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Analyzing consumer willingness to pay for organic extra virgin olive oil: A logit model approach

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Abstract

The present study examines the elements that influence Italians' willingness to pay a higher price for organic olive oil. As a result, a survey was conducted involving a heterogeneous sample of 332 consumers and their propensity to spend a surplus price was examined using a logit model. According to the study findings, consumers are willing to pay more for organic olive oil and this willingness to pay increases with age, education level, living in a smaller household, consumption of organic food and traditional sources such as producers, retailers and supermarkets. The empirical investigation demonstrates the convenience for farms of converting olive oil production from conventional to organic in order to fulfill customer needs. Companies are able to plan their medium-and long-term commercial activities when they can predict customer preferences. Indeed, consumer information may have a beneficial effect on the community as a whole due to the considerable quantity of positive environmental externalities associated with organic olive production.

Keywords: Consumer behaviour, Extra virgin olive oil, Habits, Organic production, Preferences, Willingness to pay.

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1. Introduction

The COVID-19 epidemic marked the start of a new age in society during the past few years. In terms of the economy, the current period is starting to follow a different path that has to be thoroughly investigated in the future especially in the fields of agriculture and food [1-4][1]. Due to the COVID-19 outbreak, consumer behaviour has changed significantly in several areas including food purchases, eating habits and other areas related to food consumption [6]. The pandemic problem has affected the food system from supply and demand perspectives, affecting food manufacturing and distribution in the context of a notable increase in online business transactions [7].

Moreover, unusual and irrational behaviors have occurred such as "panic buying" especially for Giffen's goods, food shortages, food accumulation and food waste [8]. Therefore, the epidemic has had a remarkable impact on the four pillars of food security: availability, access, stability and utilization [9].

Governments implemented a number of measures to control the number of infections during the health crisis [10]. The lockdown affects both households' food security with those relying heavily on work income most negatively affected and the eating habits of consumers who were obliged to remain at home [11, 12]. Customers have been buying more locally produced food in this context due to concerns about the security of the food supply [13, 14]. As a result, the pandemic has provided the opportunity for increased local food production [15, 16].[2] Consumers' product bundles have also altered in addition to changes in consumer behaviour [17, 18]. For instance, variations have occurred in the selection of daily-consumed products at the base of the Mediterranean diet's food pyramid including olive oil in addition to modifications in the standard bundle of agri-food items [19].

Extra virgin olive oil (EVOO) has become more popular than virgin and refined oils because consumers are paying more attention to what they buy and are allocating a larger portion of their income to higher-quality products than they did before the outbreak due to national restrictions, social distancing and transportation blocks [20, 21, 22].[3]

The reduction in the consumption of olive oils which are substitutes for EVOO is partly due to the fact that some in the hospitality industry prefer to prepare meals with substitute oils such as sunflower or groundnut oil. Virgin olive oil is also used in the management of catering and product supply processes which is not necessarily linked to its territorial origin and is easily available on the market at more accessible consumer prices than EVO oils or those with a protected designation of origin [23]. As a result, the market for EVOO that has been certified by brands of origin and organic production is dominated by household use [24, 25] which has grown during the epidemic because of the restrictions that were put in place to stop the spread of the disease.

Despite the initial increase in consumption brought about by the pandemic, consumption of EVOO decreased again at the end of the lockdown, following the reopening of pubs and restaurants and the consequent return to the consumption of meals outside the home. We can highlight a significant underlying trend in the behavior of consumers who appear to be more inclined to choose products that can improve health apart from these reasons that are exclusively related to the consumption share of the hospitality sector [26, 27]. The increased focus on health products is a growing asset that will undoubtedly benefit the organic EVOO market in the long run.

The future of organic olive farms is linked to higher prices and hence is contingent on consumer willingness to pay (WTP) a price premium. Thus, the purpose of this study is to determine and examine customers' WTP as a premium and to identify the typical consumer based on socioeconomic indicators and their purchasing propensity which is connected with their use of other organic food products.

EVOO production is a major economic activity in Mediterranean countries and areas such as the south of Italy, Spain and Greece [28, 29]. Consumer interest and WTP as a premium for an organic product [30, 31] may be of support to producers and the market since higher-quality organic EVOO is more expensive and risky than conventional olive oil. This consideration is central when establishing whether or not to convert production to organic [5]. Indeed, understanding the prospective trend in demand for organic EVOO is critical for both the strategies of businesses and the significant number of positive environmental externalities produced by organic production; this aligns with the environmental challenges associated with the European "farm to fork" strategy which will be pursued through the CAP and the "European Green Deal". A market study was conducted to establish whether customers are truly and effectively willing to pay a price premium for organic EVOO and to identify the factors that can influence the propensity to pay for organic olive oil to evaluate consumer preferences.

The results of the research conducted show that customers are generally willing to pay a premium for organic EVOO because they believe it is of higher quality, healthier and has a lower environmental impact than conventionally produced oil.

The remaining paper is arranged as follows: Section 2 contains a literature review on consumers' WTP for organic olive oil and agricultural food items in general. Section 3 defines the goals of our analysis. Section 4 presents the data as well as the econometrics methods used to obtain the outcomes. Section 5 illustrates and debates the model's empirical estimates. Section 6 concludes the paper with some final considerations.

2. Willingness to Pay: A Systematic Literature Review

Plasek and Temesi [32] and Wijekoon and Sabri [33] are two notable examples of research that examines customer experiences and purchasing behaviour with regard to organic agri-food goods. Numerous researchers have focused on the

[1] For a review of the socio–economic repercussions of the coronavirus pandemic, see Notarnicola, et al. [5].
[2] Notarnicola, et al. [5] emphasized the importance of short food supply chains and local production in ensuring access to healthy food during the health crisis.
[3] Notarnicola, et al. [5] demonstrate that olive oil customers fall into three distinct quality categories: basic, popular, and premium.

awareness and familiarity of consumers with organic food products (Demirtas) [34], their reasons for purchasing organic food (Nafees, et al.) [35], their perceptions of the advantages and disadvantages of such purchases (Denver et al.) [36] (Lang and Conroy) [37] as well as their sociodemographic characteristics and attitudes towards organic food (Feil, et al.) [38] Koklic, et al. [39] and Tandon et al. [40]. Organic agricultural products are healthier, more nutritious and more ecologically responsible than conventional meals. Customers are attracted to organic food products and they are willing to pay more for them [41, 42].

Several studies have examined consumers' propensity to purchase and pay for healthier food items in developed countries including Gross, et al. [43] and Ali and Ali [44]. This stream of literature reveals that consumer acceptability of food products with health advantages is influenced by a number of sociodemographic, socioeconomic and psychographic aspects in addition to the health benefits themselves [45]. Women are often willing to pay higher prices in the majority of circumstances. Additionally, income and educational attainment are significant determinants of WTP.

In this context, several studies have emphasized that customers are prepared to pay a higher price for the significance of the organic features of EVOO and the higher healthiness of the product [46][4] (see the meta-analysis of Del Giudice, et al. for more detail) [47]. Olive oil is a complex product and opinions about its quality depend on external as well as internal factors [48, 49]. Indeed, Caracciolo, et al. [50] stated that EVOO's bitterness had a detrimental effect on customers' WTP. As a result, evaluating olive oil demand and the relative WTP is challenging and the issue is empirical.

3. Context Analysis

Olive cultivation in Italy is a vital sector of the national economy as well as a strategic tool on the international commercial stage accounting for 15 percent of global production on average [51]. Italian olive oil production is dispersed with the southern and insular regions producing around 85 percent of total production [52]. With 199,345 metric tons, Apulia produces the most olive oil followed by Calabria (35,979 tons) and Sicily (24,393 tons) [53]. In total, 330,803 metric tons of olive oil is produced in Italy each year. The total area allocated to olive oil production is around 1,187,000 hectares of which 21 percent is organic with 800,000 farms involved in this industry which are mainly located in Apulia (250,000), Calabria (130,000) and Campania (110,000) [54]. In Europe, 40 percent of olive oils possessing quality certification (protected designation of origin PDO and protected geographical indication PGI) are Italian followed by Spanish and Greek olive oils. However, two to three percent of Italy's total olive oil production is certified [55].[5]

In terms of demand, the world's use of olive oil has grown at a rate of 1% annually, reaching about 3 million metric tons[6]. After Greece and Spain, Italy is third in the world in terms of per capita olive oil consumption. The four largest countries in the world ranking for per capita consumption are also the top producers and exporters [56]. Due to the Italian sector's dependency on international markets, the retail price is impacted by the quantity of imported product quotas. When the retail price remains stable over time, an increase in the initial phase of exchange is not always reflected proportionately across the supply chain. Retail pricing shows dynamics that are influenced by distribution chain strategies. Significant price variations are adopted by the industry and by the distributor in order to reduce final price variability. Farms are sometimes reluctant to participate in the certification process since PDO goods do not always attract a premium price.

4. Research Objective

The present empirical study aims to identify the variables that may influence a customer's willingness to pay more for organic extra virgin olive oil (EVOO), regardless of the challenges associated with comprehending consumer preferences. A more detailed understanding of the patterns of organic olive oil consumption is needed in order to present a more precise depiction of the organic olive oil industry with respect to present customer preferences. In this context, it is critical for olive oil businesses to understand customer preferences to determine the convenience and feasibility of converting from traditional to organic production in order to reach new markets and consumer segments. Organic olive oil provides an opportunity for olive oil producing farms. Thus, this study aims to draw a new customer profile with specific characteristics and needs as well as a possible target for agricultural enterprises.

The development of organic production is one of the specific objectives that the European Union has set for reducing greenhouse gas emissions by 2050. Thus, incentives per hectare will be provided to support organic production in order to increase the European organic agricultural area to 25 percent of the total community used agricultural area by 2030. This is undoubtedly a factor to consider when olive growing companies develop their business planning objectives.

5. Materials and Methods

Several studies in the agricultural and food literature use surveying techniques to determine customers' WTP [57, 58].[7] One of the key advantages of this approach is that respondents state their preferences explicitly rather than relying on observational data. In this paper, a face-to-face questionnaire survey was conducted on a sample of 332 consumers from the province of Messina to evaluate the WTP for organic EVOO. The questionnaire consisted of 23 questions covering a wide range of subjects connected to organic olive oil use in order to collect information on customers' WTP and any other pertinent consumer data. The questionnaire administered consisted of various sections. The first section collected

[4] For more details, see Notarnicola, et al. [5].
[5] For more information, see the Ismea-Qualivita 2021 report on the PDO and PGI agri-food production. https://www.ismeamercati.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/11992.
[7] The term WTP refers to the availability to spend an additional amount in order to attain something or avoid something unwanted.

personal information such as age, gender, educational attainment, income and employment status. The second section gathered information on organic food consumption such as what kinds of organic agricultural products were purchased. The third section collected information on EVOO consumption including whether and how much was consumed, where it was bought, satisfaction, brand, place (foreign or Italian) and type of production (organic, traditional or conventional), level of acidity, extraction procedures and so on. The fourth section sought to discover why the interviewees were willing to pay a price premium for organic EVOO. In the last section of the survey, as in the studies developed by Giannoccaro, et al. [59] and Carzedda, et al. [60], respondents were asked to choose one of three bottles of EVOO that varied in price, production region, certification (PDO or PGI), brand and organic production. The survey was conducted anonymously throughout the months of January and March 2023. The questionnaire was distributed at random in order to ensure the representativeness of the sample.

The sample consisted of 51.8 percent men and 47.9 percent women with 13.6 percent of the sample being under the age of 24 and the average age of the customers being 39. The responses of those interviewed principally came from residents of Sicily (87.4%) and were married (47%). Furthermore, customers were mainly employed. 45.5% received an income in the 20,000–29,999 euro range (20.6%) had obtained a university education (43.7%), lived in a family of at least four people (38.6%), purchased and consumed organic products (81.6%), were willing to pay a premium for organic EVOO (82.3%), consumed in the family unit between 15 and 25 liters of EVOO (37%), did not produce it (42.5%) and purchased it in conventional places such as supermarkets, retailers and producers (86.4%). These findings identify the typical consumer's profile. Table 1 summarizes the summary statistics on the respondents' sociodemographic characteristics whereas Table 2 reports the distribution of the consumers' WTP or not to pay a premium for purchasing organic EVOO as well as all other remaining information.

Table 1.
Summary statistics.

Demographic characteristics	Modalities	Number	Percentages
Gender	Female	159	47.9
	Male	172	51.8
Age classes	18–23	45	13.6
	24–34	112	33.7
	35–44	52	15.7
	45–54	65	19.6
	55–64	43	13
	Over 65	15	4.5
Educational attainment	Elementary	17	5.1
	Middle	64	19.3
	High	98	29.5
	Degree	145	43.7
	Post degree	8	2.4
Marital status	Married	156	47
	Unmarried	137	41.3
	Cohabitants	27	8.1
	Divorced	11	3.3
	Widowed	1	0.3
Employment situation	Student	58	17.5
	Employee	151	45.5
	Unemployed	26	7.8
	Freelance	47	14.2
	Homemaker	23	6.9
	Entrepreneur	10	3
	Retiree	17	5.1
Income	Under 9,999€	50	16.6
	10,000€–19,999€	61	20.3
	20,000€–29,999€	62	20.6
	30,000€–49,999€	47	15.6
	50,000€–69,999€	19	6.3
	70,000€–99,999€	4	1.3
	Over 100,000€	5	1.7
	I prefer not to reveal	53	17.6
Family members[b]	1	20	6
	2	60	18.1
	3	82	24.7
	4	128	38.6
	5	37	11.1
	Over 5	5	1.5
Organic products consumption	Yes	271	81.6
	No	61	18.4

Note: The data rely on the 332 replies to the questionnaire provided by interviewees.
[b] Number of household residents.

Table 2.
Summary of consumers' willingness to pay a premium for organic extra virgin olive oil and on consumption and purchase data.

Variables	Modalities	Number	Percentages
Willingness to pay	Yes	260	82.3
	No	56	17.7
Extra virgin olive oil consumption⋆	None	3	0.9
	5	18	5.6
	10	33	10.2
	15–25	120	37
	25–40	75	23.1
	41–65	50	15.4
	More than 65	23	7.1
Personal production	Never	91	42.5
	Rarely	14	6.5
	Sometimes	7	3.3
	Often	20	9.4
	Always	82	38.3
Place of purchase†	Never	51	86.4
	Rarely	6	10.2
	Sometimes	1	1.7
	Often	0	0
	Always	1	1.7

Notes: The data rely on the 332 replies to the questionnaire provided by interviewees.
⋆ extra virgin olive oil consumption in liters in a household over the course of a year.
† locations of purchase other than supermarkets, retailers, and producers.

Many methods for figuring out consumers' WTP for agricultural goods have been examined in the literature (for an overview, see the research by several methods for determining customers' willingness-to-pay (WTP) for agricultural commodities have been studied in the literature (see the studies of Katt and Meixner [61] and the meta-analyses by Tully and Winer [62], Li and Kallas [63], and Yang and Fang) [64]. We define the WTP for organic EVOO using a dichotomous variable that takes the value 1 if consumers are prepared to pay a premium price and 0 if they are hesitant to pay in accordance with previous empirical studies (see Kiss, et al.) [65]. Since the dependent variable is a binary variable, a logistic regression model is employed to estimate the WTP's determinants. A binomial logit model is used to assess the effect of the explanatory variables (x) on the response probabilities, p(y = j/x):

$$F(Z_j) = \frac{e^{z_i}}{1+e^{z_i}} = \frac{1}{1+e^{-z_i}} \quad (1)$$

Formally, the logit regression model can be expressed as:

$$Logit\ (Z_i) = ln\left\{\frac{p_i}{1-p_i}\right\} = \alpha_0 + \sum_{j=1}^{k} \beta_{ij} \boldsymbol{x_{ij}} + \mu_i \quad (2)$$

where Logit (Z_i) is the logit transformation of the probability Z_i, $\ln(p_i/1 - p_i)$ is the natural logarithm of the odds ratio, pi is the probability that the event occurs ($y_i = 1$), $1 - p_i$ is the probability that the event does not occur ($y_i = 0$), α_0 is the constant term, x_j is the vector of covariates, β_j is the unknown parameter vector to be estimated, μ_i is the error term and finally the subscript i indicates the i_{th} observation in the sample. The logit model is estimated through the maximum likelihood method [66, 67]. In this study, the following empirical logit regression model is generated in order to look at the factors that can affect consumers' willingness to pay (WTP) a premium for organic EVOO:

$$WTP_i = \lambda + \gamma\, Gender_i + \delta\, Age_i + \theta\, Family_i + \vartheta\, Education_i + \varrho\, Income_i + \tau\, Organic\ products_i + \kappa\, Self\ production_i + \rho\, Oil\ consumption_i + \sigma\, Purchase\ place_i + \epsilon_i \quad (3)$$

According to the literature [58, 68], the dependent variable is a function of a set of explanatory variables such as gender, age, family size, education, income, organic product consumption, personal production, EVOO consumption and placeof purchase. The Greek letters represent the regression coefficients to be estimated, λ is the intercept value and ϵ_i the residual.

6. Results and Discussions

The current section discusses the empirical findings addressing the factors that influence customers'propensity to pay for organic EVOO. The set of covariates used to predict WTP includes both sociodemographic features and product attitudes. Table 3 depicts the relationships between all of the variables in our benchmark model.

Table 3.
Correlation matrix of the variables.

	Variables	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1.	WTP	1									
2.	Gender	-0.136*	1								
3.	Age	0.050	0.056	1							
4.	Family	0.046	0.057	-0.231*	1						
5.	Education	0.084	-0.104	0.153*	-0.116*	1					
6.	Income	-0.024	0.134*	0.397*	-0.059	0.360*	1				
7.	Organic products	0.333*	-0.124*	0.014	-0.024	0.052	0.008	1			
8.	Self-production	0.134*	-0.023	-0.249*	0.104	-0.036	-0.077	0.076	1		
9.	Oil consumption	0.080	0.156*	0.126*	0.266*	-0.035	0.099	0.086	0.119*	1	
10.	Purchase place	-0.072	0.019	-0.166*	0.082	-0.039	-0.002	0.041	0.229*	0.043	1

Note: * denotes significance at the 5% level or lower.

The correlation matrix lacks coefficients indicating the existence of possible multicollinearity problems and the variance inflation factor (VIF) values which average 1.19 confirm our assumption.

The empirical outcomes of the logit model specified in Equation 3 are presented in Table 4 while Table 5 contains the results of the specification model in which the variable family is represented by a series of dummies representing the different household sizes.

Table 4.
Estimation results.

WTP	Logit model	Marginal effects	Odds ratio
	(1)	(2)	(3)
Gender	-0.830** (0.392)	-0.088** (0.041)	0.436** (0.171)
Age	0.036** (0.017)	0.004** (0.002)	1.036** (0.017)
Family	0.389** (0.173)	0.041** (0.018)	1.475** (0.256)
Education	0.474** (0.226)	0.050** (0.024)	1.607** (0.364)
Income	-0.238** (0.154)	-0.025 (0.016)	0.788 (0.121)
Organic products	2.232** (0.424)	0.237*** (0.037)	9.318*** (3.948)
Self-production	0.406** (0.169)	0.043** (0.018)	1.501** (0.254)
Oil consumption	0.125 (0.180)	0.013 (0.019)	1.133 (0.204)
Purchase place	-0.739** (0.307)	-0.079** (0.032)	0.478** (0.146)
Log likelihood	-92.996		
Joint significance test ~ $\chi^2(9)$	56.579***		
McFadden pseudo R^2	0.233		
McKelvey & Zavoina R^2	0.356		
LR test for demographic covariates ~ $\chi^2(4)$	17**		

Note: Standard errors in parentheses. ** $p < 0.05$, *** $p < 0.01$.
The total number of observations is 268.

Tables 4 and 5 report the logit model's estimated parameters together with the marginal effects and the odds ratio respectively. The fact that the two $\chi 2$ tests for joint significance reject the null hypothesis that the estimated models do not properly reflect the respondents' choices indicates that both specifications are very significant. Furthermore, the diagnostic tests (McFadden Pseudo R^2 and McKelvey and Zavoina R^2) denote that the models are valid, perform well and show a high goodness of fit. Lastly, according to Sckokai, et al. [69], the sociodemographic variables are considered by assessing the statistical significance of the likelihood ratio (LR) test for both specifications. Test results suggest that models that contain sociodemographic factors perform better than models that solely include product attitudes.

According to the empirical estimations, the sociodemographic factors with the exception of the income variable are statistically significant in explaining respondents' willingness to spend more on organic EVOO. According to Vlontzos and Duquenne [70], the lack of statistical significance of the income covariate is feasible since EVOO is a fundamental element of the Mediterranean diet and shows characteristics of inelastic products.

The "gender" dummy variable is in line with several studies [71, 72] and is negative and statistically significant in both specifications demonstrating that women are more willing to pay a premium for organic olive oil because females are more interested in healthy eating than males [73, 74].

The determinant "age" has a positive effect on the WTP premium for both models Muhammad, et al. [75] and Jiumpanyarach [76] .[8] Muhammad, et al. [75] and Jiumpanyarach [76]. As a result, customers are more willing to pay more for organic extra virgin olive oil (EVOO) as they get older. Older customers have stronger opinions about the healthfulness of organic foods than younger consumers do [77]. Thus, they are more willing to pay for organic EVOO which provides additional health benefits [78].

[8] Similar findings in the literature demonstrate that age has a positive effect on the WTP for organic food (see, e.g., Notarnicola, et al. [5]).

Table 5.
Estimation results

WTP	Logit model	Marginal effects	Odds ratio
	(4)	(5)	(6)
Gender	-0.805** (0.406)	-0.084** (0.042)	0.447** (0.182)
Age	0.035** (0.017)	0.004** (0.002)	1.035** (0.018)
Family			
2	0.920 (0.718)	0.139 (0.114)	2.508 (1.801)
3	1.603** (0.718)	0.216** (0.108)	4.967** (3.564)
4	1.713** (0.706)	0.226** (0.108)	5.543** (3.912)
5	1.693* (0.871)	0.224* (0.117)	5.433* (4.735)
6	1.777 (1.531)	0.232 (0.163)	5.911 (9.050)
Education	0.473** (0.230)	0.050** (0.024)	1.604** (0.369)
Income	-0.244 (0.158)	-0.026 (0.016)	0.783 (0.124)
Organic products	2.242*** (0.434)	0.235*** (0.038)	9.410*** (4.085)
Self-production	0.380** (0.171)	0.040** (0.018)	1.462** (0.250)
Oil consumption	0.125 (0.185)	0.013 (0.019)	1.134 (0.210)
Purchase place	-0.745** (0.307)	-0.078** (0.031)	0.475** (0.146)
Log likelihood	-91.927		
Joint significance test ~ $\chi^2(13)$	58.717***		
McFadden Pseudo R2	0.242		
McKelvey & Zavoina R2	0.365		
LR test for demographic covariates ~ $\chi 2$ (8)	19.140**		

Note: Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. The total number of observations is 268.

The "family" explanatory variable which is treated as a continuous and dummy variable in the logit model has a positive effect on the inclination to pay a premium for organic EVOO. Household size directly affects WTP for small households which are defined as those with three to four people. Because of the 10% statistical significance of the dummy variable, this has an insignificant effect. Although household size has a positive influence on WTP premiums, a large household size (with 6 people) has no effect on readiness to pay owing to the already high expenseof family life. The literature also reveals a positive relationship between household size and WTP for organic food as demonstrated by the research conducted by Wier, et al. [79] and Vapa-Tankosić, et al. [80].

The variable "education" has coefficients that are positive and statistically significant in both specifications. This result is consistent with prior research [70] which indicates that a higher level of education causes consumers to spend more money on organic EVOO. Consumers with a higher level of educational attainment typically have a greater capacity for comprehending information on healthy food consumption [81]. As a result, educational level is an important factor in predicting WTP.

In terms of consumer product attitudes, WTP a premium for organic olive oil is influenced by habitual consumption of organic foods, own production and purchasing locations but not by annual EVOO consumption in both specifications. Regarding the latter evidence, the results appear to validate the product's inelasticity.

The dummy variable "organic" *products* which reflect consumers' attitudes towards organic food consumption suggests that a higher propensity to consume organic products leads to a greater readiness to spend a surplus on organic EVOO. According to the literature [82], organic food users are more likely to purchase them and have a more favorable attitude than non-users.

The *"self-production"* covariate shows coefficients that are positive and statistically significant. This effect can be attributed to the higher sensitivity that the respondents have towards environmental conditions [83, 84, 86]. In particular, although they produce their own oil,consumers have a propensity to spend more money on organic olive oil if they buy it.

Finally, the variable *"purchase place"* has an indirect effect on the WTP for organic EVOO. More precisely, acquiring organic olive oil outside of supermarkets, retailers and producers diminishes consumers' propensity to pay an extra price for organic olive oil. The variable's negative effects can be attributed to the fact that non–traditional places of purchase do not represent sites where demand and supply meet for organic olive oil [22, 70]. Customers are therefore less likely to pay because they may obtain organic extra virgin olive oil in other ways, either as a gift or by choosing not to buy it.

In the survey, participants were requested to choose one out of three bottles of extra virgin olive oil that varied in terms of price, production area, certification (PDO or PGI), brand and organic production. The findings of this study indicate that buyers show a notable inclination towards Italian EVOO and appear to place significance on the presence of a reputable brand and PDO certification (62.3%). It is noteworthy that consumers have a strong preference for organic extra-virgin olive oil. In fact, 60.6% stated that they were willing to pay 12 euros for organic Italian extra virgin olive oil. These results are consistent with the literature [60].

7. Conclusion

In this paper, we assessed consumers' willingness to pay a price premium for organic compared to conventional olive oil. In particular, using a logit model, this study examined the propensity of consumers particularly those in the province of Messina, to spend a price surplus on organic extra virginolive oil as well as the factors influencing it. EVOO is

one of the key ingredients of the Mediterranean diet showing nutritional properties capable of bringing benefits to human health.

Our empirical research provides strong evidence that consumers are prepared to pay a premium for organic olive oil. The findings also indicate that WTP is positively affected by gender (women are more likely to pay a premium), being older, living in a small or middle–sized household, having a higher education, consuming organic products and purchasing olive oil in conventional places.

This analysis adds to the body of literature by strengthening the empirical evidence concerning the identification of the kind of consumer who shows a real propensity to spend a price surplus on organic EVOO highlighting the consumer's preference for healthier and more environmentally friendly products. These are significant discoveries with numerous intriguing implications for olive oil companies both in terms of forecasting and strategies. Olive farmers should convert to organic production to meet the needs of new markets and customer segments. Indeed, the ever increasing competitiveness in the olive oil sector has compelled many farms to use the biological method of olive oil production in order to keep pace with changing consumer preferences and tastes.

This paper offers a few interesting insights into the scientific discussion by highlighting the significance of consumer knowledge and information. It emphasises how crucial it is to identify the factors that affect consumers' decisions to purchase organic olive oil because this data enables businesses to review their marketing policies and strategic business planning objectives [85]. The study found that the more obvious the benefits for health and the environment are, the more willing consumers are to pay a premium price for organic olive oil. However, further research is required to assess customers' preferences for organic olive oil as the higher prices may act as a strong deterrent to purchase. This paper demonstrates that a better understanding of the product particularly if produced using organic methods may promote positive externalities for the environment and the community as well as guide olive companies towards sustainable production in accordance with Agenda 2030's Sustainable Development Goals. In addition, a conversion to organic production increases the possibility of receiving credit grants from banks if the olive firms request it because the European Banking Authority encourages banks to finance more sustainable projects.

Field experiments are very useful for verifying consumer behavior although they are sometimes hampered by a small sample size. Each technique has distinct advantages and disadvantages; the selection of an appropriate method is contingent on the management task underlying the assessment of propensity to pay and is impacted by both conceptual and practical constraints.

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