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What do chocolate consumers want? Exploring individual preferences and profiles, considering lifestyle, food habits and socio-demographic features

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Abstract

This study assesses the declared preferences of a sample of Italian consumers (n=657) towards chocolate, considering their sociodemographic variables, lifestyle and food habits. Firstly, the Best-Worst scaling (BWS) methodology was employed to define the relative importance assigned by consumers to 12 chocolate attributes. Additionally, the Latent Class analysis was used to identify different preference-based chocolate consumers segments. The Multinomial Logistic Regression was applied to explore the possible relationships between individuals' socio-demographic, lifestyle and food habit variables and the cluster membership. The main findings showed that "typology", "brand" and "label information" were the most important attributes for chocolate choices, while "quality certifications", "ethical attributes" and "packaging" resulted as not important for product selection. Five different consumer clusters were defined: the MRL highlighted how certain socio-demographic variables, such as age or level of education, influence the orientation of consumer choices. Also, sports activity, food habits and choices explain group membership very well.

Keywords: Best-Worst Scaling, cluster analysis, consumer preferences, chocolate, lifestyle, socio-demographic

1. Introduction

Marketing or advertising campaigns must be adapted and efficiently addressed considering the heterogeneity of consumers targets' needs (Blanc et al., 2022; Müllensiefen et al., 2018). The chocolate market is a multidimensional environment in which emotional, hedonic, health, ethical, sustainable and traditional aspects are all identifiable in a unique product, known and appreciated by most consumers. Chocolate is traditionally perceived as a

food object of temptation and a typical example of impulse buying (Merlino et al., 2021). However, in recent times chocolate has been playing a different role in people's diets, with versions related to health protection, sports food with added ingredients that enhance healthiness. This modern role of chocolate seems to be prevalent in consumers with more health and diet conscious, active lifestyles (Hu et al., 2020). The ethical and sustainability role of chocolate is also increasingly popular among consumers; aspects such as environmental (e.g. Rain Forest Alliance and Carbon Footprint), social (Fair Trade) and economic (UTZ) sustainability programs, labels and certifications are becoming the focus of ethical and "green" choices of individuals who associate certified chocolate with positive quality attributes (Annunziata et al., 2011; Didier and Lucie, 2008; Mai, 2014; Vecchio and Annunziata, 2015) also from a sensory point of view (Kiss et al., 2015).

In general, the consumption of chocolate, both among the different European countries and within Italy itself, take on different connotations: the socio-demographic characteristics of individuals, lifestyles, culinary traditions and eating habits play an important role in the individuals' decision-making process (Krieger et al., 2019; Nardone et al., 2018). With the wide range of chocolate suppliers, the increase of information, globalization and more generalised education, the attributes involved in the choice have increased and their influence assumes different dimensions. The heterogeneity of chocolate consumption leads various studies to investigate consumer behaviour attributes that describe its characteristics. For example, the type of chocolate (extra dark, dark, milk, white or with added ingredients), brand, aroma/taste and price, are among the most considered attributes in the choice of chocolate (Merlino et al., 2021; Poelmans and Rousseau, 2016; Thaichon et al., 2018). In terms of the type of chocolate, in Italy, consumer prefers the dark variety, followed by the hazelnut-based chocolate and milk chocolate (Statista, 2020). Considering the aromaticity and taste of chocolate, these attributes change in different varieties (Toker et al., 2020) and are elaborated by adding sugar to balance the bitterness of cocoa. Some prefer a sweet taste (choosing milk chocolate), others can accept the traditional bitterness of chocolate in dark and extra dark products (Kozelová et al., 2014). The concept of brand familiarity and knowledge of the manufacturer are also widely considered factors in the choice of chocolate (Ozretic-Dosen et al., 2007; Puška et al., 2018), and the consumer is able to build a feeling of loyalty towards the brand (Kamble et al., 2017; Ozretic-Dosen et al., 2007). Price represents the overall product value, including the place of purchase, quality, packaging and service. Consumption frequency (Kozelová et al., 2014) and sociodemographic characteristics (Nardone et al., 2018; Stamer and Diller, 2006) are determinants in the value assigned to price (Joutsela et al., 2017; Kozelová et al., 2014;

Thaichon et al., 2018). In addition to these choice attributes, the literature has explored the impact of several product features on consumer choice. For example, the country of origin of the brand becomes an element of acceptability as the transfer of the country image to the product image takes place (Ozretic-Dosen et al., 2007). Although COO (country of origin) seems to have an unclear impact on product evaluations (Ozretic-Dosen et al., 2007): "Made in…" i.e., where the actual processing of the chocolate takes place seems to be an attribute considered in the choice evaluation (Kozelová et al., 2014; Silva et al., 2017; Torres-Moreno et al., 2012).

A nutrition table, list of ingredients, cocoa percentage, certifications and health claims are information sought by consumers (Silva et al., 2017; Visschers and Siegrist, 2009). Chocolate can be defined as a food with a double responsibility: if chocolate with high percentages of cocoa provides numerous benefits to the human health (it helps the cardiovascular system, aids concentration, regulates sugar absorption, improves intestinal microbiota, boosts the immune system and has anti-inflammatory and positive psychological effects) (Asgary et al., 2018; Cirne et al., 2019; de Oliveira et al., 2017; Konar et al., 2016; Magrone et al., 2017; Matsui et al., 2005; Merlino et al., 2021b; Montagna et al., 2019), on the other hand, milk, white and high-calorie desserts with chocolate, with high sugar and fat content, contribute to the increase in body mass index (Roblin, 2007). In addition to nutritional information, the clarity and transparency of labels support consumer needs related to the increasing demand to make informed and conscious choices, often with the aim of contributing to sustainable production. To these are added organic certifications, which consumers see as an additional health and environmental guarantee (Mai, 2014).

Some of these choice attributes are interrelated: according to Poelmans and Rousseau (2016b), consumers who prefer dark and extra dark chocolate seek ethical and environmental sustainability attributes. In other researches was demonstrated how the positive correlation between the dark chocolate consumption and the consumers' interest towards healthier, sustainable and high-quality certified chocolate alternatives (de Andrade Silva et al., 2017; Del Prete and Samoggia, 2020; Maleki et al., 2020). The same individuals are willing to pay a higher price for a chocolate bar by decreasing their guilt as human beings towards the environment (Etilé et al., 2015; Nardone et al., 2018; Young and McCoy, 2016). According to Davis and Millner (2005), the brand is more important than promotional offers and therefore price, while other consumers are guided only by the brand when choosing (Thaichon et al., 2018).

Studies in the literature have also established the relationship between socio-demographic and lifestyle determinants demonstrating the influence on the motivations for

choosing emotional foods, such as chocolate, and dietary patterns in general (Krieger et al., 2019; Petrenya et al., 2019).

Given this premise, the evaluation of how individuals simultaneously assess the importance of a set of attributes (purchasing criteria) describing a product, correlating their choices to the characteristics of individuals, assumes high importance and contributes to the definition of choice profiles ascribable to a specific context. this condition of choice projects the consumer into a situation more associated with the realistic and complex decision-making moment of choosing a product (Nunes et al., 2016).

In this research, we therefore hypothesised that consumer profiles exist in which individuals simultaneously evaluate different qualitative aspects of chocolate, expressing a common attitude of choice towards the product and, secondly, that the dissimilar consumer profiles are characterised by different socio-demographic, lifestyle and dietary characteristics, as well as different purchasing and consumption orientations of chocolate. Starting from these hypotheses, the present study aims to understand the purchasing and consumption preferences towards chocolate, considering the influence of lifestyle, food and chocolate purchasing habits on the definition of preferences using a multidimensional approach. Specifically, considering the heterogeneity of the Italian context in terms of chocolate production, lifestyles, culinary traditions and socio-demographic characteristics of the population, a sample of consumers was surveyed considering two regions of the country, Piedmont (north-western Italy) and Sicily (southern Italy). These two areas are both important for chocolate production, but very distant both geographically and in terms of population composition, lifestyles and culinary traditions. For this purpose, the declared preferences of individuals were firstly assessed using the Best-Worst scaling (BWS) methodology. In a second step, the preference scores obtained with the BWS approach were employed as a discriminating variable to cluster the sample into different preference-related groups using the Latent Class Analysis. Finally, the effect of individual characteristics on food choices, including chocolate, lifestyle and socio-demographic on the group membership was defined by using multinomial logistic regression. Already Thomson et al. (2010) the Best-Worst Scaling technique was applied to investigate the connection between the sensory characteristics and the emotions during the consumption of dark chocolate. On the other hands, Rousseau (2015) identified consumer groups based on the impact of labels information on consumer attitudes and preferences. However, in these existing studies only some aspects separately were considered to define chocolate consumers profiles.(Zarantonello and Luomala 2011)(Roda and Lambri 2019; Donadini, Fumi, and Newby-Clark 2014) In fact, in our research the declared preferences of individuals were explored for each attribute

describing chocolate considering different quality cues categories (intrinsic, extrinsic and credence attributes). In addition, consumers profiles were obtained using as discriminating variables the preference indices obtained by the individuals answers. In addition, each consumer group was characterized in function of subjects' socio-demographic variables and geographical affiliation. This research contributes to enriching the scientific literature in the field of consumer research and to optimize the heterogeneous chocolate product thinking and communication strategies.

Materials and methods

2.1 Data collection and sample composition

Data were collected considering a convenience sample of 657 Italian individuals using a structured questionnaire distributed online in the North and South regions of Italy, respectively in Piedmont and Sicily. The choice of these two regions was made to understand if belonging to a specific geographical area can affect the preferences towards a product as chocolate. Given that certain socio-demographic variables such as gender and belonging to the two selected regions, influence the choice of the type of chocolate, as well as the emotions that run through individuals during and after consumption (Merlino et al., 2021), we considered the same areas to explore how and if different kinds of individuals variables, together with the region, could influence the definition of chocolate preferences. Survey participants were contacted by using mailing lists, messaging applications and social networks. The sample was targeted by age, gender, level of education, family composition and average income in the region of residency. The survey was conducted by following the ethical standards set out in the Declaration of Helsinki and approved by the University Bioethics Committee of the University of Turin (https://www.unito.it/ricerca/strutture-e-organi-la-ricerca/comitato-di-bioetica-dellateneo) and consent was obtained after a survey presentation and prior to starting the filling. The questionnaire was anonymous, did not include sensitive data and was drawn up in the Italian language. Respondents were required to be at least 18 years of age to participate. Data were recorded in a single database (Excel file) that was stored in a private folder shared by the members of the research team.

The sample was composed by a slight majority of women (60%) and was balanced in terms of age groups from 18 to 55. However, a minority of respondents was over 55 years old. Individuals were distributed equally in Piedmont and Sicily. In addition, the sample was composed of a majority of individuals with an average to high level of education, who were

part of families of 3-4 members, employed and students and had a low to average annual income.

2.2 The questionnaire

The structured questionnaire consisted of four sections: "Socio-demographic variables", "Lifestyle information: dietary data and physical activity", "Chocolate purchasing and consumption habits" and "Preferences evaluation".

2.2.1 Socio-demographic variables

A combination of socio-demographic variables was considered during the data collection phase. In particular, the self-administered questionnaires included residence, age, gender, educational level (primary school; lower secondary school; upper secondary school; master's degree), family size (number of components from 1 to more than 4) and the monthly average income per household unit (<€1000, € 1000–2000, € 2000– 4000, € 4000 – 6000, over € 6000 and "I won't answer").

2.2.2 Lifestyle information: dietary data and physical activity

As already showed by (Pinkster and van Kempen, 2002), lifestyle can represent what cannot be explained by socio-demographic characteristics (Heijs et al., 2009). The lifestyle of individuals can be studied by assessing their activities, opinions, interests and attitudes, using behavioural and/or latent variables (Jansen, 2012). We chose to assess individuals' lifestyles by examining only behavioural variables by matching them with a combination of socio-demographic features. Although some authors believe that these variables are less useful in predicting the preferences and choices of individuals (Jansen, 2012), in our case it has been seen that dietary habits such as attention to the physical well-being of individuals (which can also be described through their physical activity), influence chocolate purchasing and consumption choices (Brodock et al., 2021; Del Prete and Samoggia, 2020).

To this end, dietary data were collected by introducing two questions on attitudes towards food consumption into the questionnaire: What is your eating style? (omnivorous; vegetarian; vegan); What are your eating habits? (I regularly follow a balanced diet, I try to eat healthy, but occasionally I can't resist it; I eat whatever I want, whenever I want). Physical activity was revealed by asking respondents both whether or not they conducted sports activities and the weekly frequency (for sportspeople only): Low (1 time/week), moderate (2-3

times/week) and high (5 or more times/week) levels of physical activity were derived from the sample responses.

2.2.3 Chocolate purchasing and consumption habits

A set of questions that reflected purchasing and consumption habits of chocolate were provided in this section: What types of chocolate do you prefer? (Extra-dark, Dark, Milk, Gianduja (nut- based), White, with dried fruit, with added flavours, with cereals); what is your most chosen place to purchase chocolate? (Supermarket/hypermarkets, Discount, Confectioneries, Chocolate shops, Sector events/food events). Finally, in this section, the respondent was asked to indicate the reasons for buying chocolate (To consume as a snack at any time, For yourself (reward), To consume as a sweet/dessert, To give as a gift, Because my family likes it, For the preparation of sweets). The selection of both the types of chocolate and the purchasing motivations was made following the suggestion of Merlino et al. (2021).

2.3 Preferences evaluation

Among the methods commonly used to better understand the stated consumers' preferences is the use of choice experiments based on Best-Worst Scaling (BWS), which allows to determine the underlying values of consumers' preferences through a set of attributes describing a product (Merlino et al., 2018). In fact, this methodology allows to numerically define individuals' preferences starting from the analysis of the responses provided by a sample of respondents to BWS questions or choice sets (last section of the questionnaire). In the choice sets the attributes are organized following the balanced incomplete block (BIB) design (Tabacco et al., 2021): after the selection of a set of n attributes, r choice sets are provided, each containing t attributes (constant condition n>t). In the experimental design, each attribute appears s times and each couple of items appears α times following the suggestion calculated by the $\alpha = s \times (t - 1) / (n - 1)$ equation (Crouch and Louviere, 2022; Liu et al., 2018). In our case, n (12) chocolate attributes were carefully chosen from literature (Table 1) and organized in 9 choice sets (Table 2), in order to present k (k−1)/2 BW pairs and k (k−1)/2 WB pairs, each containing 4 attributes (Goodman et al., 2005). The BWS experimental design was developed by using Sawtooth MaxDiff Designer software (SSI-version 8.4.6, Sawtooth Software, Orem, UT, USA; http://www.sawtoothsoftware.com/).

Table 1. The selected attributes of chocolate.

Attributes	References
Aroma and taste	(Gámbaro and Ellis, 2012; Lybeck et al., 2006a; Ozretic-Dosen et al., 2007; Poelmans and Rousseau, 2016, 2016b; Thaichon et al., 2018)
Types of chocolate	(Gámbaro and Ellis, 2012; Lybeck et al., 2006; Thaichon et al., 2018)
Brand	(Davis and Millner, 2005; Didier and Lucie, 2008; Kamble et al., 2017; Lybeck et al., 2006; Ozretic-Dosen et al., 2007b; Thaichon et al., 2018; van Horen and Pieters, 2012)
Manufacturer reputation and knowledge	(Davis and Millner, 2005; Ozretic-Dosen et al., 2007; Thaichon et al., 2018b)
Price	(Davis and Millner, 2005; Joutsela et al., 2017; Kozelová et al., 2014; Santucci et al., 2011; Stamer and Diller, 2006; Thaichon et al., 2018)
Origin	(Lybeck et al., 2006; Ozretic-Dosen et al., 2007; Toker et al., 2020)
Health claims	(Annunziata et al., 2011; Asgary et al., 2018; Cirne et al., 2019; de Oliveira et al., 2017; Gámbaro and Ellis, 2012; Konar et al., 2016; Kozelová et al., 2014; Magrone et al., 2017; Matsui et al., 2005; Montagna et al., 2019; Scudero, 2014; Silva et al., 2017; Thaichon et al., 2018; Żukiewicz-Sobczak et al., 2013)
Quality certifications	(Didier and Lucie, 2008; Kiss et al., 2015; Mai, 2014; Vecchio and Annunziata, 2015)
Environmental sustainability	(Annunziata et al., 2011; Didier and Lucie, 2008; Kiss et al., 2015; Young and McCoy, 2015)
Ethical attributes	(Didier and Lucie, 2008; Etilé et al., 2015; Mai, 2014; Poelmans and Rousseau, 2016; Vecchio and Annunziata, 2015; Young and McCoy, 2015)
Label information	(Annunziata et al., 2011; Silva et al., 2017; Visschers and Siegrist, 2009)
Packaging	(Beneke et al., 2015; Joutsela et al., 2017; Magnier et al., 2016; Mai, 2014; Maleki et al., 2020; TecÃu and Chitu, 2018a; Thaichon et al., 2018b; Wilkins et al., 2016)

Finally, in our experimental design each attribute appeared 3 times and four different versions of the questionnaire were created (to increase the combination of attributes in the sets). Starting with a selection of 12 chocolate attributes (aroma and taste, types of chocolate, brand, manufacturer reputation and knowledge, price, origin, health claims, quality certifications, environmental sustainability, ethical attributes, label information, packaging).

Table 2. Example of a BWS questions or choice set.

Most important (BEST)	Chocolate attributes	Least important (WORST)
Indicate the most important (BEST) and the least important (WORST) attributes during the chocolate choice:		
x	Origin	
	Type of chocolate	
	Ethical attributes	
	Label information	x

During the questionnaire filling, respondents must indicate for each choice set the most important (BEST) and least important (WORST) chocolate attribute that they consider during the product selection.

2.4 Statistical analysis

Following the assumption of the Bayes hierarchical estimation (HB), the level of preference for a single attribute A is proportional to the frequency with which A is chosen as BEST, compared to the lower number with which a second attribute B is chosen as WORST. The higher utility expressed towards A defines a higher probability that A will be chosen by the consumer. This approach is based on the random utility theory underlying the pairwise comparison method from which the BWS was developed (Flynn et al., 2008). It is assumed that the individual identifies for each choice set the pair with the highest utility difference among the proposed alternatives. The analysis of the frequency with which each attribute was chosen as BEST and as WORST provides the average utility (preference index) per item calculated as a function of sample size. The preference index was obtained using Sawtooth software (SSI version 8.4.6, Orem, UT, USA; http://www.sawtoothsoftware.com/) following the following procedure: number of times the single attribute has been selected as best (COUNTbest) minus (-), the number of times the single attribute has been selected as worst (COUNTworst) related to the sample size, and the number of times the single item appears in the experimental design (in our case equal to 3). The individuals' responses were processed using Bayes hierarchical estimation (HB) which, starting from the aggregation of the responses of all individual respondents (average level of preferences declared by respondents), defines scores at the level of single attribute useful to define an ordered scale of importance of the set of items considered. The indexes obtained for each chocolate attributes were rescaled into a score (0–100) where 100 is the sum of all the items.

The Latent Class Analysis (LCA) was also used to assess the heterogeneity of the respondents and to identify homogeneous groups of individuals with respect to the preferences expressed for each chocolate attribute (Casini et al., 2009; Merlino et al., 2018; Umberger et al., 2010). In general, the entire sample is divided into unknown latent classes in terms of numerosity and size prior to analysis. The best segmentation provided by the software was chosen based on the lowest values of the Log-Likelihood (LL) and the relative Bayesian Information Criterion (BIC) for each model, according to (Chrysochou et al., 2012; Dekhili et al., 2011). This latter analysis was also conducted by using the Sawtooth MaxDiff Designer software.

The ANOVA and post-hoc Tukey's multiple comparison tests were used to verify the clusters heterogeneity with respect to the chocolate preferences (Gurdian et al., 2021). Each cluster was characterised in terms of socio-demographic, lifestyle, food habits and chocolate purchasing behaviour information. For the latter factors, Chi-square tests were applied to test the independence between the variables in the different consumer groups. After the LCA application, the Multinomial Logit Regression (MLR) was applied to examine the association among sociodemographic, lifestyle and purchasing individual's component and cluster membership (Baji et al., 2013; Cummins et al., 2016; Julia et al., 2017). The final MLR model was assessed, including the only statistically significant ($p \leq 0.05$, Wald chi-square test for model effects) independent variables (Pinto et al., 2016; Saba et al., 2019) that was defined in preliminary test including all the variables. We considered the β value and the Odd ratio (OR) (i.e., $\exp\beta$), that could be major, minor or equal to 1, to explain the probability for each predicting variable to belong to a specific cluster in comparison to the reference group. In our case, the obtained small cluster was considered as reference group. Both the ANOVA and MLR were conducted in SPSS 28.0 for Windows. The variables used in MLR models are described in Table 3.

Table 3. Sample description and variables codification in the MRL model predicting individual preferences towards chocolate attributes and association with consumer clusters (n=657).

Variables	Codification	Mean	St. dev.
Region	0= Piedmont; 1= Sicily	0.480	0.500
Age	1=18-25; 2=26-35; 3=36-45; 4=46-55; 5= 56-65; 6= >65	2.640	1.487
Gender	0= male; 1=female	0.610	0.489

Variable	Coding	Mean	SD
Family size	1= 1 component; 2 =2 components; 3= 3 components 4= 4 components; 5 = > 4 components	3.360	1.148
Educational level	1= primary school; 2= lower secondary school; 3= upper secondary school; 4= master's degree	3.280	0.723
Monthly average income of the family	0= Less than 1000 €; 1= 1000 - 2000 €; 2= 2000 - 4000 €; 3= 4000 - 6000 €; 4= Over 6000 €; 5= I won't answer	3.100	1.933
Food style	1= omnivores; 2= vegetarian; 3= vegan	1.050	0.258
Food habits	1= I regularly follow a balanced diet; 2= I try to eat healthy, but occasionally I can't resist; 3= I eat whatever I want, whenever I want	2.030	0.543
Sport	0= no; 1= yes	0.470	0.500
Frequency of sport activity	1= 1 time per week; 2= 2-3 times per week; 3= 5 or more times per week	0.890	1.028
Extra-dark	0= no; 1= yes	0.390	0.489
Dark	0= no; 1= yes	0.430	0.495
Milk	0= no; 1= yes	0.420	0.494
Gianduja (nut-based)	0= no; 1= yes	0.290	0.455
White	0= no; 1= yes	0.180	0.387
with dried fruit	0= no; 1= yes	0.340	0.475
with added flavours	0= no; 1= yes	0.080	0.266
with cereals	0= no; 1= yes	0.230	0.421
Supermarket/hypermarkets	0= no; 1= yes	0.960	0.184
Discount	0= no; 1= yes	0.160	0.366
Confectioneries	0= no; 1= yes	0.250	0.432
Chocolate shops	0= no; 1= yes	0.190	0.394
Sector events (food events)	0= no; 1= yes	0.100	0.299
To consume as a snack at any time	0= no; 1= yes	0.620	0.485
For yourself (reward)	0= no; 1= yes	0.510	0.500
To consume it as a sweet/dessert	0= no; 1= yes	0.210	0.406
To give as a gift	0= no; 1= yes	0.200	0.400
Because my family likes it	0= no; 1= yes	0.340	0.473
For the preparation of sweets	0= no; 1= yes	0.300	0.461
As a food supplement (e.g., after sport)	0= no; 1= yes	0.090	0.280

2. Results

3.1 Consumer preferences for chocolate attributes

The Best-Worst scaling application provided the results in Table 4 below through the selection of attributes considered in the purchase choices by all consumers surveyed. The selected sample considered the type of chocolate, the brand and the label information as the most important attributes for the choice of chocolate. In contrast, the certifications, ethical attributes and packaging characteristics are not considered as discriminating features for the choice of chocolate.

Table 4. Chocolate attribute preferences: for each item, the number of BEST, number of WORST, B-W and Average Rescaled Score (ARS) is reported.

Rank	Chocolate attribute	Time selected Best	Time selected Worst	B-W	ARS
1	Type of chocolate (e.g., extra dark, dark, milk, white)	1376.0	81.0	0.041	20.938
2	Brand	965.0	131.0	0.067	17.368
3	Label information (e.g., nutritional, cocoa content, sugar content)	598.0	415.0	0.211	9.347
4	Manufacturer reputation/knowledge	478.0	461.0	0.234	8.886
5	Price	474.0	482.0	0.245	8.491
6	Aroma/Taste	494.0	521.0	0.265	7.932
7	Origin	368.0	419.0	0.213	6.226
8	Environmental Sustainability	276.0	389.0	0.198	5.665
9	Health claims (e.g., high polyphenol content)	273.0	681.0	0.346	4.686
10	Quality certifications	260.0	723.0	0.367	4.107
11	Ethical attributes (e.g., fair trade)	187.0	647.0	0.329	3.807
12	Packaging	155.0	954.0	0.485	2.542

3.2 Chocolate preferences-related profiles

The chocolate consumer sample was classified by using the Latent Class analysis approach. The 5-clusters model segmentation satisfied the selection criteria (Log-likelihood= -12458.03, BIC = 25469.28). Each group, in which individuals shared similar preferences and homogeneous choices towards chocolate, was renamed according to its chocolate preferences-related profile (Table 5).

Table 5. Latent Class Analysis. Clusters of individuals were named based on the preferences expressed toward chocolate derived from the Rescaled Score values.

Cluster name	Proposed Loyalty	Sustainable Value	Certified Health Value	Informed consumer	Territorial-related brand trust	F	Sig.
Cluster dimension	*20.5 %*	*17.8 %*	*20.0 %*	*20.0 %*	*21.6 %*		
Attributes							
Aroma/taste	12.602[a]	8.640[b]	1.678[c]	2.339[d]	13.470[d]	222.41	***
Price	14.489[a]	5.130[b]	1.401[b]	15.583[c]	0.402[c]	169.86	***
Brand	20.270[a]	9.444[b]	15.097[c]	19.257[c]	17.733[d]	79.83	***
Quality certifications	1.262[a]	7.529[b]	8.398[c]	3.378[d]	1.122[d]	136.40	***
Packaging	5.130[a]	4.843[a,b]	1.242[b]	1.200[c]	1.380[c]	78.28	***
Ethical attributes (e.g., fair trade)	2.285[a]	8.368[a,b]	6.770[b]	2.538[c]	1.513[c]	114.29	***
Environmental sustainability	4.130[a]	12.636[b]	9.409[b]	4.297c	1.541[d]	115.21	***
Origin	3.637[a]	8.591[b]	9.920[b]	4.148c	20.761[d]	58.11	***
Health claims (e.g., high polyphenol content)	0.926[a]	6.698[b]	9.260[c]	4.771c	0.864[d]	185.74	***
Type of chocolate (e.g., extra dark. dark. milk. white)	22.065[a]	13.861[b]	19.294[c]	23.911[c,d]	20.500[d]	114.46	***
Manufacturer reputation/knowledge	10.959[a]	7.940[b]	4.040[c]	2.197[c]	16.713[d]	173.92	***
Label information (e.g., nutritional. cocoa content. sugar content)	2.238[a]	6.312[b]	13.485[c]	16.376[c]	4.001[d]	176.94	***

The ANOVA results highlight several significant differences across the 5 clusters in terms of individual preferences, considering the single chocolate attribute.

Furthermore, the analysis of the heterogeneity of the consumer considering their sociodemographic, food habits, lifestyle and the chocolate purchasing and consumption habits, showed significant differences in terms of age, educational level, monthly average income, food habits, chocolate choice, and purchasing habits (Table 6).

Table 6. Cluster composition in terms of socio-demographic composition, food habits, lifestyle and chocolate purchasing and consumption habits.

Clusters		Total	Proposed Loyalty	Sustainable Value	Certified Healthy Value	Informed consumer	Territorial-related brand trust	χ^2	p-value
Region	Piedmont	52	21.1	16.7	22.0	19.1	21.1	2.454	0.654
	Sicily	48	19.4	18.1	18.1	20.3	24.1		
Socio-demographic variables (%)									
Age	18-25	29.4	25.4	12.4	18.1	25.9	18.1	49.092	***
	26-35	26.1	27.5	15.2	21.1	17.0	19.3		
	36-45	12.0	19.0	15.2	22.8	16.5	26.6		
	46-55	19.7	11.6	27.9	18.6	17.1	24.8		
	56-65	9.0	10.2	18.6	27.1	18.6	25.4		
	>65	3.8	4.0	20.0	12.0	16.0	48.0		
Gender	Male	39.2	21.0	15.2	21.8	17.9	24.1	3.005	0.557
	Female	60.8	26.8	15.8	17	19.8	20.6		
Family size	1 component	8.4	20.0	20.0	27.3	14.5	18.2	9.162	0.907
	2 components	15.2	22.0	15.0	22.0	19.0	22.0		
	3 components	22.3	18.5	19.2	17.8	19.2	25.3		
	4 components	40.2	21.6	16.7	20.1	18.6	23.1		
	>4 components	13.9	17.6	17.6	17.6	27.5	19.8		
Educational level	Upper secondary school	30.5	17.2	18.6	24.4	18.2	21.6	62.870	***
	Primary school	5	0.0	20.0	0.0	20.0	60.0		
	Master's	30	26.2	12.3	16.9	22.7	21.9		

	degree								
	Lower secondary school	33.5	13.3	32.0	17.3	16.0	21.3		
Monthly average income of the family	Less than 1000 €	26.8	19.9	17.6	22.7	20.5	19.3	25.361	*
	1000 - 2000 €	27.4	25.6	14.4	23.3	15.6	21.1		
	2000 - 4000 €;	7.2	17.0	10.6	21.3	14.9	36.2		
	4000 - 6000 €	8.2	13.0	29.6	13.0	25.9	18.5		
	Over 6000 €	8.4	20.0	25.5	14.5	21.8	18.2		
	I won't answer	22.0	18.1	15.3	17.4	22.2	27.1		
Lifestyle and food habits									
Food style	Omnivores	95.9	20.4	16.6	20.1	19.8	23.0	13.651	0.091
	Vegetarian	3.2	23.8	38.1	14.3	14.3	9.5		
	Vegan	0.9	0.0	16.7	50.0	33.3	0.0		
Food habits	I regularly follow a balanced diet	13.3	9.2	13.8	25.3	32.2	19.5	59.685	***
	I try to eat healthy. but occasionally I can't resist it;	70.4	17.5	18.6	22.3	19.9	21.6		
	I eat whatever I want. whenever I want	16.3	41.1	15.0	6.5	8.4	29.0		
Sport	No	52.9	21.0	18.7	19.0	18.7	22.5	1.761	0.78
	Yes	47.1	19.4	15.9	21.4	20.7	22.7		
Frequency of sport activity	1 time per week	24.6	22.4	19.7	18.4	13.2	26.3	8.330	0.759
	2-3 times per week	62.5	19.1	15.5	22.7	21.6	21.1		
	5 or more times per week	12.9	15.0	12.5	20.0	30.0	22.5		
Chocolate purchasing and consumption habits									
Chocolate choice	Extra-dark	22.8	12	19	26	25	18	34.485	***
	Dark	19.7	21	16	19	18	26	3.659	0.456
	Milk	15.4	20	17	20	20	23	14.629	**
	Gianduja (nut-based)	17.7	26	12	16	19	26	12.649	*
	White	6.9	25	18	13	18	27	6.076	0.194
	With dried fruit	4.8	12	14	20	29	25	7.432	0.115
	With added flavours	2.7	18	20	26	10	26	4.136	0.388
	With cereals	9.9	21	19	16	17	27	4.407	0.354

Point of chocolate purchase	Supermarket/hypermarkets	65.2	20.2	16.9	19.7	20.4	22.7	8.593	0.72
	Discount	0.3	27.9	18.3	15.4	24.0	14.4	9.796	
	Confectioneries	14.1	20.2	16.0	20.2	19.6	23.9	0.435	0.979
	Chocolate shops	13.9	14.3	13.5	31.0	19.0	30.8	13.243	**
	Sector events/food events	6.5	9.2	13.8	26.2	20.0	22.2	8.321	0.08
Purchasing motivations	To consume as a snack at any time	36.8	23.0	16.9	19.6	18.1	22.5	5.629	0.229
	For yourself (reward)	9.2	25.2	13.7	19.1	22.9	19.1	5.034	0.284
	To consume it as a sweet/dessert	25.2	22.0	16.4	17.9	19.9	23.8	3.702	0.444
	To give as a gift	7.3	22.1	17.6	16.9	16.9	26.5	2.979	0.561
	Because my family likes it	12	18.1	17.2	19.9	19.5	25.3	1.939	0.747
	For the preparation of sweets	9.5	20.5	15.0	19.5	23.0	22.0	2.667	0.651

Significance level: p-value $<0.01*$; $<0.05**$; $<0.001***$.

In the following clusters description, only the preferences profile and the significant describing variables will be commented.

The *Proposed loyalty* cluster (20.5% of the total sample) chose chocolate by considering the type of chocolate, the brand, together to the hedonic aspects expressed by the product taste and aroma. This kind of consumers make more sought-after purchases with high value, also in economic term, indeed also the design of packaging covers a quite interesting role during purchase. Probably they make superficial choose, taking a short time, without pay attention to the product origin, label information and was indifferent to health claims. They were young consumers, with an average level of educational and a low-average income. This segment mainly consisted of people characterised by irregular food habits with low attention to what they eat. People that declared to "try to eat healthy, but occasionally "couldn't resist" composed almost 20% of this segment. They especially chose Gianduja and White chocolate typologies, purchased mostly from discount stores.

The *Sustainable Value* (17.8%) was the smallest cluster, which placed high importance on the selection of brand linked to environmentally sustainable policies and on the chocolate origin. Comperes to the others clusters this one considers also ethical attribute and without ever neglecting any of the attributes of the chocolate that are subject of this study. It was composed of individuals who were least interested in price, health claims and packaging. They were mostly distributed in older age groups, with average-high educational levels, and average-high family income. This group had a positive attitude towards all the three submitted food habits, buying extra-dark, but also chocolate with added ingredients, at supermarkets and discount stores.

The *Certified healthy value* cluster (20.0%) members beyond chocolate type, during purchase they focus on nutritional aspects with particular attention to certified health properties. These consumers are an accurate consumer who informs himself and reads carefully the label. They have lost contact with the producer but don't neglect aspects of chocolate origin and sustainability. They were, on the contrary, not interested in chocolate hedonic quality (taste/aroma), price and packaging. This group included people with a medium-high age, a high educational level and an average income. They paid attention to the balance of their diet, especially choosing extra-dark chocolate and product types with added fruits or cereals. The principal aspect that differentiated this group from the other was the highest interest towards the food event and chocolate shop for buying a specific and sought-after kind of product.

Individuals belonging to the *Informed consumer* group (20.0%) based their chocolate choice to attributes like brand, chocolate type, price and label information. On the contrary, this cluster is not interest on sustainable attribute (ethical and environment). It also express the lowest attentiveness toward the manufacturer awareness and reputation and the product packaging. Also the sensory attributes, aroma and taste, did not represent for these individuals important drivers for chocolate choice. These consumers were especially young people, with an average-high educational level, equally distributed between financially better-off consumers and low-income individuals. There buyers were very attentive to their food habits that can be defined as rigorous, regular, choosing extra dark, and additional types of chocolate, buying these products without a specific criterion.

The *Certified Healthy Value group* (20.0%) is represented by chocolate buyers who choose the product by paying attention to the type of product, brand, and label information, in which they evaluate the communication of certifications about the quality and health aspects of the product. These purchasers were mainly middle-age individuals, that bought chocolate especially at traditional points of purchase, as chocolate shops and event.

Finally, the largest cluster was represented by the individuals belonging to the *Territorial-related brand trust* group (21.6%). They choose a particular type of chocolate by evaluating the reputation of the territorial-brand that encompasses and expresses the link with the territory, the emotional values and the higher organoleptic quality of the product they are buying. These consumers were the oldest among the other groups, with a low educational level and an average monthly income.

They were the most distracted when consuming food, paying no attention to the regularity of their diet. They buy all types of chocolate, except extra-dark, and they buy it mainly at chocolate shops.

3.3 Predicting the chocolate preferences-related cluster membership

The final MLR including the significant predictor variables in the cluster is described in Table 7. The reference cluster is omitted in the table on MLR results (Baji et al., 2013). The analysis of the probability (β) of each predicting variable to be associated to each group was performed considering the *Sustainable sensitive* as the reference cluster.

Table 7. Results of MLR analysis considering individuals variables as a predictor on cluster membership.

Predictor variables	Proposed loyalty		Certified healthy value		Informed consumer		Territorial-related brand trust	
	β	Std. error	β	Std. error	β	Std. error	β	Std. error
Constant	*-1.471*	*1.29*	*-0.46*	*0.987*	*-0.794*	*1.047*	*0.61*	*0.87*
Socio demographic variables								
Age = 1	1.178*	0.587	-0.007	0.497	0.544	0.517	-0.048	0.503
Age = 2	1.043*	0.584	-0.046	0.491	0.031	0.526	-0.086	0.501
Educational level = 3	0.514	0.467	0.819*	0.422	0.595	0.437	1.001**	0.439
Educational level = 4	1.390**	0.487	0.600	-0.455	1.058*	-0.455	0.903*	0.435
Annual average income of the family =3	-0.943	-0.566	-0.916	0.559	-0.463*	-0.489	-1.424	0.544
Lifestyle information								
Food habits =1	-0.943	0.594	1.463**	0.619	1.652*	0.585	0.785	0.569
Food habits =2	-0.891*	0.363	1.014	0.496	0.877	0.461	-0.287	0.619

Sport = 0	-0.907	0.600	-1.575*	0.626	1.654	0.597	-0.277	0.545
Sport = 1	-0.298*		1.165*	0.503	0.851*	0.470	-0.426	0.373
Chocolate purchasing and consumption habits								
Extra dark =1	-0.730*	0.330	-0.295	0.300	0.315**	0.302	0.422	0.299
Gianduja =1	0.703**	0.325	-0.145	0.330	-0.553	0.324	0.516	0.984
Discount = 0	0.072	0.694	1.734*	0.626	-10.693	0.610	-0.952*	0.347
Chocolate shop = 1	0.502	0.411	-0.239**	0.458	-0.113	0.378	0.094*	0.365

Note: the "Sustainable value" cluster was considered as the reference for comparison with the other consumer groups.

Model Fit Statistics: Nagelkerke Pseudo R2= 0.277. Full model χ^2 (df = 52) = 202.320, p-value< 0.001. Classification accuracy (77%)

* p-value < 0.1; ** p-value < 0.05; *** p-value < 0.01

Considering the socio-demographic features, the probability of belonging to the *Proposed loyalty* cluster, rather than the reference group, was significantly higher for consumers with a low/medium age. Furthermore, individuals with an average educational level had the strongest probability to be associated with the *Proposed loyalty* cluster and *Local sensitive* groups, with respect to the Sustainable sensitive. On the contrary, the average educational level was associated positively with the Local and Health sensitive clusters. The average income appeared negatively associated with the *Informed consumer* group. Considering the Odd ratio calculated for the latter predictor variable (OR = exp β = 0.63), a unit increase of this variable decreased the probability of belonging to the *Informed consumer* group by 37% (1- OR).

As regards information on lifestyle and food habits, the individuals that "regularly follow a balanced diet" (food style =1) were positively associated with *Certified healthy value* and *Informed consumer* clusters. Hence, these individuals had the stronger probability of belonging to these consumer groups rather than to the reference cluster. On the contrary, the consumers that "try to eat healthy, but occasionally can't resist" (food style =1) had a high probability of not belonging to the *Proposed loyalty* cluster. By analysing the Odd ratio calculated for this variable, a unit increase of this factor decreased the probability of belonging to the *Proposed loyalty* by 59% (1-OR=1-0.41).

At the same time, a unit increase of Sport=1 variable (sports activity) decreased the probability of belonging to the *Proposed loyalty*, rather than to the *Sustainable sensitive* cluster by 26% (1-Odd ratio= 1- 0.74) but increased the probability of association of these consumers with the *Certified healthy value* and *Informed consumer* groups. The non-sporting consumers,

on the other hand, had a much lower probability of belonging to the *Certified healthy value* cluster.

Considering the purchasing and consumption habit predictor variables, the consumers of extra-dark and Gianduja chocolate were more likely to belong to the *Proposed loyalty* cluster. Not choosing a discount store as a place to purchase chocolate was instead negatively associated with the *Territorial-related brand trust* cluster, but probably associated with the *Certified healthy value* cluster.

Finally, the choice of chocolate shop as a chocolate point of purchase was associated with the *Territorial-related brand trust* cluster, but not with the *Certified healthy value* one. In particular, the unit increase of the predicting variable Chocolate shop, decreased the probability of belonging to the *Certified healthy value* group by 21% (1-OR= 1-0.79), but increased the probability of association with the *Territorial-related brand trust* cluster (probability increased by 10% points).

3. Discussion

This research explores different chocolate preferences and consumption profiles, introducing the association between several individuals' components (socio-demographic, lifestyle, purchasing and consumption habits) and the consumer groups. Considering the total sample of individuals, the obtained results showed that the choice of chocolate was oriented towards the evaluation of attributes that identify the product according to the type and brand. The type of chocolate is a dominant attribute because all consumers choose above all their favourite and then the other attributes. From the literature, the highest attitude towards the "type of chocolate", is found in people whose hedonistic value is strongly marked, confirming the connotation of chocolate as an emotional and sensory food (Del Prete and Samoggia, 2020; Lybeck et al., 2006; Thaichon et al., 2018). Author deduce that there are two levels of attributes: the first composed of type and the second of all other characteristics of the chocolate under analysis. In addition, the attention to the brand, and thus, in a global assessment, precludes the definition of a chocolate choice orientation mainly related to product loyalty (Lybeck et al., 2006; Puška et al., 2018). On the contrary, the consumers involved showed a low level of importance towards ethical attributes and packaging. Concerning the negative evaluation of the latter product component, this result could be justified considering the type of chocolate product, whose choice is typically linked to an impulsive and irrational purchasing decision. Indeed, as already described in the literature, the graphics, design and colours used, act unconsciously on the consumer who is irrationally influenced by the type of product (Maleki et

al., 2020; TecÃu and Chitu, 2018; Thaichon et al., 2018). One of the few cases where the consumer buys chocolate on the basis of the packaging is when the motivation to purchase can be traced to a gift, in which case the individual rationally studies and chooses the box or packaging that he or she thinks looks best (Joutsela et al., 2017). Even in the case of ethical attributes, the consumers involved in this research agreed to consider this attribute as unimportant. The literature also confirms this chocolate consumer confusion and a general scepticism towards ethical certifications, so much so that individuals tend to request more information about it (Kiss et al., 2015; Vecchio and Annunziata, 2015).

These positive and negative overall attitudes towards chocolate were also confirmed within the different identified consumer segments highlighting how - by also considering the individuals heterogeneity - the whole consumer sample emphasised the hedonic role in choosing a familiar product, together with the health implications (for the 20% of the sample) of chocolate.

However, by profiling consumers according to their preferences and associating them with their identifying characteristics, several insights were revealed to define the five different segments of chocolate consumers. The consumer groups emerged as sub-samples of balanced size, but with significant heterogeneity in preferences towards the selected set of attributes, suggesting a multifocal consumer evaluation of the chocolate product. In addition, comparing them by using the socio-demographic, lifestyle, chocolate consumption and purchasing habit variables, significant differences were revealed. However, an interesting result shows that the individuals' gender and region did not affect the preferences definition towards the chocolate attributes of choice. This result is surprising, given the fact that in our previous cross-regional research comparing Piedmont and Sicily, these two elements were important in influencing the emotions and feelings that arose before and after chocolate consumption (Merlino et al., 2021). This contrasting condition explains how the emotional sphere involved during chocolate consumption is influenced by characteristics intrinsic to the individual that are different from those involved in the decision-making process of buying chocolate itself.

Starting from the largest cluster, the *Territorial-related brand trust* members expressed a high affinity and trust towards local producers, linked to products more related to the expression of sensory characteristics, taste, and tradition of chocolate making, rather than to the health sphere. In fact, the strong disassociation of these individuals with places of purchase such as discount stores, and at the same time the higher probability that they would buy chocolate in traditional chocolate shops, explains how these individuals associate local production not only with higher product quality but also with tradition. This trend was also

confirmed by the type of chocolate choice, for example Gianduja, linked to traditional recipes and taste. This consumer segment could be ascribed in the ethnocentric consumer profile, for which the stronger function of the local brand is often correlated to symbolic food, as chocolate, emphasising product quality, taste and identity (Strizhakova and Coulter, 2015). The association between these subjects and older age is in contrast to the literature that usually sees more mature consumers more oriented towards types of chocolate (extra dark or dark) that are related to their good knowledge of the health benefits of chocolate (Annunziata et al., 2015; Teratanavat and Hooker, 2006), as well as more oriented towards foreign brands than younger subjects who are more oriented towards domestic chocolate products (Chawla and Sondhi, 2016; Strizhakova and Coulter, 2015). These contrasts may therefore be explained by the geographical areas of the survey, both historically linked to chocolate production, and which link this product above all to the traditional version, particularly in the minds of older consumers. These individuals were distinguished from the other groups by their lower level of education, probably more exalted by the symbolic, social and hedonic value of local family production, rather than by aspects of sustainability and healthiness of local/traditional production (Harwood et al., 2012; Merlino et al., 2018; Rojas-Rivas et al., 2020).

The *Proposed loyalty* gave importance of brand familiarity by quickly and directly evaluating the loyal brand, without investing much effort into searching for other characteristics (Ozretic-Dosen et al., 2007). Considering this cluster preference, we can say that the theory reported by various authors who have shown that many consumers belonging to Western culture see the pleasure of food as opposed to its health can be confirmed for these individuals (Raghunathan et al., 2006; Saba et al., 2019). This profile was also consistent with several studies in the literature in which mainly young women consumers are less diet-conscious, not yet afraid of the negative effects of food on the body's health, and therefore inclined to indulge and choose foods to satisfy their needs of physical and emotional pleasure (Brodock et al., 2021). This profile was also in accordance with the significant probability of non-sporty people to belong to this membership segment. The choice of traditionally linked chocolate such as Gianduja, however, presupposes a cultural perspective on chocolate even among the younger generations. Furthermore, in Young and McCoy (2016) a study dedicated to exploring the millennial generation towards sustainability and ethical concerns on chocolate consumption, it was found that for most young consumers, preferences for social factors were few and thus unlikely to outweigh dominant product quality attributes such as brand and ingredients. This last result confirms the interest of this consumer segment towards quality and intrinsic product aspects, rather than credence attributes that define chocolate production. This perspective on

chocolate is generally in line with other research in the agri-food sector, which shows that young consumers always express more anthropocentric attitudes to choice than older generations (Blanc et al., 2020; Massaglia et al., 2018).

The *Sustainability value* segment was the small group among the overall result profiles. This result suggests how the sustainability concerns linked to the chocolate decision-making process were less important for the consumer, thus confirming the predominant taste-hedonic role of this product (Del Prete and Samoggia, 2020). Although some works reveal a link between sustainability, sensitivity and chocolate packaging evaluation (Mai, 2014), going against our results, on the contrary, most of the research in the literature confirms that price exerts limited power over consumers who place sustainability concerns as a discriminating factor for choices (Del Prete and Samoggia, 2020). The importance towards a chocolate brand for this cluster support the theory for which a product brand has a positive impact on consumers and their intention to buy ethical/sustainable certified chocolate. In a comparative study Didier (2008), argued that consumers' willingness to pay less than the actual price for the ethical/environmental sustainability of chocolate in unbranded products, compared to fair trade or certified sustainable products. The socio-demographic profile of this segment, characterised by a majority of mature individuals, confirms the point of view of older consumers who often focus on the ethicality and sustainability of production (Mai, 2014; Massaglia et al., 2018).

The 20% of the sample reflected the profile of those consumers who consider the certified healthy and ethical properties of the product important, rather than taste in their food choice. The preferences of these consumers seem to be strongly defined on the basis of attitudes related to the food and lifestyle of these individuals, motivated by expectations of high product quality (Roininen et al., 2001). In fact, the *Certified Certified healthy value* cluster looked at the type of chocolate when choosing chocolate identified as a Certified Healthy product. While usually the taste/health combination can contribute to a better understanding of consumer choice, the choice of chocolate for this cluster reflected the interaction of a complex web of interconnected factors including diet and lifestyle. Their balanced and attentive eating style is reflected in their choice of extra-dark chocolate, often bought in places that offer a sought-after, under-marketed product. Considering the assumption of the Health and Taste Attitude Scales (HTAS), that describe the positive relationship between individuals' food style and the importance assigned to food product health and hedonic characteristics (Roininen et al., 1999), our results confirmed how people with lower caloric food intake and healthier diets rated their overall health interest as high (Saba et al., 2019). On the contrary, al also confirmed in Saba et al. (2019), taste-related attitudes were not associated with any type of eating behaviour.

Finally, the *Informed consumer* was the cluster with the highest interest towards chocolate price during its choice. Although it emerges that price is still an important and limiting attribute for the choice of chocolate (Saba et al., 2019), in this case the focus on price is associated with brand. This combination probably explains the choice towards an established brand in the market whose added value and quality is evaluated by the consumer through price. This result confirms that attributes such as price and brand, together with taste, are valued much more carefully by consumers than other attributes, such as origin, healthy or sustainability attributes, due to the low-involvement products such as chocolate (Ozretic-Dosen et al., 2007a).

The higher probability that individuals with a high level of education, but a low income who belong to this group, shows that the general valuation of the price of the products, but also of the consumer, is significantly related to the economic availability of the individuals (Harwood and Drake, 2018; Smith et al., 2009). Furthermore, their careful eating style associated with an active lifestyle is positively associated with the higher probability of choosing extra-dark chocolate (Hu et al., 2020).

In the case of chocolate purchasing motivations, although several authors have confirmed the symbolic significance of chocolate by exploring the choosing motivations (Chawla and Sondhi, 2016), in our research these elements had no significant difference across the motivational variables of the five groups, thus indicating that a large majority buy chocolate to consume it as a sweet or snack. This result might be a sample bias or maybe consumers just see chocolate as an indulgent food and they don't care too much about e.g. ethical labels, sustainability and so on.

Conclusions

This research demonstrated the multidimensional evaluation of chocolate preferences, showing a complex and heterogeneous purchasing process influenced by product characteristics, individuals' lifestyle, food habits and socio-demographic features. When considering both the whole sample and assessing the size and composition of the clusters, it emerges that the choice of chocolate for individuals in all its nuances is driven above all by the type of chocolate and the brand, relating on the one hand to taste and aroma and on the other, to the health aspects of the product. Characteristics related to the environmental and/or social sustainability of chocolate are an important purchase driver for the minority of the sample. Social-demographic and lifestyle characteristics are the most important determinants of choice. Maybe in the future this trend will be increase. Specifically, the age and educational level, together with individuals' eating styles are the most important variables for profiling

preferences. On the other hand, the region of origin of the respondents was not important in defining preferences, introducing a vision of geographic universality of the choice of chocolate that becomes an increasingly personal-related choice.

As far as the limitations of our research are concerned, the results of this study are product-specific, related to chocolate; additionally, the research sample is no a probabilistic sample but can be a starting point for future research. As generalisations beyond this group are precluded, future researches should consider a nationwide sample and/or other countries for cross-country comparison. Moreover, the sample was composed of individuals of two areas of Italy, which were homogeneous in terms of sample preferences towards chocolate. This study has important implications both from the academic because can be a starting point for define consumers' preference for other supply chain , study new variable and interaction between them, and know the psychological patterns of consumers. For producers, companies and for all supply-side players, from different consumption profiles it's possible develop new communication campaigns and marketing strategies that focus on specific pattern and ad-hoc product lines.

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