

# The connection between manufacturer and private label brands and brand loyalty in chocolate bar buying decisions – A hybrid choice approach

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## ABSTRACT

With the increase in health awareness more and more attention is paid to how manufacturers can respond to ever-changing consumer needs. This is especially true for the market of popular consumer goods such as chocolate. In order to understand Hungarian consumers' preferences in chocolate bars, we used the stated choice experiment method in our research. The attributes of our experiment included brand (manufacturer and private label), type (milk, dark, and white), a health claim (sugar free), as well as price, and our model estimations were done using the multinomial logit specification. In order to increase the explained rate of utility perceived by respondents, we also estimated a hybrid model containing a latent variable (representing consumers' brand loyalty). Our results reveal that the respondents showed a clear preference for manufacturer brands compared to private label brands. Regarding the type of chocolate, we found that milk chocolate received the most positive evaluation, which was followed by dark and white chocolate, respectively; we also demonstrated that sugar free products have a negative rating. In line with our preliminary expectations, a rise in the price of the product has a negative impact on utility as perceived by consumers. Brand loyalty is most characteristic of young and highly educated respondents, and a rise in brand loyalty lead to an increase in the preference towards manufacturer brand products compared to private label brand products.

## 1. Introduction

Nowadays, chocolate is an easily available food product which serves as a self-indulgent treat that represents affordable luxury (De Pelsmaecker, Schouteten, Gellynck, et al., 2017; Del Prete & Samoggia, 2020; Di Monaco, Ollila, & Tuorila, 2005; Kim & Jeon, 2020; Mundel, Hudleston, & Vodermeier, 2017; Poelmans & Rousseau, 2016). It has long been regarded as one of the most popular consumer goods; it is estimated that the global chocolate confectionery's market value will exceed 206 billion US dollars in 2022 (Statista, 2022a). Although amounts vary, chocolate is consumed worldwide: Switzerland is the leading country in chocolate consumption (8.8 kg/person/year), while China is the last in the line (0.1 kg/person/year) (Statista, 2021). On the basis of annual per capita chocolate consumption, Hungary is in the mid-range with a consumption of 2.61 kg (Chocosuisse, 2021). Most of the chocolate confectionery consumed in Hungary is chocolate bars, with almost 70% of it being milk chocolate, 20% of the consumption being represented by dark chocolate, and 10% by white chocolate

(Tisza, 2020).

Health awareness and wellness have gained global interest nowadays (KPMG, 2018), and this trend has an unavoidable impact on the food industry, too. To respond to the recently increased consumer interest in healthy products, the chocolate industry has come up with healthier alternatives (sometimes called "better-for-you" products) by manufacturing a wide range of products such as low fat or low sugar or sugar free chocolate confectionery (Kim & Jeon, 2020; Norton, Fryer, & Parkinson, 2013), chocolate with whole grains, protein, and other nutrients. Examples of such product launches recently can be found in both large global chocolate manufacturers such as Nestlé, Mondelez, and Mars and smaller counterparts, such as the German Ritter Sport, the British Hershey Company and Plamil, Lily's Sweets from the US, and Canada's Ross Chocolates (Confectionary Production, 2021; Hershey, 2022; Ionova, 2017; Nestlé, 2022; Persistence Market Research, 2021). In this way, the product that used to be children's and young people's favourite in the past (Sondhi & Chawla, 2017), has been gradually becoming a confectionary with healthier characteristics targeting adults

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and elderly people as well. For instance, after experiencing a 4% compound annual growth rate from 2016, the size of global sugar free confectionery market – most of which is sugar free chocolate confections (62.9%) – reached 2 billion USD in 2021, and it is expected to increase to 3.5 billion USD with a 5.4% growth rate (Persistence Market Research, 2021); this growth rate is higher than that of the whole confectionery market (3.6% between 2019 and 2027) (Thorat & Deshmukh, 2020). This shift is a logical answer of chocolate manufacturers to the current trend of growing consumer interest in healthier food alternatives (Grunert, 2017), that is well reflected by, for example, the results of Kantar Research (The Grocer, 2019) which revealed that a significant proportion of consumers are interested in the idea of lower-sugar chocolates (44% of the age group of 25–34 and 38% of those aged 55 or above, who are the most interested segments). Nevertheless, it is still children who consume the largest amounts of chocolate (Shekhar & Raveendran, 2017), in Hungary, e.g., 63% of consumers between 15 and 75 years, while 69% of households with children consume chocolate bars, and 20% and 22% of them consume the product at least weekly, respectively (Trade Magazin, 2022). However, as the age of chocolate consumers becomes more diverse, more research is being conducted to understand chocolate consumers' behaviour, including chocolate brand choice (Kim & Jeon, 2020).

Another determinant trend nowadays is the growing sales of private label (store) brand products in the food retail sector. These products, which used to mean cheap products of dubious quality, today account for an increasing proportion of retail sales (Lybeck, Holmlund-Rytkönen, & Sääksjärvi, 2006; Taranko, 2016). In Europe, for instance, value share of private labels in 2015 was 30.5%, while in 2016 it was 31.4% (Nielsen, 2018a); this pace of growth has been maintained since then, the market share of store brands decreased only in 4 European countries (out of 19) in 2020 and 2 (out of 18) in 2021 (Kátai, 2020; 2021). The biggest increase (1.4%) in 2021 was registered in Hungary, which reached 36.2% market share, its highest private label market share and growth ever listed (Kátai, 2021). The case is the same in the chocolate market: in Hungary, store brand products account for 20% of total chocolate bar sales (Tisza, 2020). As a reaction to consumer demands, premiumization has emerged in the private label brand portfolio in the past couple of years, resulting in better quality products appearing on store shelves at a relatively higher price (Nielsen, 2018a, 2018b; Prendergast & Marr, 1997). For instance, in the US by examining the private label dollar share by 5 price tiers (i.e., separating the most premium private label brands – the highest tier – from discount, value positioned products – the lowest tier) it can be noticed that while discount products still represent majority of store brand sales, their share has fallen by almost three percentage points between 2016 and 2019 from 37% to 34.2%; at the same time, premium price-tier private label products have grown from 5.9% to 7.2% according to Nielsen data (Shoup, 2019). This change has created a real competition against manufacturer brands (Burt, 2000; Nielsen, 2018b). Store brands have also entered the health and wellness product categories targeting consumers with more special demands (Nielsen, 2018a, 2018b).

Therefore, our research aim is to investigate some influencing factors (including manufacturer vs. private label brands and health claims) of consumer preferences for chocolate bars. Specifically, our objectives are the following:

1. to provide information about how consumers' chocolate bar choice is influenced by whether a product represent a private label brand or a manufacturer brand;
2. to know what the impact of a health claim (sugar free) on chocolate bar choice is;
3. to investigate how brand loyalty affects the choice between store brand and manufacturer brand chocolate bars in the context of a health claim (sugar free);
4. to reveal the impact of other relevant factors on chocolate choice (including the type of chocolate, i.e., milk, dark, and white, the price,

and the sociodemographic variables of consumers associated with brand loyalty).

Chocolate purchase is characterised by low involvement (Ahmed, Zbib, Sikander, & Noujaim, 2012; Sondhi & Chawla, 2017) because relevant information about the product is easily available, the products are cheap and easy to compare, and the risk of making a bad decision is quite low (Lybeck et al., 2006). Furthermore, as chocolate is a frequently purchased product, consumer decisions are repetitive and based on routine (Hoyer & Brown, 1990), often impulse-like (Shekhar & Raveendran, 2017), and only involve a low number of cognitive processes (Hoyer & Brown, 1990); in this way, consumers will, to a significant extent, rely on their own previous experiences when making a choice (Bogomolova & Millburn, 2012). Subsequently, most consumers spend limited time on choosing a bar of chocolate and will only rely on some key indicators that reflect overall product quality (Ozretic-Dosen, Skare, & Krupka, 2007).

As Caswell (1998) and Yiridoe, Bonti-Ankomah, and Martin (2005) note, food products can be regarded as a set of attributes; and the previously mentioned key indicators that influence chocolate bar choice are some of those attributes. A choice experiment is an appropriate method to study the product attributes, since it makes it possible to distinguish the effect of product characteristics such as taste, label, or price in an explicit manner (Poelmans & Rousseau, 2016). Thus, the choice experiment method has been applied in several cases to investigate chocolate bar consumption and purchasing behaviour, based on data collection through questionnaires or interviews (cf. for example, Mai, 2014; Poelmans & Rousseau, 2016; Rousseau, 2015; Sepúlveda, Maza, Ulde-molins, Cantos-Zambrano, & Ureta, 2021; Weiss, O'Mahony, & Wich-chukit, 2010; Young & McCoy, 2016). Since chocolate is a well-known and commonly purchased product among Hungarians (Kiss, Kontor, & Kun, 2015), consumers presumably have well-grounded preferences; therefore, any novelty bias resulting from hypothetical choice must be minimal (List & Shogren, 1999; Poelmans & Rousseau, 2016). Therefore, in order to answer our research questions, we conducted a stated choice experiment in a representative sample of Hungarian consumers, including the (manufacturer vs. store) brand, type of chocolate (milk, dark, and white), a health claim (sugar free), and price of chocolate as attributes; additionally, some sociodemographic variables were also built in our model through brand loyalty.

### 1.1. Theoretical background – factors influencing chocolate choice

In the following subsections, previous research results on factors affecting chocolate consumption related to our research aim will be discussed in the following structure: first, attitudes related to healthiness of chocolates and health claims attached to them as well as to taste of the products (including chocolate types) are presented, then the influence of price follows. Next, the impact of brands, including brand loyalty and manufacturer vs. private label brands are discussed, and last, some sociodemographic factors with potential impact on chocolate choice will be considered.

#### 1.1.1. Attitudes related to health and taste

From among personal preferences, taste is the crucial factor when buying and consuming chocolate; this is the key factor influencing chocolate consumer behaviour (Ahmed et al., 2012; Chawla & Sondhi, 2016; Del Prete & Samoggia, 2020; Gatea, Hulpe, & Stan, 2013; Karnai & Szűcs, 2015; Lybeck et al., 2006; Mai, 2014; Misniakiewicz, 2018; Ozretic-Dosen et al., 2007; Poelmans & Rousseau, 2016; Rousseau, 2015; Thaichon, Jebarajakirthy, Tatu, & Gajbhiyeb, 2018; Venkateswarlu, 2015). Misniakiewicz (2018) found that taste (in other words functional quality) was very important for 76% of a representative sample of Polish adults in a questionnaire survey, and 16% of them considered it an important factor in chocolate choice; according to Ozretic-Dosen et al. (2007) nearly 70% of a convenience sample of

Croatian undergraduate student respondents regarded it as a dominant factor, while the survey conducted by Venkateswarlu (2015) in India on a convenience sample found this percentage to be 67. In a study conducted in Hungary's one region using printed and online questionnaires, based on consumers' systematic random sample it was revealed that taste was the most important factor in choosing an artisan chocolate; 95.4% of them considered it as a dominant factor (Karnai & Szűcs, 2015). Taste, however, is crucial in repeated purchases (Grunert, 2003) and it plays an even more important role in brand loyalty; as Fernandes, Chaudhuri, and Vidyasagar (2017) and Thaichon et al. (2018) revealed in an online questionnaire survey of Indian students' convenience sample and in semi-structured in-depth interviews of Australian consumers, respectively, taste is the dominant factor in chocolate choice for loyal purchasers. Nevertheless, if a consumer has no previous experience with the product, instead of taste (as an intrinsic cue) it is extrinsic cues (the product label and packaging displaying the brand name, ingredients, nutritional information; and price) that play the major role in the buying decision (Deliza & MacFie, 1996). As regards demographic factors, based on a questionnaire survey conducted among German adults and students, Müller Dettmer, and Macht (2008) found that taste is a more important influencing factor for women than men when buying chocolate.

According to the results of a discrete choice experiment based on data from an online survey by Rousseau (2015), 95% of the sample of Belgian consumers not representative of the entire population consider the type of chocolate (dark, milk, or white chocolate) to be of key importance, and 48% of them focus on flavouring or filling; this in general highlights the importance of flavour information available in advance of purchase. Similar conclusions were reached by a discrete choice experiment conducted by Poelmans and Rousseau (2016), whose paper-based survey research among Belgian consumers who frequently eat chocolate revealed that most consumers are influenced by the chocolate type, and the second largest group are those influenced by flavouring. In terms of chocolate type, most studies found that the majority of consumers prefer milk chocolate, followed by dark, see, e.g., questionnaire survey results on samples of Romanian, Slovakian, and Flemish adults not representative of the entire population (Gatea et al., 2013; Kozelová, Mamilkková, Fikselová, & Dékányová, 2014; Poelmans & Rousseau, 2016; Rousseau, 2015, respectively), and on representative sample of Polish adults (Misniakiewicz, 2018), and finally by white chocolate (Kozelová et al., 2014; Poelmans & Rousseau, 2016; Rousseau, 2015). According to some studies, this is also true for Hungarian consumers; for instance, Karnai and Szűcs (2015) found that majority of the respondents (55.3%) prefer milk chocolate, 36.9% dark chocolate, and only 7.8% white chocolate; however, based on a questionnaire survey of a Hungarian regional sample of mainly young adults Mozsár (2013) came to the conclusion that while 58% of the respondents consume milk chocolate, 24% of them consume white chocolate, and only 18% prefer dark chocolate. At the same time, on a convenient sample of Flemish respondents who are frequent chocolate consumers, De Pelsmaeker, Schouteten, Lagast, Dewettinck, and Gellynck (2017) found that dark chocolate was preferred by slightly more consumers than milk chocolate (except when chocolate tasting was preceded by an attitudinal questionnaire), and similarly, consumers preferred dark chocolate over milk chocolate as was revealed by a questionnaire survey conducted in two Italian regions by Merlini et al. (2021). Both studies' results also showed white chocolate to be the least frequently chosen (De Pelsmaeker, Schouteten, Lagast, et al., 2017; Merlini et al., 2021). Januszewska, Viaene, and Verbeke (2001) found no difference in the preference for type between genders in a questionnaire survey conducted on Belgian and Polish consumers' quota samples; the studies conducted by Kozelová et al. (2014) and Misniakiewicz (2018), however, revealed differences in the age of consumers: the youngest consumers (aged 18–23, and 18–24, respectively) preferred milk chocolate, and liked dark chocolate the least, while the oldest age group (above 65 years of age) was quite the reverse.

Since chocolate is basically an “unhealthy” product (Prestwich, Hurling, & Baker, 2011; Rousseau, 2015) due to its high calorie content (Misniakiewicz, 2018; Norton et al., 2013) – especially according to women (Grogan, Bell, & Conner, 1997) –, therefore, a growing number of health problems (e.g., obesity, diabetes, insulin resistance) and the globally emerging trend towards healthy lifestyles pose new challenges to the food industry (Lalor, Madden, McKenzie, & Wall, 2011; Misniakiewicz, 2018; Szakály, Fehér, & Kiss, 2019; Szakály, Kiss, & Jasák, 2014) and the chocolate industry is no exception. There is a growing demand for healthier alternatives, such as low calorie and sugar free food products, including chocolates (Dumbrava et al., 2020; Selvasekaran & Chidambaram, 2021) which can serve as a self-indulgent treat and, at the same time, meet consumers' health awareness driven expectations (Misniakiewicz, 2018; Olegario, González-Mohino, Estevez, Madruga, & Ventanas, 2020; Tolve et al., 2021). The research results of Misniakiewicz (2018) reveal, for example, that 40% of respondents who do not consume chocolate now would change their consumer preferences if they had confectionery products with reduced sugar content available; in Brazil Melo, Childs, Drake, AndréBolini, and Efraim (2010) found in a conjoint analysis of preferences of milk chocolate consumers that both diabetic and non-diabetic consumers considered sugar free chocolate confectionery products to have a higher utility than conventional ones. Consistent with that, based on an online survey on Australian consumers' representative sample, Bogomolova and Millburn (2012) reported reduced sugar levels increase consumers' acceptance of chocolate; as a result, one of the recommendations Thaichon et al. (2018) make to manufacturers is to place a larger number of healthier (such as sugar free) chocolate types on the market. In line with this, based on a focus group interview among Hungarian consumers, Laskai and Olsovszkyiné Némédi (2016) concluded that chocolate sales could be increased by decreasing the carbohydrate content of the products. It is worth mentioning, however, that the majority of consumers are not willing to sacrifice taste for health (Urala & Lächteenmäki, 2003, 2004, 2006; Kontor, Szakály, Véha, & Kiss, 2018; Szakály et al., 2014; Verbeke, 2006), which means taste is a more powerful incentive than health in chocolate consumption as well, as reported by De Pelsmaeker, Schouteten, Lagast, Dewettinck, and Gellynck (2017) on a sample of Flemish consumers and Grogan et al. (1997) based on a questionnaire survey of British university students. Consumers expect chocolate to be tasty even when the product is more beneficial in nutritional terms than conventional bars are. This is also well traceable in the study conducted by Melo et al. (2010), who found that non-diabetic consumers rated chocolate labelled “sugar free” to be better than chocolate with a “diabetic” label meaning exactly the same; this may be due to the fact that in non-diabetic people's minds diabetic products are associated with a lower sensory quality value. This is the reason why most consumers will opt for a chocolate containing sugar and not sweeteners (De Pelsmaeker, Schouteten, Lagast, et al., 2017). Similarly, the results of a questionnaire survey on British adult consumers' quota sample show that out of the ten attributes investigated in the study low calorie and sugar content were the least important factors affecting the choice of premium chocolates (Mai, 2014); this is also confirmed by the study results obtained by Mozsár (2013), who reported that 56% of Hungarian respondents did not find it at all important for a chocolate not to be fattening; on the contrary, 72% of them considered chocolate to be inherently healthy. This means consumers choose chocolate based on taste information instead of health information (Steinhauser, Janssen, & Hamm, 2019); however, Senese, Gnisci, and Pace (2015) reported that informative symbols used on packaging (including sugar free claims), which may hinder purchasing the product after the first impression, may improve the evaluation of the product when the decision-making process takes a longer time.

Based on the results above, the following hypothesis is proposed:

**H1.** The attributes related to taste of the chocolate (measured by the milk type and the absence of sugar-free claim) increase the utility level

perceived by the consumers more than those related to health (measured by the dark type and the presence of sugar-free claim).

### 1.1.2. Price

Since chocolate is primarily consumed because of its hedonic value or is frequently purchased as a present, several studies have confirmed that economic factors do not play a primary role in chocolate consumers' behaviour; Ozretic-Dosen et al. (2007), for example, showed that price was only specified by a few respondents as a dominant factor in chocolate choice. Based on a questionnaire survey among Indian chocolate consumers, Chawla and Sondhi (2016) reported price to be the fourth most important factor after taste, brand, and soft texture, while Mai (2014), who was studying premium chocolates, found that price was only the fifth most important factor after taste, brand, packaging, and ingredients. Other research results concluded that consumers regard price as not particularly important when the chocolate has a good taste (see, e.g., the questionnaire survey results of Ahmed et al., 2012, conducted on a roughly representative sample of Lebanese consumers), while others found price not to have any impact on brand loyalty in the case of chocolate bars (Fernandes et al., 2017; Thaichon et al., 2018). On the other hand, Rousseau (2015) reported price to influence the second highest number of consumers (49%) in their chocolate choice; the Hungarian results obtained by Mozsár (2013) showed it to be the third most important factor (60% of respondents considered it important or very important) after flavouring and quality, while Karnai and Szűcs (2015) found it to be the fourth after taste, quality, and brand. Misniakiewicz (2018) reported it to be the fourth in line (39% found it very important, 43% found it important); Kozelová et al. (2014) listed it among the most influential factors in chocolate purchasing (with 16% of consumers being influenced by it); while Venkateswarlu (2015) reported that it affected significantly the second highest number of consumers (12%) when they buy sweets.

In line with expectations – *ceteris paribus* – consumers prefer cheaper chocolate; see, for instance, the results of a tasting experiment conducted by Di Monaco et al. (2005) among Finnish students, questionnaire survey results of Poelmans and Rousseau (2016) and Rousseau (2015) in Belgium, and a discrete choice experiment conducted in Ecuador and Spain by Sepúlveda et al. (2021). Based on a focus group interview of Hungarian consumers, Laskai and Olsovskyné Némédi (2016) also recommends price reduction to increase chocolate sales. Research focusing on economic factors has confirmed that the price of chocolate has a different impact on chocolate purchasing and consumption when age, gender, income, and educational attainment are considered (Stamer & Diller, 2006; Thaichon et al., 2018). Based on a questionnaire survey conducted in Finland on regular chocolate consumers' convenience sample Lybeck et al. (2006) found price to be more important in chocolate choice for men than for women; nevertheless, Di Monaco et al. (2005) reached exactly the opposite conclusion. Based on a representative survey of German households Stamer and Diller (2006) distinguished five different categories of chocolate consumers, ranging from those who only consider price to those who only take brand and quality into consideration. The five groups differed from each other in terms of income, for example.

Although the results of previous research are contradictory in terms of the importance of price in chocolate choice, it is hypothesized that:

**H2.** Price has a significant effect on chocolate choices, in line with the traditional economic theory as the price of the chocolate increases, the utility perceived by consumers decreases.

### 1.1.3. Brand and brand loyalty

When investigating chocolate attributes, a significant number of research studies focused on the effect of brand on the purchasing and consumption of the product (Del Prete & Samoggia, 2020). These studies brought to light that brand has a great impact on consumers when choosing chocolate (Ahmed et al., 2012; Bogomolova & Millburn, 2012;

Kamble, Zagade, & Abhang, 2017; Karnai & Szűcs, 2015; Kozelová et al., 2014; Mai, 2014; Misniakiewicz, 2018; Mozsár, 2013; Ozretic-Dosen et al., 2007; Venkateswarlu, 2015). Bogomolova and Millburn (2012) reported brand to be the most influential factor, while Chawla and Sondhi (2016) and Mai (2014) reported it to be the second, and Rousseau (2015) found it to be the fourth most important element; this latter study reported that 36% of consumers are influenced by it when buying chocolate. Kozelová et al. (2014) show that 24% of consumers were influenced, while Venkateswarlu (2015) states that 49% of consumers were significantly influenced, by brand name while deciding what chocolate to purchase; Misniakiewicz (2018) found brand to be important for 38% of consumers, and very important for 37%. In Hungarian respondents, 37% considered the brand of the chocolate to be a very important factor when making their choice (Mozsár, 2013), in case of artisan chocolates, the importance of brand was found to be 3.6 in a 5-point scale, where 1 = not important at all, 5 = very important (Karnai & Szűcs, 2015). Some research studies (Ahmed et al., 2012; Chawla & Sondhi, 2016; Kozelová et al., 2014) have shown brand to play a more significant role than price does, while others (Karnai & Szűcs, 2015; Lybeck et al., 2006; Misniakiewicz, 2018; Ozretic-Dosen et al., 2007) found it to play a relatively less significant role.

Previous experiences with the given chocolate brand will lead to brand loyalty, in fact, brand satisfaction is the most important factor influencing brand loyalty in case of chocolates (Puška, Stojanović, & Berbić, 2018; Sloot, Verhoef, & Frances, 2005), but if a consumer has no previous experience with the given brand, they are more likely to exclude it from the options, and no repeated purchase will take place (Bogomolova & Millburn, 2012; Norton et al., 2013; Thaichon et al., 2018). Since the single sum spent on chocolate is low, chocolate purchase is usually impulse and spontaneous in nature (Sloot et al., 2005); therefore, if a consumer is satisfied with the chosen chocolate brand, she/he will simply continue to repurchase it, partly because of habit without a complex process of thinking (Kuikka & Laukkanen, 2012). Consumers are loyal to a brand because they associate it with the given quality and taste, and they are unwilling to drop that for another brand; they will, however, easily replace their favourite chocolate brand when it is temporarily unavailable (Ozretic-Dosen et al., 2007; Venkateswarlu, 2015). For instance, a Hungarian study (Mozsár, 2013) reported that 79% of consumers buy another brand chocolate when they cannot find their favourite one in a given shop. Investigating demographic differences, Fernandes et al. (2017) concluded that there are no gender differences in chocolate brand loyalty.

Few studies have analysed, however, the role of private label vs. manufacturer brands in chocolate purchasing (De Pelsmaeker, Schouteten, Lagast, et al., 2017; Lybeck et al., 2006; Mozsár, 2013; Taranko, 2016). De Pelsmaeker, Schouteten, Lagast, et al. (2017) found that most consumers prefer manufacturer brand chocolate to store brand products. Taranko (2016) also confirmed this result based on an online survey of Polish consumers when coming to the conclusion that consumers have a more positive attitude towards manufacturer brands, and consider them to be of higher quality, but have relatively the same opinion about their healthiness, irrespective of the brand owner. Mozsár (2013) reported that 57% of Hungarian respondents buy private label brand chocolate; most of them, however, buy this type of chocolate for themselves only and not to give it as a present, and they also do not like to receive store brand chocolate as a present. Lybeck et al. (2006) showed that private label brand chocolate is usually preferred by middle-aged people and those with a higher level of educational attainment. At the same time, no significant relationship was found between purchasing store brand products and other demographic variables, including gender, income, household size, marital status, or job (Lybeck et al., 2006). Regarding brand loyalty, it proved to be stronger towards manufacturer brands than private label brands, as in the latter case consumers are easier to persuade to switch to another brand (Lybeck et al., 2006; Miquel, Caplliure, & Aldas-Manzano, 2002). For example, in an experiment among Spanish consumers Pérez-Santamaría, Martos-Partal, and

Garrido-Morgado (2019) used a 7-point scale to assess loyalty for chocolate brands: in the case of manufacturer brands the average of two loyalty-related statements (purchasing probability and willingness to recommend the brand) was 4.89 and 5.09, while these averages were 4.87 and 4.88, respectively, in the case of store brands. Based on these results, the following hypothesis is proposed:

**H3.** Consumer brand loyalty has a significant impact on the choice between store and manufacturer brand chocolates.

#### 1.1.4. Sociodemographic factors

Turning to the studies investigating the effect of sociodemographic factors on chocolate purchasing and consumption, the results regarding gender are quite varied. For instance, Misniakiewicz (2018) failed to find any difference between consumers and non-consumers of chocolate in terms of gender, Januszewska et al. (2001) found no difference in the amount of consumed chocolate, and Grogan et al. (1997) and Januszewska et al. (2001) revealed no difference in the frequency of chocolate consumption. At the same time, other studies demonstrated that women buy and consume chocolate more frequently than men do (Kozelová et al., 2014; Lybeck et al., 2006; Rozin, Levine, & Stoess, 1991), including one study conducted among Hungarian consumers (Karnai & Szűcs, 2015). In addition, the younger a consumer, the more likely they are to consume chocolate (Misniakiewicz, 2018) and consume it in large amounts (Kozelová et al., 2014; Lybeck et al., 2006; Rozin et al., 1991). According to some studies, income exerts no effect on the frequency of chocolate consumption and purchase (Kozelová et al., 2014), whereas research conducted among Hungarian consumers reached the conclusion that an increase in income leads to less frequent chocolate consumption (Mozsár, 2013). Studying the amount of money spent on chocolate, Kozelová et al. (2014) found no difference in terms of gender and job but did in age and income: people aged 18–23 and 46–55 spend 1–3 EUR a week on chocolate significantly more often, similarly to those whose monthly income is between 801 and 1000 EUR, compared to the rest of the groups. Based on these results, we hypothesize that:

**H4.** Consumer brand loyalty and, through it, the choice between store and manufacturer brand chocolates can be partly explained by certain sociodemographic variables.

As the literature review above presents, several previous research studies examined the impact of health claims (including being sugar free) on chocolate consumption, and several others the role of brand loyalty when choosing a chocolate bar; moreover, a few studies investigated the choice of manufacturer vs. private label brand chocolates, but none of them examined their combined effect. Thus, the originality of the paper lies in the fact that, to the best of the authors' knowledge, this is the first study to examine the impact of brand loyalty in the context of choosing between producer and private label brand chocolates taking into consideration a health claim (sugar free) through a hybrid choice approach.

## 2. Material and methods

### 2.1. The sample

The study obtained ethical approval on September 15, 2020 (approval number: GTKDH/24/2022) from the Research Ethics Committee of the University of Debrecen, Faculty of Economics and Business. Participants gave informed consent before taking part in the research. Data collection was carried out in October and November 2020 in the form of face-to-face interviews in which 500 persons were included through the Hungarian market research firm Szociográf (<http://www.szociograf.hu/>). The interview took 15 min to complete. Sampling was representative of the whole Hungarian adult population in terms of regions and settlement types; therefore, the composition of the sample fully met the quotas based on data provided by the Hungarian Central Statistical Office (quota sampling). In each selected region and

settlement stratified random sampling was used, and the strata variable was the birthday key. Then, in the assigned settlements, each interviewer was given a randomly selected starting address, from which, in ascending order by house number, the interviewer began the questioning at the third house on one side of the street, and then, if they were done there, they continued at the next third house on the same side of the street. During the compilation of the sampling plan, it was also ensured that the interviewers should not differentiate between questioning in a district with detached houses or a district with blocks of flats. In each household visited it was the person aged at least 18 and with the birthday closest to the date of the assessment who was interviewed. This method ensured randomization in the individual strata in the second step, as well. The sample was weighted for gender and age; thus, it reflects the composition of the Hungarian adult population on the basis of four variables: gender ( $\text{Chi}^2(2,2) = 0.100$ ;  $p = 0.752$ ), age group ( $\text{Chi}^2(3,2) = 2.767$ ;  $p = 0.251$ ), settlement type ( $\text{Chi}^2(3,2) = 0.776$ ;  $p = 0.679$ ), and region ( $\text{Chi}^2(7,2) = 0.367$ ;  $p = 0.999$ ). The details are presented in Table 1.

**Table 1**

Sociodemographic characteristics of the respondents and population composition according to representative variables.

Sociodemographic factors	Sample (N = 500)	Hungarian population <sup>a</sup>
<i>Gender (%)</i>		
Female	51.00	52.09
Male	49.00	47.91
<i>Age group category (%)</i>		
18–39	34.80	32.80
40–59	37.80	35.02
60–	27.40	32.18
<i>Settlement type (%)</i>		
Municipality	27.20	29.57
Other city or town	54.80	52.51
Capital	18.00	17.92
<i>Region (%)</i>		
Western Transdanubia	10.00	10.18
Central Transdanubia	11.20	10.86
Southern Transdanubia	9.60	8.95
Northern Great Plain	14.40	14.77
Central Hungary	30.00	31.19
Northern Hungary	11.60	11.45
Southern Great Plain	13.20	12.60
<i>Highest educational attainment (%)</i>		
8 grade elementary school at most	11.80	
Vocational or technical school	28.20	
Matura examination	41.40	
Higher education degree	18.60	
<i>Subjective income (%)</i>		
Can live well from it, and can also save money	7.80	
Enough to live on, but can barely save any money	39.00	
Can make ends meet, but cannot save money	45.60	
Sometimes find(s) it difficult to make ends meet	4.60	
Regularly find(s) it difficult to make ends meet	0.20	
Does not know/Has not answered	2.80	
<i>Marital status (%)</i>		
Married	37.00	
Lives with a registered partner	20.40	
Single	21.00	
Widow(er)	10.60	
Divorced	10.60	
Separated	0.40	

Notes.

<sup>a</sup> Source of data: Hungarian Central Statistical Office (2020a; 2020b).

## 2.2. Experimental design

The survey used in our research consisted of three parts. In the first section in line with the basic concept of our research, we assessed consumer brand loyalty with the help of 11 statements. The statements related to brand loyalty (see section 2.3.2) were developed by the authors using several sources as only the starting point to arrive at a comprehensive measure of brand loyalty. Based on Sheth and Park (1974), we did not limit the measure of brand loyalty to behaviour (i.e., repeated purchase of the brand) but took into consideration cognitive or attitudinal structures underlying it. The repeated purchase measure (item 7) as well as the statements of positive word-of-mouth (including recommendation) can be found in Bobălcă, Gămilă, and Ciobanu (2012) (items 10 and 11) and Kim, Han, and Park (2001) (item 10). Statements related to sticking to the chosen brand even if external circumstances are not ideal (favourite brand is not available immediately, its price increases) can be found in Odin, Odin, and Valette-Florence (2001) (items 8 and 9) and Petzer, Mostert, Kruger, and Kunh (2014) (item 8). The role of similarity of brand personality and the consumer's personality as well as the satisfaction with the brand (items 4 and 6) in brand loyalty originate from Kim et al. (2001), besides, the role of disappointment in consumer commitment for a brand was discussed by Sung and Choi (2010) (item 4). Statements about well-known brands and influence of others appear in Raju (1980) (items 1 and 2) and Sprotles and Kendall (1986) (item 1). Item 3 is based on Monga (2002). Item 5 is based on Fournier and Yao (1997) who found that at attitudinal level it is likely that the brand to which the consumer is loyal will seem like a friend to the consumer. In the second section of the questionnaire, we presented the decision situations of our stated choice experiment, which served as the basis for our later model estimation. Finally, the sociodemographic characteristics of the respondents were assessed.

As previous research confirmed (for instance, Poelmans & Rousseau, 2016; Tagbata & Sirieix, 2008), the type of chocolate is essential in chocolate choice; according to Rousseau (2015), 95% of consumers consider this attribute when buying chocolate. The same research reported that price as the second most important factor has an impact on 49% of consumers, while brand as the fourth most important has an influence on 36% of them (Rousseau, 2015). Thus, based on the literature (e.g., Mai, 2014; Rousseau, 2015), our stated choice experiment included brand; on the basis of Rousseau (2015) and Poelmans and Rousseau (2016), three chocolate types (dark, milk, or white chocolate) and the price of a 100 g bar of chocolate; and in line with Melo et al. (2010), two sugar claim values (no claim, sugar free) were used as selected attributes. Two of the four chocolate brands used in the experiment were manufacturer brands that are the most frequently consumed and most liked by Hungarian consumers (Laskai & Olsovskyné Némédi, 2016; Mozsár, 2013): the first one is Milka, which originated in Switzerland in 1901, and has been manufactured by the US confectionery company Mondelez International (formerly known as Kraft Foods) since 1990 (Mondelez International, 2021), and the second is Boci, which originated in Hungary in 1927, and has been produced by the Swiss food and drink processing conglomerate Nestlé S.A. since 1991 (HVG, 2005). The two chosen commercial brands were Tesco and Spar, since these brands belong to the largest turnover non-discount store retail chains in the FMCG industry in Hungary (Trade Magazin, 2020). Given that, according to Booth (2014), the best experiments with foods are the ones that imitate a realistic consuming/shopping situation, we included the levels of price attribute by the brand owner types, with four levels for manufacturer brands (Boci and Milka), and also four levels for store brands (Spar and Tesco). Prices were based on the current price of the products in the two retail chains (Spar and Tesco); with the lowest level being the rounded-up value of current prices to 50 HUF (0.14 EUR), and the levels above that increasing by 25 HUF (0.07 EUR) at each step. Again, for the sake of realistic simulation, choice sets included chocolates' real packaging, the only modification being the "sugar free" logo in half of the cases. The levels of attributes are presented in Table 2.

**Table 2**

The selected attributes and their levels.

Attribute	Attribute level
Brand name	Boci (manufacturer brand) Milka (manufacturer brand) Spar (private label brand) Tesco (private label brand)
Type	Dark Milk White
Sugar claim	No claim about the amount of sugar Sugar free
Price (Boci and Milka)	250 HUF (0.70 EUR) 275 HUF (0.77 EUR) 300 HUF (0.84 EUR) 325 HUF (0.91 EUR)
Price (Spar and Tesco)	200 HUF (0.56 EUR) 225 HUF (0.63 EUR) 250 HUF (0.70 EUR) 275 HUF (0.77 EUR)

D-efficiency experimental design was used with the help of Ngene 1.2 software (Choicemetrics, 2018; Rose & Bliemer, 2009) to simulate decision situations. This resulted in 16 decision situations altogether. To reduce the large number of situations blocking was applied; thus, respondents only faced a subset (8 decision situations). Each decision situation included four alternatives, the first two of which always involved a manufacturer brand (Boci, Milka), and the last two involved a store brand product (Spar, Tesco). It is important to mention that our decision situations did not include the "no choice" option; in this way, respondents were in a way "forced" to make a decision. Decision situations were introduced with the following comment: "You are going to face 8 decision situations, each of which includes 4 options (chocolate alternatives). Please choose the chocolate alternative you would most prefer to buy in each situation." Fig. 1 shows a sample decision situation.

Discrete choice model estimation was done using the R: Apollo package (Hess & Palma, 2019; Hess & Palma, 2021; R Core Team, 2020). The applied specifications included multinomial logit and integrated choice latent variable models (hereinafter referred to as the hybrid choice model). These are presented in detail in the next sub-section.

## 2.3. Model specifications

### 2.3.1. The standard choice modelling approach

One of the basic theories of standard choice modelling – on which several model specifications are built – is random utility theory (RUT). This assumption says that out of the elements of a decision set, individuals pick the option that provides them with the highest utility level. In this case, utility can be divided into two parts: a systematic part (which originates from certain observable characteristics of the product or service) and a random part (which includes the effects unrelated to the systematic part) (Equation (1)).

$$U_{n,i,t} = V_{n,i,t} + \varepsilon_{n,i,t}, \quad (1)$$

where  $n$  stands for the respondent,  $i$  is the alternative,  $t$  is the decision situation,  $U_{n,i,t}$  is the total utility,  $V_{n,i,t}$  is the systematic part of utility and  $\varepsilon_{n,i,t}$  is the random part of utility (Ben-Akiva & Lerman, 1985).

One of the oldest known and most frequently used specifications, the multinomial logit (MNL) attributed to McFadden and Zarembka (1974) is also based on this assumption. One of the benefits of the model is that it is easy to estimate, and its results can be interpreted relatively simply. The systematic part of utility in the case of MNL can be written according to Equation (2).

$$V_{n,i,t} = \beta' X_{n,i,t}, \quad (2)$$

where  $\beta'$  indicates the parameter vector estimated for the analysed at-



**Fig. 1.** Sample decision situation.  
 Notes: Ft = HUF, Tejsokoládé = Milk chocolate, Weisse Schokolade = White chocolate, Cukormentes = Sugar free.

tributes and  $X$  is the vector of attributes for alternative  $i$ .

**2.3.2. The hybrid choice modelling approach**

The most frequently challenged aspect of standard choice modelling is that it disregards factors significant in terms of decision-making, such as different attitudes and perceptions. The incorporation of the above into the choice models creates the possibility of significantly more precise and more realistic modelling (McFadden, 1986). Hybrid choice modelling (HCM) aims to bypass this issue by amending the standard choice model with a further component, as described by Equation (3).

$$U_{n,i,t} = V_{n,i,t} + \lambda LV_n + \varepsilon_{n,i,t}, \tag{3}$$

where  $LV_n$  indicates the latent variable for person  $n$ , and  $\lambda$  indicates the effect of such a variable.

As mentioned by O'Neill, Hess, and Campbell (2014), by using hybrid choice modelling, analysts have the opportunity to incorporate factors that influence decision-making into the model that cannot be captured directly (e.g., through certain sociodemographic characteristics). Such may be the case with different attitudes that can be measured and incorporated into our choice model using certain evaluation scales, taking us to a new level of explained variance in decision-making. Advantageous features of hybrid choice modelling include incorporating these factors as dependent rather than explanatory variables, thus avoiding factors such as measurement error and endogenous bias.

Hybrid choice models are made up of so-called structural and measurement equations. The structural equations describe the structure of the latent variable(s) in the function of the different observable variables, while measurement equations describe the relationship of the latent variable(s) and the related indicators (Bolduc, Ben-Akiva, Walker, & Michaud, 2005).

In our research we targeted a latent variable, which was approached with the help of 11 statements (evaluated on a 1–5 scale by the respondents). These statements aimed to approximate brand loyalty. To construct the structural equation of our model, several sociodemographic variables were tested. The final specification can be written according to Equation (4).

$$LV_n = \gamma_{Age_{Level\ 2}} Age_{Level\ 2_n} + \gamma_{Age_{Level\ 3}} Age_{Level\ 3_n} + \gamma_{Education_{Level\ 2}} Education_{Level\ 2_n} + \gamma_{Education_{Level\ 3}} Education_{Level\ 3_n} + \gamma_{Education_{Level\ 4}} Education_{Level\ 4_n} + \eta_n, \tag{4}$$

where  $\gamma$  is the coefficient estimated for the observed sociodemographic feature, and  $\eta_n$  indicates the random addend. The meanings of the variables can be found in the notes to Fig. 2.

The measurement equations of our hybrid model (Equation (5)) were estimated on the basis of the ordered logit structure (in the case of every statement,  $l-1$  threshold parameters were estimated, where  $l$  is the number of levels of the statement) (Daly, Hess, Patrui, Potoglou, & Rohr, 2012).

$$ME_{k,n} = \zeta_k LV_n + \sigma_{k,n}, \tag{5}$$

where  $ME_{k,n}$  is the measurement equation for the statement  $k$ ,  $\zeta_k$  is the coefficient estimated for the latent variable (for the statement  $k$ ),  $LV_n$  is the latent variable for the respondent  $n$ , and  $\sigma_{k,n}$  the random part of the measurement equation.

Our measurement equations relate to the following statements:

1. I prefer famous and reputable brands to less known brands.
2. I particularly prefer brands that others also like.
3. Brands are very important to me.
4. My favourite brand never causes disappointment.
5. I regard my favourite brand as my friend.
6. My favourite brand reflects my personality, this is why I like it.
7. I will continue to buy my favourite brand in the future as well.
8. If I cannot get my favourite brand, I keep looking for it until I find it somewhere.
9. I will buy my favourite brand even when its price increases.
10. I am happy to recommend my favourite brand to others.
11. I only tell others positive things about my favourite brand.

The structure of our hybrid choice model can be seen in Fig. 2. The systematic part of the utility function of the models (both the MNL and the HCM) estimated later is constructed according to Equation (6) (in the case of the first and second alternatives) and Equation (7) (in

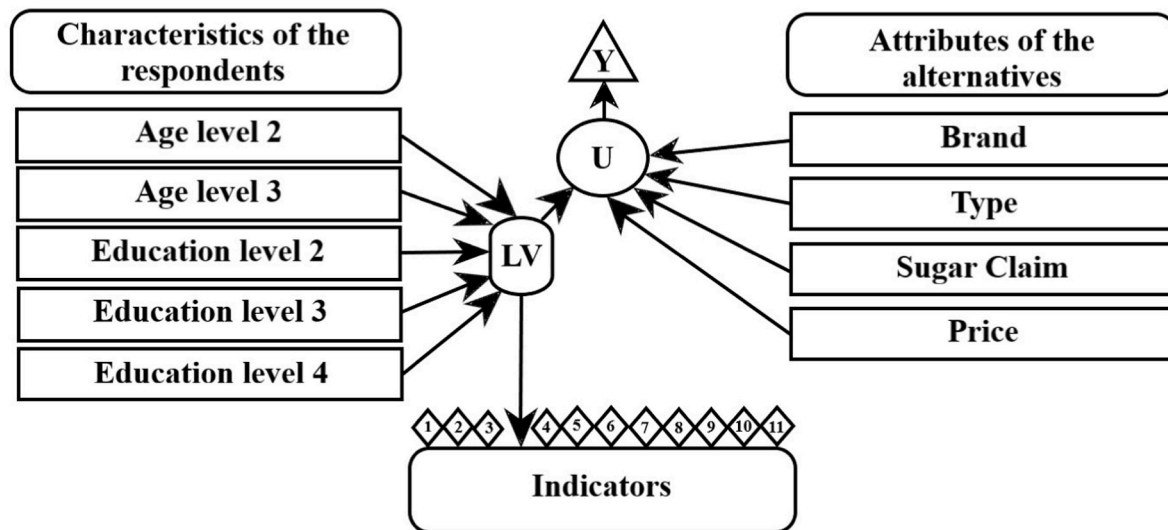


Fig. 2. Structure of the hybrid choice model.

Notes: Y: observed choice; U: utility; LV: latent variable (brand loyalty); Age level 2: Respondents between 40 and 59 years of age; Age level 3: Respondents above 60 years of age; Education level 2: Vocational school; Education level 3: Matura examination; Education level 4: Higher education certificate.

the case of the third and fourth alternatives).

$$V_{n,i,t} = \beta_{Brand_{Boci}} Brand_{Boci_{n,i,t}} + \beta_{Brand_{Milka}} Brand_{Milka_{n,i,t}} + \beta_{Type_{White}} Type_{White_{n,i,t}} + \beta_{Type_{Milk}} Type_{Milk_{n,i,t}} + \beta_{Sugar_{content}} Sugar_{content}_{Sugar_{free}_{n,i,t}} + \beta_{Price} Price_{n,i,t} + \lambda LV_n \tag{6}$$

$$V_{n,i,t} = \beta_{Brand_{Spar}} Brand_{Spar_{n,i,t}} + \beta_{Type_{White}} Type_{White_{n,i,t}} + \beta_{Type_{Milk}} Type_{Milk_{n,i,t}} + \beta_{Sugar_{content}} Sugar_{content}_{Sugar_{free}_{n,i,t}} + \beta_{Price} Price_{n,i,t} \tag{7}$$

Our calculations on willingness to pay (WTP) were done according to Equation (8), and the standard errors were originated based on the delta method (Hole, 2007).

$$WTP_{Attribute\ x} = -\frac{\beta_{Attribute\ x}}{\beta_{Price}} \tag{8}$$

where  $WTP_{Attribute\ x}$  is the marginal willingness to pay estimated for attribute x, and the  $\beta_{Attribute\ x}$  and  $\beta_{Price}$  indicate the utility coefficient regarding the attribute x and the price, respectively.

In order to compare the importance of the attributes examined, we have calculated relative importance by the use of Equation (9), similar to Troiano, Vecchiato, Marangon, Tempesta, and Nassivera (2019) and Richetin, Caputo, Demartini, Conner, and Perugini (2022).

$$Attribute\ importance_x = \frac{[\max(\beta_x) - \min(\beta_x)] * \max(L_x)}{\sum_{x=1}^X \{[\max(\beta_x) - \min(\beta_x)] * \max(L_x)\}} * 100, \tag{9}$$

where  $\max(\beta_x)$  and  $\min(\beta_x)$  denotes the maximum and minimum utility coefficients of the xth attribute and  $L_x$  is the attribute level of the xth attribute (in our case  $\max(L_x)$  will be 1 if the attribute level is dummy coded and 3.25 (the maximum value of price divided by 100, due to the scaling) for the continuous attribute price). It is important to note that,  $\min(\beta_x)$  is equal to zero when the attribute is continuous.

### 3. Results

This section will first present the descriptive statistics of the statements related to brand loyalty followed by the results of model estimations, starting with the result of the multinomial logit specification, and going on to the results of the hybrid choice model. This will be followed by the analysis of our results obtained from the structural and measurement equations of the hybrid choice model. Finally, calculations

on marginal willingness to pay will be carried out. It is important to mention that the sample for our model estimations included 473 persons. We excluded respondents who do not consume chocolate or provided incomplete responses to several questions that are relevant for our study.

#### 3.1. Statements related to brand loyalty

The descriptive statistics of the 11 statements on brand loyalty are presented in Table 3.

As Table 3 clearly shows, the mean evaluation for all the statements was above three. The statement with the highest level of agreement (nearly 43% of respondents absolutely agreed) was the seventh (“I will continue to buy my favourite brand in the future as well.”), whereas the one with the lowest level (approximately 14% of respondents absolutely agreed) was Statement 3 (“Brands are very important to me.”). It should also be mentioned that only 19% of respondents said (absolutely agreed with the Statement 8) if they cannot get their favourite brand, they keep looking for it until they find it somewhere.

#### 3.2. Results of model estimations

The results of our multinomial logit and hybrid choice model estimations are presented in Table 4.

Based on the results of the MNL model estimation, respondents prefer Milka brand products most, followed by Boci, Spar, and Tesco brand products. Regarding type, milk chocolate was the most preferred among respondents, followed by dark and white chocolate. In addition, sugar free chocolate is less preferred compared to sugar-containing chocolate. Finally, it can be seen that in line with our expectations, price is a negative parameter (as price rises, utility decreases). All the estimated parameters are statistically significant at the 1% level.

The parameter estimations of the HCM model lead to the same conclusion as the MNL model: the most preferred chocolate is Milka milk chocolate with sugar content, at the lowest possible price. An essential observation, though, is that there is some improvement in the model fit (based on Log-likelihood, Pseudo  $R^2$ , AIC and BIC values). Furthermore, the introduction of the latent variable of brand loyalty expanded the full utility equation with a further explained component, which means that the extent of unexplained variability decreased. The positive and significant value of coefficient  $\lambda$  estimated for studying the effect of the latent variable suggests that as brand loyalty increases, the first two

**Table 3**  
Descriptive statistics of the statements.

Statement	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	Mean	Standard deviation
1	6.98	8.24	27.91	29.81	27.06	3.62 <sup>b</sup>	1.17
2	9.73	12.47	39.53	24.10	14.17	3.21 <sup>cde</sup>	1.13
3	11.00	13.74	36.15	25.16	13.95	3.17 <sup>e</sup>	1.16
4	3.59	6.13	21.99	36.79	31.50	3.86 <sup>a</sup>	1.04
5	13.74	10.15	27.06	29.39	19.66	3.31 <sup>cde</sup>	1.28
6	12.48	10.78	27.48	29.81	19.45	3.33 <sup>cd</sup>	1.25
7	3.59	3.38	20.72	29.18	43.13	4.05 <sup>a</sup>	1.05
8	13.74	12.90	27.48	26.85	19.03	3.25 <sup>cde</sup>	1.28
9	8.46	8.25	31.50	31.71	20.08	3.47 <sup>bc</sup>	1.15
10	6.55	5.50	17.76	32.35	37.84	3.89 <sup>a</sup>	1.16
11	5.07	5.92	19.87	36.79	32.35	3.85 <sup>a</sup>	1.09

Notes: Statements are measured on 5-point scales, where 1 = does not agree at all, 5 = absolutely agrees. Friedman test ( $\chi^2 = 664.05$ ;  $df = 10$ ;  $p < 0.05$ ) with pairwise comparisons (by Dunn's post-hoc test) was used to examine significant differences. Different superscripts show significant differences ( $p < 0.05$ ) between the means.

**Table 4**  
The results of multinomial logit (MNL) and hybrid choice model (HCM) estimations.

Features and data describing the model	MNL model		HCM model	
	Estimates	Robust t-values	Estimates	Robust t-values
Brand: Boci	1.283***	17.63	1.376***	12.42
Brand: Milka	1.818***	25.50	1.916***	17.54
Brand: Spar	0.488***	7.60	0.474***	7.32
Type: White	-0.383***	-7.41	-0.381***	-7.27
Type: Milk	0.529***	9.74	0.551***	9.89
Sugar content: sugar free	-0.893***	-20.59	-0.896***	-19.97
Price (scaled by 100)	-1.503***	-19.87	-1.523***	-19.92
$\lambda$	-	-	0.553***	14.12
Individuals	473			
Observations	3784			
Estimated parameters	7		8	
Log-likelihood (0) (for choice model)	-5245.738		-5245.738	
Log-likelihood (for choice model)	-4329.553		-4266.776	
Pseudo R <sup>2</sup>	0.1747		0.1866	
AIC	8673.11		8549.55	
BIC	8716.78		8599.46	

Notes: \*\*\* indicate the coefficients are statistically significant at the 1% level. When doing the estimations, the following attribute levels: Brand: Tesco, Type: Dark, Sugar content: No claim, were used as the basis (based on dummy specification).  $\lambda$  denotes the estimated coefficient for the latent variable. AIC denotes the Akaike information criterion. BIC denotes the Bayesian information criterion.

alternatives (Boci and Milka manufacturer brand products) are more preferable compared to the third and fourth alternatives (Spar and Tesco private label products). In line with our expectations, this conclusion reflects the fact that consumers make consistent choices when buying chocolate bars, and their choice is clearly affected by (reflects) their loyalty towards manufacturer brands.

We have also calculated the relative importance of the examined attributes in chocolate choice decisions for both MNL and HCM models, by using a calculation similar to that used by Troiano et al. (2019) and Richetin et al. (2022). Based on the results (Fig. 3), we can say that price is the most important attribute in chocolate choice decisions (around 57% of importance), followed by brand (around 21–22% of importance), type (10.7% of importance) and finally, sugar content (around 10.5% of importance).

### 3.3. Structural and measurement estimations of the hybrid choice model

Table 5 presents the estimated parameters for the structural equation for the latent variable of the hybrid choice model and for the measurement equations for the 11 statements related to brand loyalty.

On the basis of the estimated parameters for the structural equation we can draw the conclusion that the value of the latent variable (brand loyalty) is the highest in the age group ranging from 18 to 39, which is followed by the age group above 60. Those aged between 40 and 59 can be considered the least loyal. Regarding the highest educational attainment, we obtained significant parameter estimates for two levels at the 1% level, which leads to the conclusion that compared to the individuals who completed 8 years of primary school at most, those having a Matura examination are more loyal, and those with a higher education certificate have even more intense brand loyalty.

The estimated  $\zeta$  parameters in measurement equations are significant and positive at the 1% level for all the statements, which enables us to conclude that as the level of the latent variable (brand loyalty) increases, the evaluation of these statements becomes higher among the respondents. The highest value was reached by Statement 11 (“I only tell others positive things about my favourite brand.”), which means it is this statement where evaluation rises most when the level of brand loyalty rises. The lowest score was achieved by Statement 2 (“I particularly prefer brands that others also like.”); thus, this is the statement where evaluation rises least when the level of brand loyalty rises.

### 3.4. Willingness-to-pay calculations

As a next step, we made calculations on marginal willingness-to-pay (WTP) based on our hybrid choice model. The results can be seen in Table 6.

On the basis of the WTP estimations displayed in Table 6, consumers would be willing to pay approximately 90 HUF (0.25 EUR) more for Boci, 126 HUF (0.35 EUR) more for Milka, and 31 HUF (0.09 EUR) more for a Spar brand chocolate bar compared to the Tesco brand chocolate used as the basis level. Regarding the type of chocolate, where dark chocolate is the point of reference, consumers would pay approximately 25 HUF (0.07 EUR) less for white, and 36 HUF (0.10 EUR) more for milk chocolate. Finally, we can also observe that consumers would pay approximately 59 HUF (0.16 EUR) less for sugar free products compared to chocolate bars containing sugar.

## 4. Discussion

Based on our results we can state that price is by far the most important factor influencing the choice of chocolate; this finding shows the price sensitivity of Hungarian consumers (see, e.g., Hajdu & Notari, 2012). This result contradicts previous research findings, in which price was the second most important factor in chocolate choice at most (Rousseau, 2015; Venkateswarlu, 2015), but in majority of studies it was only the third (Kozelová et al., 2014; Poelmans & Rousseau, 2016), the fourth (Chawla & Sondhi, 2016; Misniakiewicz, 2018) or even a less important factor (Mai, 2014; Ozretic-Dosen et al., 2007). Even some previous Hungarian studies found price to be only the third (Mozsár, 2013) or fourth in importance (Karnai & Szűcs, 2015); however, these

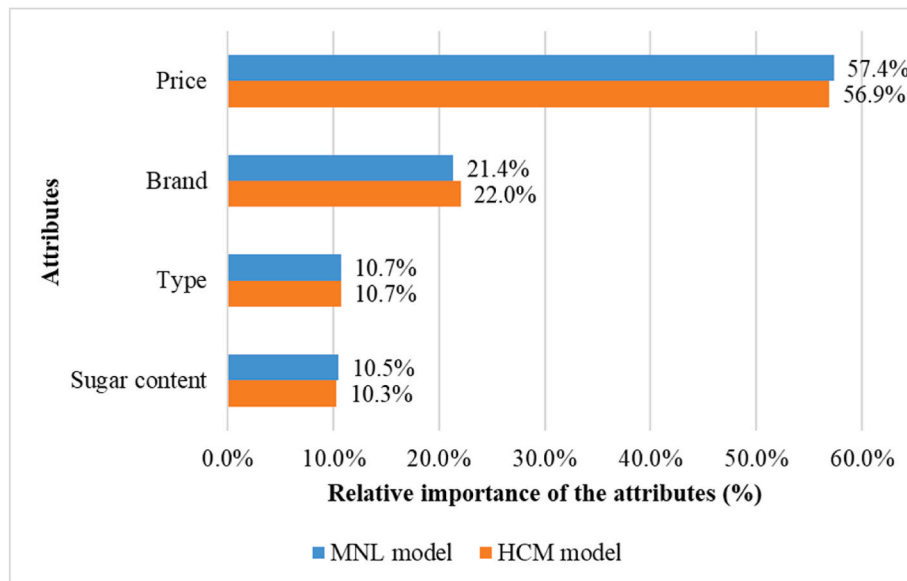


Fig. 3. Relative importance of the attributes.

**Table 5**  
The results of HCM estimation (structural and measurement equations).

Structural equation parameters	Estimates	Robust t-values	Measurement equation parameters	Estimates	Robust t-values
$\gamma_{Age_{Level\ 2}}$	-0.762***	-6.77	$\zeta_{q6}$	1.750***	11.41
$\gamma_{Age_{Level\ 3}}$	-0.617***	-4.58	$\tau_{q6_1}$	-3.072***	-8.97
$\gamma_{Education_{Level\ 2}}$	-0.021	-0.12	$\tau_{q6_2}$	-2.048***	-6.41
$\gamma_{Education_{Level\ 3}}$	0.660***	4.18	$\tau_{q6_3}$	-0.184	-0.61
$\gamma_{Education_{Level\ 4}}$	0.721***	3.68	$\tau_{q6_4}$	2.070***	6.59
<b>Measurement equation parameters</b>	<b>Estimates</b>	<b>Robust t-values</b>	$\zeta_{q7}$	2.486***	9.85
$\zeta_{q1}$	1.653***	10.86	$\tau_{q7_1}$	-6.129***	-10.49
$\tau_{q1_1}$	-3.806***	-10.33	$\tau_{q7_2}$	-4.823***	-9.40
$\tau_{q1_2}$	-2.633***	-8.36	$\tau_{q7_3}$	-1.960***	-4.59
$\tau_{q1_3}$	-0.548**	-1.93	$\tau_{q7_4}$	0.398	0.96
$\tau_{q1_4}$	1.394***	4.82	$\zeta_{q8}$	2.185***	11.19
$\zeta_{q2}$	1.397***	10.41	$\tau_{q8_1}$	-3.293***	-8.11
$\tau_{q2_1}$	-3.082***	-10.72	$\tau_{q8_2}$	-1.947***	-5.06
$\tau_{q2_2}$	-1.813***	-6.95	$\tau_{q8_3}$	0.105	0.29
$\tau_{q2_3}$	0.554**	2.27	$\tau_{q8_4}$	2.401***	6.07
$\tau_{q2_4}$	2.372***	9.02	$\zeta_{q9}$	2.340***	10.46
$\zeta_{q3}$	1.783***	11.29	$\tau_{q9_1}$	-4.326***	-9.25
$\tau_{q3_1}$	-3.328***	-9.67	$\tau_{q9_2}$	-2.984***	-6.97
$\tau_{q3_2}$	-1.875***	-6.09	$\tau_{q9_3}$	-0.242	-0.63
$\tau_{q3_3}$	0.596**	1.99	$\tau_{q9_4}$	2.424***	5.66
$\tau_{q3_4}$	2.719***	8.18	$\zeta_{q10}$	2.357***	9.77
$\zeta_{q4}$	2.267***	9.66	$\tau_{q10_1}$	-4.799***	-10.12
$\tau_{q4_1}$	-5.722***	-11.00	$\tau_{q10_2}$	-3.626***	-7.92
$\tau_{q4_2}$	-3.936***	-8.95	$\tau_{q10_3}$	-1.693***	-4.15
$\tau_{q4_3}$	-1.526***	-3.93	$\tau_{q10_4}$	0.821**	2.02
$\tau_{q4_4}$	1.276***	3.25	$\zeta_{q11}$	2.595***	9.92
$\zeta_{q5}$	1.651***	10.53	$\tau_{q11_1}$	-5.610***	-10.44
$\tau_{q5_1}$	-2.827***	-8.75	$\tau_{q11_2}$	-4.067***	-7.94
$\tau_{q5_2}$	-1.898***	-6.15	$\tau_{q11_3}$	-1.761***	-3.95
$\tau_{q5_3}$	-0.112	-0.40	$\tau_{q11_4}$	1.335***	3.02
$\tau_{q5_4}$	1.994***	6.73			

Notes: \*\*\* and \*\* indicate that the coefficients are statistically significant at the 1% and 5% levels, respectively.  $\gamma$  denotes the estimated parameters for variables in structural equation.  $\zeta$  denotes the estimated parameters for the latent variable in measurement equations.  $\tau$  denotes the estimated threshold parameters in measurement equations.

studies were not representative of the entire Hungarian adult population. The second most important factor in chocolate choice was found to be brand, similarly to the results of Chawla and Sondhi (2016), Kozelová et al. (2014), Mai (2014), and Venkateswarlu (2015), while according to some other studies (Karnai & Szűcs, 2015; Misniakiewicz, 2018;

Poelmans & Rousseau, 2016; Rousseau, 2015) it proved to be less important. Chocolate type also influences Hungarian consumers' chocolate choice; however, to a much lesser degree than Belgian consumers in previous studies (Poelmans & Rousseau, 2016; Rousseau, 2015). Finally, among the four factors we examined sugar content influences

**Table 6**

WTP estimations of the hybrid choice model.

Level of attributes	WTP estimates	Robust t-values	Robust standard errors
Brand: Boci	90.34***	12.63	0.07
Brand: Milka	125.80***	16.28	0.08
Brand: Spar	31.09***	6.74	0.05
Type: White	-25.00***	-7.13	0.04
Type: Milk	36.14***	8.78	0.04
Sugar content: sugar free	-58.82***	-16.07	0.04

Notes: \*\*\* indicate the coefficients are statistically significant at the 1% level. When doing the estimations, the following attribute levels: Brand: Tesco, Type: Dark, Sugar content: No claim, served as the basis. Due to scaling in model estimates, WTP was multiplied by 100.

Hungarians to the least extent, which is in line with the findings of [Mai \(2014\)](#) and [Venkateswarlu \(2015\)](#) that out of 10 and 6 attributes, respectively, sugar content was the least important in chocolate choice, and those of [Misniakiewicz \(2018\)](#), who found energy/nutrition facts were the tenth most important factors out of 12 when choosing confectionary products. This result clearly shows the relative unimportance of health aspects when choosing an indulgence product like chocolate.

In harmony with the results of the majority of previous studies ([Gatea et al., 2013](#); [Karnai & Szücs, 2015](#); [Kozelová et al., 2014](#); [Misniakiewicz, 2018](#); [Poelmans & Rousseau, 2016](#); [Rousseau, 2015](#)), as well as Hungarian sales data ([Tisza, 2020](#)), both our MNL and HCM model estimations confirm that Hungarian consumers like milk chocolate the most, followed by dark and white chocolate. These results are further supported by our WTP estimates: respondents are willing to pay the most for milk chocolate, and the least for white chocolate. This partly contradicts the results of [Mozsár \(2013\)](#), who found that with milk chocolate definitely dominating the market, Hungarian respondents will choose dark chocolate the least frequently; however, as opposed to our study sample, hers was not representative of the total Hungarian population which could explain the higher preference for white over dark chocolate in her study. Because dark chocolate is considered healthier than milk chocolate (due to its lower sugar and higher dietary fibre and iron content) ([Chen, 2018](#)) but it is less sweet, our results confirm our first hypothesis (H1), i.e., the taste of the chocolate increases the utility level perceived by the consumers more than its healthiness. The lower preference for dark chocolate compared to milk chocolate in our research may be attributed to the fact that many consumers are not willing to accept some of the sensory characteristics (bitter taste and astringent flavour) of this chocolate type ([Chawla & Sondhi, 2016](#)). This may be especially true for Hungarians confirmed by the studies of [Ahrens \(2015\)](#) and [Lanfer et al. \(2013\)](#) in which the highest prevalence of bitter taste sensitivity appeared in Hungarian children among children from eight European countries, while the sweet taste preference was the highest in Hungary, and one of the strongest explanatory variables was culture. According to [Sina et al. \(2019\)](#) the higher adherence to healthy dietary guidelines significantly decreases the chance for high sweet taste preferences and significantly increasing the chance for a high bitter taste preference; however, Hungarians' dietary patterns appear to be relatively unhealthy which is also clear from the fact that Hungarians are one of the most obese and malnourished nations in Europe ([Llanaj et al., 2021](#)).

Even if in the FMCG industry consumer preference towards store brands has been approaching the preference towards manufacturer brands for the past ten years ([Schultz, Block, & Viswanathan, 2014](#)), both our model estimations – in line with the majority of previous research ([De Pelsmaeker, Schouteten, Lagast, et al., 2017](#); [Taranko, 2016](#)) – confirm that Hungarian consumers prefer manufacturer brand chocolate (Milka, Boci) to private label brand products (Spar, Tesco). In addition, consumers feel a difference between manufacturer brands in favour of international brands: willingness-to-pay was higher regarding

Milka chocolate (the most popular chocolate brand in Hungary according to [Statista, 2022b](#)) compared to the chocolate named Boci, which is known and accepted among consumers as being a Hungarian brand. The results suggest that the affective component of attitude is essential in brand choice. WTP-estimations are suggestive of the same order of preference as the model estimations: consumers are ready to pay most for Milka, followed by Boci, then Spar, and finally Tesco brand chocolate. The same preference order was found by [Laskai and Olsovskyné Némédi \(2016\)](#) among Hungarian consumers, except Tesco brand chocolate that was not examined in the research.

Contrary to [Melo et al. \(2010\)](#), as well as [Bogomolova and Millburn \(2012\)](#), and consistent with the results of [De Pelsmaeker, Schouteten, Lagast, et al. \(2017\)](#), both the MNL and the HCM model estimations allow us to conclude that Hungarian consumers consider sugar-containing chocolate to have a higher utility compared to sugar free chocolate. Accordingly, their willingness to pay is subsequently lower in the case of sugar free chocolate. One of the reasons behind this must be the fact that consumers attribute a lower sensory quality to sugar-free products, i.e., the so-called unhealthy = tasty intuition ([Raghunathan, Naylor, & Hoyer, 2006](#)) prevails among Hungarian consumers, meaning that they attribute better taste to less healthy product variations, and vice versa. At the same time, they are not willing to waive the expected taste ([Kontor et al., 2018](#)), since 86% of them rarely or never give up on the good taste of food for the sake of its healthiness ([Szakály, 2008](#)). This can explain why they prefer the less healthy chocolate (which is considered tastier) over the healthier sugar free alternative. This result also confirms H1. So much is certain that taste information is essential in chocolate choice of consumers (including Hungarians), confirming previous research results ([Ahmed et al., 2012](#); [Chawla & Sondhi, 2016](#); [Del Prete & Samoggia, 2020](#); [Gatea et al., 2013](#); [Lybeck et al., 2006](#); [Mai, 2014](#); [Misniakiewicz, 2018](#); [Ozretic-Dosen et al., 2007](#); [Poelmans & Rousseau, 2016](#); [Rousseau, 2015](#); [Thaichon et al., 2018](#); [Venkateswarlu, 2015](#)). Another part of the reason for Hungarian preference for sugar-containing over sugar free chocolates is that as the majority of Hungarian consumers consider chocolate to be inherently healthy ([Mozsár, 2013](#)), additional health claims (sugar free) probably do not make a difference to them.

In line with our expectations, as well as theory and empirical experiences ([Di Monaco et al., 2005](#); [Laskai and Olsovskyné Némédi, 2016](#); [Poelmans & Rousseau, 2016](#); [Rousseau, 2015](#)) both model estimations in our research support the idea that an increase in the price of chocolate will decrease consumer utility, which implies that chocolate can be regarded as an ordinary good and which reflects buyers' marked price sensitivity. This result supports our second hypothesis (H2).

HCM model estimation allowed us to include the study of brand loyalty in our research. Our results reveal that Hungarian consumers consider brand to be an important criterion in chocolate choice, confirming previous results ([Ahmed et al., 2012](#); [Bogomolova & Millburn, 2012](#); [Kamble et al., 2017](#); [Kozelová et al., 2014](#); [Mai, 2014](#); [Misniakiewicz, 2018](#); [Mozsár, 2013](#); [Ozretic-Dosen et al., 2007](#); [Venkateswarlu, 2015](#)). Nearly 43% of respondents said they would definitely continue to buy their favourite brand in the future, and almost three fourth of consumers would happily act as advocates of their favourite brand of chocolate, recommending its outstanding characteristics to others. Results also make it clear, however, that some consumers are not willing to make additional investments to find a given chocolate brand if it is not readily available: confirming the results of [Mozsár \(2013\)](#), only 19% of respondents said they would certainly visit another shop if they could not find their favourite brand at their main supply site; thus, consumers will relatively easily replace their favourite brand with another one, as was also found by previous research ([Ozretic-Dosen et al., 2007](#); [Venkateswarlu, 2015](#)). In addition to the time and effort invested in finding the favourite chocolate brand, another investment by consumers would be paying a higher price for it. Similarly to the previously discussed investments, our results show that only minority of consumers would be willing to pay a higher price for their favourite

brand, i.e., one fifth of Hungarian consumers would continue buying their favourite brand if its price increased.

In harmony with the results of the studies conducted by Lybeck et al. (2006), Miquel et al. (2002), and Pérez-Santamaría et al. (2019), our research demonstrated that consumers are more loyal to manufacturer brand chocolate than store brand products, which further confirms the results of the study conducted by Mozsár (2013) among Hungarian consumers. Thus, we can conclude that consumer brand loyalty has a significant impact on the choice between store and manufacturer brand chocolates which supports our third hypothesis (H3). This association may be because heavy chocolate users trust private label brand products more and are more likely to believe that their quality reaches that of manufacturer brand products; at the same time, it is precisely heavy users who show a greater tendency to try new products that have a lower price, or better availability, or have been recommended by friends (Lybeck et al., 2006). This in turn results in lower levels of brand loyalty among consumers buying typically store brand products.

Consistent with the study on the chocolate market carried out by Golkar, Golkar, Abbasian Kasgarilist, & Hosseini Toudeshki (2014), our research revealed that brand loyalty varies significantly depending on age and educational attainment. It is generally accepted that older consumers' brand loyalty is more intense compared to the young (Patterson, 2007; Tranberg & Hansen, 1986; Uncles & Ehrenberg, 1990; Moisescu (2009), however, failed to spot any difference in brand loyalty towards non-durables on the basis of consumers' age. Our research results, however, show that it is the youngest age group (aged between 18 and 39) that exhibits the most intense chocolate brand loyalty; this is consistent with the conclusions that Moisescu (2009) came to regarding durables. Furthermore, – also consistent with the results of Moisescu (2009) on durables – this study found that higher educational attainment results in more intense brand loyalty; this correlation, however, could not be established in case of non-durables according to Moisescu (2009). As a result, our fourth hypothesis (H4) is supported by our findings, i.e., brand loyalty and, through it, the choice between store and manufacturer brand chocolates can be partly explained by age and education level of the consumer.

To sum up, our results show that Hungarian respondents reported the highest utility value with products represented by the not sugar-free Milka milk chocolate, at the lowest price. Consumers are more loyal to manufacturer brand than store brand products, and brand loyalty is the highest in the youngest age group and increasing with the level of education.

## 5. Conclusions

Our results reveal that Hungarian consumers consider brand to be an important criterion when choosing chocolate. Brand loyalty is more intense towards manufacturer brands compared to store brands; nevertheless, consumers also favour the international chocolate brand over the Hungarian one. An important result for the industry is the observation that – contrary to other surveys – in Hungary it is the youngest age group that is the most brand loyal consumer segment. This provides an outstanding opportunity for the “rejuvenation” of brands, which could guarantee long term success on the market.

Results also make it clear that majority of consumers are not loyal to chocolate brands: they will relatively easily replace their favourite brand with another one, especially if its price increased. In line with this, both model estimations in our research demonstrated that an increase in the price of chocolate leads to a decrease in the utility perceived by consumers, which reflects buyers' price sensitivity. This result has important consequences on the Hungarian chocolate industry concerning pricing strategies.

Milk chocolate is the most popular type of chocolate among Hungarian consumers, which is also supported by sales data; furthermore, this is the version consumers are willing to pay most for. On the one hand, the high preference for milk chocolate is almost a global

phenomenon; on the other hand, there are cultural and sensory reasons for this high preference.

Our results also confirmed the prevalence of the so-called unhealthy = tasty intuition in Hungary. This manifests in the lower preference level of sugar free chocolate over sugar-containing chocolate; thus, consumers expect chocolate to provide a high enjoyment level rather than a high health level. This has a quite serious consequence since it acts as the chief obstacle to the successful introduction of functional chocolate bars to the market. We named this phenomenon the chocolate paradox: on the one hand, consumers consider chocolate to be an indulging product; on the other hand, it is also increasingly important that the product has health benefits.

Our research is a novel study in several senses. To the best knowledge of the authors, it is the first time that chocolate consumption habits have been explored in Hungary via a stated choice experiment; in addition, this has been the first study in the world to investigate the choice of this product category using hybrid choice modelling. At the same time, this research – though it was representative for four variables – would be worth extending to test the results in a larger, perhaps international, sample. A further limitation of the study is that our choice experiment was based on stated type data, which is strongly affected by hypothetical context (e.g., participants in our experiment had no budget constraint). Furthermore, this experiment included only a few variables (brand, type, sugar claim, price); therefore, a further extension of the research could be the inclusion of further variables (for instance, flavouring; packaging; presentation; country of origin; other health claims, such as vitamin enriched; trademarks such as organic, fair trade, GMO free) which have a great impact on chocolate purchasing.

## Data availability statement

Data are available upon reasonable requests.

## Author contribution statement

Marietta Kiss: Investigation, Data Curation, Writing - Original Draft, Writing - Review & Editing, Visualization. Péter Czine: Methodology, Formal analysis, Data Curation, Writing - Original Draft. Péter Balogh: Methodology, Resources, Project administration, Funding acquisition. Zoltán Szakály: Conceptualization, Resources, Data Curation, Supervision. All authors have approved the final article.

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## Ethical statement

The study obtained ethical approval on September 15, 2020 (approval number: GTKDH/24/2022) from the Research Ethics Committee of the University of Debrecen, Faculty of Economics and Business. Participants gave informed consent before taking part in the research.

## Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## References

- Ahmed, Z. U., Zbib, I. J., Sikander, A., & Noujaim, R. G. (2012). Does country of brand origin (COBO) matter for the Lebanese consumers? *EuroMed Journal of Business*, 7(2), 108–128. <https://doi.org/10.1108/14502191211245561>

- Ahrens, W. (2015). Sensory taste preferences and taste sensitivity and the association of unhealthy food patterns with overweight and obesity in primary school children in Europe—a synthesis of data from the IDEFICS study. *Flavour*, 4(1), 8. <https://doi.org/10.1186/2044-7248-4-8>
- Ben-Akiva, M., & Lerman, S. R. (1985). *Discrete choice analysis: Theory and application to travel demand (transportation studies)*. Cambridge, MA: MIT Press.
- Bobálčá, C., Gämlik, C., & Ciobanu, O. (2012). Developing a scale to measure customer loyalty. *Procedia Economics and Finance*, 3, 623–628. [https://doi.org/10.1016/S2212-5671\(12\)00205-5](https://doi.org/10.1016/S2212-5671(12)00205-5)
- Bogomolova, S., & Millburn, S. (2012). Reasons for non-consideration of brands and the role of prior experience. *Journal of Brand Management*, 19(4), 304–317. <https://doi.org/10.1057/bm.2011.41>
- Bolduc, D., Ben-Akiva, M., Walker, J., & Michaud, A. (2005). Hybrid choice models with logit kernel: Applicability to large scale models. In M. E. H. Lee-Gosselin, & S. T. Doherty (Eds.), *Integrated land-use and transportation models* (pp. 275–302). Bingley, UK: Emerald Group Publishing Limited. <https://doi.org/10.1108/9781786359520-012>
- Burt, S. (2000). The strategic role of retail brands in British grocery retailing. *European Journal of Marketing*, 34(8), 875–890. <https://doi.org/10.1108/03090560010331351>
- Caswell, J. A. (1998). Valuing the benefits and costs of improved food safety and nutrition. *The Australian Journal of Agricultural and Resource Economics*, 42(4), 409–424. <https://doi.org/10.1111/1467-8489.00060>
- Chawla, D., & Sondhi, N. (2016). Attitude and consumption patterns of the Indian chocolate consumer: An exploratory study. *Global Business Review*, 17(6), 1412–1426. <https://doi.org/10.1177/0972150916660408>
- Chen, M. (2018). Choose healthy chocolate. In M. A. Rahnman (Ed.), *Proceedings of the 2nd European conference on industrial engineering and operations management (IEOM)* (pp. 434–441). Paris, France: IEOM Society International.
- Chocousuisse. (2021). Facts & figures – per capita consumption of chocolate products. Retrieved from <https://www.chocousuisse.ch/en/services/facts-figures>. (Accessed 29 March 2021).
- Choicemetrics. (2018). *Ngen, C. 1.2 user manual & reference guide*. Sydney, Australia: ChoiceMetrics Pty Ltd.
- Confectionery Production. (2021). Spotlight: Revealing the health-conscious confectionery revolution. Retrieved from <https://www.confectioneryproduction.com/feature/35268/spotlight-revealing-the-health-conscious-confectionery-revolution/>. (Accessed 4 June 2022).
- Core Team, R. (2020). *R: A language and environment for statistical computing*. Vienna, Austria: R Foundation for Statistical Computing. Retrieved from <https://www.R-project.org/>. (Accessed 19 September 2021).
- Daly, A., Hess, S., Patrui, B., Potoglou, D., & Rohr, C. (2012). Using ordered attitudinal indicators in a latent variable choice model: A study of the impact of security on rail travel behaviour. *Transportation*, 39(2), 267–297. <https://doi.org/10.1007/s11116-011-9351-z>
- De Pelsmaeker, S., Schouteten, J. J., Gellynck, X., Delbaere, C., De Clercq, N., Hegyi, A., et al. (2017). Do anticipated emotions influence behavioural intention and behaviour to consume filled chocolates? *British Food Journal*, 119(9), 1983–1998. <https://doi.org/10.1108/BFJ-01-2016-0006>
- De Pelsmaeker, S., Schouteten, J. J., Lagast, S., Dewettinck, K., & Gellynck, X. (2017). Is taste the key driver for consumer preference? A conjoint analysis study. *Food Quality and Preference*, 62, 323–331. <https://doi.org/10.1016/j.foodqual.2017.02.018>
- Del Prete, M., & Samoggia, A. (2020). Chocolate consumption and purchasing behaviour review: Research issues and insights for future research. *Sustainability*, 12(14). <https://doi.org/10.3390/su12145586>. Article 5586.
- Deliza, R., & MacFie, H. J. (1996). The generation of sensory expectation by external cues and its effect on sensory perception and hedonic ratings: A review. *Journal of Sensory Studies*, 11(2), 103–128. <https://doi.org/10.1111/j.1745-459X.1996.tb00036.x>
- Di Monaco, R., Ollila, S., & Tuorila, H. (2005). Effect of price on pleasantness ratings and use intentions for a chocolate bar in the presence and absence of a health claim. *Journal of Sensory Studies*, 20(1), 1–16. <https://doi.org/10.1111/j.1745-459X.2005.061704.x>
- Dumbrava, D., Popescu, L. A., Soica, C. M., Nicolin, A., Cocan, I., Negrea, M., et al. (2020). Nutritional, antioxidant, antimicrobial, and toxicological profile of two innovative types of vegan, sugar-free chocolate. *Foods*, 9(12). <https://doi.org/10.3390/foods9121844>. Article 1844.
- Fernandes, S., Chaudhuri, S., & Vidyasagar, A. (2017). Success crowns cadbury dairy milk: Brand and culture analysis. *International Journal of Applied Business and Economic Research*, 15(2), 177–189.
- Fournier, S., & Yao, J. L. (1997). Reviving brand loyalty: A reconceptualization within the framework of consumer-brand relationships. *International Journal of Research in Marketing*, 14(5), 451–472. [https://doi.org/10.1016/S0167-8116\(97\)00021-9](https://doi.org/10.1016/S0167-8116(97)00021-9)
- Gatea, A., Hulpe, R. C., & Stan, L. (2013). Marketing study for chocolate consumption in Cluj-Napoca. *Agricultura-Revista de Ştiinţă şi Practică Agricolă*, 87(3/4), 90–93. <https://doi.org/10.15835/arspa.v87i3-4.9982>
- Golkar, M., Golkar, A., Abbasian Kasgari, A., & Hosseini Toudeshki, E. (2014). Determining the factors influencing the brand equity from the perspective of the consumer in Iran chocolate industry (Baraka Chocolate). *Journal of Social Sciences and Humanities Research*, 2, 40–48. <https://doi.org/10.24200/jsshr.vol2iss02pp40-48.02>
- Grogan, S. C., Bell, R., & Conner, M. (1997). Eating sweet snacks: Gender differences in attitudes and behaviour. *Appetite*, 28(1), 19–31. <https://doi.org/10.1006/appe.1996.0067>
- Grunert, K. G. (2003). Purchase and consumption: The interdisciplinary nature of analysing food choice. *Food Quality and Preference*, 1(14), 39–40. [https://doi.org/10.1016/S0950-3293\(02\)00033-2](https://doi.org/10.1016/S0950-3293(02)00033-2)
- Grunert, K. G. (2017). The health trend. In K. G. Grunert (Ed.), *Consumer trends and new product opportunities in the food sector* (pp. 15–31). Wageningen, The Netherlands: Wageningen Academic Publishers. <https://doi.org/10.3920/978-90-8686-852-0>
- Hajdu, I., & Notari, M. (2012). Are Hungarian customers quality conscious? *International Journal of Sales, Retailing and Marketing*, 1(4), 9–16. <https://doi.org/10.5848/apbj.2012.00098>
- Hershey. (2022). Choose your moment. Retrieved from [https://www.thehersheycompany.com/en\\_us/home/brands.html](https://www.thehersheycompany.com/en_us/home/brands.html). (Accessed 4 June 2022).
- Hess, S., & Palma, D. (2019). Apollo: A flexible, powerful and customisable freeware package for choice model estimation and application. *Journal of Choice Modelling*, 32. <https://doi.org/10.1016/j.jocm.2019.100170>. Article 100170.
- Hess, S., & Palma, D. (2021). Apollo: Version 0.2.4, user manual. Retrieved from [www.ApolloChoiceModelling.com](http://www.ApolloChoiceModelling.com). (Accessed 10 August 2021).
- Hole, A. R. (2007). A comparison of approaches to estimating confidence intervals for willingness to pay measures. *Health Economics*, 16(8), 827–840. <https://doi.org/10.1002/hec.1197>
- Hoyer, W. D., & Brown, S. P. (1990). Effects of brand awareness on choice for a common, repeat-purchase product. *Journal of Consumer Research*, 17(2), 141–148. <https://doi.org/10.1086/208544>
- Hungarian Central Statistical Office. (2020a). Tables (STADAT) - time series of annual data - population, vital events/1.2.Population by type of settlement, 1 January (1980–2020), 1.3.Population by sex and age, 1 January (1980–2020). Retrieved from [http://www.ksh.hu/stadat\\_annual\\_1](http://www.ksh.hu/stadat_annual_1). (Accessed 1 September 2020).
- Hungarian Central Statistical Office. (2020b). Tables (STADAT) - time series of annual, regional statistics - population, vital events/6.1.1.Resident population by sex, 1 January (2001–2020). Retrieved from [http://www.ksh.hu/stadat\\_annual\\_6\\_1](http://www.ksh.hu/stadat_annual_6_1). (Accessed 1 September 2020).
- HVG. (2005). Szerencsi csokoládégyár. March, 28, 2005. Retrieved from <https://hvg.hu/magyarmarka/20050329szerencsicsokoladegyár>. (Accessed 22 August 2021).
- Ionova, A. (2017). *Chocolate makers innovate to entice health-conscious consumers*. Reuters. December 19. Retrieved from <https://www.reuters.com/article/us-cocoa-dem-and-innovation-idUSKBN1ED1PZ>. (Accessed 4 June 2022).
- Januszewska, R., Viaene, J., & Verbeke, W. (2001). Market segmentation for chocolate in Belgium and Poland. *Journal of Euromarketing*, 9(3), 1–26. [https://doi.org/10.1300/J037v09n03\\_01](https://doi.org/10.1300/J037v09n03_01)
- Kamble, A., Zagade, A., & Abhang, N. (2017). Evaluating impulse purchases generated by affections and advertisement effectiveness. *Management Science Letters*, 7(10), 479–486. <https://doi.org/10.5267/j.msl.2017.7.003>
- Karnai, L., & Szűcs, I. (2015). Kézműves csokoládégyártás főbb jellemzői Hajdú-Bihar megyében (main characteristics of craftsman sweets consumption in Hajdú-Bihar county). *Táplálkozásmarketing (The Hungarian Journal of Nutrition Marketing)*, 2(2), 59–66. <https://doi.org/10.20494/TM/2/2/5>
- Kátai, I. (2020). Europe is a private label fortress. *Trade Magazin*, 25 May, 2020. Retrieved from <https://trademagazin.hu/en/a-sajatmarka-fellegvara-europa/>. (Accessed 4 June 2022).
- Kátai, I. (2021). Private label today. *Trade Magazin*, 22 April, 2021. Retrieved from <https://trademagazin.hu/en/sajatmarka-helyzetjelentes/>. (Accessed 4 June 2022).
- Kim, C. K., Han, D., & Park, S. B. (2001). The effect of brand personality and brand identification on brand loyalty: Applying the theory of social identification. *Japanese Psychological Research*, 43(4), 195–206. <https://doi.org/10.1111/1468-5884.00177>
- Kim, S.-H., & Jeon, H.-M. (2020). Chocolate choice motives and attitudes in foodservice market: Fine store product vs. manufactured product consumers. *Journal of Foodservice Business Research*, 23(2), 149–168. <https://doi.org/10.1080/15378020.2019.1706701>
- Kiss, M., Kontor, E., & Kun, A. (2015). The effect of 'organic' labels on consumer perception of chocolates. *The Annals of the University of Oradea Economic Sciences*, 24(1), 448–457.
- Kontor, E., Szakály, Z., Véha, M., & Kiss, M. (2018). Egészség vagy íz? Fogyasztói dilemmák a funkcionális élelmiszerekkel kapcsolatban – szakirodalmi áttekintés (health or taste? Consumer dilemmas with functional foods – literature review). *Táplálkozásmarketing (Hungarian Journal of Nutrition Marketing)*, 5(2), 17–29. <https://doi.org/10.20494/TM/5/2/2>
- Kozelová, D., Mamilková, E., Fikselová, M., & Dékányová, J. (2014). Analysis of consumer behavior at chocolate purchase. *Potravinarstvo Slovak Journal of Food Sciences*, 8(1), 62–66. <https://doi.org/10.5219/325>
- KPMG. (2018). 24. *Consumer Currents – issues driving consumer organizations*. Retrieved from <https://assets.kpmg/content/dam/kpmg/xx/pdf/2018/10/consumer-currents-issues-driving-consumer-organizations.pdf>. (Accessed 13 June 2019).
- Kuikka, A., & Laukkanen, T. (2012). Brand loyalty and the role of hedonic value. *The Journal of Product and Brand Management*, 21(7), 529–537. <https://doi.org/10.1108/1061042111276277>
- Lalor, F., Madden, C., McKenzie, K., & Wall, P. G. (2011). Health claims on foodstuffs: A focus group study of consumer attitudes. *Journal of Functional Foods*, 3(1), 56–59. <https://doi.org/10.1016/j.jfff.2011.02.001>
- Lanfer, A., Bammann, K., Knof, K., Buchecker, K., Russo, P., Veidebaum, T., et al. (2013). Predictors and correlates of taste preferences in European children: The IDEFICS study. *Food Quality and Preference*, 27(2), 128–136. <https://doi.org/10.1016/j.foodqual.2012.09.006>
- Laskai, Z., & Olsovszkyné Némédi, A. (2016). A csokoládé fogyasztói megítélés (Consumer Perception of Chocolate). *Élelmiszer, Táplálkozás és Marketing (The Hungarian Journal of Food Nutrition and Marketing)*, 12(2), 39–46.
- List, J. A., & Shogren, J. F. (1999). Price information and bidding behavior in repeated second-price auctions. *American Journal of Agricultural Economics*, 81(4), 942–949. <https://doi.org/10.2307/1244336>
- Llanaj, E., Vincze, F., Kósa, Z., Bárdos, H., Diószegi, J., Sándor, J., et al. (2021). Deteriorated dietary patterns with regards to health and environmental

- sustainability among Hungarian roma are not differentiated from those of the general population. *Nutrients*, 13(3), 721. <https://doi.org/10.3390/nu13030721>
- Lybeck, A., Holmlund-Rytkönen, M., & Sääksjärvi, M. (2006). Store brands vs. Manufacturer brands: Consumer perceptions and buying of chocolate bars in Finland. *International Review of Retail Distribution & Consumer Research*, 16(4), 471–492. <https://doi.org/10.1080/09593960600844343>
- Mai, L.-W. (2014). Consumers' willingness to pay for ethical attributes. *Marketing Intelligence & Planning*, 32(6), 706–721. <https://doi.org/10.1108/MIP-08-2013-0139>
- Market Research, P. (2021). *Sugar-free confectionery market – market study on sugar-free confectionery: Global market to remain dominated by North America and Europe*. US: Persistent Market Research.
- McFadden, D. (1986). The choice theory approach to market research. *Marketing Science*, 5(4), 275–297. <https://doi.org/10.1287/mksc.5.4.275>
- McFadden, D., & Zarembka, P. (1974). Conditional logit analysis of qualitative choice behavior. In P. Zarembka (Ed.), *Frontiers in econometrics* (pp. 105–142). New York, NY: Academic Press.
- Melo, L., Childs, J. L., Drake, M., André Bolini, H. M., & Efraim, P. (2010). Expectations and acceptability of diabetic and reduced-calorie milk chocolates among nondiabetics and diabetics in the USA. *Journal of Sensory Studies*, 25(s1), 133–152. <https://doi.org/10.1111/j.1745-459X.2010.00291.x>
- Merlino, V. M., Mota-Gutierrez, J., Borra, D., Brun, F., Coccolin, L., Blanc, S., et al. (2021). Chocolate culture: Preferences, emotional implications and awareness of Italian consumers. *International Journal of Gastronomy and Food Science*, 25. <https://doi.org/10.1016/j.ijgfs.2021.100374>. Article 100374.
- Miquel, S., Capliure, E. M., & Aldas-Manzano, J. (2002). The effect of personal involvement in the decision to buy store brands. *The Journal of Product and Brand Management*, 11(1), 6–18. <https://doi.org/10.1108/10610420210419513>
- Misniakiewicz, M. (2018). Consumers' expectations and behavior towards confectionery products. Polish market case study. In I. Černá (Ed.), *Proceedings of 18th international joint conference – central and eastern Europe in the changing business environment* (pp. 222–232). Prague, Czech Republic: Oeconomica Publishing House, University of Economics.
- Moiescu, O. I. (2009). The influence of market type and demographics on brand loyalty: A study among Urban Romanian consumers. *Annals of Faculty of Economics*, 4(1), 737–741.
- Mondelez International. (2021). Our history. Retrieved from <https://www.mondelezinternational.com/About-Us/Who-We-Are/Our-History>. (Accessed 22 August 2021).
- Monga, A. B. (2002). Brand as a relationship partner: Gender differences in perspectives. In S. M. Broniarczyk, & K. Nakamoto (Eds.), 29. *North American advances in consumer research* (pp. 36–41). Valdosta, GA: Association for Consumer Research.
- Mozsár, A. (2013). Csokoládé fogyasztás vizsgálata a Jászágban élő huszoneves fiatalok körében (The Examination of Chocolate Consumption in Jászág among Young People in their Twenties). *Economica*, 6(Különszám), 82–91. <https://doi.org/10.47282/ECONOMICA/2013/6/Különszám/4462>
- Müller, J., Dettmer, D., & Macht, M. (2008). The attitudes to chocolate questionnaire: Psychometric properties and relationship to dimensions of eating. *Appetite*, 50(2–3), 499–505. <https://doi.org/10.1016/j.appet.2007.10.008>
- Mundel, J., Huddleston, P., & Vodermeier, M. (2017). An exploratory study of consumers' perceptions: What are affordable luxuries? *Journal of Retailing and Consumer Services*, 35, 68–75. <https://doi.org/10.1016/j.jretconser.2016.12.004>
- Nestlé. (2022). Tastier and healthier food. Retrieved from <https://www.nestle.com/sustainability/nutrition-health/tasty-healthy-food>. (Accessed 4 June 2022).
- Nielsen. (2018a). *The rise and rise again the private label*. The Nielsen Company. Retrieved from <https://www.nielsen.com/wp-content/uploads/sites/3/2019/04/global-privat-e-label-report.pdf>. (Accessed 4 June 2022).
- Nielsen. (2018b). A kereskedelmi márkák új hajnala (new dawn of commercial brands). June 5, 2018. Retrieved from <https://www.nielsen.com/hu/hu/insights/article/2018/the-new-dawn-of-commercial-brands/>. (Accessed 1 January 2019).
- Norton, J. E., Fryer, P. J., & Parkinson, J. A. (2013). The effect of reduced-fat labelling on chocolate expectations. *Food Quality and Preference*, 28(1), 101–105. <https://doi.org/10.1016/j.foodqual.2012.08.004>
- Odin, Y., Odin, N., & Valette-Florence, P. (2001). Conceptual and operational aspects of brand loyalty: An empirical investigation. *Journal of business research*, 53(2), 75–84. [https://doi.org/10.1016/S0148-2963\(99\)00076-4](https://doi.org/10.1016/S0148-2963(99)00076-4)
- Olegario, L. S., González-Mohino, A., Estevez, M., Madruga, M. S., & Ventanas, S. (2020). Impact of 'free-from' and 'healthy choice' labeled versions of chocolate and coffee on temporal profile (multiple-intake TDS) and liking. *Food Research International*, 137. <https://doi.org/10.1016/j.foodres.2020.109342>. Article 109342.
- O'Neill, V., Hess, S., & Campbell, D. (2014). A question of taste: Recognising the role of latent preferences and attitudes in analysing food choices. *Food Quality and Preference*, 32, 299–310. <https://doi.org/10.1016/j.foodqual.2013.10.003>
- Ozretic-Dosen, D., Skare, V., & Krupka, Z. (2007). Assessments of country of origin and brand cues in evaluating a Croatian, Western and eastern European food product. *Journal of Business Research*, 60(2), 130–136. <https://doi.org/10.1016/j.jbusres.2006.10.011>
- Patterson, P. G. (2007). Demographic correlates of loyalty in a service context. *Journal of Services Marketing*, 21(2), 112–121. <https://doi.org/10.1108/08876040710737877>
- Pérez-Santamaría, S., Martos-Paral, M., & Garrido-Morgado, Á. (2019). Identifying a private-label supplier on national brand. *The Journal of Product and Brand Management*, 28(3), 432–443. <https://doi.org/10.1108/JPB-06-2018-1908>
- Petzer, D., Mostert, P., Kruger, L.-M., & Kuhn, S. (2014). The dimensions of brand romance as predictors of brand loyalty among cell phone users. *South African Journal of Economic and Management Sciences*, 17(4), 457–470. <https://doi.org/10.4102/sajems.v17i4.721>
- Poelmans, E., & Rousseau, S. (2016). How do chocolate lovers balance taste and ethical considerations? *British Food Journal*, 118(2), 343–361. <https://doi.org/10.1108/BFJ-06-2015-0208>
- Prendergast, G. P., & Marr, N. E. (1997). Perceptions of generic products: A macro and micro view. *The Journal of Product and Brand Management*, 6(2), 93–108. <https://doi.org/10.1108/10610429710175637>
- Prestwich, A., Hurling, R., & Baker, S. (2011). Implicit shopping: Attitudinal determinants of the purchasing of healthy and unhealthy foods. *Psychology and Health*, 26(7), 875–885. <https://doi.org/10.1080/08870446.2010.509797>
- Puška, A., Stojanović, I., & Berbić, S. (2018). The impact of chocolate brand image, satisfaction, and value on brand loyalty. *Časopis za Ekonomiju i Tržišne Komunikacije (Economy and Market Communication Review)*, 8(1), 37–54. <https://doi.org/10.7251/EMC1801037P>
- Raghunathan, R., Naylor, R. W., & Hoyer, W. D. (2006). The unhealthy = tasty intuition and its effects on taste inferences, enjoyment, and choice of food products. *Journal of Marketing*, 70(4), 170–184. <https://doi.org/10.1509/jmk.70.4.170>
- Raju, P. S. (1980). Optimum stimulation level: Its relationship to personality, demographics, and exploratory behavior. *Journal of Consumer Research*, 7(3), 272–282. <https://doi.org/10.1086/208815>
- Richetin, J., Caputo, V., Demartini, E., Conner, M., & Perugini, M. (2022). Organic food labels bias food healthiness perceptions: Estimating healthiness equivalence using a Discrete Choice Experiment. *Appetite*, 172, Article 105970. <https://doi.org/10.1016/j.appet.2022.105970>
- Rose, J. M., & Bliemer, M. C. J. (2009). Constructing efficient stated choice experimental designs. *Transport Reviews*, 29(5), 587–617. <https://doi.org/10.1080/01441640902827623>
- Rousseau, S. (2015). The role of organic and fair trade labels when choosing chocolate. *Food Quality and Preference*, 44, 92–100. <https://doi.org/10.1016/j.foodqual.2015.04.002>
- Rozin, P., Levine, E., & Stoess, C. (1991). Chocolate craving and liking. *Appetite*, 17(3), 199–212. [https://doi.org/10.1016/0195-6663\(91\)90022-K](https://doi.org/10.1016/0195-6663(91)90022-K)
- Schultz, D. E., Block, M. P., & Viswanathan, V. (2014). Brand preference being challenged. *Journal of Brand Management*, 21(5), 408–428. <https://doi.org/10.1057/bm.2014.5>
- Selvasekaran, P., & Chidambaram, R. (2021). Advances in formulation for the production of low-fat, fat-free, low-sugar, and sugar-free chocolates: An overview of the past decade. *Trends in Food Science & Technology*, 113, 315–334. <https://doi.org/10.1016/j.tifs.2021.05.008>
- Senese, V. P., Gnisci, A., & Pace, A. (2015). Cogito ergo Gusto: Explicit and implicit determinants of the first tasting behaviour. Smart Innovation, Systems and Technologies book series. In S. Bassis, A. Esposito, & F. Morabito (Eds.), 37. *Advances in neural networks: Computational and theoretical issues* (pp. 273–282). Cham, Switzerland: Springer. [https://doi.org/10.1007/978-3-319-18164-6\\_26](https://doi.org/10.1007/978-3-319-18164-6_26)
- Sepúlveda, W. S., Maza, M. T., Uldemolins, P., Cantos-Zambrano, E. G., & Ureta, I. (2021). Linking dark chocolate product attributes, consumer preferences, and consumer utility: Impact of quality labels, cocoa content, chocolate origin, and price. *Journal of International Food & Agribusiness Marketing*, 1–20. <https://doi.org/10.1080/08974438.2021.1908924>
- Shekhar, S. K., & Raveendran, P. T. (2017). Perceptions and attitudes towards the silent salesman. *International Journal of Business Innovation and Research*, 14(1), 104–121. <https://doi.org/10.1504/IJBIR.2017.085788>
- Sheth, J. N., & Park, C. W. (1974). *A theory of multidimensional brand loyalty*. Faculty Working Papers; no. 151. Champaign, IL: College of Commerce and Business Administration University of Illinois at Urbana-Champaign.
- Shoup, M. E. (2019). The rise and premiumization of private label: Sales surpass \$143 bn, notes Nielsen. Retrieved from <https://www.foodnavigator-usa.com/Article/2019/08/30/The-rise-and-premiumization-of-private-label-Sales-surpass-143bn-notes-Nielsen>. (Accessed 4 June 2022).
- Sina, E., Buck, C., Jilani, H., Tornaritis, M., Veidebaum, T., Russo, P., et al. (2019). Association of infant feeding patterns with taste preferences in European children and adolescents: A retrospective latent profile analysis. *Nutrients*, 11(5), 1040. <https://doi.org/10.3390/nu11051040>
- Sloot, L., Verhoef, P., & Frances, P. (2005). The impact of brand equity and the hedonic level of products on consumer stock-out reactions. *Journal of Retailing*, 81(1), 15–34. <https://doi.org/10.1016/j.jretai.2005.01.001>
- Sondhi, N., & Chawla, D. (2017). Segmenting and profiling the chocolate consumer: An emerging market perspective. *Journal of Food Products Marketing*, 23(2), 123–143. <https://doi.org/10.1080/10454446.2017.1244784>
- Sproles, G. B., & Kendall, E. L. (1986). A methodology for profiling consumers' decision-making styles. *Journal of Consumer Affairs*, 20(2), 267–279. <https://doi.org/10.1111/j.1745-6606.1986.tb00382.x>
- Stamer, H. H., & Diller, H. (2006). Price segment stability in consumer goods categories. *The Journal of Product and Brand Management*, 15(1), 62–72. <https://doi.org/10.1108/10610420610650882>
- Statista. (2021). Per capita chocolate consumption worldwide in 2017, by country (in kilograms). Retrieved from <https://www.statista.com/statistics/819288/worldwide-chocolate-consumption-by-country/>. (Accessed 29 March 2021).
- Statista. (2022a). Size of the chocolate confectionery market worldwide from 2012 to 2025. Retrieved from <https://www.statista.com/statistics/983554/global-chocolate-confectionery-market-size/>. (Accessed 26 February 2022).
- Statista. (2022b). Ranking of food brands in Hungary in 2020, by consumer reach points (CRP). Retrieved from <https://www.statista.com/statistics/1119943/hungary-leading-food-brands-by-crp/>. (Accessed 8 May 2022).
- Steinhauser, J., Janssen, M., & Hamm, U. (2019). Consumers' purchase decisions for products with nutrition and health claims: What role do product category and Gaze

- duration on claims play? *Appetite*, 141. <https://doi.org/10.1016/j.appet.2019.104337>. Article 104337.
- Sung, Y., & Choi, S. M. (2010). I won't leave you although you disappoint me": The interplay between satisfaction, investment, and alternatives in determining consumer-brand relationship commitment. *Psychology and Marketing*, 27(11), 1050–1073. <https://doi.org/10.1002/mar.20373>
- Szakály, Z. (2008). Trendek és tendenciák a funkcionális élelmiszerek piacán: Mit vár el a hazai fogyasztó? (Trends and tendencies in the functional food market: What does the domestic consumer expect?). *Élelmiszer, Táplálkozás és Marketing (The Hungarian Journal of Food, Nutrition and Marketing)*, 5(2–3), 3–11.
- Szakály, Z., Fehér, A., & Kiss, M. (2019). Consumer acceptance of personalized nutrition. In C. M. Galanakis (Ed.), *Trends in personalized nutrition* (pp. 225–260). London, UK: Elsevier Academic Press. <https://doi.org/10.1016/b978-0-12-816403-7.00009-x>.
- Szakály, Z., Kiss, M., & Jasák, H. (2014). Funkcionális élelmiszerek, fogyasztói attitűdök és személyre szabott táplálkozás (functional foods, consumer attitudes and personalized nutrition). *Táplálkozásmarketing (Hungarian Journal of Nutrition Marketing)*, 1(1–2), 3–17. <https://doi.org/10.20494/TM/1/1-2/1>
- Tagbata, D., & Sirieix, L. (2008). Measuring consumers' willingness to pay for organic and Fair Trade products. *International Journal of Consumer Studies*, 32(5), 479–490. <https://doi.org/10.1111/j.1470-6431.2008.00714.x>
- Taranko, T. (2016). Consumer Attitudes towards Manufacturer Brands and Own Label Brands—the Case of the Chocolate Market in Poland (Postawy konsumentów wobec marek producentów i marek własnych detalistów na rynku czekolady w Polsce). *Problemy Zarządzania*, 14(57), 119–137. <https://doi.org/10.7172/1644-9584.57.7>
- Thaichon, P., Jebarajakirthy, C., Tatu, P., & Gajbhayeb, R. G. (2018). Are you a chocolate Lover? An investigation of the repurchase behavior of chocolate consumers. *Journal of Food Products Marketing*, 24(2), 163–176. <https://doi.org/10.1080/10454446.2017.1266551>
- The Grocer. (2019). Portion control, sustainability and daily fixes: 10 charts explaining UK attitudes to confectionery. Retrieved from <https://www.thegrocer.co.uk/trend-reports/portion-control-sustainability-and-daily-fixes-10-charts-explaining-uk-attitudes-to-confectionery/595282.article>. (Accessed 7 May 2022).
- Thorat, B., & Deshmukh, R. (2020). *Confectionery market by product type (Hard-Boiled sweets, mints, gums & jellies, chocolate, caramels & toffees, medicated confectionery, fine bakery wares, and others), age group (children, adult, and geriatric), price point (economy, mid-range, and luxury), and distribution channel (Supermarket/Hypermarket, convenience stores, pharmaceutical & drug stores, food services, duty-free outlets, E-commerce, and others): Global opportunity analysis and industry forecast, 2021–2027*. US: Allied Market Research.
- Tisza, A. (2020). Magazine: No stopping for chocolate tablets! *Trade Magazin*. May 22, 2020. Retrieved from <https://trademagazin.hu/en/megallni-tilos-tabla/>. (Accessed 31 March 2021).
- Tolve, R., Tchuembou-Magaia, F. L., Verderese, D., Simonato, B., Puggia, D., Galgano, F., et al. (2021). Physico-chemical and sensory acceptability of no added sugar chocolate spreads fortified with multiple micronutrients. *Food Chemistry*, 364. <https://doi.org/10.1016/j.foodchem.2021.130386>. Article 130386.
- Trade Magazin. (2020). Kereskedelmi toplista 2019 (retail top list 2019). *Trade Magazin*. Retrieved from [https://trademagazin.hu/wp-content/uploads/2020/06/FMCG-Kereskedelmi-Toplista-2019\\_posztern.pdf](https://trademagazin.hu/wp-content/uploads/2020/06/FMCG-Kereskedelmi-Toplista-2019_posztern.pdf). (Accessed 19 April 2021).
- Trade Magazin. (2022). Milyen csokoládét szeretnek a magyarok? Kutatás (what kind of chocolates are liked by Hungarians? A research). *Trade Magazin*. Retrieved from <https://trademagazin.hu/hu/magazine-likes-chocolate/>. (Accessed 7 May 2022).
- Tranberg, H., & Hansen, F. (1986). Patterns of brand loyalty: Their determinants and their role for leading brands. *European Journal of Marketing*, 20(3/4), 81–109. <https://doi.org/10.1108/eum000000004642>
- Troiano, S., Vecchiato, D., Marangon, F., Tempesta, T., & Nassivera, F. (2019). Households' preferences for a new 'climate-friendly' heating system: Does contribution to reducing greenhouse gases matter? *Energies*, 12(13), 2632. <https://doi.org/10.3390/en12132632>
- Uncles, M. D., & Ehrenberg, A. S. C. (1990). Brand choice among older consumers. *Journal of Advertising Research*, 30(4), 19–22.
- Urala, N., & Lähteenmäki, L. (2003). Reasons behind consumers' functional food choices. *Nutrition & Food Science*, 33(4), 148–158. <https://doi.org/10.1108/00346650310488499>
- Urala, N., & Lähteenmäki, L. (2004). Attitudes behind consumers' willingness to use functional foods. *Food Quality and Preference*, 15(7), 793–803. <https://doi.org/10.1016/j.foodqual.2004.02.008>
- Urala, N., & Lähteenmäki, L. (2006). Hedonic ratings and perceived healthiness in experimental functional food choices. *Appetite*, 47, 302–314. <https://doi.org/10.1016/j.appet.2006.04.007>
- Venkateswarlu, T. (2015). A study on consumer buying behaviour of confectionery products in Visakhapatnam. *JIMS&M: The Journal of Indian Management & Strategy*, 20(3), 54–62. <https://doi.org/10.5958/0973-9343.2015.00025.3>
- Verbeke, W. (2006). Functional foods: Consumer willingness to compromise on taste for health? *Food Quality and Preference*, 17(1–2), 126–131. <https://doi.org/10.1016/j.foodqual.2005.03.003>
- Weiss, B. H., O'Mahony, M., & Wichchukit, S. (2010). Various paired preferences tests: Experimenter effect on "Take Home" choice. *Journal of Sensory Studies*, 25(5), 778–790. <https://doi.org/10.1111/j.1745-459X.2010.00309.x>
- Yiridoe, E. K., Bonti-Ankomah, S., & Martin, R. C. (2005). Comparison of consumer perceptions and preference toward organic versus conventionally produced foods: A review and update of the literature. *Renewable Agriculture and Food Systems*, 20(4), 193–205. <https://doi.org/10.1079/RAF2005113>
- Young, M. E., & McCoy, A. W. (2016). Millennials and chocolate product Ethics: Saying one thing and doing another. *Food Quality and Preference*, 49, 42–53. <https://doi.org/10.1016/j.foodqual.2015.11.014>