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# RECOGNISING WINE QUALITY – EXAMINING DEMOGRAPHIC INFLUENCES AND CONSUMER PREFERENCES

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## ABSTRACT

*The globalisation of the market, the entry of new wine countries on the wine world map and changes in consumer lifestyles have led to a change in the perception of wine consumers. These circumstances lead to the need to identify and analyse the factors influencing consumer preferences and wine recognition. This study aims to identify the factors influencing wine quality recognition. The empirical research is based on a survey conducted during the WineRi wine fair in Rijeka in June 2021. A total of 169 people gave valid answers, which form the sample for this study. Based on the collected data, the authors developed a binary logistic regression model in which the participants' perception of whether they recognised differences in the quality of wines was used as a dependent variable, while socio-demographic, wine consumption variables and variables connected to the wine selection and purchase process were used as independent variables. The results show that age, education, relationship status, household income and frequency of consumption influence the perception of the recognition of the quality of wine, as well as factors such as the perceived relationship between wine price and quality.*

*The conclusions resulting from the analysis carried out might be helpful not only for scholars but also for wine producers when developing a wine product list and marketing strategy.*

**Key words:** *wine quality recognition, consumer behaviour, preferences, socio-demographic characteristics, wine*

## 1. INTRODUCTION

Wine is a globally valued product that brings together not only wine consumers at family gatherings and other social occasions but also the academic community concerned with legality and consumer behaviour. On the one hand, the wine sector is studied by the academic community from the perspective of producers and other participants in the supply chain to examine their position in the national and global market in relation to the policies and strategies of the state and the European Union (Pomarici, Sardone, 2020), as well as their size and power asymmetry in relation to partners, customers and suppliers (Katunar et al., 2020a; Chan et al., 2018; Velázquez and Buffaria, 2017). On the other hand, wine producers need to understand why customers prefer certain types of wine and how well they differentiate wines by category and quality. Researchers are studying consumer preferences in the wine sector to understand consumers better so that marketing strategies can be developed according to the target consumers (Ellis et al., 2018; Migliore et al., 2020). This paper is focused on consumers and their preferences and decision-making.

Preferences are often defined as subjective comparative evaluations between two alternatives (Hallden, 1957, von Wright, 1963). Therefore, the decision maker is not expected to directly rank preferences for all possible choices but only for any pair of choice alternatives. A person can only be considered rational if they are able to express preferences for any two choice alternatives. If one can express preferences for any pair of alternatives, the utility function can be derived indirectly. Of course, this assumes that the decision maker's preferences fulfil transitivity requirements, which is a problem when faced with very similar but somewhat different alternatives (Luce, 1956). Therefore, seeking product/brand differentiation may be a more difficult task for the producer of a laundry detergent than for a producer of a lifestyle good such as quality wine. Both compete with numerous similar products, but consumers of quality wine are much more interested in the slight differences between the products, try to understand them and form preference relationships.

On the one hand, the globalisation of the market, the emergence of new competitors on the world wine map, and changing consumer preferences, on the other, show the need for constant research into consumer preferences and habits so that producers can adapt quickly to current market needs. The authors believe that the inability of decision makers to distinguish (and therefore compare) very similar alternatives, together with the desire for clear preferences in a lifestyle product area, provides producers and distributors with the opportunity to differentiate their product/brand from the competition.

Croatia is a country with a centuries-old tradition of viticulture and winemaking. The quality of wine has improved considerably, and the share of quality and premium wines in total

production has increased from 68% to 81% in the last 15 years (Katunar, 2019). Considering the problem of the Croatian wine industry and the EU wine industry that the New World countries have an advantage of scale and less labour force than the traditional wine producers from the EU countries (Katunar et al. 2020b), this paper focuses on the consumer behaviour of Croatian wine consumers. Insight into consumer behaviour enables Croatian wine producers to gain a competitive advantage through the quality of the wine and the adaptation of the offer to consumer needs. At the WineRi 2021 wine fair in Rijeka, held in June 2021, a survey was conducted, and the research is based on a sample of 169 responses. The purpose of the paper is to investigate what affects the quality of wine recognition based on the responses of the surveyed participants.

The main research question of the paper is what influences the recognition of differences in wine quality. Wine is an experience good (Katunar, Vretenar, 2023), and the evaluation of product quality and quality assessment are subject to subjective perception (quality is in the eyes of the consumer). The aim of this paper is to investigate the factors that influence the perceived ability to evaluate quality. Participants' perception of whether they recognised quality differences between wines of the same variety was used as the dependent variable, while socio-demographic and wine consumption variables were used as independent variables. In this research, the focus is on consumers' perceptions of their own ability to recognize the quality of wine, rather than their ability to recognize the actual differences between wines. A binary logistic regression model was created to test defined hypothesis. Thus, the main research hypothesis is that the perception of recognising differences in wine quality is influenced by socio-demographic and wine consumption variables and variables connected to the wine selection process.

According to research (Wright et al. 2023; Hennigs et al. 2015; Wiedmann, 2009), consumers are willing to pay more if they perceive a product as a luxury good. Therefore, price is linked to factors such as label design, perceived quality, etc. Castellini and Samoggia (2018) argue that branding and brand loyalty are of limited importance among younger generations, but they are open to new things, especially if accompanied by an appealing image and informative labels.

This research is an extension of previous research on consumer preferences in the wine industry by the author of this paper. The paper is organised as follows. After a brief literature review (second section), the data, sample and methodology are described (third section). Empirical results and analyses are presented in the fourth section. The discussion and conclusion are shown in the fifth section.

## **2. LITERATURE REVIEW**

Wine is not considered an alcoholic beverage like any other. It has a certain special status compared to other alcoholic beverages. Wine connects people and provides wine lovers with endless topics of conversation at family and other formal and informal gatherings. Given increasing competition in the wine market and changing consumer perceptions, where

consumers, through the consumption of wine, expect others from a pleasure (Alpeza et al., 2023), also an experience (Kaštelan Mrak and Kaštelan, 2023), consumers are currently the focus of producers when designing wine offers and marketing strategies.

Numerous scientific studies deal with the preferences of wine consumers. According to a study by Lockshin and Corsi (2012), around 400 articles dealt with the behaviour of wine consumers, which were narrowed down to about 100 journal articles between 2004 and 2012 by focusing only on peer-reviewed journal articles.

Knowing the indicators influencing wine consumers' preferences is vital for wine producers to adapt to increasing competition and to adapt their products to the market's needs. Various preference models are used in the literature on the EU wine sector to identify those factors. There are many scientific papers dealing with the influence of socio-demographic variables on the frequency of wine consumption. Stockley et al. (2017) analysed the influence of age on wine consumption in Australia. They found that older consumers drank more frequently, while those between 25 and 34 drank larger quantities. In the work by Gustavsen and Rickertsen (2018), among other variables, found the significance of consumers' age. They found that in their sample, the frequency of wine consumption increases by 0.4 percentage points when the age of the respondents increases by one year. Rebelo et al. (2021) conducted a study on the frequency of wine consumption in Spain and Portugal and found that older people in Portugal tended to drink wine more often, while they found no such effect in Spain. In the work of Dubois et al. (2021), age is a significant variable, but the results are different in the countries observed. Alpeza et al. (2023) examined the habits of Croatian wine consumers based on 428 respondents and concluded that the frequency of consumption generally increases with age.

In addition to age, the influence of income on consumer preferences has also been studied frequently. The authors have come to contradictory conclusions. While some authors concluded that an increase in income level leads to an increase in wine consumption (Gustavsen and Rickertsen, 2018; Garcia-Cortijo et al., 2019), others found that income level was not significant or that the lowest income was associated with an increase in wine consumption (Dubois et al., 2021). The results should be considered in the context of the market in which the study was conducted. In countries traditionally involved in wine production, the increase in income is expected to have an impact on the quality of wine consumed, while in other countries income is expected to have an impact on quantity.

In addition to the influence of age and income in the research made by Gustavsen and Rickertsen (2018), they also found marginal differences in education and marital status on preferences. They came to the conclusion that a higher level of education increases the likelihood of wine consumption, while people who are married drink wine more often.

Botonaki and Tsakiridou (2004) used factor analysis to investigate consumers' attitudes toward wine quality in Greece and consumers' willingness to pay according to PDO label and region. Guris et al. (2006) investigated the brand preferences of wine consumers in Turkey using a multinomial logit model. Their results showed that occupation, marital status, place of birth, income, and gender influence wine brand choice.

Apart from analysing the influence of socio-demographic variables on the perception of wine quality recognition, this paper also uses wine consumption variables and variables related to the wine selection and purchase process as independent variables.

In a recently published study conducted with a different data set of this questionnaire (Vretenar et al. 2023), significant behavioural differences in consumption frequency were found in relation to consumers' gender, age, marital status and education. The frequency of wine consumption was also analysed by Gustavsen and Rickertsen (2018), Rebelo et al. (2021) and Dubois et al. (2021).

In their study of a large sample of wine consumers in Australia, Stockley et al. (2017) concluded that drinking with family and friends is an important reason to drink more frequently. In their American study, Dinescu et al. (2016) found that married people consumed alcohol less frequently than others (their study did not focus on wine), while Birditt et al. (2018) concluded that couples drinking together had a positive effect on their marriage.

Todd et al. (2021), in their research guided by consumer preferences for front label attributes, concluded that wine varietal selection depends on label information to drive flavor selection and facilitate site selection. In terms of label design, Sherman and Tuten (2011) found that traditional labels are more appealing to wine consumers than other types of wine labels in terms of brand name and label design.

Liu and Murphy (2007) concluded in their research that Chinese people tend to buy inexpensive wines for private consumption and public occasions to get more mianzi in front of others. On some important occasions, consumers buy a foreign (French) red wine to impress their guests and gain more social status and prestige.

### **3. DATA, SAMPLE AND METHODOLOGY**

The analysis is based on a sample of 169 respondents, and because the sample is relatively small, the authors decided to convert participants' responses from a Likert into two distinct dichotomous scales. The conversion of Likert scale measurements into a binary or dichotomous scale was suggested and done in the research of Jumbe Marsden et al. (2016), Akugizibwe and Ahn (2020), van Eck van der Sluijs et al. (2021), Jeong and Lee (2016) and Khalafallah et al. (2020), with the first three doing so with converting 5-point Likert scale measurements into dichotomous denoting the Likert scale values 1, 2 and 3 into no or false and the Likert scale values 4 and 5 into yes or true.

Binary logistic regression models are often used in consumer preference research (Lanfranchi et al., 2020; Sreejesh et al., 2013; Harrell, 2015; Wilson and Lorenz, 2015; Tabachnick and Fidell, 2019). Specifically, Lanfranchi et al. (2020) used the method to analyse wine consumer behaviour. Therefore, the authors deemed it appropriate for this research.

During the *WineRi 2021* wine fair in Rijeka, held in June 2021, a survey was conducted to gain better insight into the tastes, trends and wine consumption of the fair visitors. Survey was a

combination of explored demographic and preference factors used in previous research by Stanco, Lerro and Marrota (2020), De Vita et al. (2019), Gurys, Metin and Caglayan (2007), Botonaki and Tsakiridou (2004). A total of 169 individuals gave valid answers, making up the sample for this study (Table 1). The ratio of men and women who partook in the survey was almost even, and most participants stated they were single, divorced, or widowed. Over 75% of the participants have a bachelor’s or higher education degree, and more than 75% live with a household income ranging from 666 EUR to 2660 EUR. Somewhat expectedly, since the individuals decided to visit the wine fair, 78.11% of the survey participants consume wine daily or weekly, and most of them are doing so while socialising with friends, rarely alone.

Table 1. Sample characteristics overview

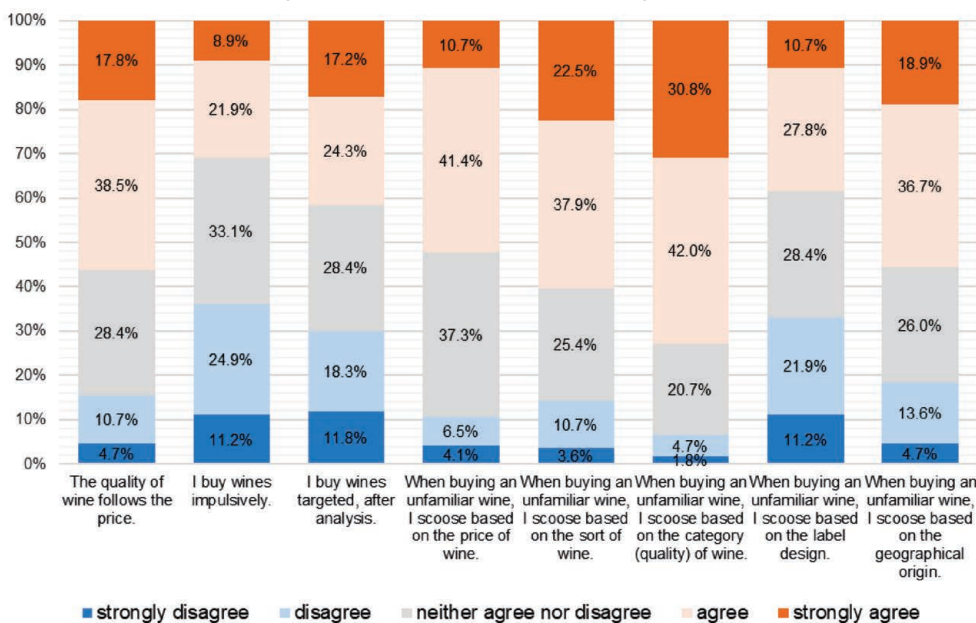
| <b>Sample characteristics</b> | <b>N</b> | <b>% of total</b> |
|-------------------------------|----------|-------------------|
| <i>Gender</i>                 |          |                   |
| Male                          | 82       | 48.52             |
| Female                        | 87       | 51.48             |
| <i>Education</i>              |          |                   |
| High school education         | 38       | 22.49             |
| Bachelor’s degree or higher   | 131      | 77.51             |
| <i>Relationship status</i>    |          |                   |
| Single/divorced/widowed       | 114      | 67.46             |
| Married/stable relationship   | 55       | 32.54             |
| <i>Household income</i>       |          |                   |
| <666 EUR                      | 9        | 5.33              |
| 666-1330 EUR                  | 42       | 24.85             |
| 1331-1995 EUR                 | 50       | 29.59             |
| 1996-2660 EUR                 | 39       | 23.08             |
| 2661-3325 EUR                 | 10       | 5.92              |
| 3326-3990 EUR                 | 2        | 1.18              |
| >3990 EUR                     | 17       | 10.06             |
| <i>Consumption frequency</i>  |          |                   |
| Daily/weekly                  | 132      | 78.11             |
| Monthly/annually              | 37       | 21.89             |
| <i>Consumption company</i>    |          |                   |
| Alone                         | 4        | 2.37              |
| With friends                  | 124      | 73.37             |
| With family                   | 41       | 24.26             |
| N = 169                       |          |                   |

Source: Authors

Aside from sociodemographic and wine consumption characteristics, participants in conducted survey also evaluated their wine selection and purchase decision-making process using a 5-point Likert scale. The given statements and participants’ responses are shown in Figure 1.



**Figure 1. Wine selection decision process**



Source: Authors

However, because the sample is relatively small, for this analysis the authors decided to convert participants' responses from a Likert scale into two distinct dichotomous (Jeong and Lee, 2016; Jumbe Marsden et al., 2016; Akugizibwe and Ahn, 2020; van Eck van der Sluijs et al., 2021). Since a 5-point Likert scale was used, the exact cutoff point between lower and higher ratings on the scale is unclear. Because of that, two separate scales are made, *dichotomous negative* and *dichotomous positive*, and both will be used to construct binary regression models subsequently compared. In the dichotomous negative scale (*Model 1*), the authors denote a 0 if participants answered 1, 2 or 3 and a 1 if participants answered 4 or 5. This approach allows us to distinguish between lower (1 to 3) and higher (4 and 5) ratings on the scale. Precisely, denotation 0 means that a participant is unlikely or has a neutral viewpoint on his/her ability to recognize the quality of wine (dependent variable) or disagrees or is neutral about a particular statement (independent variables). Denotation 1 means that a participant is assured in his/her ability to recognise the quality of the wine (dependent variable) or agree with a particular statement regarding wine selection and purchase decision-making (independent variables). In the dichotomous positive scale (*Model 2*), the authors denote a 0 if participants answered 1 or 2 and a 1 if participants answered 3, 4 or 5. In this case, denotation 0 means that a participant has a negative viewpoint on wine quality recognition ability (dependent variable) or disagrees with a particular statement (independent variables). Denotation 1 implies that a participant is likely or has a neutral viewpoint on wine quality recognition ability (dependent variable), agrees, or is neutral about a particular statement regarding wine selection and purchase decision-making (independent variables). The participant's perception of whether they recognise differences in the quality of wines of the same sort (QWR) was used as a



dependent variable, while previously described socio-demographic and wine consumption variables, as well as variables connected to the wine selection decision process, were used as independent variables in proposed model. Detailed information about each variable can be found in Table 2.

**Table 2.** Model variables operationalisation

| Variable                              | Operationalisation  |                                     |
|---------------------------------------|---|-------------------------------------|
|                                       | Model 1 - dichotomous negative  | Model 2 - dichotomous positive      |
| Quality of wine recognition (QWR)     | 0 = unlikely or neutral, 1 = likely   | 0 = unlikely, 1 = neutral or likely |
| Age (AG)                              | age in years  |                                     |
| Gender (GEN)                          | 0 = male, 1 = female  |                                     |
| Education (EDU)                       | 0 = high school education, 1 = bachelor's degree or higher  |                                     |
| Relationship status (REL)             | 0 = single/divorced/widowed, 1 = married/stable relationship  |                                     |
| Household income (HIN)                | 0 = <665 EUR, 1 = 666-1330 EUR, 2 = 1331-1995 EUR, 3 = 1996-2660 EUR, 4 = 2661-3325 EUR, 5 = 3326-3990 EUR, 6 = >3990 EUR |                                     |
| Consumption frequency (CON_F)         | 0 = daily/weekly, 1 = monthly/annually  |                                     |
| Consumption company (CON_C)           | 0 = alone, 1 = with friends, 2 = with family  |                                     |
| Monthly spending (SPENT)              | monthly expenditure on wine in EUR  |                                     |
| Quality follows price (QP)            | 0 = disagree or neutral, 1 = agree  | 0 = disagree, 1 = neutral or agree  |
| Impulsive purchase (IMP)              | 0 = disagree or neutral, 1 = agree  | 0 = disagree, 1 = neutral or agree  |
| Targeted purchase (TAR)               | 0 = disagree or neutral, 1 = agree  | 0 = disagree, 1 = neutral or agree  |
| Unknown - price driven (U_PRC)        | 0 = disagree or neutral, 1 = agree  | 0 = disagree, 1 = neutral or agree  |
| Unknown - sort driven (U_SRT)         | 0 = disagree or neutral, 1 = agree  | 0 = disagree, 1 = neutral or agree  |
| Unknown - category driven (U_CAT)     | 0 = disagree or neutral, 1 = agree  | 0 = disagree, 1 = neutral or agree  |
| Unknown - label design (U_LAB)        | 0 = disagree or neutral, 1 = agree  | 0 = disagree, 1 = neutral or agree  |
| Unknown - geographical origin (U_GEO) | 0 = disagree or neutral, 1 = agree  | 0 = disagree, 1 = neutral or agree  |

Source: Authors

A binary logistic regression model (Sreejesh et al., 2013; Harrell, 2015; Wilson and Lorenz, 2015; Tabachnick and Fidell, 2019; Lanfranchi et al., 2020) with the dependent variable QWR was constructed:

$$QWR = \log\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1 AG + \beta_2 GEN + \beta_3 EDU + \beta_4 REL + \beta_5 HIN + \beta_6 CON\_F + \beta_7 CON\_C + \beta_8 SPENT + \beta_9 QP + \beta_{10} IMP + \beta_{11} TAR + \beta_{12} U\_PRC + \beta_{13} U\_SRT + \beta_{14} U\_CAT + \beta_{15} U\_LAB + \beta_{16} U\_GEO + e,$$

where  $p$  is the probability that

$$y = \beta_0 + \beta_1 AG + \beta_2 GEN + \beta_3 EDU + \beta_4 REL + \beta_5 HIN + \beta_6 CON\_F + \beta_7 CON\_C + \beta_8 SPENT + \beta_9 QP + \beta_{10} IMP + \beta_{11} TAR + \beta_{12} U\_PRC + \beta_{13} U\_SRT + \beta_{14} U\_CAT + \beta_{15} U\_LAB + \beta_{16} U\_GEO + e$$

will take the value 1.

The logistic regression beta coefficients represent the change in the log odds of the outcome variable for a one-unit increase in the predictor variable. Exponentiated coefficients will show the odds ratios of change of the dependent variable QWR:

$$OddsQWR = \frac{p}{1-p} = e^{\beta_0 + \beta_1 AG + \beta_2 GEN + \beta_3 EDU + \beta_4 REL + \beta_5 HIN + \beta_6 CON\_F + \beta_7 CON\_C + \beta_8 SPENT + \beta_9 QP + \beta_{10} IMP + \beta_{11} TAR + \beta_{12} U\_PRC + \beta_{13} U\_SRT + \beta_{14} U\_CAT + \beta_{15} U\_LAB + \beta_{16} U\_GEO + e},$$

using the previously defined labels. Furthermore, to contribute to the understanding of factors influencing the individuals' stated ability to recognise the quality of a wine, the authors conducted nonparametric Mann-Whitney U and Kruskal Wallis H tests accordingly, followed by Dunn's post hoc pairwise comparison tests, adjusted using Bonferroni's error correction (Conroy, 2012; Harris and Hardin, 2013; Dinno, 2015). By proving significant differences between sociodemographic and wine consumption habit groups, the authors aim to corroborate the findings of the logistic regression result. The empirical analysis and data manipulation were done using STATA 17.0 MP-Parallel Edition.

#### 4. EMPIRICAL RESULTS AND ANALYSIS

To evaluate the two proposed dichotomous scales, the authors used the fit indices for binary logistic regression models using the two dichotomous scales (Adelson and McCoach, 2010; Akugizibwe and Ahn, 2020). The results are presented in Table 3. Model 1 with a dichotomous negative scale, i.e., where denotation 0 includes the Likert scale response values 1, 2 and 3, and denotation 1 includes response Likert scale values 4 and 5, portrayed better-fit indices and therefore will be used for the binary logistic regression analysis (Hosmer et al., 2013; Long, Freese, 2014; Greene, 2018).

Table 3. Fit indices for logistic regression models using dichotomous scales

|                                   | Model 1 - dichotomous negative | Model 2 - dichotomous positive |
|-----------------------------------|--------------------------------|--------------------------------|
| LR $\chi^2(22)$ / LR $\chi^2(20)$ | 85.48                          | 49.44                          |
| Prob > $\chi^2$                   | 0.0000                         | 0.0000                         |
| Deviance                          | 129.199                        | 145.479                        |
| McFadden R2                       | 0.398                          | 0.254                          |
| Cragg-Uhler (Nagelkerke) R2       | 0.552                          | 0.380                          |
| AIC                               | 175.199                        | 187.479                        |
| BIC                               | 247.186                        | 251.660                        |
| Correctly classified              | 79.29%                         | 73.25%                         |

Source: Authors

The likelihood ratio chi-square of 85.48 with a p-value of 0.0000 tells that proposed sixteen-predictor model fits significantly better than a model with only a constant included, with no predictors (Tabachnick and Fidell, 2019). A non-significant post-estimation Pearson test value ( $\chi^2(146) = 132.39$ ,  $p > \chi^2 = 0.7834$ ), as well as Hosmer-Lemeshow test value, indicates that the logistic regression model fits well to data ( $\chi^2(8) = 1.49$ ,  $p > \chi^2 = 0.9928$ ) (Hosmer and Lemeshow, 2000; Hosmer et al., 2013). Furthermore, the value of McFadden’s pseudo R2 ( $R^2 = 0.3982$ ) indicates an excellent model fit (Hensher and Stopher, 1979), as well as Cragg and Uhler’s ( $R^2 = 0.552$ ) (Cragg and Uhler, 1970). The logistic regression model results are shown in Table 4, providing insight into the coefficients, standard errors, associated p-values and the 95% confidence intervals of the coefficients.

Table 4. Logistic regression results

|                         | $\beta$ | exp( $\beta$ ) | se (exp( $\beta$ )) | sig.     | 95% C.I. for exp( $\beta$ ) |            |
|-------------------------|---------|----------------|---------------------|----------|-----------------------------|------------|
|                         |         |                |                     |          | lower                       | upper      |
| Age                     | 0.0429  | 1.0439         | 0.0242              | 0.064*   | 0.9975                      | 1.0925     |
| Gender                  | -0.7261 | 0.4838         | 0.2268              | 0.121    | 0.1930                      | 1.2127     |
| Education               | -1.1539 | 0.3154         | 0.1932              | 0.060*   | 0.0949                      | 1.0479     |
| Relationship status     | -1.2585 | 0.2841         | 0.1688              | 0.034**  | 0.0887                      | 0.9103     |
| <b>Household income</b> |         |                |                     |          |                             |            |
| 666-1330 EUR            | 3.6997  | 40.4334        | 66.7339             | 0.025**  | 1.5917                      | 1027.1130  |
| 1331-1995 EUR           | 2.6443  | 14.4073        | 22.3117             | 0.095*   | 0.6293                      | 314.6967   |
| 1996-2660 EUR           | 2.3302  | 10.2799        | 16.8935             | 0.156    | 0.4104                      | 257.5210   |
| 2661-3325 EUR           | 2.5789  | 13.1823        | 26.8511             | 0.205    | 0.2433                      | 714.1831   |
| 3326-3990 EUR           | 5.0508  | 156.1424       | 360.4836            | 0.029**  | 1.6919                      | 14410.4300 |
| >3990 EUR               | -0.2559 | 0.7742         | 1.3752              | 0.885    | 0.0238                      | 25.1692    |
| Consumption frequency   | -2.3239 | 0.0979         | 0.0803              | 0.005*** | 0.0196                      | 0.4891     |

| Consumption company           |         |        |        |          |        |         |
|-------------------------------|---------|--------|--------|----------|--------|---------|
| With friends                  | -0.6556 | 0.5191 | 0.8539 | 0.690    | 0.0207 | 13.0437 |
| With family                   | 0.3775  | 1.4586 | 0.8112 | 0.497    | 0.4904 | 4.3387  |
| Monthly spendings             | 0.0017  | 1.0017 | 0.0010 | 0.078*   | 0.9998 | 1.0036  |
| Quality follows price         | -1.0610 | 0.3461 | 0.1769 | 0.038**  | 0.1271 | 0.9426  |
| Impulsive purchase            | -0.4274 | 0.6522 | 0.3390 | 0.411    | 0.2355 | 1.8062  |
| Targeted purchase             | 0.9846  | 2.6767 | 1.3286 | 0.047**  | 1.0118 | 7.0813  |
| Unknown – price-driven        | -1.2977 | 0.2731 | 0.1306 | 0.007*** | 0.1070 | 0.6971  |
| Unknown – sort driven         | 1.3817  | 3.9818 | 2.2896 | 0.016**  | 1.2901 | 12.2897 |
| Unknown – category driven     | 1.4928  | 4.4496 | 3.0277 | 0.028**  | 1.1726 | 16.8854 |
| Unknown – label design        | -0.6957 | 0.4987 | 0.2643 | 0.189    | 0.1765 | 1.4093  |
| Unknown – geographical origin | 0.1374  | 1.1473 | 0.5960 | 0.791    | 0.4145 | 3.1759  |
| Constant                      | -4.6377 | 0.0097 | 0.0206 | 0.029    | 0.0001 | 0.6255  |
| LR $\chi^2(22)$               | 85.48   |        |        |          |        |         |
| Prob > $\chi^2$               | 0.0000  |        |        |          |        |         |
| Pseudo R2                     | 0.3982  |        |        |          |        |         |

\* p<0.1. \*\* p<0.05. \*\*\* p<0.01

Source: Authors

If the age of an individual increases by 1, that will lead to an increase in the chances of 4.39% that the individual will answer 4 or 5 when asked about the quality of wine recognition. If an individual has a bachelor's or higher degree education, that will lead to a decrease in the chances of 68.46% that the individual will answer 4 or 5 when asked about the quality of wine recognition. Based on the 95% C.I. values, age and education of individuals does not provide enough evidence for the expected effects of a singular variable. If an individual is married or is in a stable relationship, that will lead to a decrease in the chances of 71.59% that the individual will answer 4 or 5 when asked about the quality of wine recognition. The C.I. values support such findings. If an individual lives in a household with an income ranging from 666 EUR to 1330 EUR, that will lead to an increase in the chances of 3943.34% that the individual will answer 4 or 5 when asked about the quality of wine recognition. If an individual live in a household with an income ranging from 1331 EUR to 1995 EUR, that will lead to an increase in the chances of 1307.32% that the individual will answer 4 or 5 when asked about the quality of wine recognition. If an individual live in a household with income ranging from 3326 EUR to 3990 EUR, that will lead to an increase in the chances of 15514.24% that the individual will answer 4 or 5 when asked about the quality of wine recognition. Impact of monthly income levels affecting wine quality recognition are supported by the C.I. values. Suppose an individual consumes wine on a monthly or annual basis. In that case, that will lead to a decrease in the chances of 90.21% that the individual will answer 4 or 5 when asked about

the quality of wine recognition, which is supported by the C.I values as well. If the monthly spending of an individual increases by 1 EUR, that will lead to an increase in the chances of 0.17% that the individual will answer 4 or 5 when asked about the quality of wine recognition. The effect of monthly spending to the wine quality recognition ability is not fully supported by the C.I values. If an individual agrees with the statement that the quality of the wine follows the price, that decreases the chances by 65.39% that the individual will answer 4 or 5 when asked about the quality of wine recognition. Moreover, if an individual buys wines targeted and after analysis, that increases the chances by 167.67% that the individual will answer 4 or 5 when asked about the quality of wine recognition. If an individual agrees that when buying an unfamiliar wine, they choose based on the price, that decreases the chances by 72.69% that the individual will answer 4 or 5 when asked about the quality of wine recognition. If an individual agrees that when buying an unfamiliar wine, they choose based on the sort, that increases the chances by 298.18% that the individual will answer 4 or 5 when asked about the quality of wine recognition. Finally, if an individual agrees that when buying an unfamiliar wine, they choose based on the category, that increases the chances by 344.96% that the individual will answer 4 or 5 when asked about the quality of wine recognition. The C.I. values for all of the purchase preferences stated above prove to be significant.

The constructed logistic regression model gave an overall correct classification rate of 79.29%, with a sensitivity of 64.29% and a specificity of 86.73%. A detailed classification matrix is presented in Table 5. Out of the 51 individuals who were neutral or stated that they were unlikely to recognise the quality of wine, the model correctly classified 36 of them. Regarding 118 individuals who stated that they are likely to recognise the quality of wine, 98 were correctly classified by the model.

**Table 5.** Classification matrix

| Classified          | Unlikely or neutral | Likely   | Total     |
|---------------------|---------------------|----------|-----------|
| Unlikely or neutral | 36 (64%)            | 15 (13%) | 51 (30%)  |
| Likely              | 20 (36%)            | 98 (87%) | 118 (70%) |
| Total               | 56                  | 113      | 169       |

Source: Authors

To further contribute to the understanding of an individual's stated wine quality recognition ability, with the use of appropriate nonparametric tests, the authors sought the differences between sociodemographic and wine consumption habit groups of individuals and the wine selection and purchase decision-making subgroups. Significant differences were determined using Mann-Whitney U tests between gender ( $z = 8.284, p = 0.004$ ), relationship status ( $z = 6.313, p = 0.012$ ), and consumption frequency ( $z = 13.314, p = 0.000$ ) subgroups. Interestingly, men ( $M = 0.439$ ) state higher levels of ability to recognise the quality of wine than women ( $M = 0.230$ ). Looking at relationship status differences, the single, divorced or widowed individuals ( $M = 0.439$ ) were believed to have a better understanding of wine quality determination than the ones who are married or in a stable relationship ( $M = 0.200$ ). Expectedly, individuals who

consume wine on a daily or weekly basis ( $M = 0.402$ ) were more convinced to accurately recognise the quality of wine than individuals consuming wine on a monthly or annual basis ( $M = 0.081$ ).

Regarding the wine selection and purchase decision-making process, significant differences were found between different individuals with different target purchase intentions ( $z = 10.519$ ,  $p = 0.012$ ) and individuals who, while buying unknown wine, are price-driven ( $z = 5.453$ ,  $p = 0.020$ ), sort driven ( $z = 5.754$ ,  $p = 0.017$ ) or wine quality category driven ( $z = 9.105$ ,  $p = 0.003$ ). Individuals who first analyse the wine offer and make a targeted purchase ( $M = 0.471$ ) believe to be more able to determine a quality wine than individuals who do not have the same purchase tactics ( $M = 0.232$ ). When buying unknown wine, individuals who are price-oriented ( $M = 0.420$ ) in the intended purchase state have a lower ability to recognise the quality of wine than the ones who do not make price-driven purchase decisions ( $M = 0.250$ ). If the individual's wine choice decision is sort-driven, they state to have a higher ability of wine quality recognition ( $M = 0.402$ ) than the ones who do not consider wine sort when buying unknown wine ( $M = 0.224$ ). The last observed significant differences were between individuals who, when purchasing unknown wine, are quality category driven, with the ones looking at the stated quality believed to have a better ability to distinguish between different quality wine ( $M = 0.398$ ), different to the individuals not considering the stated wine quality category ( $M = 0.152$ ).

## **5. DISCUSSION**

The analysis revealed interesting insights into how wine consumers assessed their ability to recognise wine quality. As it habitually goes with experiential goods, expectedly, first finding was that older respondents were more confident that they could recognise wine quality than younger respondents (it must be noted that considering C.I values, the significance of this finding is modest). The idea that confidence comes with experience is supported by previous research showing that the frequency of wine consumption increases with age (Stockley et al. (2017), Gustavsen and Rickertsen (2018), Alpeza et al. (2023)). The discovery that respondents who spend more money on wine are more confident in their ability to recognise wine quality was also expected. Although one could argue that it is not necessarily true that those who buy more expensive cars are better drivers, this finding supports authors assumption that such individuals are also more experienced tasters.

Moreover, there are few intuitive explanations for the finding that respondents with higher levels of education were less confident in their ability to recognise the quality of the wine they consumed than respondents with lower levels of education (this finding is also of modest statistical significance). The first explanation would be based on the famous Goethe quote, "Doubt grows with knowledge". In this sense, consumers with higher education might be more aware that there is a lot of marketing involved in creating user experiences and that in the process of experiencing them, one might be unintentionally drawn to better presented products, i.e. that one's senses are not only influenced by the organoleptic properties of the tasted wine. The other possible explanation (which does not necessarily contradict the first

one) would be that respondents with higher education consume wine less often (which is supported by the results of the analysis of the frequency of wine consumption conducted with other data from this survey (Vretenar et al., 2023)).

A somewhat curious result of this analysis was the statistically significant differences in the perceived ability to recognise wine quality between groups with different family incomes. In this regard, the questionnaire included six income groups, of which respondents in the two lowest income groups and respondents in the second highest income group were significantly more confident than other participants that they could recognise wine quality. Other income groups showed less confidence but their results are statistically insignificant. Given the considerable price differences between wines, it cannot be assumed that all wine lovers have similar opportunities to taste products of all price ranges (especially more expensive wines). It should also be noted that income as a variable also showed confusing results in other research (Dubois et al. (2021) vs. Garcia-Cortijo et al. (2019)).

Perhaps the most exciting finding of this analysis relates to the perceived relationship between wine price and quality. Participants who agreed with the assertion that the quality of the wine follows the price and participants who indicated that when they had to choose between unfamiliar wines, they did so base on price were less confident that they could recognise the quality of the wine. Again, this result might be due to participants being aware of the difficulties in judging quality. However, it might also mean consumers who cannot recognise quality rely more on price as a measure of quality. In addition, none of the groups studied in this research possessed exceptional confidence in their ability to recognise the quality of the wine (the statement that the quality of the wine was recognisable had less positive than neutral and negative answers). This is even more intriguing in light of the fact that all survey participants were consumers of the wine fair, and it might lead to the conclusion that wine lovers are aware of the difficulty of accessing wine quality. As previous research clearly shows that consumers are willing to pay more if they perceive a certain product as a luxury (Wright et al. 2023, Hennigs et al. 2015), the main implication of this work for business management could be to shift the focus to product attributes that help create a luxury image (branding and loyalty for older generations and appearance and informative labels for younger generations (Castelini and Samoggia, 2018)) rather than focusing mainly on wine quality, which is difficult to evaluate even for wine lovers. Thus, this finding points out the importance of price positioning to overall product development and marketing efforts. In this sense, the authors could draw the conclusion that wine as an experiential good is perhaps more similar to fine art than one might intuitively think.

Although the authors found evidence that individual who consume wine more frequently, as well as individuals who research products before purchase are more confident in their ability to recognise the quality of a wine, some social characteristics proved to be of significant and intriguing influence. Male participants from conducted research were more confident in their wine quality assessment ability than their female counterparts were. Additionally, the single, divorced and widowed individuals among participants were more confident in their wine



quality recognising ability, although they consume wine less frequently than those married do or in a committed relationship, arguing against the stated experience-based explanations.

## **6. CONCLUSIONS**

This paper provides some evidence on the factors that influence wine consumers' perceptions of their ability to assess the quality of wine. Following factors that have been shown to be influential in other research on wine consumers, a bundle of demographic factors and consumer preferences were included in the study. Strong statistical significance with the perceived ability to recognise wine quality are associated with the variables of frequency of consumption and relationship status. In addition, strong significance is found among consumers who are conscientious in their wine selection, those who believe that quality follows price, and those who place more importance on wine sort and labelled category. Some of the expected factors such as age and social context of wine consumption were found to be statistically insignificant in this research as they were related to frequency of consumption rather than recognition of wine quality. Others such as age, education and monthly expenditure showed statistical significance, but not strong.

The main theoretical finding of this research, therefore, is the relative unimportance of demographic factors (besides marital status) in trying to understand wine consumers' perceptions of their own ability to recognise quality. The other side of the "coin" shows the relative importance of behavioural factors in the same matter. From a business or managerial perspective, this research could be useful in pointing wine producers towards experiential bases for better market segmentation when trying to achieve a quality or luxury image for their products. In other words, if consumers are not very confident in recognising wine quality, it is up to wine producers to find the right approach to meet wine lovers' expectations, i.e., it could be beneficial to understand consumers' behavioural patterns.

The biggest shortcoming of this research is the small sample size, which only allows limited conclusions on wine consumers' behaviour and preferences to be made. Another limitation of the sample is the deliberate decision to conduct survey at the wine fair. The latter limitation is due to authors' view that they believe it is better to analyse the perceptions and preferences of those who know and love wine, as wine is an experiential good. Since the authors consider this research a preliminary communication, they intend to address the former shortcomings in the future by repeating this survey on a larger scale.

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# PREPOZNAVANJE KVALITETE VINA – ISPITIVANJE DEMOGRAFSKIH UTJECAJA I PREFERENCIJA POTROŠAČA

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## SAŽETAK

Globalizacija tržišta, ulazak novih vinskih zemalja na kartu vinskog svijeta i promjene u načinu života potrošača doveli su do promjena u percepcijama potrošača vina. Uslijed tih okolnosti javlja se potreba za prepoznavanjem i analizom čimbenika koji utječu na preferencije potrošača. Cilj ovog rada je identificirati čimbenike koji utječu na prepoznavanje kvalitete vina. Empirijsko istraživanje temelji se na istraživanju provedenom na sajmu vina WineRi u Rijeci u lipnju 2021. godine. Uzorak čine valjani odgovori od ukupno 169 sudionika sajma. Na temelju prikupljenih podataka razvili smo model binarne logističke regresije u kojem je percepcija sudionika u prepoznavanju razlike u kvaliteti vina korištena kao zavisna varijabla, dok su socio-demografski čimbenici, bihevioralni čimbenici konzumacije vina i prikupljeni podaci vezani uz postupak odabira i kupnje vina korišteni su kao nezavisne varijable. Rezultati pokazuju da dob, obrazovanje, bračni status, prihod kućanstva i učestalost potrošnje utječu na percepciju prepoznavanja kvalitete vina, kao i percipirani odnos između cijene vina i kvalitete.

*Zaključci koji su posljedica provedene analize mogu biti korisni ne samo za znanstvenike, već i za proizvođače vina prilikom razvoja liste vinskih proizvoda i marketinške strategije.*

**Ključne riječi:** *prepoznavanje kvalitete vina, ponašanje potrošača, preferencije, socio-demografske karakteristike, vino*