Forest Fruits' Purchase and Consumption Motives by the Urban Romanians: an Application of the Theory of Planned Behaviour

Adriana MAN\textsuperscript{1}, Renata JANUSZEWSKA\textsuperscript{2}

\textsuperscript{1}Faculty of Horticulture, University of Agricultural Sciences and Veterinary Medicine Cluj Napoca, 3-5 Calea Manastur Street., 400372, Cluj Napoca, Romania; adrianacofari@yahoo.fr
\textsuperscript{2}Faculty of Bioscience Engineering, Department of Agricultural Economics, Ghent University, Coupure Links 653, B-9000 Ghent, Belgium

Abstract. This study investigates the purchase and consumption motives for forest fruits in the Romanian urban area. The forest fruit purchase, including place, type and use was studied using multi-response questions. Additionally, the determinants of consumption are investigated using the Theory of Planned Behaviour (TPB). Data is analyzed using descriptive analysis, simple linear and hierarchical regressions. Results show that a broad variety of forest fruits are consumed in the Romanian urban area, including mainly fresh fruits mostly bought from farmers’ markets. Furthermore, the perceived difficulties of eating fruits and the opinion of others are important for Romanian urban consumers when deciding to eat forest fruit, while nutritional beliefs about these fruits are not significant. Habit is a key determinant predicting future consumption.

Keywords: forest fruit, urban consumers, Theory of Planned Behaviour, habit, BMI

INTRODUCTION

In Romania general fresh fruit and fruit products consumption decreased during the last years to 67.8 kg in 2007 (National Institute of Statistics, 2008) and it is smaller than in the EU-27 with an average of 91 kg consumption per capita (Freshfel Europe, 2009). With respect to forest fruit consumption there are not available data.

To reveal the consumption determinants of food, researchers often use as framework called the Theory of Planned Behaviour (TPB) (Ajzen, 1985; 1991). To the authors’ knowledge, TPB has never been used for analysis of forest fruit consumption; however it has been used to predict consumption of other fruits (Blanchard, 2009a; 2009b; De Bruijn, 2010).

TPB states that there are three conceptually independent determinants of intention to perform the behaviour, in the present case of the intention to consume forest fruit: the Attitude (A) toward the behaviour, the Subjective Norm (SN) and the Perceived Behavioural Control (PBC). Attitude refers to the degree to which a person has a favourable (good, safe, healthy) or unfavorable (bad, unsafe, unhealthy) evaluation or appraisal of the behaviour in question. The second predictor, SN, is a social factor and refers to the perceived social pressure (from family, friends, important institutions and doctors) to perform or not to perform the behaviour. The third determinant of intention, PBC, relates to the perceived ease or difficulty of performing the behaviour (price, availability, easiness to prepare) and reflects past experience and anticipated difficulties. Further is stated that Intention and PBC are the independent determinants of behaviour.

The present study focuses on urban Romanian consumers. The aims of the present study are to determine: where forest fruits are purchased; what are the preferred types of forest fruit; how they are used; and what are determinants of forest fruit consumption.
MATERIALS AND METHODS

The elements of TPB are represented on a 5-point scale questions (Ajzen, 2002). The salient beliefs related to the behaviour, social norms and perceived behavioural control regarding the fresh forest fruits were obtained from a review of literature and Romanian electronic newspapers. The indirect questions regarding attitude (A) measure evaluative and affective judgments related to food safety, healthiness, taste, ecological labelling of forest fruit and consumption satisfaction. The indirect measure of subjective norm (SN) includes items related to social and personal norms. The indirect questions regarding perceived behavioural control (PBC) evaluate the facilitating conditions, and easiness to obtain and prepare the fresh forest fruits. The behavioural intention is obtained through mediation of three questions measuring the expectance, willingness and intention (Francis et al., 2004). The behaviour was measured with two questions about past behaviour: a 7-point scale question regarding the consumption frequency and a 6-point scale question regarding the amount of fresh forest fruits eaten in the last two months. TPB is extended in the present study with two determinants of the behaviour: Habit and body mass index (BMI) (Fig. 1). The newly added element, i.e. ‘habit’ was measured on a 5-point scale question while BMI was calculated from self-reported weight and height. Based on these self-reported values the respondents are divided in two BMI groups: the first group of underweight and normal weight persons and the second group of overweight and obese respondents.

The questionnaire was made up of four parts. The first included the questions related to TPB and the second the extensions with Habit and BMI. The third part comprised the multi-response questions regarding forest fruit purchasing behaviour, including place of purchase, most preferred forest fruits and, possible use of the fruits, while the fourth part included the socio-economic questions. The convenience sampling, a nonprobability sampling technique was used since it allows obtaining a sample of pre-established groups by the interviewer (Malhotra, 1999). The study was realized on urban forest fruit consumers in Cluj Napoca city, Romania, in October 2009. From 243 questionnaires sent, 229 (94%) were complete and further analyzed. The majority of respondents were women (66%) and the mean age of the sample was 37 years. About 60% of respondents, who have secondary education, live in households with 2 to 5 members, are married and have a medium income level.

For data are analysed with the program SPSS 16.0. Descriptive analyses are performed for purchase information, simple and hierarchical regression analyses are calculated for the extended TPB, and chi-square tests are conducted for the socio-economic variables.
RESULTS AND DISCUSSION

Purchase and preferences for forest fruits in Romania

With respect to the questions about purchase and preferences for forest fruits in Romania, these were multi-response questions, so the total number of responses in the tables is higher than the number of respondents (229), while for each variable the number of responses cannot exceed 229.

Table 1 represents the place of acquisition of forest fruits in Romania. The respondents declared that they buy forest fruit from farmers’ markets (30%), fruit and vegetable stores (24%) or pick the fruit themselves (24%). Only 8% of Romanians purchase forest fruit from the sellers along the roads.

<table>
<thead>
<tr>
<th>Place of acquisition of forest fruits in Romania</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmers’ market</td>
<td>145 (29.7%)</td>
</tr>
<tr>
<td>Fruit-vegetables stores</td>
<td>117 (24.0%)</td>
</tr>
<tr>
<td>Self picking</td>
<td>115 (23.6%)</td>
</tr>
<tr>
<td>Groceries</td>
<td>69 (14.1%)</td>
</tr>
<tr>
<td>Sellers along the roads</td>
<td>37 (7.6%)</td>
</tr>
<tr>
<td>Other place</td>
<td>5 (1.0%)</td>
</tr>
<tr>
<td>Total</td>
<td>488 (100.0%)</td>
</tr>
</tbody>
</table>

The most preferred forest fruits for Romanian urban consumers are raspberries (12%) (Tab. 2). Raspberries are the most widespread fruit in Romania. After raspberries, consumers like to eat walnuts, common hazel nuts, wild strawberries, dewberries and blueberries. The least liked are the cornelyan cherries, mountain cranberries and sea buckthorn (<3%).

<table>
<thead>
<tr>
<th>Forest fruit preferences in Romania</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raspberries</td>
<td>200 (12.1%)</td>
</tr>
<tr>
<td>Walnuts</td>
<td>194 (11.7%)</td>
</tr>
<tr>
<td>Common hazels</td>
<td>188 (11.4%)</td>
</tr>
<tr>
<td>Wild strawberries</td>
<td>163 (9.9%)</td>
</tr>
<tr>
<td>Dewberries</td>
<td>155 (9.4%)</td>
</tr>
<tr>
<td>Blueberries</td>
<td>149 (9.0%)</td>
</tr>
<tr>
<td>Chestnuts</td>
<td>121 (7.3%)</td>
</tr>
<tr>
<td>Rosehips</td>
<td>116 (7.0%)</td>
</tr>
<tr>
<td>Blackcurrants</td>
<td>92 (5.6%)</td>
</tr>
<tr>
<td>Mulberries</td>
<td>81 (4.9%)</td>
</tr>
<tr>
<td>Wild cherries</td>
<td>55 (3.3%)</td>
</tr>
<tr>
<td>Cornelyan cherry</td>
<td>48 (2.9%)</td>
</tr>
<tr>
<td>Mountain cranberries</td>
<td>44 (2.7%)</td>
</tr>
<tr>
<td>Sea buckthorn</td>
<td>44 (2.7%)</td>
</tr>
<tr>
<td>Other fruits</td>
<td>3 (0.2%)</td>
</tr>
<tr>
<td>Total</td>
<td>1653 (100.0%)</td>
</tr>
</tbody>
</table>
Furthermore, the study revealed that forest fruits are used principally for fresh consumption (30%) by the Romanian urban consumers (Tab. 3). Other important uses are for jams (25%), cakes (22%) and compotes (20%).

<table>
<thead>
<tr>
<th>Use of forest fruit in Romania</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responses</td>
</tr>
<tr>
<td>Fresh consumption</td>
</tr>
<tr>
<td>For jams</td>
</tr>
<tr>
<td>For cakes</td>
</tr>
<tr>
<td>For compote</td>
</tr>
<tr>
<td>Other use</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

It is observed that from the sample of 229 persons, 204 eat fresh forest fruit, which means that the other 25 respondents (11% of the total sample) do not consume fresh forest fruit (Tab. 3). With respect to these consumers, 60% are women and most of them are younger than 34 years.

Application of the extended Theory of Planned Behaviour to forest fruits consumption in Romania

Firstly, the simple regression is calculated for the Intention to consume forest fruit and secondly, the results of the hierarchical regression for the extended TPB are presented.

In a simple regression, when behavioural intention is the dependent variable, only SN and PBC are significant in predicting the intention to consume forest fruits in Romania (p<.005).

\[
\text{BI}=5.038+0.004 \text{ A}+0.206 \text{ SN}+0.210 \text{ PBC}
\]

\[R^2=0.20\]

The simple regression shows that Attitude is not significant in predicting the intention to consume forest fruit. A similar result was obtained by Blanchard et al. (2009a) for instrumental Attitude on fruit and vegetable consumption in a college population. However, the result is not consistent with findings of Bogers et al. (2004), where Behavioural Intention to consume fruit and vegetables is predicted by all three determinants. The subjective norms referring to opinions of family, friends, doctors, media, food industry and National Forest Administration ROMSILVA related to forest fruit consumption, are good predictors of consumption. It means that Romanian people are influenced by the opinions of others when consuming forest fruit. Finally, PBC, referring to price, easiness to prepare, and availability of forest fruit, is the most important variable that predicts Romanian urban consumers’ consumption of forest fruit.

Next, the hierarchical regression is calculated in four steps, with the dependent variable ‘behaviour’ as the sum of consumption frequency and amount of forest fruit consumed.

In the first step, both intention and PBC are significant predictors of forest fruit consumption (Tab. 4). In the second step, when attitude and subjective norms components are added, both behavioural intention and PBC keep their power to predict behaviour, while the added elements (A and SN) do not influence the behaviour. The third step of hierarchical
regression reveals that the strongest predictors of behaviour are the intention and habit along with PBC and SN. The fourth step shows that BMI has no influence on the prediction of forest fruit consumption.

Determinants of forest fruit consumption behaviour in Romania

<table>
<thead>
<tr>
<th></th>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
<th>Step 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>R²</td>
<td>0.29</td>
<td>0.30</td>
<td>0.37</td>
<td>0.37</td>
</tr>
<tr>
<td>Intention (BI) to eat forest fruit</td>
<td>.184***</td>
<td>.097***</td>
<td>-.145***</td>
<td>.160***</td>
</tr>
<tr>
<td>PBC</td>
<td>.473**</td>
<td>-.103*</td>
<td>.313*</td>
<td>.034*</td>
</tr>
<tr>
<td>Attitude</td>
<td>.362</td>
<td>.458</td>
<td>-.142</td>
<td></td>
</tr>
<tr>
<td>Subjective norms (SN)</td>
<td>.158</td>
<td>.184*</td>
<td>.311*</td>
<td></td>
</tr>
<tr>
<td>Habit</td>
<td></td>
<td>.473*</td>
<td>-.022***</td>
<td>.360</td>
</tr>
<tr>
<td>BMI</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: hierarchical regression coefficients-dependent variable: behaviour
***p< .001, **p< .005, *p< .05

When analyzing the hierarchical regression, in the first step both intention to consume forest fruits (BI) and perceived difficulties and facilitations (PBC) are significant predictors of forest fruit consumption behaviour, and the same result is obtained by De Bruijn (2010) focusing on fruit consumption by college students. Attitude and SN are not significant predictors for the behaviour when are added in the second step. However when habit is added, it becomes the strongest predictor of forest fruit consumption along BI, PBC and SN. The same result of the predictive power of habit over consumption is shown in research on fruit (Harker et al., 2003; De Bruin, 2010) and other food products (Januszewska and Viaene, 2001; Verbeke and Vackier, 2005). The fourth step of regression reveals that BMI does not predicts the consumption of forest fruit by Romanian people. That result is however inconsistent with findings of Blanchard et al. (2009b), who showed a relationship between fruit and vegetable consumption and obesity in USA.

CONCLUSIONS

The present study shows that Romanian urban consumers eat a wide variety of forest fruit. They consume mainly fresh fruits, with raspberries the most preferred. The fruit is mostly bought at farmers’ markets, however many respondents pick forest fruits themselves.

Attitude beliefs about safe and healthy aspects of forest fruit are not important for Romanian urban consumers, and the most significant predictors of consumption relate to the perceived difficulties of eating fruits. Habit is a key element for Romanian urban consumers when deciding to consume forest fruit, while BMI is not relevant in predicting consumption. The Theory of Planned Behaviour is a useful tool in analyzing food consumption and its determinants.

REFERENCES


