.3 _b | 16.8 _{a,b} | 23.1 _a | 21.2 _a | df=12 |
| Two or three times a month | 24.9 _a | 21.4 _a | 21.9 _a | 21.9 _a | |
| Once a month | 18.2 _a | 16.8 _a | 15.0 _a | 11.9 _a | |
| Rarer than once a month | 31.5 _b | 28.6 _b | 27.8 _b | 19.5 _a | |
| Preference of sweetness (white) (%) | | | | | |
| Dry | 27.1 _b | 35.8 _{a,b} | 34.8 _{a,b} | 40.4 _a | 21.17* |
| Semi-dry | 32.9 _{a,b} | 28.5 _a | 39.2 _b | 35.4 _{a,b} | df=6 |
| Sweet | 40.0 _b | 35.8 _b | 26.0 _a | 24.2 _a | |

Source: Authors' data. * $\chi^2 = p < 0.05$; in each row a and b are significantly different at the 5% level.

The German wine market is highly competitive (Fleuchaus, 2011). The food retail market makes up three quarters of the total market. Within the food retail market, the average price per 0.75l bottle is €2.04 (GfK, 2013). This means that, for wine producers as well as for agents and retailers, it is crucial to know if consumers favouring sustainable products are generating more value than others. Table 6 displays the preferred price ranges by cluster. It is obvious that *unconcerned non-experts* are those consumers who buy wine at the lowest price point, under €2 per bottle (top two categories), while *sustainable connoisseurs* avoid this price range.

Table 6: Clusters and wine prices

| Characteristics | Clusters | | | | χ^2/df |
|---------------------------------------|----------------------------------|--------------------------------|----------------------|-----------------------------------|----------------|
| | Unconcerned non-experts n=182 | Concerned non-experts n=220 | Phlegmatics n=320 | Sustainable connoisseurs n=302 | |
| Price level under €2 (%) | | | | | |
| Very often | 7.2 _b | 5.9 _b | 4.4 _{a,b} | 2.0 _a | 62.89* |
| Often | 17.7 _b | 3.6 _a | 5.3 _a | 2.6 _a | df=9 |
| Seldom | 25.4 _a | 27.3 _a | 27.2 _a | 24.5 _a | |
| Never | 49.7 _c | 63.2 _{a,b} | 63.1 _b | 70.9 _a | |
| Price level €6.00 to €7.99 (%) | | | | | |
| Very often | 2.8 _c | 6.8 _{b,c} | 8.8 _{a,b} | 13.2 _a | 111.45* |
| Often | 21.5 _b | 20.5 _b | 31.6 _a | 35.1 _a | df=9 |
| Seldom | 33.1 _b | 44.5 _a | 45.0 _a | 43.7 _a | |
| Never | 42.5 _d | 28.2 _c | 14.7 _b | 7.9 _a | |
| Price level €8.00 to €9.99 (%) | | | | | |
| Very often | 2.2 _{b,c} | 1.4 _c | 4.4 _b | 8.3 _a | 106.37* |
| Often | 7.2 _b | 7.3 _b | 15.6 _a | 17.5 _a | df=9 |
| Seldom | 28.7 _c | 35.9 _{b,c} | 42.8 _b | 51.7 _a | |
| Never | 61.9 _c | 55.5 _c | 37.2 _b | 22.5 _a | |

Source: Authors' data. * $\chi^2 = p < 0.05$; in each row a, b, c and d are significantly different at the 5% level.

Our research indicates that the clusters of *phlegmatics* as well as the *sustainable connoisseurs* buy wines at higher price points. In contrast, *unconcerned non-experts* seldom buy wines over €8 per bottle while *concerned non-experts* rarely choose a bottle that falls in the price range between €6.00 and €7.99. All in all, it can be concluded that *phlegmatics* and *sustainable connoisseurs* are the consumers who buy wines at higher price points. In combination with the high consumption rate *sustainable connoisseurs* are a crucial target group in the German wine market.

5. DISCUSSION AND CONCLUSIONS

Our findings promote the growing knowledge about sustainability and especially sustainable consumers in the global wine business. The interaction of product involvement, personality and lifestyle provides comprehensive insights into consumer behaviour in the context of sustainability and wine. The items chosen concerning sustainable lifestyles, which were taken from the NEP (Dunlap et al., 2000), SRCB (Roberts, 1996), PCE (Straughan and Roberts, 1999) and LOHAS (IMUK, 2012) show a high consistency. This led to convincing results in the factor analysis. However, the items for wine involvement taken from Aurifeille et al. (2002), Brunner and Siegrist (2011) and Ghvanidze (2012) are not as robust, indicating the need for further research. Still, they led to satisfactory results. Both wine involvement and sustainable lifestyles provide strong criteria to identify consumer clusters beyond demographics and consumption frequency.

We identified four clusters with very different characteristics. *Concerned* and *unconcerned non-experts* represent 39.2% of the sample and demonstrate an interest in wine far below average. Half of them are concerned about environmental issues, which the other half have significantly less interest in sustainability. Embodied by the *phlegmatics* nearly one third of the sample is indifferent concerning wine involvement and sustainable lifestyles. The *sustainable connoisseurs*, who represent 29.5% of German wine consumers, should be the focus of the growing number of sustainable wine producers. *Sustainable connoisseurs* consume wine with high frequency and buy more expensive wines than the other clusters we identified. The size of this consumer segment, which values sustainability, is comparable to the overall result of 29% of people in all regions analysed by Loveless et al. (2010). Compared to the national values for the US (west coast) and Sweden, where 36% of consumers care more about sustainability (Loveless et al., 2010), German wine consumers tend to be more reserved in valuing aspects of sustainability. This is also in line with the results of Mueller Loose and Remaud (2013), who indicate that Germany is an average wine market when it comes to the topic of sustainability. Nevertheless, given the combination of their greater consumption rate and willingness to pay, *sustainable connoisseurs* create value for wine producers, agents and retailers. To meet their demands concerning sustainability will lead to greater market success for sustainable wine producers.

Unconcerned non-experts, who are in the market for cheap wines, need not be targeted regarding sustainability. Therefore, producers focusing on the lowest price ranges cannot expect a great effect when building their brand in a more sustainable position. Another issue in the connection between low-priced wines and sustainability is a lack of consistency. Consumers in the medium-priced mass market – the *concerned non-experts* and *phlegmatics* – show opposed interests in sustainability. *Phlegmatics* are not very aware of sustainability. Products for this target group might not benefit from adding sustainability in their brand personality. *Concerned non-experts*, on the other hand, react to sustainability characteristics in their buying decision. Thus, there is an argument for producers' implementing sustainability for the medium-priced mass market. *Sustainable connoisseurs*, who focus on the premium market,

also have an evident interest in sustainability. Therefore, products in higher price ranges should deliver both a perception of high quality and value added in terms of sustainability.

Our study identifies target groups with greater or lesser interest in sustainability. It characterizes two major consumer segments that are aware of sustainability. In a further survey, we plan to identify the sustainability claims that are rewarded by those consumers, thus promising greater market success. This is closely linked to product and communication innovations in the field of sustainable wine to meet the needs of a growing number of interested consumers. With this deeper knowledge about specific consumer behaviour, ambitious sustainable wine producers can improve their chances of business success.

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APPENDIX

Table A1: Socio-demographics of the sample

| Socio-demographics | Own Data | Springer (2013) |
|---|-----------------|------------------------|
| Gender (%) | | |
| Female | 52.2 | 51.6 |
| Male | 47.8 | 48.4 |
| Age (%) | | |
| 14–19 ¹⁾ | 2.3 | 2.7 |
| 20–29 | 15.2 | 15.2 |
| 30–39 | 19.6 | 19.8 |
| 40–49 | 28.4 | 28.3 |
| 50–59 | 21.1 | 21.3 |
| 60 and older | 13.2 | 12.8 |
| Highest level of education (%) | | |
| No schooling | 0.1 | 1.2 |
| Lower secondary school | 8.5 | 25.0 |
| Secondary school | 35.5 | 35.3 |
| High school degree | 27.3 | 15.9 |
| University degree | 28.7 | 22.6 |
| Household net income per month (%) | | |
| €1,000 and below | 4.8 | 4.6 |
| €1,000 – €1,499 | 9.5 | 8.2 |
| €1,500 – €1,999 | 12.5 | 13.5 |
| €2,000 – €2,499 | 15.5 | 16.4 |
| €2,500 – €2,999 | 14.3 | 15.0 |
| €3,000 – €3,499 | 11.4 | 13.1 |
| €3,500 – €3,999 | 11.4 | 9.8 |
| €4,000 – €4,499 | 6.4 | |
| €4,500 – €4,999 | 5.9 | 19.4 ²⁾ |
| €5,000 and higher | 8.2 | |

Source: Based on authors’ dataset and Springer (2013). ¹⁾ Legal drinking age in Germany: 16;

²⁾ Springer (2013) aggregates all incomes higher than €4,000.