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Fruit-related lifestyles as a segmentation tool for fruit consumers

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Abstract

Purpose – This study develops a modified food-related lifestyle (FRL) instrument to analyse Kosovo consumers' fruit consumption behaviour and attitudes.

Design/methodology/approach – The research study is based on a structured questionnaire designed using a reduced version of the FRL instrument, including evaluation factors related to fruit consumption, which is useful to describe a fruit-related lifestyle. Data were collected through a face-to-face survey with 300 consumers in three main cities in Kosovo. A principal component analysis (PCA) with Varimax rotation and Kaiser Normalisation was performed to interpret and investigate fruit-related lifestyles. Cluster analysis was performed to analyse market segments, using the identified factors obtained from the PCA, a hierarchical clustering algorithm with a Ward linkage method and the K-means clustering technique.

Findings – Consumption behaviour is motivated by health concerns (perceived), fruit (nutrition) content and consumption habits. Four distinct consumer clusters were identified based on the fruit-related lifestyle instrument and analysed considering the different fruit purchase and consumption behaviour, attitudes towards health, quality, taste and safety.

Research limitations/implications – The authors adapted a survey tool based on a reduced FRL instrument to elaborate a specific survey instrument suitable to describe the fruit-related consumer's lifestyles. The instrument was not designed according to the standard scales design procedure, but it is a first step towards creating a fruit-related lifestyle instrument.

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Originality/value – The fruit-related lifestyle instrument can be used in studies focused on fruit consumer segmentation. Results provide insight into fruit marketing and distribution companies, which can adjust their marketing strategies and customer-oriented initiatives tailored for specific consumer segments. Results can be useful also for policymakers to promote increased fruit consumption.

Keywords Consumer attitudes, Consumer behaviour, Fruit, Food-related lifestyles, Principal component analysis, Cluster analysis

Paper type Research paper

1. Introduction

Fruit and vegetables are considered the cornerstone of healthy diets (Slavin and Lloyd, 2012; Wallace *et al.*, 2020). A diet based on fruits and vegetables positively affects disease prevention, personal health promotion and weight management (Knai *et al.*, 2006; Verzeletti *et al.*, 2010). One of the ten risk factors for death is the low consumption of fruits and vegetables; if these products were consumed at sufficient levels, the lives of about 2.7 million people could be saved annually (WHO, 2003; 2004a).

Despite the health importance of fruits and vegetables, many people do not consume even the minimum recommended amount (Rekhy and McConchie, 2014; WHO, 2004b). A diet with minimum consumption of 400 grams (i.e. five portions) of fruits and vegetables per day is recommended by the World Health Organization (WHO) (WHO, 2003). Nevertheless, the actual consumption is half of the recommended daily allowance for adults in Europe and as low as 6–8% in the USA (Produce for Better Health Foundation, 2010; Rekhy and McConchie, 2014). These conditions have led governments and non-government stakeholders to promote fruit and vegetable consumption for nutrition policy purposes (Rekhy and McConchie, 2014). Therefore, insight into the determinants of fruit consumption is essential to improve consumption promotion and achieve the set goals (Menozzi and Mora, 2012).

Understanding fruit and vegetable consumers' behaviour is also important because available statistics on the consumption of fruits and vegetables may not accurately reflect the consumption patterns or behaviour (Díaz-Garcés *et al.*, 2016). Many factors affect fruit consumption behaviour and consumers' preference – first and foremost socio-demographic characteristics (Rasmussen *et al.*, 2006; Verzeletti *et al.*, 2010). For example, study results show that women consume more fruit than men (Menozzi and Mora, 2012). Previous studies show that age also affects consumption patterns (Godin *et al.*, 2010; Shaikh *et al.*, 2008), e.g. the elderly consume more fruit than youngsters (Menozzi and Mora, 2012). Other studies highlight additional factors, such as family role models and lifestyle (Neumark-Sztainer *et al.*, 2003; Tak *et al.*, 2008).

Previous research on fruit consumption behaviour and consumer preferences used an explorative, qualitative approach rather than descriptive tools, such as the food-related lifestyle (FRL) instrument. For instance, see Furst *et al.* (1996) regarding analysis of consumer food choices using qualitative methods and Krølner *et al.* (2011) for a systematic review of qualitative studies of determinants of children's fruit and vegetable intake. Some studies based on focus groups, such as Gámbaro *et al.* (2021), aimed at identifying sensory aspects relevant for fruit consumption using the "check-all-that-apply (CATA)" method, while Mesías *et al.* (2021) explored the attitudes of fruit consumers towards naturalness and preservatives. Other studies are also explorative but they are based on quantitative research, for instance, using CATA to identify relevant fruit attributes (Tarancón *et al.*, 2021), while other approaches are rather causal and based on longitudinal measures (see Bere *et al.*, 2008). These approaches are useful in many situations, but they are less suitable for a segmentation study comparable across geographical areas and cultures. Qualitative research does not allow a standard statistical representation of the results (Harris *et al.*, 2009; Paisley *et al.*, 2001), and different qualitative research methods can lead to diverging results. For instance, compared with individual interviews, in focus groups, participants are less likely to express their opinions freely (Nyumba

et al., 2018), and consumer buying behaviour descriptions can be misleading (Gámbaro *et al.*, 2021).

In addition to personal and family characteristics (highlighted above), a person's lifestyle has been identified as an important factor (Menozzi and Mora, 2012; Pearson *et al.*, 2009). An FRL is defined as the interface between the consumer's values and the product's perception and buying behaviours (Grunert, 2006; Grunert *et al.*, 1993, 2001). Investigating people's lifestyles in marketing research can be challenging, as a person may have a complex (food-related) lifestyle, varying also in the function of the selected products and attributes (Thøgersen, 2017).

FRL vary across cultural or ethnic groups – people with different cultural backgrounds appear to have different eating patterns (Kapelari *et al.*, 2020; Nemeth *et al.*, 2019). FRL can categorise consumers based on attitudes toward purchasing, preparing and consuming food, while each group may have a different lifestyle or behaviour related to specific food segments (Jang *et al.*, 2011a, b). In addition, in today's world, there are concerns such as food safety, the importance of being organic and sustainability in food consumption, which have made an investigation on FRL even more necessary; attention to such concerns has increased in conjunction with Covid-19 (Borsellino *et al.*, 2020).

The FRL instrument developed by Grunert (2006) and Grunert *et al.* (2001) is a convenient tool aimed at describing people's lifestyles related to food and is based on five dimensions: ways of shopping (items related to product information, attitudes towards advertising and shopping information), quality aspects of food (related to taste and freshness), cooking methods (interest in cooking and willingness to use new ways), consumption situations and purchasing motives (social event and self-fulfilment in food) (Eun *et al.*, 2020; Huang *et al.*, 2015). These dimensions are evaluated at the individual level using an instrument composed of 69 items. However, in many studies, the instrument has been modified, either reducing the number of items or adapting it to the study's specific purpose, e.g. making it more suitable to the type of food analysed (Montero-Vicente *et al.*, 2019; Wycherley *et al.*, 2008).

Previous research applying the FRL instrument has focused mostly on Western countries, but there have been attempts to replicate this approach to other settings (Grunert *et al.*, 2011; Scholderer *et al.*, 2004). There have been several publications studying FRL in post-communist transition countries too. One of the earliest publications is Kesić and Piri-Rajh (2003), who carried out a market segmentation analysis based on FRL in Croatia. Several later publications on transition countries used FRL in conjunction with health and organic. Żakowska-Biemans (2011) analysed Polish consumers' motives for food choice focusing on organic food using FRL. Also, Djokic *et al.* (2018) used FRL to analyse consumer preferences and market potentials for organic food. Szakály *et al.* (2012) analysed the relationship between Hungarian consumers' lifestyle, health behaviour and functional foods consumption. Pérez-Cueto *et al.* (2010) applied FRL to identify specific FRL dimensions that are potential predictors of obesity in five European countries (Belgium, Denmark, Germany, Greece and Poland).

This paper focuses on consumer behaviour related to specific fresh food products, i.e. fresh fruit. Data are used from a survey using a reduced version of the FRL instrument and include several questions on fruit-related aspects. In this context, this study explores consumer fruit-related lifestyles, identifies consumer segments according to their FRL and describes and analyses consumers' clusters, providing insight both to policymakers and local producers. The outcome is useful for market researchers and marketing and foodservice operators who need to identify consumer segmentation from FRL patterns (Jang *et al.*, 2011a).

The consumer survey was administered in Kosovo, a post-communist transition economy, which is suitable because fruit production is among the main agri-food sectors. Furthermore, Kosovo consumers have a relatively high level of fruits consumption (FAO, 2014).

This paper adds to the limited literature on FRL in transition countries, but it also provides a starting point for developing a specific instrument for studying fruit consumer behaviour that could be further developed and used in other contexts.

The structure of the paper is as follows: the following section consists of the literature review on FRL, and the third section describes the data and methods, followed by the results section and conclusions.

2. Food-related lifestyle overview

Lifestyle research as a topic for investigating consumer segmentation was first developed by Lazer (1963). In the FRL approach, lifestyle is defined as personal values and perceptions of concrete objects and behaviours expressed as cognitive categories that affect food consumption and purchasing (Grunert *et al.*, 2011).

The link between lifestyle and food was specifically addressed by a survey instrument developed in the early 1990s by Brunsø and Grunert (1995), Grunert *et al.* (2011), Su and Haynes (2017). This theory measures consumer preferences and attitudes toward products by examining the relationship between product attribute perceptions and motives or values (Brunsø and Grunert, 2007; Kim *et al.*, 2018). This approach allows a consistent food market segmentation across countries and assessing consumers' attitudes toward specific foods and their preference for consumption. The FRL instrument is defined as a tool to group consumer shopping and consumption related to quality, health, taste and freshness (of food products) (Buckley *et al.*, 2007); it typically incorporates five distinct components of shopping, i.e. food quality, cooking method, consumption and shopping motivation (Montero-Vicente *et al.*, 2019), and these factors can be modified for deeper analysis of food markets (Fang *et al.*, 2013; Ryan *et al.*, 2004). It can also be considered a practical tool for sub-domain segmentation (Wycherley *et al.*, 2008).

The FRL instrument is suitable to describe people lifestyles using a quantitative measurement approach. In this respect, it is a descriptive research tool. Its main uses are individuals' profiling or consumer segmentation. This allows describing consumers according to certain characteristics included in the instrument. Then, the lifestyle profiles are associated and used to explain other specific aspects, such as obesity, consumers care about food quality or safety, the enjoyment of eating in social places and trying novel foods, the impact of advertising on their eating habits as well as snacking habits (Pérez-Cueto *et al.*, 2010).

Past research has shown that people can be grouped into various segments that differ by social, demographic and attitudinal characteristics (Jang *et al.*, 2011b). The FRL model has been widely used in research in Europe, the USA and other countries because it explains consumers' motivation to eat or consume and purchase (Nie and Zepeda, 2011; Saba *et al.*, 2019). There has been a growing interest in the applied research to apply FRL in conjunction with health, including consumer preference or attitude towards organic food and the association of FRL with obesity (Djokic *et al.*, 2018; Żakowska-Biemans, 2011).

The FRL questionnaire content (e.g. items) depends on the research subject, such as convenience food and soft drink, and each market trend survey can be used (Buckley *et al.*, 2007; Eun *et al.*, 2020; Kim *et al.*, 2018). There have been several studies focusing on fruit and vegetables. Montero-Vicente *et al.* (2019) analysed fresh fruit consumers in Spain applying FRL in Spain, whereas Dimech *et al.* (2011) examined the influence that Maltese consumers' lifestyles have on their attitudes towards fruit and vegetables quality features.

As a general-purpose instrument, FRL does not focus on any specific food category. Some items, such as interest in cooking and cooking methods, do not match the study of fresh fruit consumption. Thus, an instrument to describe the consumer's "fruit-related lifestyle" would benefit from integrating specific behavioural and attitudinal elements related to fruit purchase and consumption. Such an instrument can be used whenever fresh fruit consumer behaviour needs to be described and adapted to study the consumption behaviour of other fresh foods, such as vegetables usually prepared as salads or eaten raw.

The modified FRL instrument (that can be called "fruit-related lifestyle") is based on several factors that influence consumer fruit preferences and consumption behaviour in previous studies. It provides a measurement of consumer characteristics on several aspects, such as the

importance of fruit information and brand for consumers (Kleih and Sparke, 2021; Mesías *et al.*, 2021; Migliore *et al.*, 2015; Tarancón *et al.*, 2021), the reason for choosing a fruit shop (Mesías *et al.*, 2021; Rekhy and McConchie, 2014), fruit-related consumption behaviour (de Bruijn, 2010; Konopacka *et al.*, 2010; Menozzi and Mora, 2012), quality and taste perception (Dimech *et al.*, 2011; Kleih and Sparke, 2021; Mesías *et al.*, 2021; Tarancón *et al.*, 2021), as well as health and safety concerns (Díaz-Garcés *et al.*, 2016; Mesías *et al.*, 2021; Tarancón *et al.*, 2021).

3. Research method

3.1 Questionnaire design

The structured questionnaire was designed based on the previous FRL studies highlighted in Section 2. Together with a reduced version of the FRL instrument, the questionnaire included socio-demographic characteristics and evaluation factors related to fruit consumption, which is useful to describe a fruit-related lifestyle. The first part of the fruit-related section was about fruit information, label and brand, including questions about the importance of information about fruit, production country or region, producer's details, seller and brand. In the second part of the section, questions were included about the reasons for choosing a fruit shop/outlet, including shop distance, fruit price, store hygiene and cleanliness, fruit freshness and choice variety in the store. In the third part of the section, perceptions or preferences about the type of store or market that fruits are supplied was examined, such as farmers' markets or green markets, on-farm shopping, supermarket, neighbourhood or convenience shop. In the fourth part, respondents' fruits consumption habits were examined, including three questions about the reasons for consuming fruit (nutrients content/vitamins, affordability or habit). In the fifth section, quality and taste perception were evaluated, including questions about the quality of domestic versus imported fruits, the effect of soil on fruit quality, the importance of touching the fruit (e.g. when buying to select the right quality) as well as whether fruit tasting or smelling affect consumer choices. In the sixth section, the evaluation of respondents' price-consciousness was performed using the following questions (Bruner *et al.*, 2001):

(1) Do you check the price of the purchased fruit at the time of purchase or not?

(2) Do you pay attention to special offers?

(3) Do you believe that a person can save much money by shopping around for bargains?

(4) Do you check prices even when buying inexpensive items?

In the seventh section, health concerns were evaluated through agreement/disagreement with the following statements (Dimech *et al.*, 2011):

(1) Fruits are important if one wants to have a varied diet.

(2) Regular consumption of fruits can probably prevent diseases.

(3) I pay attention to having a healthy diet.

Finally, in the eighth section, fruit (food) safety was examined by questions including safety certificate of fruit products in terms of confidence in food safety, organic certification of fruit products and perceived (food) safety according to the origin (imported versus domestic).

3.2 Sample

The data were collected through face-to-face interviews with 300 consumers in three major cities of Kosovo: Prishtina, Prizren and Gjilan. The sample size was decided considering the available resources and was based on a 95% confidence level (alpha = 0.05) and a confidence interval of about 6% for binary options equally distributed in the population. The sample was proportionally allocated among the three cities according to population size reported by the

ASK (2013) population census (Prishtinë 145,149 inhabitants, 150 respondents, Prizren 85,119 inhabitants, 90 respondents; Gjilan 54,239 inhabitants and 60 respondents). From a marketing perspective, these three markets are the main ones in terms of size and purchasing power.

The survey was carried from December 2013 to January 2014, by trained, experienced graduates and students, under the authors' supervision, using a random intercept approach in different locations in the mentioned cities. Judgement was used to decide the sampling locations, while the on-site selection was performed according to expert recommendations. This approach does not guarantee that the resulting sample represents the general population because the sample frame (people attending the selected locations during data collection) is much smaller than and may be different from the population. The comparison of the sample with the population statistics is reported in Table 1.

The resulting sample is slightly biased, showing over-representation of younger people and under-representation of elders. The sample appears biased also concerning "education level" since most respondents had a university degree (about 49%), and respondents with a high school diploma and middle education were for about 39 and 9%, respectively (Table 1). Also, it should be noted that the statistics are reported for the whole population (largely rural society), while the survey targeted urban areas, namely the largest and most developed cities (especially Pristina), which have a high level of university-educated citizens by default since the capital hosts Kosovo's key academic and public institutions. Since the purpose of the study is not an accurate representation of consumer segments, this is not a relevant issue. Still, it must be taken into account when considering the shares of the different segments derived from this sample.

3.3 Data analysis

The data are analysed using principal component analysis (PCA) with Varimax rotation and Kaiser normalisation, using the software package SPSS 24.0. The PCA analysis items with a factor loading below 0.40 commonality (Eun *et al.*, 2020) and an eigenvalue lower than or equal to 1 were excluded. The internal reliability of each factor was assessed by Cronbach's alpha (Cronbach, 1951).

After obtaining the orthogonal factors, market segments based on consumers' fruit-related lifestyles were obtained using cluster analysis. A hierarchical cluster analysis with a Ward linkage and K-means clustering technique (Hair *et al.*, 2010) was used. In the end, ANOVA and Duncan's multiple range tests were used on socio-demographic characteristics to assess the differences among segments.

	Category	Sample % $n = 299$	Kosovo %[1]
Age	19–30 years old	37.7	15.0
	31–40 years old	22.3	36.8
	41–50 years old	23.0	26.3
	51–60 years old	13.7	11.0
	More than 60 years old	3.3	10.8
Gender	Male	46.8	50.3
	Female	53.2	49.7
Education	Basic to middle school	11.5	66.5
	High school	39.2	20.6
	Higher education and university	49.3	12.9
Household size	1–2 persons	1.7	9.3
	3–4	24.0	24.1
	5 persons or more	74.3	66.6
Monthly income	Average	314	370

Note(s): [1]Kosovo Agency of Statistics, 2017 (http://askdata.rks-gov.net)

Table 1. Socio-demographic variables of the sample and population

4. Results

4.1 Principal component analysis

The Kaiser–Meyer–Olkin (KMO) statistics of the PCA is 0.660, exceeding the recommended value of 0.6 (Kaiser, 1974). The Bartlett's test of sphericity reached statistical significance, thus supporting the factorability of the correlation matrix (Bartlett, 1954). According to factor loading, eigenvalue and Cronbach's alpha, the 33 items can be grouped into eight significantly different factors (Table 2). These factors explain 64.91% of the total variance.

(1) Factor 1 consists of questions about the importance of fruit information, where the fruit was produced (country or region), the grower's name, knowing the seller and brand reputation.

(2) Factors 2 and 3 relate to shopping habits in two cases of the reason for choosing a fruit shop (criteria for choosing where to buy, such as distance, fruits price, hygiene, freshness and fruits varieties) and speciality shops (farmers or green market, on-farm shopping, supermarket and neighbourhood or convenience shop).

(3) Factor 4 comprises fruits consumption habits, such as fruit content, vitamins, affordability and regular consumption.

(4) Factor 5 is about attitudes toward fruit quality and taste perception based on domestic and imported fruits quality, the impact of contaminated soils on fruit quality, taste smell and touching perceptions.

(5) Factor 6 relates to the price-consciousness' scales, such as checking alternatives prices, looking for specials, bargains during shopping and price checking of inexpensive items.

(6) The health concern is reflected by Factor 7. Its items include the importance of fruits in the diet, fruit consumption in preventing diseases and attention to having a healthy diet.

(7) Factor 8 is about confidence in fruit safety, including safety and organic certificate, the safety of domestic and imported fruits as health concerns.

Looking at the average score in the original items loading on Factor 1, information about fruits was most important to respondents, which may be due to quality or taste perception, which is in accordance with the results of Factor 5 or safety aspect (results of Factor 8 items). The reason for choosing a fruit shop (Factor 2), freshness of fruits and hygiene of a fruit shop had a high point among other items. Farmers' markets or green markets and supermarkets had the highest correlation coefficient for Factor 3. This finding can be linked to safety and convenient shopping (buying several things simultaneously). In the case of food consumption lifestyle, fruits were consumed because of their vitamins (Factor 4), and respondents are used to checking prices on alternatives before buying a fruit (Factor 6).

4.2 Cluster analysis

Cluster analysis resulted in four clusters based on the factors obtained from the PCA (Table 3). Cluster 1, labelled as the "careless consumers", accounts for about 17% of the sample ($N = 44$) and has low-factor scores compared to other segments. Cluster 2, the "adventurous" consumer group, comprises about 39% of the sample ($N = 102$); they show high scores in shopping habits (choosing a fruit shop), quality and taste perception factors, indicating pursuit of various values related to fruit quality and taste, especially for importance of eating, touching, smelling, tasting and seeing. This segment can also be labelled as quality-seeking consumers in line with Kim *et al.* (2018). The consumers of this

Factors and attributes	Average points	Std. deviation	Factor loading	Eigen value	Cronbach's alpha
Factor 1. Fruits information, labels and brands				13.870	0.594
Product (fruit) information is of high importance to me[1]	4.31	0.804	0.590		
Country where fruit is produced[2]	3.47	1.134	0.872		
Region within Kosovo where fruit is produced[2]	3.18	1.115	0.885		
The name of the grower[2]	3.54	1.043	0.482		
Knowing the seller[3]	2.21	0.876	0.760		
Brand reputation[3]	2.70	0.950	0.670		
Factor 2. The reason for choosing a fruit shop				4.305	0.551
I choose where to buy fruits based on distance[1]	3.27	0.958	0.653		
Price is important[1]	3.59	0.956	0.486		
Hygiene is important[1]	4.62	0.511	0.706		
Freshness of fruits is important[1]	4.61	0.565	0.761		
Varieties of fruits is important[1]	4.06	0.828	0.650		
Factor 3. Speciality shops				2.688	0.570
Farmers' markets/green market[1]	4.12	0.944	0.769		
On farm directly[1]	3.47	1.100	0.593		
Supermarket[1]	3.82	0.722	0.732		
Neighborhood/convenience shop[1]	3.30	0.812	0.727		
Factor 4. Fruits' consumption habits				1.970	0.585
I consume fruits because they contain vitamins[1]	4.37	0.686	0.419		
Fruits are generally affordable for me[1]	3.57	0.789	0.716		
It is a tradition to eat fruits regularly[1]	3.97	0.766	0.462		
Factor 5. Quality and taste perception				1.572	0.562
Domestic fruit is of high quality[1]	4.01	0.781	0.851		
Imported fruit is of high quality[1]	3.05	0.758	0.761		
I am very concerned about contaminated soils and their impact on fruit quality[1]	3.84	1.038	0.469		
Eating is to me a matter of touching, smelling, tasting and seeing; all the senses are involved[1]	3.84	0.819	0.501		
Factor 6. Price-consciousness' scales				1.184	0.574
When I am in a shop I will always check prices on alternatives before I buy[1]	3.86	0.766	0.603		
When I buy or shop, I really look for specials[1]	3.73	0.810	0.787		
I believe a person can save a lot of money by shopping around for bargains[1]	3.81	0.886	0.431		
In a store, I check the prices, even when I am buying inexpensive items[1]	3.85	0.748	0.599		
Factor 7. Health concern				1.854	0.501
Fruits are important if one wants to have a varied diet[1]	4.05	0.839	0.548		
A regular consumption of fruits can probably prevent diseases[1]	4.04	0.836	0.706		
I pay attention to having a healthy diet[1]	3.93	0.918	0.456		

(*continued*)

Table 2.
Exploratory and confirmatory factor analysis of fruit-related lifestyle

Factors and attributes	Average points	Std. deviation	Factor loading	Eigen value	Cronbach's alpha
Factor 8. Confidence in fruit safety				1.695	0.586
Safety certificate of fruit products in terms of your confidence in food safety[3]	3.02	0.870	0.844		
Organic certification of fruit products in terms of your confidence in food safety[3]	2.84	0.885	0.810		
Domestic fruit is safe for health[1]	4.07	0.718	0.822		
Imported fruit is safe for health[1]	3.05	0.787	0.768		

Note(s): 1. Five-point semantic scale (strongly disagree, disagree, neither agree nor disagree, agree and strongly agree)
2. Five-point semantic scale (never, occasionally, frequently, often and always)
3. Five-point semantic scale (very low, low, moderate, high and very high)

Table 2.

Factors	Careless consumer 17.1% (n = 44)	Clusters total = 258 Adventurous consumer 39.5% (n = 102)	Conservative consumer 26.3% (n = 68)	Functional consumer 17.1% (n = 44)	F-value	Sig
Factor 1. Fruits information, labels and brands	2.74 (0.89)	3.15 (0.63)	3.00 (0.89)	4.00 (0.89)	23.22	0.00
Factor 2. The reason for choosing a fruit shop	3.60 (0.55)	4.40 (0.55)	3.72 (1.00)	3.80 (1.30)	22.22	0.00
Factor 3. Speciality shops	2.75 (0.50)	3.75 (0.50)	3.25 (0.50)	3.25 (1.26)	16.28	0.00
Factor 4. Fruits consumption habits	3.67 (0.58)	4.00 (0.00)	4.00 (0.00)	4.33 (0.58)	8.92	0.00
Factor 5. Quality and taste perception	3.15 (0.50)	3.81 (0.50)	3.22 (0.50)	3.75 (0.50)	12.96	0.00
Factor 6. Price-consciousness' scales	3.45 (0.50)	3.75 (0.00)	4.02 (0.50)	3.84 (0.00)	10.49	0.00
Factor 7. Health concern	3.33 (0.58)	4.00 (0.00)	3.67 (0.58)	4.33 (0.58)	14.29	0.00
Factor 8. Confidence in food safety	3.15 (0.50)	3.25 (0.50)	2.75 (0.96)	3.50 (0.58)	17.08	0.00

Note(s): Results are presented as factors mean (standard deviation) and significant difference using ANOVA with Tukey's post-hoc tests

Table 3.
Cluster analysis for consumers' fruit-related lifestyles

segment show the greatest interest in shopping place, and special fruit shop and freshness and varieties of fruits impacted their choosing shopping palace. Cluster 3, the "conservative" consumers with about 26% of the sample (N = 68), appears to have relatively high price consciousness scale (Factor 6) scores compared to other segments. They usually check prices on alternatives, look for specials and believe a person can save money by bargains. For the last cluster (4), "functional" consumer, with about 17% (N = 44), health and food safety are

important. Since a healthy diet is important for these consumers, they pay special attention to fruit in their FRL and pay special attention to aspects of fruit safety, including health certificates and the region in which the fruit is produced. Also, product information, such as the grower's name, knowing the seller and brand reputation, influences their purchases and fruit consumption while they are also price-conscious.

4.3 Socio-demographic characteristics of segments

Table 4 shows the results of the Kruskal–Wallis test for socio-demographic characteristics of segments. Characteristics of education, household size and monthly income differ significantly between the identified segments.

Regarding education, the consumers in the "functional" cluster are relatively well-educated (about 70% of this segment have university education) and live in smaller households; health and food safety appear important for this cluster. Similarly, "adventurous" consumers, who are relatively highly educated, can be considered "health

Socio-demographic characteristics	Careless consumer (n = 44)	Adventurous consumer (n = 102)	Conservative consumer (n = 68)	Functional consumer (n = 44)	$\chi^{2\#}$
Age					1.157
19–30 years old	15 (34.1)	37 (36.3)	11 (16.1)	9 (20.4)	
31–40 years old	17 (38.6)	27 (26.5)	8 (11.8)	16 (36.4)	
41–50 years old	9 (20.5)	21 (20.6)	31 (45.6)	12 (27.3)	
51–60 years old	2 (4.5)	14 (13.7)	15 (22.1)	5 (11.4)	
More than 60 years old	1 (2.3)	3 (2.9)	3 (4.4)	2 (4.5)	
Gender					4.317
Male	26 (59.1)	46 (45.1)	29 (42.7)	17 (38.6)	
Female	18 (40.9)	56 (54.9)	39 (57.3)	27 (61.4)	
Education					11.943**
Basic (4 years)	0 (0.0)	1 (0.9)	1 (1.5)	0 (0.0)	
Middle (9 years)	3 (6.8)	6 (5.9)	6 (8.8)	0 (0.0)	
High school (12 years)	22 (50.0)	51 (50.0)	42 (61.8)	13 (29.5)	
University	19 (43.2)	44 (43.2)	19 (27.9)	31 (70.5)	
Household size					19.731**
2 members	1 (2.3)	2 (1.9)	1 (1.5)	1 (2.3)	
3–4 members	19 (43.2)	48 (47.2)	29 (42.6)	15 (34.1)	
5–6 members	17 (38.6)	14 (13.7)	22 (32.4)	22 (50.0)	
7–8 members	6 (13.6)	28 (27.4)	13 (19.1)	3 (6.8)	
More than 8 members	1 (2.3)	10 (9.8)	3 (4.4)	3 (6.8)	
Monthly income					8.887*
150–250 EUR	1 (2.3)	1 (0.9)	3 (4.4)	0 (0.0)	
251–500 EUR	14 (31.8)	17 (16.7)	18 (26.5)	5 (11.4)	
501–800 EUR	15 (34.1)	51 (50.0)	17 (25.0)	9 (20.4)	
801–1,200 EUR	10 (22.7)	25 (24.7)	17 (25.0)	20 (45.4)	
1,201–1,500 EUR	3 (6.8)	7 (6.8)	5 (7.4)	5 (11.4)	
1,501–2,000 EUR	1 (2.3)	1 (0.9)	6 (8.8)	5 (11.4)	
More than 2,000 EUR	0 (0.0)	0 (0.0)	2 (2.9)	0 (0.0)	

Note(s): Results are presented as number (percentage), * indicates significant at $p < 0.05$ and ** indicate significant at $p < 0.01$
Kruskal–Wallis test

Table 4. Socio-demographic characteristics of consumers' clusters

concerned" and "quality seeking" consumers. This group of consumers demonstrate a particular interest in fruits' freshness and varieties. University-educated, wealthier and female consumers dominate the functional cluster. This cluster scores higher in most factors compared to other clusters – the difference is more remarkable in the case of Factor 1; thus, well-educated female consumers tend to pay more attention to product information and labels.

5. Discussions and conclusions

This paper analysed Kosovo consumers' fruit consumption behaviour using the FRL approach. Fruit-related factors were structured specifically to describe fruit consumption behaviour. Eight factors derived from the combination of 33 items were used to investigate the so-called fruit-related lifestyle. The items included information about fruits and their brand, fruit purchasing habits, choosing the type of fruit shop and type of fruit supply, fruit consumption habits, attitude towards fruit quality and taste, price-consciousness scales, health concerns and fruit safety concepts.

The results of consumers' perceptions of fruit consumption revealed that regular fruit consumption was a habit/tradition. Consumers stated that their consumption was determined by vitamins and the importance of fruit consumption in various diets, referring to the consumer's perceptions of the importance of health and the fruit contents. Consumer behaviour is understandable due to the importance of physical activity and sports to their health condition. The results of a study by Menozzi and Mora (2012) in Italy revealed that respondents who did regular physical activity and cared about their health tend to consume a higher amount of fruit. The same result was found in Silva and Silva (2015) study in Brazil that low physical activity was associated with low consumption of fruits and vegetables and lack of awareness of the importance of fruit for health and a healthy lifestyle.

Out of the four designated groups (careless, adventurous, conservative and functional consumers), the "careless consumers" had the lowest factor scores. The "adventurous" consumers' group (the largest one) had a high score in the factors relating to fruit buying habits, fruit quality, taste and freshness perception. They also score high referring to the place to purchase fruits, indicating pursuit of various values related to fruit quality and taste, especially for the importance of eating, touching, smelling and tasting. In other studies, a similar group of consumers was identified and called "foodie consumers" (Mohsen, 2017; Sloan, 2013). These people are very interested in discovering the world of food and want to try new flavours, and for them, taste, texture, aroma and presentation are of great importance. This group has attracted the attention of many marketing researchers, especially in food, because they can expand their market share through these consumers. "Innovative consumers" was a term used in the Wongprawmas *et al.* (2018) study to refer to a group of customers who welcome new foods and innovations and enjoy buying food. In the Wycherley *et al.* (2008) study, the "adventurous segment" also appreciated what stores and agricultural markets offer and believed that retail outlets could offer specific products with specialised advice. They also trust more in food content than other segments of the study.

The "conservative consumers" (third cluster) are highly price-conscious compared to other clusters. They usually check prices on alternatives, look for specials and believe a person can save money by bargains. Also, according to Wycherley *et al.* (2008), these consumers were less inclined to organic and healthy foods and similar to their conclusion that conservative segment consumers were less inclined to special foods with high quality and good taste. We also observed a similar result for the food safety factor in this study. Indeed, fruit consumers in this sector, in addition to the issue of health, do not pay enough attention to food safety. Also, according to Wongprawmas *et al.* (2018), who surveyed the quality and origin of meat in the Kosovo region, "conservative consumers" were sensitive to product prices due to their

traditional behaviour, and product information and quality were of lower importance and priority to them. As Haas *et al.* (2016) showed, in the study of quality attributes of milk and dairy products, conservative food consumers tended to consume familiar foods and were not interested in consuming new foods and therefore had lower involvement in food purchasing.

The fourth cluster, "functional consumers", contrary to the conservative consumers, emphasised health and food safety because a healthy diet was important to them, and they paid special attention to health, regional certificates, the brand of fruits as well as their price. University-educated, wealthier and female consumers dominate the functional cluster. They pay high attention to written information (on the label or elsewhere). Thus, the industry can reach out to this group mainly through improving written information attached to the product (e.g. label and packaging). In some studies, other factors, such as taste, were considered in addition to attention to health. In the study of Jang *et al.* (2011b) in South Korea, the behaviour of those paying attention to health-related features was labelled as "health-seeking". This behaviour was observed in the group of enthusiastic consumers who also emphasised food taste and health issues.

According to the socio-demographic analysis of the identified segments, the "adventurous cluster" was young and paid special attention to the quality and freshness of fruits and fruit shops. In contrast, middle-aged and old consumers dominate the conservative and functional clusters. This result is similar to the findings of the Wongprawmas *et al.* (2018) study, which included an "innovative consumers" segment, young and educated consumers. Also, this age group in the adventure segment in the study of Wycherley *et al.* (2008) was such that middle-aged and highly educated people were in this segment. The young age consumers mostly present in "careless", "snacking" and "uninvolved" food segments, but similar to our study, older consumers were more present in the "conservative" and "functional" segments also in line with the Eun *et al.* (2020) study. Young people in the Montero-Vicente *et al.* (2019) study, related to FRL toward fruit consumption, were more likely to be in the "unconcerned" segment, which had the least consumption of fresh fruit and the least desire for natural products. More educated people formed the "functional cluster" so that the health and safety of fruit were important to them.

In contrast, most "careless consumer" clusters were less educated than the "functional cluster". In the study of Wycherley *et al.* (2008), consumers with low levels of education were in the "uninvolved group", and educated people were in the "adventurous group". In the study of Eun *et al.* (2020), FRL is used in a case study on diet drinks; highly educated consumers were often classified in the "value-seeking group", emphasising quality, health, economics and sensory traits. "Careless consumers" were less likely than the average to have children, and most members of the conservative cluster lived with 3–4 members of the family, which leads to more attention on the price of fruit, alternatives and looking for specials. It was similar to Wycherley *et al.* (2008) in that "careless consumers" lived in larger households. Concerning this, consumers are more than the average in the low level of monthly income in the "conservative segment", which can confirm the fruit buying behaviour of these consumers in this cluster. Low-income consumers were included in the "careless consumer" segment of the Eun *et al.* (2020) study, while high-income people were in the "value-seeking" segment.

To conclude, consumer behaviour and preferences related to fruits' consumption and health vary significantly by socio-economic factors. From the results of this study, describing the behaviour of various consumer segments can support fruit marketing and distribution companies to gain new and interesting insights that can help them set marketing goals, plan customer-oriented initiatives and design targeted marketing mix strategies. These results can also be useful for policymakers, especially in health promotion and policy support to increase fruit consumption, by applying targeted communication strategies. As highlighted by Montero-Vicente *et al.* (2019), marketing advertising campaigns can take initiatives related

to each group of consumers based on the characteristics of the consumers (personalisation of advertising campaigns). These ads can be promoted based on product features (in the case of fruits emphasising health), influencers and famous athletes who appeal to specific groups.

In terms of the approach, this paper is based on an effort to adapt a survey tool focused on consumer fruit behaviour, also based on a reduced FRL instrument, to elaborate a specific survey instrument suitable to describe the fruit-related consumer's lifestyles. Although the main aspects of fruit consumption have been considered, one limitation is that the instrument was not designed according to the standard scale design procedure (DeVellis, 2016). However, this research work may be considered a first step towards creating a more solid fruit-related lifestyle instrument in the future.

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