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CONSUMER RESEARCH OF CREDIBILITY AND VALUE OF
ORGANIC FOODS
PhD DISSERTATION

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1. INTRODUCTION

Consumer trust in the food chain is a significant issue in contemporary society. Given that food is an integral part of everyday life, consumers are increasingly concerned about the quality and safety of what they eat. While certain characteristics of food, such as smell, taste, and appearance, allow consumers to make immediate judgments about its quality, there are other attributes that often go unnoticed, such as the presence of pesticides or the production methods employed. Organic food is considered as a credence good, because there is an information asymmetry between the consumers and producers (Giannakas, 2002). In the case of credence quality, the consumer of a product cannot fully evaluate the quality of a particular good (Darby & Karni, 1973). Consequently, many consumers, particularly in emerging markets (Nuttavuthisit & Thøgersen, 2017), remain skeptical about the authenticity of organic products.

Trust and credibility are fundamental concepts in consumer behavior, particularly in the context of food products. The most widely accepted definition of trust comes from Rousseau et al. (1998): “a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intention or behavior of another.” From our viewpoint, it means that the consumers’ tolerance for ambiguity is increased as a result of an inner assurance or conviction (Thorsøe et al., 2016).

Trust and credibility are strongly related to each other, but their meaning is also different. Credibility is narrowly characterized by its believability, plausibility, or capacity to be believed, while trust encompasses various interpretations, such as reliance, dependence, or confidence in another individual or entity (McKnight & Chervany, 2001). According to Bentele & Seidenglanz (2008) credibility is a sub-phenomenon of trust. In the context of food products, credibility can be a feature of a product attributed by consumers. As Thorsøe et al. (2016) explains, food producers or retailers must be credible to generate consumer trust.

Credibility is a relatively new research field in the context of consumable products. Green et al. (2020), Plasek & Temesi (2019) and Küster-Boluda & Vila (2020) examined credibility in the case of alternative medicine, functional food, and low-fat food, respectively. Other researchers have explored fields related to food products in terms of credibility. Anders et al. (2010) examined it within third-party certification in the food supply chain, Kumar & Polonsky (2019) researched it from food retailer perspective.

Organic food can be defined based on Kahl et al.'s (2012) definition: “Organic food is produced within a regulated and certified production process.” According to them, food can be described by intrinsic or extrinsic quality attributes. These attributes are strongly related to consumer expectations and trust (Pivato et al., 2007).

The importance of organic food is well indicated by the steadily growing market. As sustainability is more and more in the focus of food product development, organic food is becoming a successful concept in the food industry (Sahota, 2020). Whilst in 2008, the organic food market reached 50,9 billion USD (Willer & Kilcher, 2010), the sales of organic food doubled in only a decade, up to 119 billion USD in 2019 (Willer et al., 2021).

This growth in organic food sales can be attributed to an increased demand for organic food. The vast majority of this demand originates from North America and Europe, nonetheless, local organic markets are rising in Asia, Latin America, and Africa (Sahota, 2020). On account of the increasing demand for organic food, consumer trust has gained great interest among researchers (Macready, 2020).

In the case of organic food, the credibility of certification systems and labelling practices becomes a vital factor in rebuilding and strengthening consumer trust in the agricultural sector (Hughner et al., 2007). As consumers in Hungary are more likely to be skeptical of official institutions, having robust and transparent organic certification processes can serve as a means

to assuage concerns and increase the uptake of organic products (Bryła, 2016). By fostering credibility in organic food production, these countries can work towards mitigating the deep-seated distrust inherited from their socialist past and promote sustainable agricultural practices that align with consumer demands for trustworthy and ethical food choices (Nuttavuthisit & Thøgersen, 2017; Zander et al., 2015).

The credibility of organic food in Hungary assumes even greater significance given the historical and social context of former socialist countries. As indicated by social psychology research, the legacy of socialist regimes has left a lasting impact on institutional trust in these nations, with trust in governmental and public institutions found to be notably low (Marozzi, 2015). The erosion of trust in state institutions during the socialist era resulted in citizens relying on private and informal networks to address their daily needs due to limited resources and services (Marozzi, 2015).

Various factors impede the growth of the organic food market. Researchers have identified the high price of organic food as a significant barrier (Szente, 2004; Bryła, 2016; Jarczok-Guzy, 2018). While the health benefits associated with organic food are often acknowledged as a positive factor, low credibility in organic products poses an additional obstacle to market expansion (Nuttavuthisit & Thøgersen, 2017).

The most recent data of the Hungarian organic food market is from 2015, which valued it at €30 million, accounting for only 0.3% of the total food market, with per capita organic food consumption at €3/person/year (Willer et al., 2022). Although it can be assumed that these figures have increased since then, organic food consumption among Hungarian consumers still falls well below the averages of Western European countries. For instance, Austria has per capita consumption of €254/person/year, Germany has €180/person/year, and Czech Republic consumes more than double that at €19/person/year (Willer et al., 2022).

Hungarian organic food consumers demonstrate a nuanced understanding of sustainability and ethical consumption, as evidenced by their heightened awareness of factors such as the circular economy, support for small-scale producers, and a conscious effort to minimize food waste (Pércsi et al., 2024). While their primary purchases on the organic market typically revolve around fresh fruits and vegetables, there exists a discerning attitude towards sourcing, with a preference for products from trusted sources (Nagy-Pércsi & Fogarassy, 2019). However, despite this attention to sourcing, direct purchasing from small-scale farmers remains uncommon among consumers (Nagy-Pércsi & Fogarassy, 2019). This discrepancy may be attributed to several obstacles identified within the market, including a lack of trust, insufficient information, and notably, the perceived high prices of organic products (Szente, 2015). Despite these challenges, there is a growing recognition of the importance of organic consumption, though currently, only a narrow segment of the population regularly engages in such practices, with a significant portion sourcing their products from markets rather than directly from producers (Kertész & Török, 2021).

Consumer's perceived credibility in organic food is crucial, given the perception that organic products are better for the environment, more sustainable, and healthier than conventionally grown alternatives (Wee et al., 2014). However, maintaining credibility in the organic food industry presents challenges. The certification process for organic products is often costly and time-consuming, leading some farmers and traders to mislabel their products as "organic" without adhering to the necessary guidelines. This deceptive practice erodes consumer trust in the industry as a whole. Additionally, incidents of fraud and mislabeling within the organic food industry contribute to consumer skepticism and doubts regarding the authenticity of organic products (von Meyer-Höfer et al., 2015).

Maintaining credibility in the organic food industry presents challenges, paralleling the environmental concerns arising from the pervasive use of single-use plastic packaging. Since

the 1950s, plastic has become ubiquitous in food packaging, contributing significantly to the global plastic production, as reported by the United Nations Environment Program (UNEP) in 2018. However, the widespread use of single-use plastic packaging has led to severe environmental consequences, primarily due to its propensity to break down into minuscule particles known as microplastics, as highlighted by Hale et al. (2020).

Food packaging stands prominently as a primary source of microplastics, constituting a pervasive environmental concern (Zarus et al., 2020). The lifecycle of plastic packaging culminates in its disposal, often ending up as non-biodegradable waste (Pasqualino et al., 2011). Over time, these discarded materials undergo fragmentation, breaking down into minuscule particles known as microplastics. Microplastics infiltrate various ecosystems, including marine environments (Waite et al., 2018), terrestrial soils, and even the atmosphere (Cai et al., 2017), and hence can inflict substantial harm on both wildlife and human health, with far-reaching consequences (Underwood et al., 2017).

Microplastics have been detected in many food products, like beer (Kosuth et al., 2018), tea (Hernandez et al., 2019), honey (Liebezeit & Liebezeit, 2013) and fish (Karami et al., 2017), showing an emerging concern for public health and food safety, as consuming microplastics can negatively influence digestive, respiratory and circulatory systems of the human body (Jadhav et al., 2021).

Biodegradable plastics present a notable improvement over traditional plastic packaging for several reasons. Unlike conventional plastics that persist in the environment for centuries, biodegradable plastics have the capability to break down into organic materials when exposed to specific conditions (Kale et al., 2007). This characteristic significantly reduces their environmental footprint, curbing the accumulation of non-degradable waste in landfills and ecosystems (Coppola et al., 2021). Furthermore, the decomposition of biodegradable plastics generates less harm to wildlife and marine ecosystems (Jadhav et al., 2021). Overall, their

capacity to transition into organic matter offers a more sustainable and responsible solution, aligning with the pressing need to reduce plastic-related environmental degradation and promote a cleaner, healthier planet (Flury & Narayan, 2021).

In recent years, sustainability has taken center stage in the food industry's agenda. International policies now emphasize the ecological impact of large-scale food production, as these systems contribute significantly to global carbon dioxide emissions (Crippa et al. 2021), aligning with the United Nations' 2030 Agenda for Sustainable Development, which includes a specific goal: "Ensure sustainable consumption and production patterns" (United Nations, 2015). This goal aims to reduce waste generation by 2030 and encourage companies to report their sustainability performance (Target 12.5 and 12.6, respectively). To support these objectives, the European Union has introduced the Farm to Fork strategy as part of the European Green Deal, designed to facilitate the transition towards more environmentally friendly practices in European agriculture and the food industry (European Commission, 2020).

While organic agriculture is usually regarded as a sustainable method, there are certain aspects, which nuance this notion. Organic agriculture demands a comparatively higher input of human labor as a key resource in the production process. Studies indicate that organic farming requires on average 55% more labor for certain pivotal activities such as weed control or crop harvesting compared to conventional farming methods (Seufert et al., 2012). This increased demand for labor in organic farming is primarily attributed to its stricter regulations on weed management and fertilization practices (Zhang et al., 2007). Moreover, organic production may entail higher risks related to environmental conservation and biodiversity protection, necessitating additional resources for achieving sustainable production (IFOAM - Organics International, 2021). Therefore, while organic farming offers benefits such as reduced chemical inputs and improved soil health, it also requires a greater investment in human labor and management practices to uphold its principles of sustainability and environmental stewardship.

While both companies and consumers now recognize the need for more sustainable products and consumption habits, consumers often find it challenging to assess the true environmental impact of the food products they purchase. Their primary source of information for evaluating a product's sustainability comes from labels provided by producers or retailers, creating an information imbalance that turns sustainability claims into "credence attributes" – qualities that consumers cannot directly verify (Fernqvist & Ekelund, 2014). Unfortunately, this information gap also opens the door to "greenwashing," where companies with poor environmental performance present themselves in a positive light (Delmas & Burbano, 2011). Greenwashing is particularly prevalent in the packaging and labeling of food products (Montero-Navarro et al. 2021).

To combat greenwashing and provide consumers with more accurate information, the European Commission has introduced the Product Environmental Footprint (PEF) methodology, designed to uniformly assess a product's environmental impact throughout its entire lifecycle. The PEF methodology is applicable to various consumer products, including food items, and holds significant potential for informing consumers about the sustainability of their purchases.

While the PEF methodology is a relatively recent development, limited research has explored consumer acceptance of this new labeling system. A report by the Ipsos consortium for the European Commission found that communicating PEF scores guides consumers toward more environmentally friendly choices (Elsen et al. 2019). In contrast, a choice-based experiment conducted by Limnios et al. (2016) revealed that consumers placed little value on PEF scores, largely due to their limited knowledge of the concept. To our knowledge, no prior field research has investigated consumers' willingness to pay (WTP) for PEF-labeled products.

As pointed out by Steenis (2022), the sustainability of a product depends on both its content and packaging, and consumers perceive it as deceptive when only one of these attributes (either the packaging or the product content) is sustainable. Although organic policies do not regulate

the type of packaging for organic food products, there is limited research on the relationship between organic food and packaging (Ketelsen et al. 2020).

One of the key factors influencing consumer behavior in this market is the perceived quality of the purchased products. Consumers have become more discerning, not only considering the nutritional aspects of food but also examining the overall quality, authenticity, and sustainability of the products they buy (Wu et al., 2021). As a result, understanding the factors that influence consumers' willingness to pay for organic foods is crucial for businesses operating in this market. Therefore, recognizing the impact of food packaging color on consumer perceptions and preferences is imperative for businesses seeking to comprehend factors influencing consumers' willingness to pay for organic foods in this market.

The color of food packaging has been identified as a significant factor affecting consumer perceptions and preferences. Clydesdale (1991) emphasizes that the color of a product is among its most crucial attributes, and this holds true for food items. Colors have a profound impact on emotions and can shape the way consumers perceive the product. Marozzo et al. (2020) note that colors are capable of conveying messages, and this ability can significantly influence consumer behavior.

Moreover, the color of food packaging can go beyond influencing perceptions; it can also impact the sensory experience of consumers. Wang and Chang (2022) suggest that the color of packaging can affect the taste perception of a product. This implies that the color of organic food packaging not only influences how consumers view the product but may also affect their actual taste experience.

In the specific context of organic foods, the role of colors becomes even more pronounced. The colors used in the presentation, packaging, and branding of organic food products can influence consumers' overall perception of the product's quality, authenticity, and sustainability

(Margariti, 2021). Therefore, businesses operating in the organic food market must carefully consider the colors they use in their branding and packaging to align with the values and preferences of their target consumers.

Examining the packaging colors of organic foods in the market reveals certain trends. White and green are dominant colors, aligning with the association of these colors with freshness, health, and organic qualities. Blue, yellow, and red colors are also present, albeit less frequently. Notably, the usage of yellow and red colors in the packaging of organic foods is lower than the market average (Chrysochou & Festila, 2019). This observation raises questions about the consumer perceptions and associations with different colors in the context of organic foods.

Consumers attribute specific qualities to different packaging colors, and these associations can influence their purchasing decisions. Pereira (2021) highlights that consumers may associate black packaging with premium quality, aligning with previous research by Klimchuk and Krasovec (2012) and Lyons and Wien (2018). However, it's important to note that the color black may also have implications for perceptions of healthiness, as suggested by Karnal et al. (2016). This demonstrates the complexity of color associations and the need for businesses in the organic food market to carefully consider the messages conveyed by their packaging colors.

2. OBJECTIVES OF THE RESEARCH

Credibility and willingness to pay of organic food is influenced by various intrinsic and extrinsic factors. The aim of this research to quantify the effect of product-specific factors (e.g., packaging, price) and external factors (e.g., place of purchase), which might influence consumers' perceived credibility and willingness to pay of organic food. Attributes were selected based on Nagy et al. (2022)'s literature review findings, where the following attributes were found to be the most influential: packaging (Danner & Menapace, 2020), appearance (Nuttavuthisit & Thøgersen, 2017), communication (Vega-Zamora et al., 2019), certification and country of origin (Pedersen et al., 2018), price (Lee et al., 2020) and place of purchase (Bonn et al., 2016).

Among these attributes, certification holds the greatest prominence. Certification involves evaluating organic food supply chain actors to ensure compliance with organic standards and regulations, thus serving as a key factor in consumer trust (Janssen & Hamm, 2012). Organic logo generally signals certification to consumers, and well-known logos can create trust (Janssen & Hamm, 2012), although Činjurević et al. (2018) argue that the logo alone may not suffice to establish credibility in the product, particularly in Central and Eastern Europe.

Certification was assessed combined with the country of origin, as organic food is usually certified in the country its coming from (Pedersen et al., 2018). Numerous studies indicate that organic food originating from developing countries is perceived as less credible compared to products from Western countries (Watanabe et al., 2020; Bruschi et al., 2015; Yadav et al., 2019; Lang & Conroy, 2021; Chen et al., 2019). According to Yin et al. (2019), consumer ethnocentrism can influence organic food credibility based on the country of origin.

Hypothesis 1 (H1): Consumers consider locally produced organic products more credible compared to imported organic products.

While limited evidence exists, product-level communication has the potential to enhance credibility in organic products (Vega-Zamora et al., 2019). Similarly, the appearance of organic food is believed to influence consumer perceptions. Lockie et al. (2002) demonstrated that processed organic food creates skepticism among consumers regarding its organic status. Communication of organic claims through packaging design, along with clear and accurate organic labelling, can increase consumers' perceived credibility in organic food products (Margariti, 2021).

Packaging is a relatively underexplored topic in current literature (Hemmerling et al., 2015). Danner & Menapace (2020) found that consumers in German-speaking countries perceive plastic-packaged organic fruits and vegetables as less credible. Similarly, Hemmerling et al. (2015) argue that packaging, despite providing information about the organic status of the product, is often seen as environmentally unfriendly, contradicting the concept of organic food.

Hypothesis 2 (H2): Environmental-friendly packaging and natural appearance of the product positively influence organic products' perceived credibility.

The high price of organic food is a primary barrier to increased consumption (Hemmerling et al., 2015). However, low-priced organic products also generate distrust (Yin et al., 2016). Also, consumers' willingness to pay for organic food is lower, if they do not consider it credible (Krystallis & Chrysosoidis, 2005). This contrast underscores the importance of measuring these credibility factors to understand which aspects are most significant to consumers.

Hypothesis 3 (H3): Consumers consider lower priced organic products less credible than higher priced organic products.

Furthermore, the place of purchase plays a critical role in consumers' assessment of organic food credibility (Konuk, 2018). Positive consumer perceptions of retailers are particularly influential (Bonn et al., 2016), while in the case of online retailers, the media richness of the

website can impact the perceived credibility of organic products (Yue et al., 2017). Consumers can be skeptical of organic origin, if a product is sold in a superstore (Padel & Foster, 2005).

Hypothesis 4 (H4): Organic products' perceived credibility will be lower if it is sold in a conventional supermarket.

Assessing the actual sustainability of packaging is a complex task for consumers (Herrmann et al. 2022). In addition to the challenge of assessment, consumers often lack knowledge about the environmental friendliness of packaging materials (Lindh et al. 2016). Providing additional information to consumers can assist in their decision-making process. For instance, research by Van Asselt et al. (2022) revealed that negative information about plastic packaging decreased consumers' willingness to pay for a product. According to Wensing et al. (2020), green nudges can increase WTP, but nudges are only effective if they match consumers' cognitive style. In some cases, consumers rely on the appearance of packaging rather than communicated information, posing a risk of misleading practices in the food industry (Ketelsen et al. 2020). However, despite the growing interest in environmentally friendly packaging, Ketelsen et al. (2020) found no field studies on consumers' attitudes toward sustainable packaging in their review.

Hypothesis 5 (H5): Environmentally friendly packaging increases the willingness to pay for organic products.

Green and earthy tones are often associated with the organic nature and environmental friendliness of a product (Chrysochou & Festila, 2019). These colors communicate a commitment to sustainability and resonate with consumers who prioritize eco-friendly choices. Hallez et al. (2023) add nuance to this understanding, suggesting that cooler colors, such as blue and green, can influence perceptions of healthiness and sustainability. However, these colors seem to have a limited impact on taste perception.

Hypothesis 6 (H6): In the case of organic products, green packaging increases willingness to pay and trust in the product.

3. LITERATURE REVIEW

Only a few research has tried to tease out all possible credibility factors. Danner & Menapace (2020) found 5 authenticity-related themes: organic label, origin, retail outlet/brand, packaging, product category. Tangnatthanakrit et al. (2021) proposed 5 factors, which influence organic food trust: control, competence, characteristics, communication, and community. Some studies list other factors as well, like natural taste, merchandising, knowledge, scarcity, and tourism (Bryła, 2016), although there is no evidence behind these factors as to their influence on the credibility of organic food.

In order to find all extrinsic, product-related factors which determine credibility of organic food products, we conducted a systematic literature review (see chapter 4.1 for methodology). 55 articles were found to be relevant to this topic. From these, manually analyzed articles (see Table 1), we identified the following 9 exogenous factors which can influence the credibility of a food product: labeling, certification, place of purchase, country of origin, brand, price, communication, product category, and packaging.

Table 1. Selected articles and major findings.

Source	Year	Country	Method	Sample size	Sample characteristics	Major findings
European countries						
Krystallis & Chryssohoidis	2005	Greece	Survey	164	73.8% female; biased towards younger ages and higher educational levels	Consumers who do not trust organic labels, certifiers, and retailers are not willing to pay more for organic food
Padel & Foster	2005	United Kingdom	Focus group	96	Over half were female; third in full-time employment; high proportion of academic education	Organic and not organic buyers have no trust in supermarkets in case of organic food, labels, and certification increase trust, but consumers are afraid of imported organic food

Pivato et al.	2008	Italy	Structural equation modeling, survey	400	Not available	CSR activities of retailers positively influence trust in organic food
Perrini et al.	2010	Italy	Survey	183	Average age was 48 years; 67.8% female; frequent shoppers	Consumers are more likely to trust private-label organic products if they consider the retailer as socially responsible
Janssen & Hamm	2012a	Czech Republic, Denmark, Germany, Italy, Switzerland, United Kingdom	Choice experiment	2441	Level of education was generally high; mean household size was above average	Organic logos create consumer trust, well known and trusted logos are perceived as stricter standard and control system
Janssen & Hamm	2012b	Czech Republic, Denmark, Germany, Italy, United Kingdom	Focus group, survey	149, 2042	Females and younger ages are overrepresented	Trust in the EU organic logo and the certification behind was not very high
Gerrard et al.	2013	United Kingdom	Focus group, survey	29, 410	70% females; 52% under 45 years old	Consumers trust products which have a national (Soil Association) organic logo more than the EU logo (or without a logo)
Müller & Gaus	2015	Germany	Survey	145	University students	Negative media harms organic food trust
Vittersø & Tangeland	2015	Norway	Survey	1987	Representative samples	Norwegian consumers trusted labeling less in 2013 than in 2000
Zander et al.	2015	Estonia, France, Germany, Italy, Poland, United Kingdom	Survey	3000	Representative samples	Pragmatic organic consumers trust organic certification regardless of the country of origin, committed consumers have lower trust in global certifications
Bryła	2016	Poland	Survey	1000	Representative samples	The following factors influence organic food authenticity: natural taste, product quality, label, quality sign, retailer, merchandising, appearance, knowledge, packaging, brand name, region, scarcity, and tourism

Thorsøe et al.	2016	Denmark	Focus group, survey	5, 5467	Females, older ages and higher education and higher incomes are overrepresented	Danish consumers have high trust in the labeling and the certification
Perić et al.	2017	Serbia, Croatia	Survey	520	Females are overrepresented	63% of Serbian and 50% of Croatian respondents do not believe advertising on organic food
Činjarevic et al.	2018	Croatia	Survey	184	Females and higher education are overrepresented	Most consumers are skeptical about product claims of organic food on the labeling and advertising
Meyerding & Merz	2018	Germany	Eye tracking, conjoint analysis	73	Younger ages and higher education are overrepresented	The occurrence of organic label creates trust in the product
Pedersen et al.	2018	Germany	Focus group, survey	38, 255	Regular organic buyers; 68% female	The trust in the exporting country influences the organic food trust
Steffen & Doppler	2018	Germany	Case study, interview	10	Older ages are overrepresented	Brand and retailer are important to a customer, although they do not believe in certificates
Vega-Zamora et al.	2019	Spain	Survey	800	Not available	Communication helps to build trust towards organic food
Ladwein & Romero	2021	France	Survey	316	Not representative; very diverse	Trust in retailers and producers has a positive impact on purchase intention and the authenticity of organic food
European and non-European countries						
Thøgersen et al.	2019	Germany, France, Denmark, China, Thailand	Survey	6059	Representative sample	Country of origin is a more important quality cue than organic labeling, consumers prefer products from developed countries
Danner & Menapace	2020	USA, Germany	Online comment analysis	1069	Not applicable	The authors found 5 authenticity-related themes: organic label, origin, retail outlet/brand, packaging, product category
Non-European countries						
Lockie et al.	2002	Australia	Focus group	130	Not available	Certification is important, but processed food makes

						people suspicious whether it is organic
Essoussi & Zahaf	2008	Canada	Focus group	6 focus groups	Younger ages are overrepresented	Labeling, certifiers are creating trust amongst consumers, they are skeptical about imported organic food, and they do not trust superstores
Essoussi & Zahaf	2009	Canada	In-depth interview	21	Younger ages are overrepresented	Distribution, certification, country of origin, and labeling are related to consumers' trust in organic food
Zepeda & Deal	2009	USA	Semi-structured interview	25	Not available	Consumers do not trust organic food from Walmart
Van Loo et al.	2011	USA	Choice experiment	976	Females and higher education are overrepresented	USDA organic logo creates more trust than a generic organic logo
Chen & Lobo	2012	China	Structural equation modeling, survey	960	Younger ages are overrepresented	Labeling is the most important factor influencing consumer beliefs
Sangkumchaliang & Huang	2012	Thailand	Survey	390	Higher education are overrepresented	The knowledge of certification body is important to the customer to trust organic product
Tung et al.	2012	Taiwan	Survey	913	Not available	Taiwanese consumers do not trust organic labels
Bruschi et al.	2015	Russia	Focus group, survey	26, 160	Higher education are overrepresented	Russian consumers trust European certifications more than local ones
Hemmerling et al.	2015	-	Review	277 articles	Not applicable	Packaging of certain organic food seems to be not environmentally friendly to consumers
Teng & Wang	2015	Taiwan	Survey	693	Higher education are overrepresented	Labeling is significant to the creation of consumer trust
Yip & Janssen	2015	China	Survey	245	Females, older ages and higher incomes are overrepresented	Hong Kong consumers found Chinese organic product less trustworthy than local and imported organic product
Bonn et al.	2016	USA	Survey	471	Females and higher education are overrepresented	Consumers are more likely to purchase organic wine from a retailer they trust

Yin et al.	2016	China	Survey	876	Not available	Well-known brands are trusted more than lesser-known brands, low price reduces consumer trust and certification has no significant impact on trust
Nuttavuthisit & Thøgersen	2017	Thailand	Focus group, in-depth interview, survey	16, 10, 177	Higher education and income are overrepresented	General trust in the certification system in Thailand is low, consumers rely on package appearance, and the retail store
Yue et al.	2017	China	Laboratory experiment	120	Younger ages are overrepresented	Media richness of website and review lengths of product impacts the trust in organic food in case of E-commerce
Kim et al.	2018	USA	Consumer panel analysis	154308	Representative sample	USDA organic labeling is more credible than third party organic certification
Konuk	2018	Turkey	Survey	352	Age group 31-40 are overrepresented	Store image influences the trust in private-label organic food
Sobhanifard	2018	Iran	Survey	546	Median age was 38 years; 58% females	Product claims, psychological security, and doubt are the main components of organic food trust
Chen et al.	2019	China	Survey	576	55% females	Chinese consumers trust organic products with organic labels from developed countries
Hwang & Chung	2019	USA	Survey	318	68% females; median age was 49 years	Consumers' perception of retailer's store quality positively influences organic food fit
Lee et al.	2019	Taiwan	Survey	928	66% females; most representation was from 41-50 years old	Labeling, local production, and price premium affects the trust in organic food
Yadav et al.	2019	India	In-depth interview	34	Males are overrepresented	There are many different organic certifiers in India, which confuse consumers, and there are no known brands of organic food that they can trust

Yin et al.	2019	China	Choice experiment	853	Income level was slightly higher than the average	Trust in organic food depends on the country of origin and certifiers
Kantamaturapoj & Marshall	2020	Thailand	In-depth interview	9	Not available	Certification and retail communication is key to consumer trust
Lian & Rajadurai	2020	Malaysia	Survey	390	54% females; most representation was from 40-49 years old	Malaysian consumers trust their national organic logo, myOrganic
Liang & Lim	2020	Taiwan	Survey	592	Females and higher education are overrepresented	Nutritional values on the labeling enhance trust in the organic labels
Watanabe et al.	2020	Brazil	Survey	382	Undergraduate students are overrepresented	Brazilians have a lack of trust in institutions and companies, which influences consumer trust
Yormirzoev et al.	2020	Russia	Survey	608	58% females; median age was 36 years	Consumer trust organic milk from the EU more than from Russia
Truong et al.	2021	Vietnam	Interview	27	93% female; median age was 35 years	Vietnamese consumers are sceptic in local certifications' authenticity, USDA certificate create more trust. Bigger retailers are seen more trustworthy in case of organic vegetables.
Tangnatthanakrit et al.	2021	Thailand	Survey	319	Females between age of 30 and 49	Authors proposed 5 factors, which influence organic food trust: control, competence, characteristics, communication and community. Community had the biggest impact on trust, control, competence and communication does not influence trust
Watanabe et al.	2021	Brazil	Survey	349	80% females; 42.7% aged from 18 to 25 years	Consumers' trust varies on fresh produce category and certification. They trust in organic vegetables better than fruit.
Yang et al.	2021	China	Choice experiment	450	Males and younger ages are overrepresented	Contrary to other food products, in case of oolong tea Chinese

						consumers prefer Chinese organic certification
Yu et al.	2021	China	Survey	269	Females and higher education are overrepresented	CSR activities of organic food companies can positively influence consumer trust of organic food

3.1. Certification

Half of the selected articles - 28 by number - mention certification as one of the most important factors influencing the credibility of organic food. Organic logos are discussed in this part because these logos represent the certification itself, and usually, it is a legal requirement as well.

Evaluating the selected research, it can be observed that generally, consumers have lower trust towards organic food with a certification from a developing country. For example, general trust in the certification system is low in Thailand (Nuttavuthisit & Thøgersen, 2017), but it can create trust if consumers know about the certification body (Sangkumchaliang & Huang, 2012). The preference for certification from a developed country and lack of trust in the local certifiers can be seen in the case of Brazilian (Watanabe et al., 2020), Russian (Bruschi et al., 2015), Indian (Yadav, 2019), Vietnamese (Truong et al., 2021), and Chinese (Chen et al., 2019) consumers.

We observed some opposite results as well. Malaysian consumers trust their national organic logo, myOrganic (Lian & Rajadurai, 2020). In the case of oolong tea, Chinese consumers prefer Chinese organic certification (Yang et al., 2021).

In the case of European consumers, we can see a more nuanced picture. Janssen & Hamm (2012) examined consumer reactions to organic logos in six European countries. Their results show that organic logos create consumer trust; well-known and trusted logos are perceived by the consumers as having stricter standards and control system behind them. Consumers from

the United Kingdom trust their national logo more than the European Union organic logo or an organic product without any logo (Gerrard et al., 2013). Czech, Danish, German, Italian and UK consumers also have lower trust towards European Union organic logo compared to their national organic logo (Janssen & Hamm, 2012), although it is important to mention, that compulsory EU logo usage was recently implemented by the time of data collection of the research. Based on the research of Zander et al. (2015), which was performed in six European countries, trust in the certification system and organic logo can be differentiated by types of consumers. Regular and occasional organic consumers trust organic certification regardless of its origin, on the other hand, consumers who have higher knowledge and involvement towards organic food have lower trust in global certifications.

The organic food market is different in the United States and Canada, although consumer attitudes are similar to the European market. Certification plays an important role in the credibility of organic food in the case of Canadian consumers (Essoussi & Zahaf, 2009). Both Kim et al. (2018) and Van Loo et al. (2011) agree that in the case of consumers from the United States, an USDA organic logo creates more trust than any generic organic logo.

Overall, most of the research shows that certification has a significant role in the credibility of organic food, but Yin et al. (2016) questions the importance of it. According to them, certification has no impact on consumer trust in the case of milk products. Tangnatthanakrit et al. (2021) obtained similar results during their research in Thailand.

3.2. Labeling

Labeling is as important for a product to be credible as certification. Labeling is a general term in this case since it partly covers other factors as well, like certification, brand, or packaging. There is no clear distinction amongst the authors between labeling and organic logos; some research considers organic logos as part of the labeling. In this review, we consider labeling as

information about the product displayed on the packaging, and organic logos were discussed separately in the previous sub-section.

According to Teng & Wang (2015), Essoussi & Zahaf (2009), Lee et al. (2019), Chen & Lobo (2012), Padel & Foster (2005), and Sobhanifard (2018) labeling is significant to the creation of consumer trust in the case of organic food. Most research shows a positive relationship between labeling and credibility, although a lot of them challenge it as well. For example, Thorsøe et al. (2016) proved that Danish consumers trusted organic labeling, Meyerding & Merz (2018) used an eye-tracking method and found evidence that the presence of an organic label created trust in the product. On the other hand, based on Činjarević et al. (2018), Croatian consumers are skeptical about the organic claims on labeling; Tung et al. (2012) agree that Taiwanese consumers do not trust organic labels.

Trust in labeling can change over time, as Vittersø & Tangeland's (2015) study in Norway shows. They compared data from 2000 and 2013 and found that Norwegian consumers had more trust in organic labeling in 2000 than in 2013. Also, the content of the labeling is not indifferent for credibility. Nutritional values on the labeling enhance trust in the organic labels, based on the research of Liang & Lim (2020).

3.3. Place of purchase

Of the selected articles, nineteen pay attention to the place of purchase as a factor influencing credibility. The majority of those papers, namely 16 covers only retailers, 2 paper mention supermarkets, and only 1 inspects trust from the perspective of online shops. Unfortunately, we did not find any research on organic specialty shops, direct sale, or farmers' market, although these sales channels can be important in the case of organic food.

We found miscellaneous results regarding supermarkets and organic food trust. Mostly in the United States, United Kingdom, and Canada, consumers have low trust in organic food if it is

sold in a superstore (Padel & Foster, 2005; Zepeda & Deal, 2009; Essoussi & Zahaf, 2008). Nonetheless, research has confirmed that positive consumer perception of a retailer has a positive impact on the credibility of the organic food sold there (Bonn et al., 2015; Hwang & Chung, 2019; Konuk, 2018; Steffen & Doppler, 2019; Ladwein & Romero, 2021). In their work, Pivato et al. (2007) show a positive relationship between the corporate social responsibility (CSR) activities of a retailer and the trust in the organic food sold in their stores.

Many retailers are selling organic food under private labels, so there is a bit of an overlap between the place of purchase and the branding of a product. According to Perrini et al. (2010) consumers are more likely to trust private-label organic products if they consider the retailer as socially responsible.

Organic food retail could not avoid the spread of e-commerce, although research is very limited in this field. Yue et al. (2017) investigated the influence of online product presentation on organic chicken breast. Based on their research, the media richness of online product presentation and review lengths of organic products impact the trust in organic food.

3.4. Country of origin

The origin of organic food has significant importance for perceived credibility. This topic was partly discussed in subsection Certification because organic food is usually certified in the country where it comes from. As in the case of certification, we can see differences between consumers of developed and developing countries, although based on Thøgersen et al. (2019) country of origin is an even more important cue for consumers than organic labeling both in developed and developing countries.

According to Lee et al. (2019), Yip & Janssen (2015), and Thorsøe et al. (2016) Taiwanese, Hong Kong, and Danish consumers have higher trust in local organic food compared to

imported ones. Canadian and UK consumers are skeptical about imported organic food (Padel & Foster, 2005; Essoussi & Zahaf, 2008).

Based on the findings of Bruschi et al. (2015), Chen et al. (2019), Yin et al. (2019) and Yormirzoev et al. (2020), the opposite reaction can be seen by consumers from developing countries. Chinese consumers trust organic food from developed countries (Chen et al., 2019; Yin et al., 2019), Russian consumers trust European organic food (Bruschi et al., 2015; Yormirzoev et al., 2020). These findings can be explained with the research of Pedersen et al. (2018). Based on their results, the image and trust in the exporting country affect the trust in the organic food they export.

3.5. Other factors

Brand, price, communication, and product category were also identified as influencing factors of credibility, although only a few articles discuss these factors.

Brand is a trust-building factor in the case of organic food. Yin et al. (2016) found that well-known brands are trusted more compared to lesser-known brands. According to Steffen & Doppler (2019), the branding of organic food creates more trust than certification. CSR activities of organic food companies can positively influence consumer trust of organic food (Yu et al., 2021). The lack of known brands can cause trust issues in certain markets (Yadav et al., 2019).

The effect of price on organic food authenticity is supported by the bibliometric analysis. Research has proved that the high price of organic food is a barrier to consumption (Hemmerling et al., 2015). On the other hand, Lee et al. (2019) points out that premium price affects trust in organic food, and Yin et al. (2016) proved that in the case of organic milk, low price reduced consumer trust in the product. This is true the other way around: consumers are

not willing to pay more for organic food if they do not trust it (Krystallis & Chryssohoidis, 2005).

Product-level and retail-level communication help to build trust toward organic food (Vega-Zamora et al., 2019; Kantamaturapoj & Marshall, 2020), although Perić et al. (2017) disagree with it. According to them, 63% of Serbian and 50% of Croatian consumers do not believe advertisements on organic food, which derives from the general mistrust in the media and advertising. Müller & Gaus (2015) investigated the effect of media on organic food trust. Based on their research, negative media harms the credibility of organic food products.

The credibility of certain organic product categories is questionable for consumers. According to Lockie et al. (2002), processed organic food makes consumers suspicious whether it is in fact organic. Consumers' trust can vary on fresh produce category. Based on Watanabe et al. (2021), consumers trust organic vegetables better than organic fruit.

Packaging seems to influence consumers' trust in organic food, although there is very limited research on this topic. Danner & Menapace (2020) identified packaging as an influencing factor, although its impact on credibility was questioned only by the consumers of the German-speaking countries, whereas USA consumers did not find it a credibility issue. German, Austrian and Swiss consumers believe that in the case of organic fruit and vegetable, plastic packaging makes them appear 'less organic' (Danner & Menapace, 2020). In their review, Hemmerling et al. (2015) confirm the theory that packaging seems to be not environmentally friendly in the eye of consumers, as it is against the idea of organic food, although packaging can also be useful because it can indicate the organic status of the product. Nuttavuthisit & Thøgersen (2017) mention that consumers rely on the appearance of the packaging when they assess the credibility of organic food.

4. METHODOLOGY OF THE RESEARCH

4.1. Systematic review and bibliometric analysis

The purpose of the systematic review is to find all extrinsic, product-related factors which determine credibility and trust in organic food products. To detect those factors, we used PRISMA guidelines for this review. PRISMA enables review authors to summarize evidence in a selected field accurately and reliably (Liberati et al., 2009). There is no existing review protocol for this kind of research field.

For this review, we used Web of Science and SCOPUS search engines, as those databases considered the widest and recommended sources in our research field (Lakner et al., 2021). We conducted the searches during October 2021, the last search was done on 15th October 2021. To find all relevant articles about the credibility factors of organic food, we used several search phrases. The composition of search expressions had been supported by term frequency – inverse document frequency method (TF-IDF) on some randomly chosen text from the relevant field. The term “organic food” or “organic product” or “organic produce” or “organic” had to be in the title of the article, as well as “consumer” or “consumption”. These phrases narrowed down the scope of the articles mostly to consumer-related topics of organic food. In addition, the abstracts of the articles had to contain at least one of the following phrases: “trust”, “credence”, “credible”, “credibility”, “skepticism”, “beliefs”, “authenticity” or “communication”. With the above-mentioned search phrases, we ran pre-tests on the Web of Science search engine which proved to be accurate to describe our research topic. We did not limit the publication date of the studies, because the earliest study that we found on this particular topic was from 2002. For these search phrases, we found 212 results in Web of Science and 218 results in SCOPUS. From these, 162 records were duplicates, which were discarded (see Figure 1).

To screen and select the articles for our review, we used Covidence online software, which enabled us to evaluate articles by two authors independently in 2 steps. In the first step, we evaluated the remaining 268 articles by reading the abstract only. In this step, we excluded 106 studies, which were irrelevant to our topic. In some cases, it was not unequivocal from the abstract if an article was relevant, so these studies were selected for the full-text assessment.

In the second step, 162 articles were assessed for eligibility by reading the full text. During this step, 107 studies were excluded for various reasons. The most common reason was being irrelevant for our research. These articles contained the required search words, although organic food consumption behavior was not assessed in the context of credibility or trust. 15 studies were excluded because of poor results, 8 articles were in a foreign language, 3 studies included a conceptual model with no results explained and 3 articles were not accessible.

Besides the systematic review, a bibliometric analysis was conducted on the selected articles to reveal the connection between the identified credibility factors. For this purpose, two different software packages were used. VOSviewer (version 1.6.15) software is capable of visualizing networks and forming clusters, which enables further analysis (van Eck & Waltman, 2009). CitNetExplorer (version 1.0.0) can be used to study the development of a research field, which can support the literature review (van Eck & Waltman, 2014).

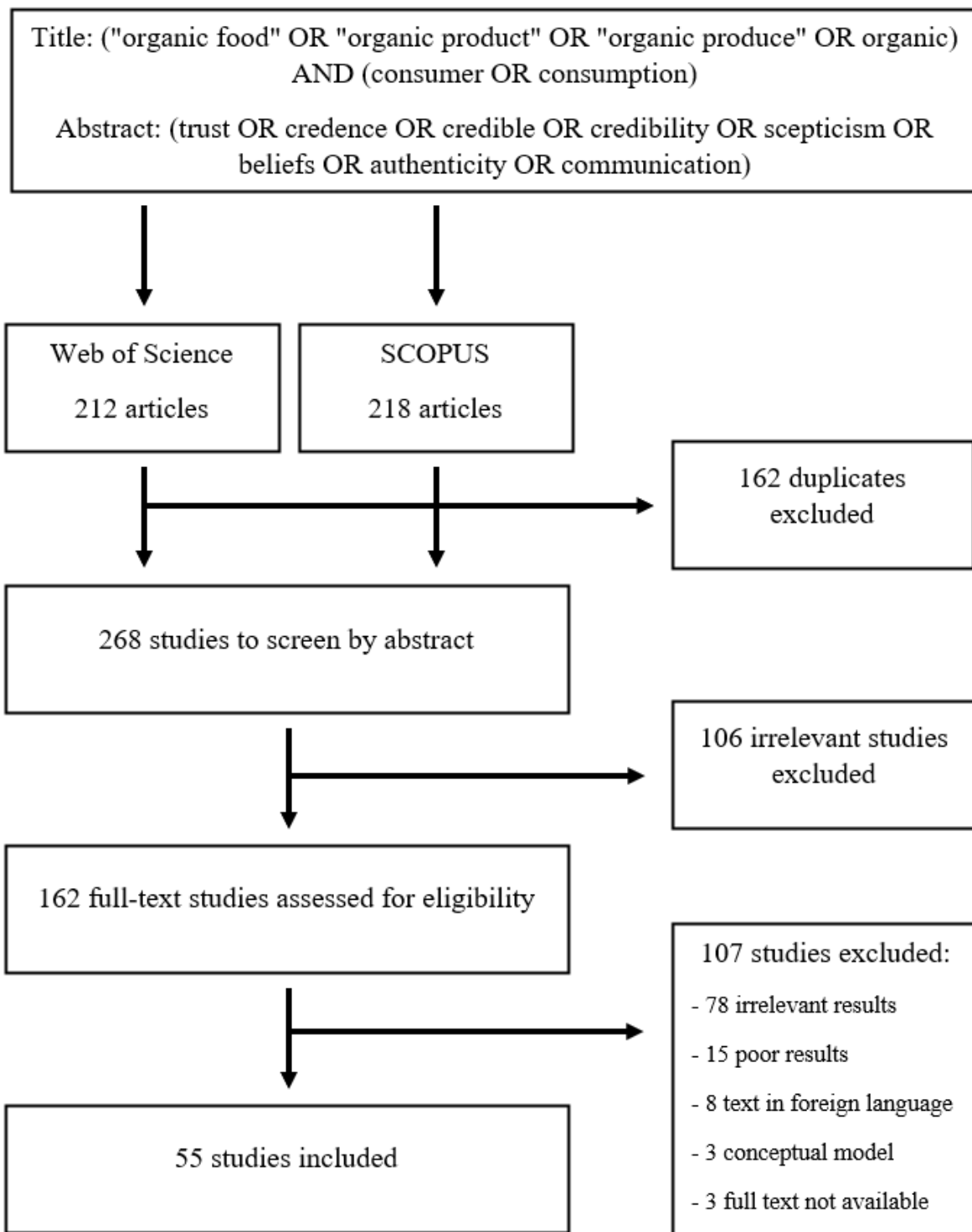


Figure 1. Search words and search method.

4.2. Conjoint analysis

To assess the various external credibility factors of organic food, an online questionnaire was developed using the choice-based conjoint method. This method involves conducting a consumer survey in which respondents are asked to rank "cards" containing different combinations of products based on their perceived importance. Through this analysis, the relative utility and importance of each attribute level can be determined in relation to the others (Green et al., 2001).

The initial step in constructing the survey involved selecting the measured factors and their respective levels, based on Nagy et al.'s (2022) systematic review and bibliometric analysis and the set-up hypothesis in chapter 2. Figure 2 shows chosen attributes and their levels used in the research.

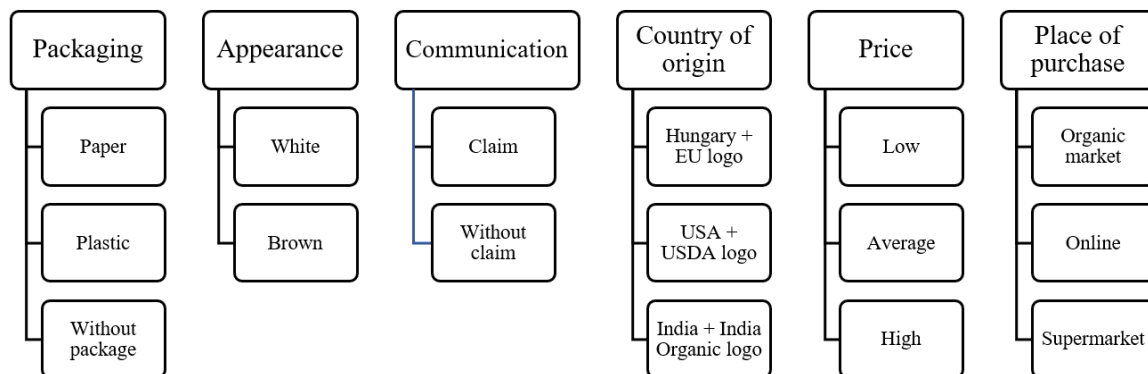


Figure 2. Attributes and their levels

Rice was chosen as the focal product for this research due to its multifaceted significance. Rice stands as a staple food for a significant portion of the global population, making it a cornerstone of diets worldwide. Its ubiquity ensures that any findings derived from this research hold broad relevance. By conducting consumer studies specifically on organic rice, valuable insights can be gained into the transparency and trustworthiness of organic certifications, empowering

consumers to make informed choices about their food purchases. Moreover, the findings from such studies can be generalized to other food items with similar production processes and organic claims, thereby contributing to broader discussions on organic credibility in the food industry.

The attribute levels were determined based on market observations. In the case of packaging, in addition to commonly used plastic and paper packaging, a packaging-free option was included to account for the growing trend of packaging-free retailing (Fuentes et al., 2019).

While white rice is the most commonly available type in retailers, brown rice has gained popularity as a more natural choice (Saleh et al., 2019). Therefore, in the questionnaire, the product presentation attribute was set to reflect this market observation. Furthermore, communication on organic status was based on the prevalent claim of "From controlled organic farming" found on many organic products.

The country-of-origin attribute consisted of three levels, representing the main rice exporters to the European Union (EC, 2022). In addition to the local product, rice sourced from India and the United States was also incorporated into the choice experiment. This inclusion reflected the global nature of the rice market, with both India and the USA being significant players in rice production and export. By including rice from these major exporting countries, the experiment aimed to capture the diverse preferences and considerations of consumers, highlighting the importance of international trade in shaping food choices and markets. To aid in distinguishing the origin, the organic logo of the respective country was partially incorporated.

To establish the price levels, market observations conducted in April 2021 were considered. The low price level was set at 999 HUF / 12 PLN (approximately €2.50), the average price at 1399 HUF / 17 PLN (approximately €3.5), and the high price at 2499 HUF / 29 PLN (approximately €6) per kilogram.

Currently, organic food is readily available in most supermarkets and has become the primary sales channel for such products (Willer et al., 2022). Alongside supermarkets, online sales channels are increasing in number, while traditional channels like markets still hold significance for consumers when purchasing organic food (Hamzaoui-Essoussi et al., 2013).

In the second step of the study, conjoint "cards" were generated using the R program, following the guidelines outlined by Aizaki and Nishimura (2008). Using the selected attributes and their respective levels, a full factorial design was created using the R package AlgDesign. Given the large number of attributes and levels involved in the survey, it was impractical to present all possible product variations to the participants. To address this, an orthogonal design was employed to reduce the number of choice sets to 16 pairs of cards in the questionnaire (for example, see Figure 3).

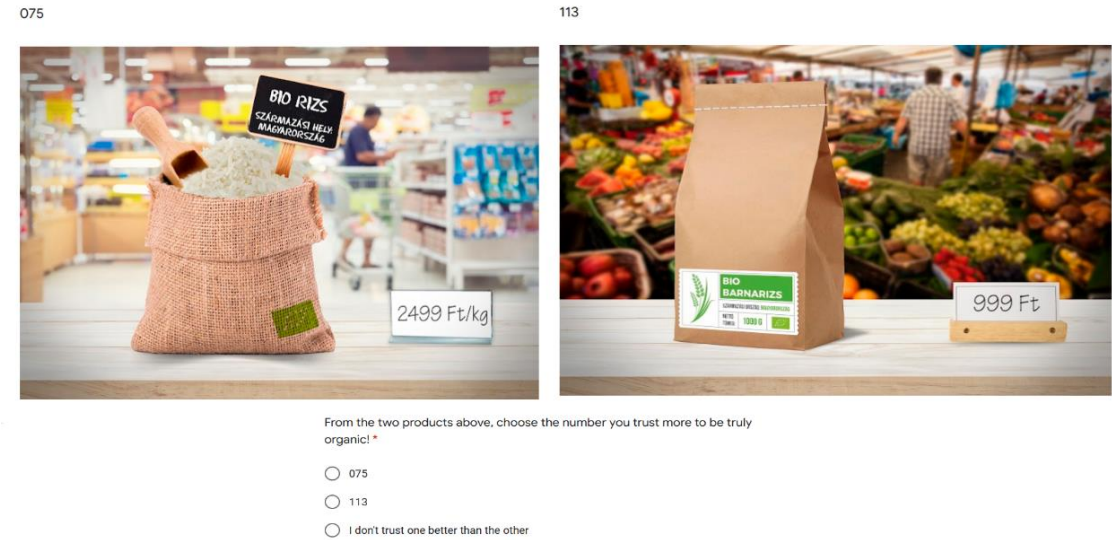


Figure 3. Example of conjoint card

A notable aspect of this research is the approach taken when querying the participants. Instead of asking about their willingness to purchase the products, they were specifically asked to indicate which product they trusted to be genuinely organic. This methodology allows us to ascertain the significance of the product attributes that influence the credibility of organic food.

However, one limitation of this approach is that it does not enable us to determine willingness to pay, despite price being included as one of the attributes in the conjoint analysis.

According to random utility theory, perceived utility can be split into two components: systematic utility and a random component:

$$U_i = V_i + e_i$$

Where U is the utility of the product, V is the observable component and e is the random factor.

$$V_i = \beta_{pac}PAC_i + \beta_{App}APP_i + \beta_{Com}COM_i + \beta_{COO}COO_i + \beta_{Pri}PRI_i + \beta_{Pop}POP_i$$

V_i is the representative utility in the case of product i in the above showed equation. PAC_i , APP_i , COM_i , COO_i , PRI_i and POP_i values represent the product attributes of product i (packaging, appearance, communication, country of origin, price, and place of purchase), β value is an unknown coefficient, which represents the unobservable factors.

Based on the above mentioned equation, conditional logit model was calculated in R, using `clogit()` function in the 'survival' package (Lumley, 2006). To account for how individual characteristics impact the assessment of attributes, the model incorporates interactions between individual characteristics and attribute variables.

Within the questionnaire, in addition to selecting conjoint cards, Hungarian and Polish participants were also asked various questions relating to their organic food consumption habits. These included inquiries about the frequency of organic food consumption (Zander et al., 2015) and the participants' familiarity with the organic logos presented in the questionnaire (Janssen & Hamm, 2012).

In addition to collecting demographic data, different scales were employed to measure participants' attitudes towards specific food consumption habits. A 5-question scale developed

by Brunsø et al. (2021) was utilized to gauge attitudes towards responsible food consumption. Respondents' general willingness to pay for organic food was assessed using questions adapted from Wang et al. (2020). Given that the attribute of country of origin was investigated, participants' ethnocentrism was also measured using a scale developed by Gabrielle Klein et al. (2006).

The online questionnaire (see Annex A4) was distributed to Hungarian respondents between 14th October and 7th December 2021 via social media platforms. For the Polish sample, the questionnaire was administered through the online platform Prolific from 20th to 22nd June 2022. During these periods, a total of 723 Hungarian responses were collected, with 652 of them deemed analyzable after excluding respondents who solely selected the option "I trust neither." For the Polish sample, a total of 299 responses were obtained, and after analysis, 290 responses were included in the study. All participants were asked if they are responsible for food purchase in their household, thus respondents who are not directly engaged in food purchasing decisions were excluded from analysis.

The scales' reliability was examined through Cronbach's alpha coefficient, ensuring the stability and consistency of the measurements. Additionally, correlation analysis was conducted using Pearson's correlation coefficient to determine the strength and direction of relationships between variables. Each analysis was conducted with SPSS software (version 27).

Although we aimed for representativeness in the sampling, there are notable differences between the two samples from Hungary and Poland. Table 2 illustrates that neither sample is representative of the overall population. The Hungarian sample is skewed towards female respondents, while the Polish sample is skewed towards male respondents. Additionally, the Polish sample over-represents younger participants. In terms of education, the Hungarian sample over-represents individuals with higher education, whereas the Polish sample is

primarily composed of respondents with a secondary school education.

Table 2. Socio-demographic characteristics of the samples.

	Hungary (n=652)		Poland (n=290)	
Gender				
Male	174	27%	211	73%
Female	478	73%	79	27%
Age				
18-25	249	38%	213	73%
26-35	160	25%	49	17%
36-45	93	14%	20	7%
46-55	84	12%	5	2%
56+	66	10%	3	1%
Education				
Primary school	3	0%	1	1%
Vocational school	8	1%	7	2%
Secondary school	241	37%	177	61%
University	400	62%	105	36%
Place of living				
Capital city	207	32%	24	8%
Town	292	45%	207	71%
Village	153	23%	59	21%
Perceived income				
Low	100	15%	30	10%
Average	344	53%	136	47%
High	208	32%	124	43%

However, similarities in terms of place of residence and income are observed between the Hungarian and Polish samples. Given the comparative nature of the research, data from 652 Hungarian respondents and 290 Polish respondents were separately analyzed using the same methods.

4.3. Experimental auction

4.3.1. Field experiment

We designed an experiment to assess how environmentally friendly packaging influences consumers' willingness to pay (WTP) for four organic product variants, as shown in Figure 4. We chose pasta for this experiment because it is a common household ingredient, and a method for calculating Product Environmental Footprint (PEF) is already available for pasta products (Cimini et al., 2019).





	Plastic packaging		Biodegradable packaging	
No sustainability claim	A		B	
PEF logo	C		D	

Figure 4. Experimental setup

Pasta emerges as an ideal subject for consumer studies exploring organic credibility, given its global popularity and uncomplicated manufacturing process. Serving as a cornerstone of numerous cuisines, pasta holds a significant presence on dinner tables worldwide, making it pertinent to a diverse range of consumers. Its minimal ingredient list and straightforward

production methods make it a prime candidate for investigating organic claims, allowing researchers to delve into aspects such as sourcing practices, production transparency, and labelling accuracy. By conducting consumer studies specifically focused on organic pasta, valuable insights can be gleaned into the integrity and authenticity of organic certifications, enabling consumers to navigate the organic food landscape with confidence and trust. Furthermore, the results obtained from such studies can be generalized to other food items with similar characteristics and organic labelling, extending the understanding of organic credibility across various product categories in the food industry.

To gather WTP data, we used the Becker-DeGroot-Marschak (BDM) experimental method (Becker et al., 1964) for several reasons. Firstly, the BDM method allows us to collect WTP data in a realistic, non-hypothetical setting (Lusk et al., 2004). Secondly, the BDM method is suitable for field experiments, as it can be conducted one-on-one with participants, offering flexibility in recruitment (Canavari et al., 2019).

We conducted our field experiment at one of Budapest, Hungary's largest and most renowned organic farmers' markets. Farmers' market attendees often exhibit distinct intrinsic motivations and preferences, providing a valuable context to explore environmentally conscious consumer behavior (Garner, 2019). By focusing on this unique setting, we aimed to gain insights into the specific dynamics of sustainable purchasing within a community known for its emphasis on organic and environmentally friendly products. Since this market operates only on Saturdays, we collected data over two consecutive market days, February 25, and March 4, 2023. All the products in our study, sourced from certified organic manufacturers, were chosen based on the premise that participants had knowledge that all products were organic, as only certified organic farmers and traders can sell their products at this market. The market primarily takes place in an open-air setting, so our experimental setup mimicked the typical market environment. Weather conditions on the two experimental days were quite similar, minimizing potential

environmental effects.

We randomly recruited participants at the organic market and provided them with a brief overview of the research. Participants were informed that they would receive a participation fee of 2000 HUF (approximately €5). They were seated in groups of 1-3 people and given detailed explanations of the experimental method. To ensure that all participants understood the BDM experimental method, we conducted a practice run using chocolate bars.

In our study, participants were randomly assigned to one of two groups: the treatment group or the control group. Participants in the treatment group were provided with information regarding the detrimental effects of microplastics on the environment, raising awareness about the issue. In contrast, the control group did not receive this informative content. This between-subjects experimental design allowed us to compare how participants' knowledge of microplastics' environmental impact influenced their subsequent behaviors and attitudes.

The four product variants, presented to participants in a randomized order were available with actual labels on them. Product A served as the benchmark since it is a commercially available organic product in the Hungarian market. Product B was packaged in biodegradable PLA (polylactic acid) packaging. Product C had normal plastic packaging like Product A but featured a PEF logo on the label, indicating a more sustainable production process than the average pasta product. Product D was packaged in biodegradable material and included the PEF logo. All four products had a similar appearance, the same main label, and the same package size (400 g). The only differences among them were the additional logos indicating the various attributes we were studying.

Both control and treatment groups received the following baseline information on the PEF logo, as it is unknown to consumers, given the fact that PEF logo is not available on food product labels yet: *'A Product Environmental Footprint (PEF) is a new method for measuring*

sustainability performance developed by the European Commission in cooperation with companies and sustainability experts. The aim of the PEF is to improve the validity and comparability of the environmental performance evaluation compared to existing methods. The PEF makes it possible to determine all relevant environmental and health impacts as well as resource-related burdens caused by a product. For the calculation, the entire life cycle of the products is considered.'

As previously mentioned, participants in the treatment group received extra information on the negative environmental impact of microplastics: *'It is well known that plastics are now accumulating in the environment, and they can accumulate as microscopic items and even more problematically in the form of microplastic. When they break down, they do not biodegrade, in the sense that they are transformed into carbon dioxide, water, or compost with no ecotoxicity.'*

In addition to the BDM method and basic demographic information, we asked participants about their trust in each product and whether they considered them genuinely organic and sustainable. Trust and perceived sustainability was measured with a single item scale (How much do you trust this product, that it was produced according to the organic standards?; 1 – do not trust at all; 7 – high trust; How sustainable do you consider this product?; 1 – not sustainable at all; 7 – very sustainable). We also included questions from the revised New Environmental Paradigm (NEP) scale, which was developed by Dunlap et al. in 2000. NEP scale consists of 15 questions about environmental issues, and participants were rating these questions on a 5-point scale (1 – strongly disagree; 5 – strongly agree).

Following the BDM procedure, once bids for each of the four products were collected, we randomly selected the binding product and then randomly picked a price from an urn. The price range was between 300 and 1000 HUF (equivalent to €0.8 and €2.6) in 50 HUF (about 12 cents) increments, based on typical pasta prices in the Hungarian market. If a participant's willingness

to pay (WTP) for the randomly chosen binding product exceeded the randomly drawn price, they would receive the product and the drawn price would be deducted from the participation fee. However, if their bid was equal to or lower than the randomly drawn price, they would not receive the product, and no deduction was required.

Each experimental session took about 15 minutes to complete. Participants received both the BDM instructions and treatment information verbally, following a written script. The survey was paper-based, and participants completed it themselves.

Our study was registered on [Aspredicted.org](https://aspredicted.org) under number 112970 and obtained ethical approval from the Interim Ethical Committee of the Hungarian University of Agriculture and Life Sciences Doctoral School of Economic and Regional Sciences. All methods were carried out in accordance with relevant guidelines and regulations. Before taking part in the experiment, informed consent was obtained from all participants.

Data analysis was carried out using Stata version 17.0. OLS regression analysis was employed to examine the relationships between variables. This statistical method facilitated the exploration of how independent variables predict changes in a dependent variable. Moreover, to assess the significance of the regression coefficients, t-tests were conducted. These tests provided valuable insights into whether the relationships observed were statistically significant, thereby confirming the robustness and reliability of the regression model.

Table 3 displays the socio-demographic characteristics of our sample. We recruited 105 participants who are regular buyers of organic food over two experimental days, with an even distribution between control and treatment groups. The required sample size was determined as 102 participants with a power of 0.8, medium effect size ($d=0.5$) and a Type I error rate of 0.05. It is worth noting that our sample does not perfectly represent the Hungarian population; it includes an overrepresentation of older, highly educated women. However, these characteristics

align with the socio-demographic profile of regular organic food buyers, as indicated by the Ökobarometer in 2019.

Table 3. Socio-demographic characteristics of the participants (n=105)

	Control	Treatment	Full sample	p-value
	Gender			0.6354
Male	18	20	38	
Female	35	32	67	
	Age group			0.7729
18-25	3	4	7	
26-35	9	4	13	
36-45	5	10	15	
46-55	14	10	24	
56+	22	24	46	
	Education			0,8140
Elementary	1	0	1	
Vocational	1	0	1	
Highschool	7	13	20	
College	44	39	83	
	Perceived income			0.8514
Low	8	5	13	
Average	18	26	44	
High	27	21	48	

Note: No statistically significant differences were observed with t-tests between control and treatment groups within 95% confidence interval.

We also gathered information from our respondents about their organic food purchasing habits, sustainability considerations, and motivations for buying organic food. Nearly half of the respondents (46%) reported buying organic food on a weekly basis, with a third purchasing it more frequently. About 18% of respondents bought organic food less often, typically 1-2 times a month. A significant three-quarters of our respondents said they always or often take into account the sustainability and environmental impact of the food they buy.

In terms of motivation, 93% of our participants cited healthiness as their primary motivating factor for buying organic food. Environmental considerations were a motivating factor for 48% of the participants. Additionally, a smaller proportion of respondents, around 24%, were motivated by the better taste of organic food, while 23% were motivated by concerns about animal welfare.

Participants were assigned randomly to either the control or treatment groups. After analyzing the data, we found no significant differences between the two groups concerning gender ($t=0.4756$, $Pr=0.6354$), age group ($t=-0.2894$, $Pr=0.7729$), education ($t=0.2359$, $Pr=0.8140$), and perceived income ($t=0.1878$, $Pr=0.8514$), all within a 95% confidence interval.

4.3.2. Laboratory experiment

A laboratory experiment was set up to investigate how different packaging colors impact consumers' willingness to pay (WTP) for four organic products, with pasta chosen as the experimental item due to its widespread use in households. The Becker-DeGroot-Marschak (BDM) experimental auction method (Becker et al., 1964) was employed to elicit WTP. The experiment took place on the Buda Campus of the Hungarian University of Agriculture and Life Sciences in Budapest, Hungary, between October 9 and 10, 2023.

Participants were randomly selected on the university campus. They were seated in groups of 12-18 individuals, where the experimental method was explained in detail. To ensure

understanding, a trial run was conducted using chocolate bars before proceeding with the actual experiment. The four products (see Figure 5), presented in a randomized order, shared a similar appearance and package size (400 g) to minimize bias, differing only in the background color of the labels.



Figure 5. Labels used in the experimental auction.

In addition to indicating WTP values and basic demographic details, participants were asked to evaluate the perceived credibility, quality, healthiness, and sustainability of each product. Participants' attitudes toward responsible food consumption were measured using a 5-question scale on food responsibility developed by Brunsø et al. (2021), as responsible attitudes could

influence organic consumption. The interest in health and natural products was gauged using scales developed by Roininen et al. (1999), considering its potential correlation with the evaluation of organic and functional foods. The frequency of purchasing organic food was also assessed based on Zander et al. (2015).

Following the BDM mechanism, a product and a price were randomly drawn from an urn after participants completed the survey. Prices ranged between 250 and 600 HUF (€0.65 and €1.55) in 50 HUF (approximately 12 cents) increments. If the participant's WTP for the drawn product exceeded the randomly selected price, they were required to purchase the product; otherwise, no transaction occurred.

Each experimental round lasted approximately 15 minutes, with participants receiving oral BDM information based on a written script. The survey was conducted online, and participants independently completed it. Participants did not receive any reward for taking part in the experiment. The study was registered on Aspredicted.org (number 146002) and obtained ethical approval from the Interim Ethical Committee of the Doctoral School of Economic and Regional Sciences (case number 13/2023). Every respondent provided informed consent before participating.

Seemingly Unrelated Regression (SUR) analysis was conducted using Stata version 17.0 to explore the relationships among variables. This advanced statistical technique allowed for the examination of multiple equations simultaneously, accounting for potential correlations among the error terms.

In Table 4, the characteristics of the 102 participants are outlined, providing insights into their demographic distribution, educational background, perceived income, and buying frequency of organic food.

Table 4. Characteristics of participants (n=102)

Sex at birth		
Male	32	31%
Female	70	69%
Age group		
18-25	99	97%
26-35	3	3%
Residence area		
Capital city	44	43%
City/town	37	36%
Village	21	21%
Education		
High school	93	91%
Diploma	9	9%
Perceived income		
Low	11	11%
Average	50	49%
High	41	40%
Organic food buying frequency		
Never/Almost never	32	31%
Less than once per month	35	34%
1-2 times per month	25	25%
Once per week	7	7%
Several times per week	3	3%

The majority of participants were females (69%), primarily belonging to the 18-25 age group (97%). Residence areas were diverse, with 43% residing in the capital city, 36% in a city or town, and 21% in a village. Educational background predominantly included high school graduates (91%). Participants reported varied perceived incomes, with 11% indicating low, 49% average, and 40% high income levels. Regarding organic food buying frequency, 31% reported never/almost never, 34% less than once per month, 25% 1-2 times per month, and smaller

percentages for more frequent purchasing, which corresponds with the organic food consumption habits of the Hungarian population (Szente & Torma, 2015).

5. RESULTS AND DISCUSSIONS

5.1. Results of bibliometric analysis

In the systematic literature review, 9 factors were identified, which can influence the credibility of a food product: labeling, certification, place of purchase, country of origin, brand, price, communication, product category, and packaging. Results of the systematic review can be seen in Figure 6.

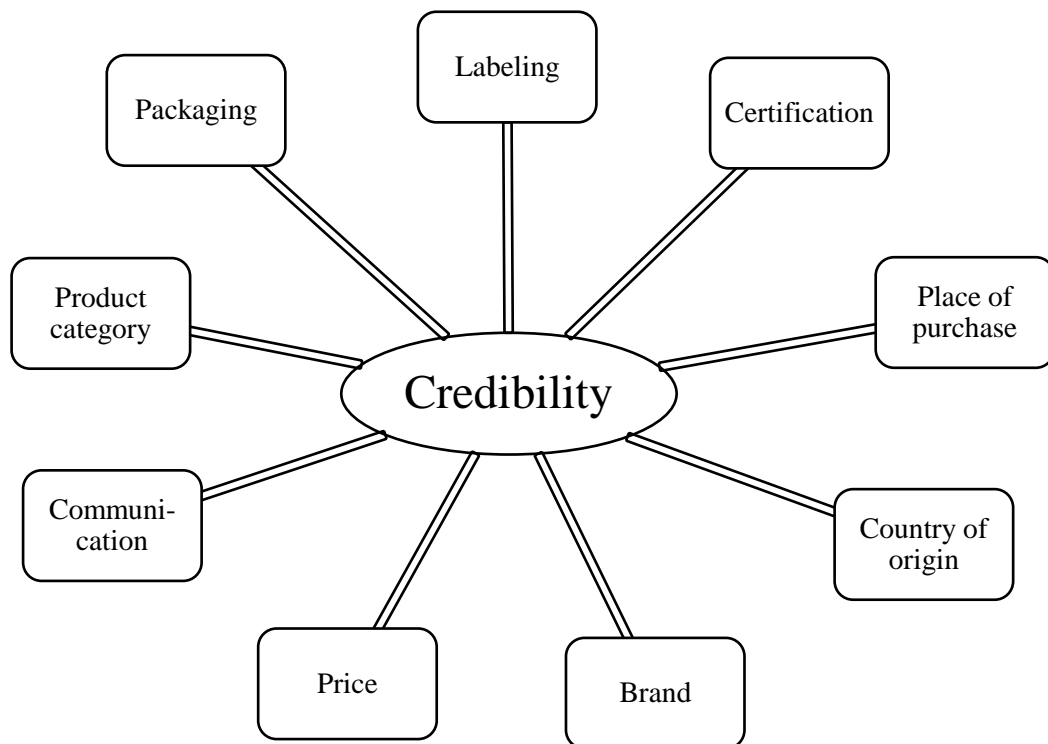


Figure 6. Factors influencing the credibility of organic foods

Of the selected 55 papers, more than half were published after 2016, which indicates the current interest in this research field (see Figure 7). Only 7 studies were conducted before 2010.

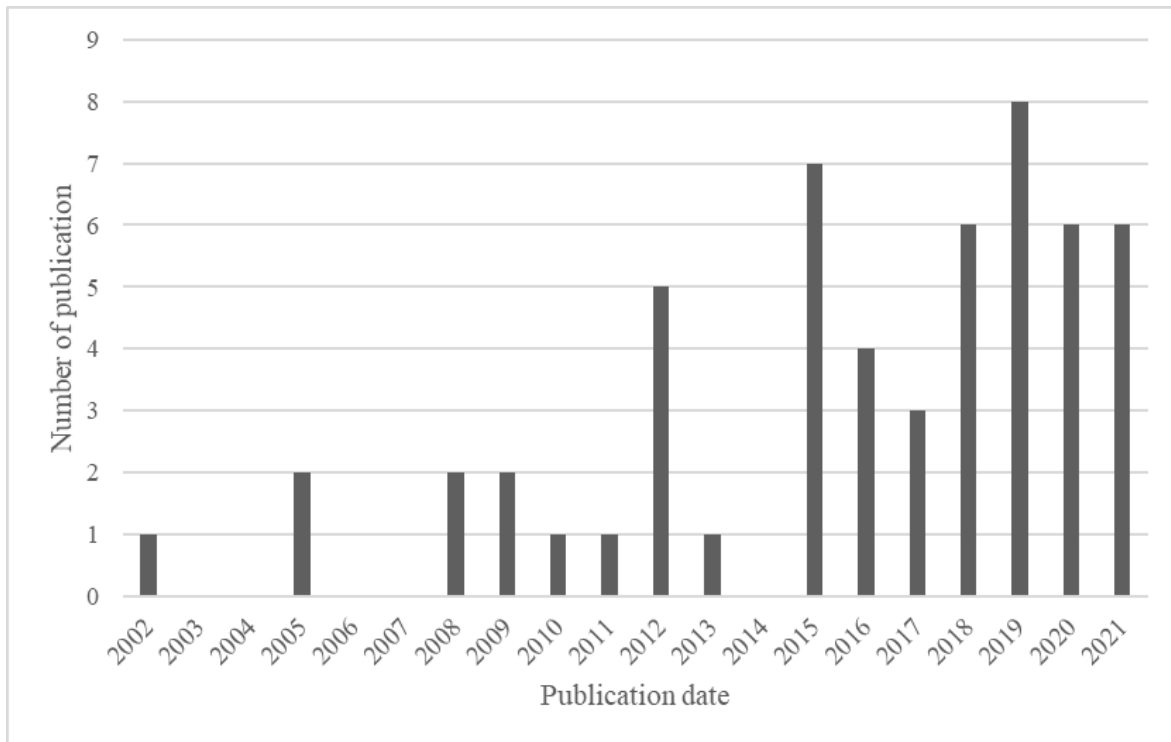


Figure 7. Distribution of articles by publication date.

In terms of location, most of the research was conducted in European countries. More than 1/3 of the articles report results from Asian countries, and only 8 papers write about North American consumers, which does not represent the actual size of the organic food market of these continents. There are 2 articles from Brazil and Australia each, which provide valuable results as well.

Figure 8 shows the connections and co-occurrence of the identified credibility factors. With the VOSviewer software, the terms related to credibility, trust, and the influencing factors were chosen from the abstracts. The size of each circle represents the number of occurrences in the selected articles, and co-occurrence is illustrated by the distance between the circles.

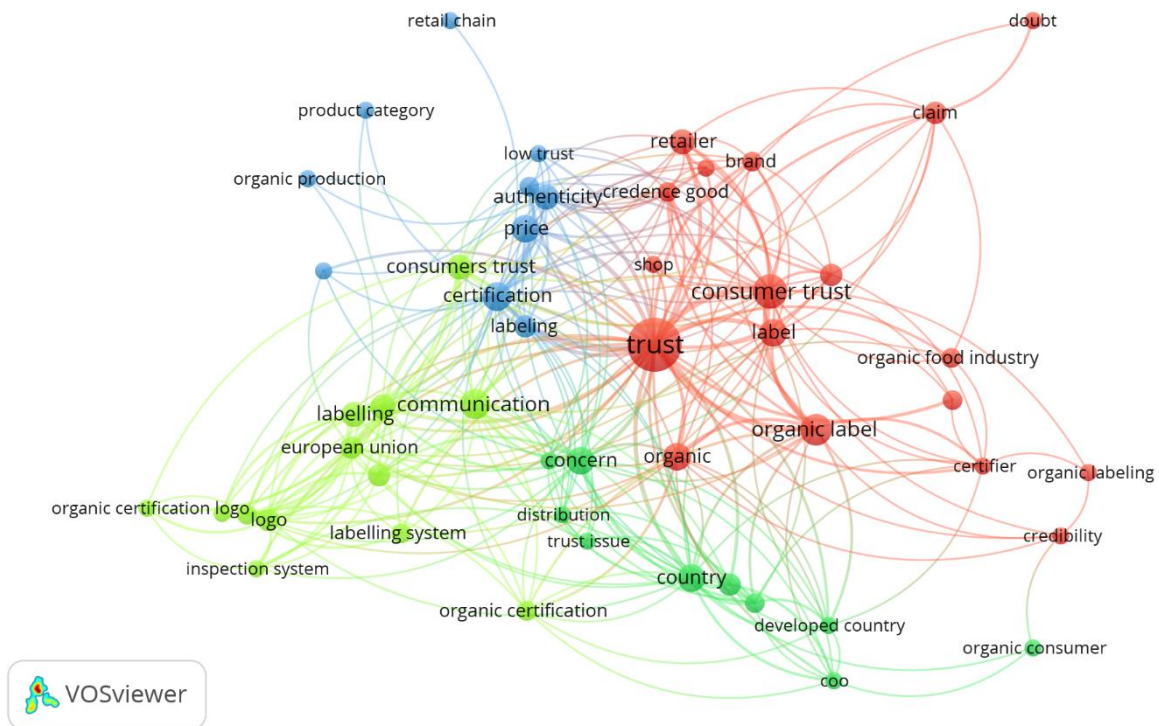


Figure 8. Network visualization of credibility factors.

Based on the connections of the 9 identified credibility factors, 4 clusters could be identified. The red cluster contains the most terms, and trust is the most relevant term in the selected papers. Trust is strongly related to organic label and shop, although retailer and brand are also significant to trust, which correlates with the findings of Padel & Foster (2005). In the blue cluster, labeling, certification, price, authenticity, and low trust are very closely related to each other. Retail chain and product category also belong to this cluster, which supports the results of Danner & Menapace (2020).

Communication, which is mentioned by Tangnatthanakrit et al. (2021), is in the middle of the light green cluster, and it is very close to labeling and concern, although concern belongs to the green cluster. Logo, inspection, and certification also appear in the light green cluster with the European Union, which shows that most of the research related to organic logos was about the EU organic logo. Concern, distribution, trust issue, and country are the main terms in the green

cluster. These terms represent the connection between country of origin and consumer concerns. Although these clusters do not represent each credibility factor, this analysis is a good indicator of the connections between the factors.

The visualization capability of CitNetExplorer has been a useful tool because it allowed us to find the most relevant publications and investigate the intellectual roots of our research topic. With the CitNetExplorer, connections between the citations of the chosen 55 papers can be visualized, as seen in Figure 9.

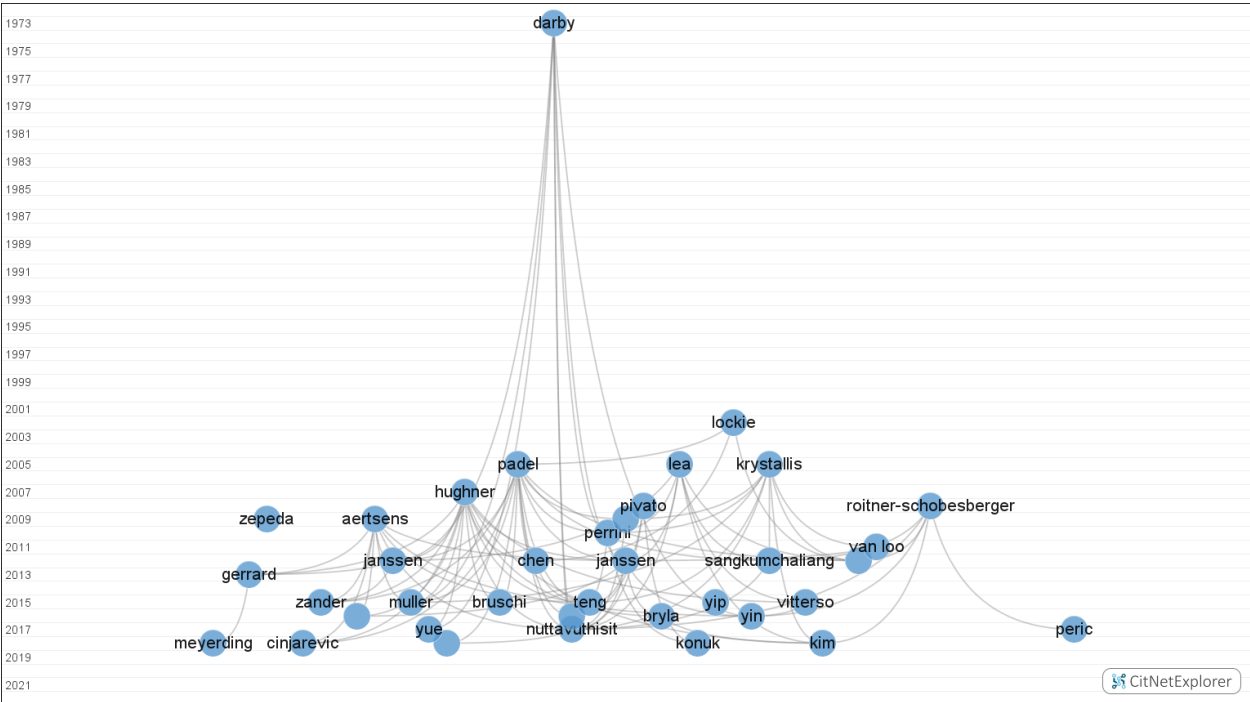


Figure 9. Network visualization of citations.

Each circle represents a publication, and publications are labeled with the first author's last name. Vertical location shows publication year, with old articles at the top and new publications at the bottom. In the horizontal direction, publications are arranged according to citation relationships. Highly cited publications that take into account direct and indirect citation relationships tend to be closer to each other horizontally. Publications that are less relevant with respect to other citations are further away (van Eck & Waltman, 2017).

Nine publications were cited 10 or more times, from which 3 papers are included in the review. The article by Padel & Foster (2005) was cited most frequently, namely 21 times. They investigated qualitatively consumers purchasing decisions of organic food. From our perspective, their most important findings were that labeling, certification and the country of origin play an important role in the perceived trust of organic food, which tend to be the major factors in later publications as well.

Almost the same amount, 20 papers cited the review of Hughner et al. (2007), in which they explore the reasons why people buy organic food. This publication does not mention trust related factors of organic food, although it gives important conclusions about the nature of organic food consumption.

Four articles were cited 13 times, from which 3 were published before 2010. Krystallis & Chryssohoidis (2005) discussed the importance of labeling, certification, and the place of purchase from the credibility perspective. Lea & Worsley (2005) investigated Australian consumers' beliefs about organic food. Aertsens et al.'s (2009) review is discussing the personal determinants of organic food consumption.

Nuttavuthisit & Thøgersen's (2017) article was published in 2017, although it was cited 13 times, which shows the relevance of this paper to our topic. As they did qualitative research about the consumer trust in Thailand, it offers important statements about the credibility factors of organic food in emerging countries.

The oldest cited publication is from 1973, written by Darby & Karni (1973). In their publication, they clarify the meaning of the credence attribute, which explains the high citation number.

5.2. Factors affecting organic food credibility

Table 5 displays the food related consumer behavior and attitude scales of the Hungarian and Polish samples. It can be observed that the pattern of the organic food buying frequency is very similar between the two samples. Approximately third of the respondents purchase organic food once or twice a month, Polish respondents slightly purchase more frequently organic food compared to the Hungarian participants. 14% of either Hungarian and Polish respondents almost never buy organic food, and approximately 10% of respondents can be considered as frequent organic food buyers.

Table 5. Food related consumer behaviors and attitudes of the samples.

	Hungary (n=652)		Poland (n=290)	
Organic food buying frequency (Zander et al., 2015)				
	n	%	n	%
Never / almost never	94	14%	39	14%
Less than once per month	138	21%	56	19%
About once or twice per month	252	39%	107	37%
About once per week	100	15%	62	21%
Several times per week	68	11%	26	9%
Logo knowledge (Janssen & Hamm, 2012)¹				
	Average	SD	Average	SD
EU organic logo	4.046	2.288	3.794	2.071
USDA organic logo	2.623	1.990	2.021	1.448
India Organic logo	1.943	1.643	1.598	1.030

Food responsibility (Brunso et al., 2021)²

	Average	SD	Average	SD
I try to choose food produced with minimal impact on the environment.	4.879	1.782	4.076	1.611
I am concerned about the conditions under which the food I buy is produced.	4.954	1.785	4.275	1.615
It is important to understand the environmental impact of our eating habits.	5.195	1.775	4.237	1.705
I try to choose food that is produced in a sustainable way.	5.699	1.644	5.179	1.422
I try to buy organically produced foods if possible.	4.006	1.955	3.828	1.759

Price sensitivity (Wang et al., 2020)²

	Average	SD	Average	SD
It is acceptable to pay more for organic food than conventional food.	4.560	1.903	4.344	1.555
I am willing to spend extra money in order to buy organic food.	4.376	1.891	4.052	1.669

Ethnocentrism (Gabrielle Klein et al., 2006)²

	Average	SD	Average	SD
Only those products that are unavailable in Hungary/Poland should be imported.	5.414	1.885	4.251	1.896
Hungarian/Polish products, first, last, and foremost.	5.376	1.742	4.337	1.737

A real Hungarian/Polish person should always buy Hungarian/Polish-made products.	3.739	2.129	3.048	1.900
Hungarian/Polish people should not buy foreign products, because this hurts Hungarian/Polish business and causes unemployment.	3.819	2.028	2.550	1.606
It may cost me in the long-run but I prefer to support Hungarian/Polish products.	4.943	1.835	3.601	1.677
Hungarian/Polish consumers who purchase products made in other countries are responsible for putting their fellow Hungarian/Polish people out of work.	2.563	1.874	2.210	1.443

¹7-point Likert scale: 1=This logo is completely unknown to me, 7=This logo is well-known to me. ²7-point Likert scale: 1=I completely disagree with this statement, 7=I completely agree with this statement.

Regarding organic logo knowledge, Hungarian respondents have a deeper awareness of either EU, USDA and India Organic logos compared to Polish respondents, although the same pattern can be observed: EU logo is the most well-known logo, and India Organic logo is the least known logo among the organic logos used in this research (see Figure 10). Hungarian respondents scored higher points on both Food Responsibility, Price Sensitivity and Ethnocentrism scales as well.

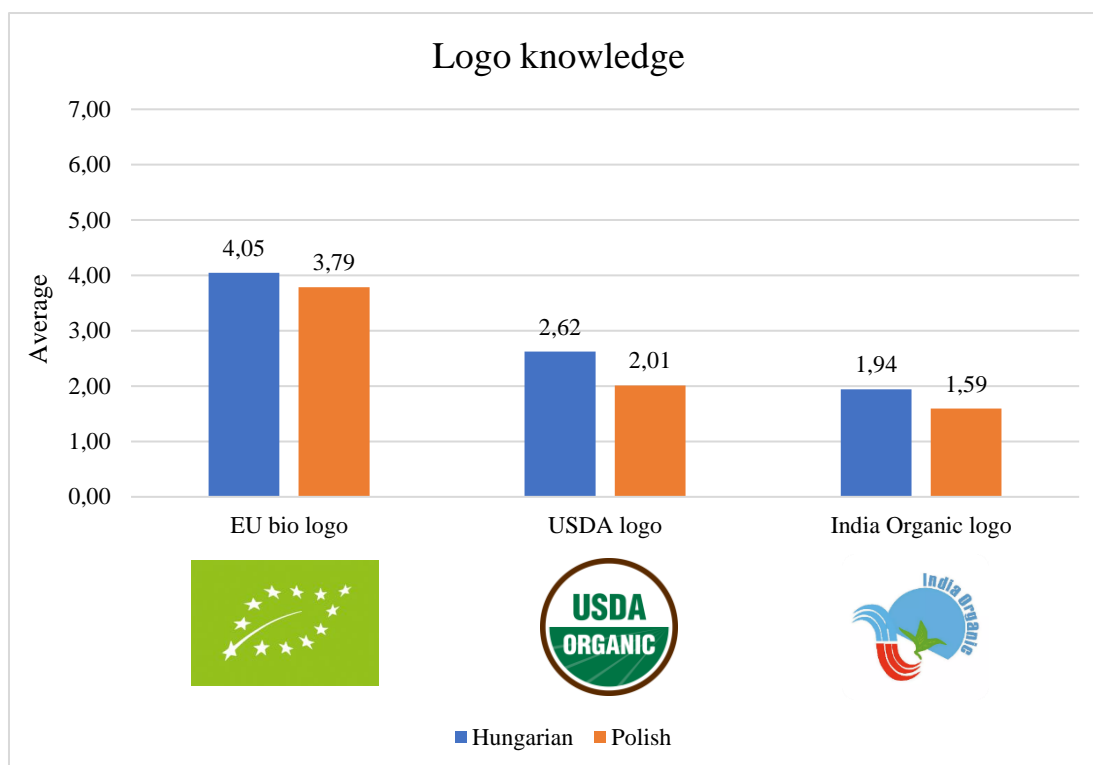


Figure 10. Logo knowledge

The consumer attitudes of the respondents were assessed using scales consisting of several questions. The reliability of the scales is shown by the Cronbach's Alpha value. If the Cronbach's Alpha value is above 0.66, then the scale reliably measures individual attitudes. Based on Table 6, it can be said that the questions asked well measured the attitudes of individual respondents regarding food consumption.

Table 6. Reliability of scales (Cronbach's Alpha)

Cronbach's Alpha	Hungarian	Polish
Food responsibility	0,911	0,875
Price sensibility	0,897	0,827
Ethnocentrism	0,881	0,855

In Figure 11, it can be clearly observed that in the case of all three consumer attitudes, the Hungarian respondents gave higher scores than the Polish respondents. The biggest difference

can be observed in the case of ethnocentrism, the Polish respondents appear to be much less ethnocentric than the Hungarian respondents. A significant difference can also be observed in the case of responsible food consumption, regarding the willingness to pay, the two samples are close to each other.

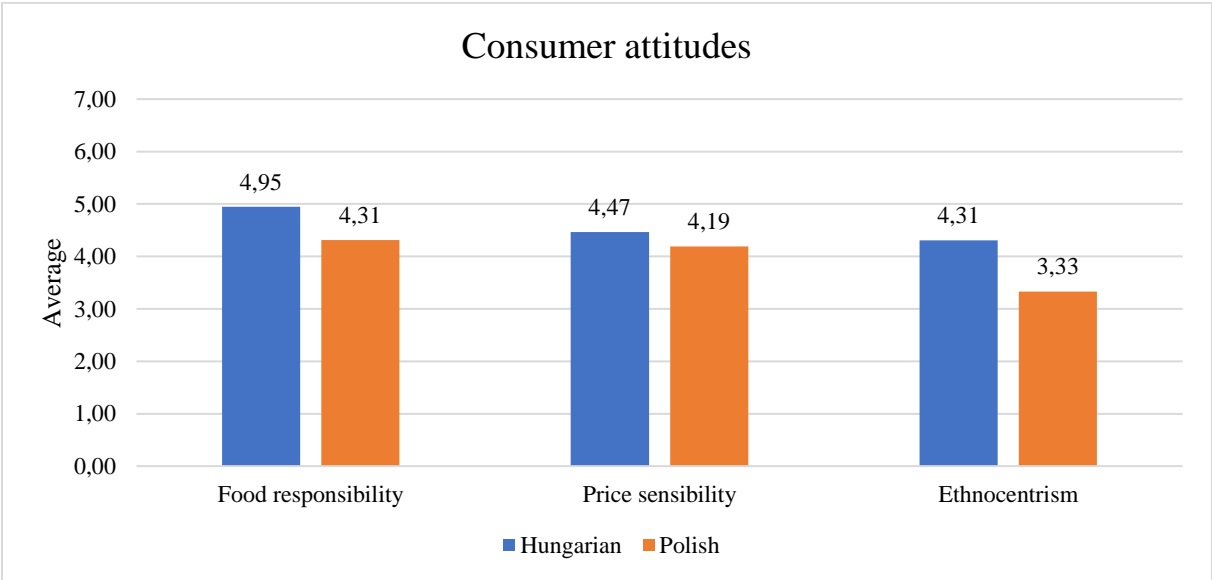


Figure 11. Consumer attitudes

The correlations between demographic data and consumption habits were examined using Pearson's correlation coefficient.

In the case of both the Hungarian and Polish samples, it can be clearly observed based on Tables 7 and 8 that the knowledge of organic logos is significantly influenced by the frequency of purchasing organic food. The more often a consumer buys organic food, the more familiar they are with organic logos. This applies not only to the EU organic logo, but also determines the knowledge of the other logos.

Table 7. Demographics – logo knowledge correlation (Hungarian respondents)

		EU logo knowledge	USDA logo knowledge	India logo knowledge
Organic purchase frequency	Pearson correlation	.419**	.276**	.225**
	Significance	,000	,000	,000
	N	652	652	652
Gender	Pearson correlation	.112**	,015	-,019
	Significance	,004	,711	,631
	N	652	652	652
Age	Pearson correlation	-,101*	-,080*	-,059
	Significance	,010	,041	,129
	N	652	652	652
Education	Pearson correlation	.104**	,019	-,050
	Significance	,008	,621	,198
	N	652	652	652
Place of living	Pearson correlation	-,019	,031	,070
	Significance	,635	,430	,075
	N	652	652	652
Income	Pearson correlation	.097*	,048	-,005
	significance	,013	,226	,908
	N	652	652	652

** p<0,01

In addition to the frequency of purchases, the respondents' gender had a significant effect on their knowledge of logos. In both samples, women were more familiar with the EU organic logo than men. However, this only applies to the EU organic logo, no significant difference can be observed in the case of the other logos.

In the case of Hungarian respondents, those with a higher education were more familiar with the EU organic logo than those with a lower education. This was not observed in the case of the Polish sample.

Table 8. Demographics – logo knowledge correlation (Polish respondents)

		EU logo knowledge	USDA logo knowledge	India logo knowledge
Organic purchase frequency	Pearson correlation	.421**	.277**	.260**
	Significance	,000	,000	,000
	N	290	290	290
Gender	Pearson correlation	.183**	,026	,061
	Significance	,002	,655	,297
	N	290	290	290
Age	Pearson correlation	,100	,109	,104
	Significance	,088	,065	,076
	N	290	290	290
Education	Pearson correlation	,098	,078	,088
	Significance	,097	,183	,137
	N	290	290	290
Place of living	Pearson correlation	-,034	,071	,008
	Significance	,568	,227	,892
	N	290	290	290
Income	Pearson correlation	.233**	,085	,052
	significance	,000	,150	,376
	N	290	290	290

** p<0,01

Table 9. Demographics – consumer attitudes correlation (Hungarian respondents)

		Food responsibility	Price sensibility	Ethnocentrism
Organic purchase frequency	Pearson correlation	.469**	.452**	.169**
	Significance	,000	,000	,000
	N	652	652	652
Gender	Pearson correlation	.131**	.099*	,052
	Significance	,001	,012	,181
	N	652	652	652
Age	Pearson correlation	,059	.208**	,072
	Significance	,130	,000	,067
	N	652	652	652
Education	Pearson correlation	,041	,068	-,005
	Significance	,297	,082	,901
	N	652	652	652
Place of living	Pearson correlation	,034	,011	.120**
	Significance	,387	,786	,002
	N	652	652	652
Income	Pearson correlation	-,004	.131**	,025
	significance	,911	,001	,524
	N	652	652	652

** p<0,01

Table 10. Demographics – consumer attitudes correlation (Polish respondents)

		Food responsibility	Price sensibility	Ethnocentrism
Organic purchase frequency	Pearson correlation	.503**	.420**	.134*
	Significance	,000	,000	,022
	N	290	290	290
Gender	Pearson correlation	.184**	,054	-,031
	Significance	,002	,359	,604
	N	290	290	290
Age	Pearson correlation	,000	,064	,096
	Significance	,995	,281	,103
	N	290	290	290
Education	Pearson correlation	,062	,078	,036
	Significance	,289	,185	,539
	N	290	290	290
Place of living	Pearson correlation	-,102	-,139*	,001
	Significance	,084	,018	,983
	N	290	290	290
Income	Pearson correlation	.235**	.264**	,066
	significance	,000	,000	,264
	N	290	290	290

** p<0,01

Tables 9 and 10 show the correlations between demographic characteristics and food consumption attitudes. In the case of both samples, it can be observed that the frequency of buying organic food is significantly related to consumer attitudes. Responsible food consumers and respondents with a higher willingness to pay buy organic food more often. In the case of Hungarian respondents, ethnocentric respondents also buy organic food more often.

Both Hungarian and Polish women consider themselves to be responsible food consumers compared to male respondents. Older Hungarian respondents are willing to pay significantly higher prices for organic food than younger respondents. The same cannot be observed for Polish respondents. Similarly, rural Hungarian respondents declared themselves to be more ethnocentric compared to urban respondents, but this was not true for Polish respondents.

We could also observe several correlations in the case of income. Hungarian and Polish respondents with higher incomes are willing to pay higher prices for organic food based on their

own declarations, and in addition, Hungarian respondents with higher incomes are also considered responsible food consumers.

Table 11. Results of the conditional logit model of the Hungarian respondents.

Level of attribute	Coefficients	Exp (coef)	se (coef)	z-value
Packaging				
Plastic ^a	-0.377	0.686 *	0.043	-8.735
Paper ^a	0.515	1.673 *	0.039	13.058
Appearance				
Brown ^b	0.236	1.266 *	0.032	7.339
Communication				
Claim ^c	0.167	1.181 *	0.032	5.151
Country of origin + organic logo				
Hungary + EU logo ^d	0.681	1.975 *	0.036	18.712
USA + USDA logo ^d	-0.152	0.859 *	0.043	-3.513
Price				
Low ^e	-0.229	0.795 *	0.041	-5.599
High ^e	0.107	1.113*	0.042	2.549
Place of purchase				
Organic market ^f	0.149	1.161 *	0.036	4.179
Online ^f	-0.265	0.767 *	0.043	-6.171

* $p < 0.001$; ^a- reference category: Without packaging; ^b- reference category: White; ^c- reference category: Without claim; ^d- reference category: India + India Organic logo; ^e- reference category: Average; ^f- reference category: Supermarket.

Table 11 illustrates the findings regarding the influential factors among Hungarian respondents, with the country of origin emerging as the most significant factor, as supported by the

corresponding organic logo displayed on the conjoint cards.

Domestic origin positively impacted the credibility of organic food (Exp coef=1.975), and for rice, Indian origin was deemed more credible than rice from the United States (Exp coef=0.859).

The type of packaging emerged as the second most important factor in determining consumers' perceived credibility in organic rice. Paper packaging (Exp coef= 1.673) instilled confidence in respondents, while plastic packaging (Exp coef=0.686) deterred them from trusting the organic authenticity of the food products. Packaging-free options were considered less credible compared to paper packaging.

Another less researched attribute that gained prominence was product appearance, which significantly influenced respondents' perceived credibility in organic rice. Specifically, when the product appeared brown, respondents were more inclined to believe that it was genuinely produced in accordance with organic standards (Exp coef=1.266).

Other characteristics also exerted a significant, albeit lesser, influence on the credibility of organic rice. The claim "from controlled organic farming" bolstered confidence in the organic nature of the rice (Exp coef=1.181). The place of purchase was indicated by the background of the products in the questionnaire, with the organic market background appearing more credible from the respondents' perspective (Exp coef=1.161). Organic rice presented in an online store (Exp coef= 0.767) was considered less credible compared to rice with a supermarket background. Price had the least impact on the credibility of organic food, although it still carried significance. When the price of organic rice was lower than the average price, consumers harboured doubts about its organic origin. Conversely, a higher price enhanced the perceived reliability of the organic product (Exp coef=1.113).

Table 12 displays that packaging, appearance, and place of purchase were the most influential attribute for Polish respondents to consider a product as credible to be organic.

Table 12. Results of the conditional logit model of the Polish respondents.

Level of attribute	Coefficients	Exp (coef)	se (coef)	z-value
Packaging				
Plastic ^a	-1.035	0.355 *	0.071	-14.554
Paper ^a	0.593	1.810 *	0.064	9.266
Appearance				
Brown ^b	0.294	1.341 *	0.051	5.748
Communication				
Claim ^c	-0.028	0.972	0.052	-0.546
Country of origin + organic logo				
Hungary + EU logo ^d	0.214	1.239 *	0.056	3.845
USA + USDA logo ^d	-0.254	0.775 *	0.066	-3.871
Price				
Low ^e	-0.320	0.726 *	0.066	-4.829
High ^e	0.036	1.036	0.072	0.499
Place of purchase				
Organic market ^f	0.255	1.290 *	0.058	4.372
Online ^f	-0.350	0.705 *	0.070	-4.988

* $p < 0.001$; ^a- reference category: Without packaging; ^b- reference category: White; ^c- reference category: Without claim; ^d- reference category: India + India Organic logo; ^e- reference category: Average; ^f- reference category: Supermarket.

Packaging emerged as the most crucial factor for Polish respondents when evaluating the credibility of organic rice. Respondents from Poland considered paper packaging (Exp

coef=1.810) credible against plastic packaging (Exp coef=0.355), similar to the Hungarian sample.

The appearance of the product also played a significant role. Polish respondents in line with Hungarian respondents perceived brown rice (Exp coef=1.341) as more credible compared to white rice.

Place of purchase, while still significant, exerted a relatively lesser influence as the third most important attribute impacting the credibility of organic food for Polish respondents. Polish participants exhibited greater credibility in the organic market setting (Exp coef=1.290), with online shopping (Exp coef=0.705) appearing less credible than purchasing from a supermarket.

The country of origin demonstrated a significant but comparatively weaker impact on product credibility for Polish respondents. However, the order of attribute levels remained consistent between the two countries. In other words, rice of Hungarian origin was perceived as the most credible (Exp coef=1.239), followed by rice from India and then the United States.

Price played a lesser role as an influencing factor for Polish respondents. Only the low price attained significance in influencing the credibility of organic rice (Exp coef=0.726). However, a low price had a negative effect on credibility just like in the case of Hungarian sample. Unlike the Hungarian respondents, high price did not yield a positive effect for Polish participants. The communication on the product had no significant effect on Polish respondents. It was the least important attribute in the Hungarian sample but seemed to be completely indifferent to the Polish sample.

In addition to examining the overall importance of each product attribute, we further investigated potential differences in credibility among different consumer groups. Specifically, we assessed variations based on gender, age, level of education, place of residency, perceived

income, and frequency of organic food purchases. Additionally, we explored the impact of logo knowledge, consumers' food responsibility, willingness to pay, and ethnocentrism. The statistically significant findings are summarized in Tables 13 and 14.

Table 13. Results of the conditional logit model: Interaction effects of Hungarian respondents.

Level of attribute	Interaction effect	Coefficients	Exp (coef)	se (coef)	z-value
Packaging					
Paper	Gender	0.328	1.389 *	0.076	4.307
Appearance					
Brown	Age	0.177	1.194 *	0.052	3.412
Brown	India logo knowledge	0.324	1.382 *	0.066	4.935
Country of origin + organic logo					
Hungary + EU logo	Age	0.473	1.605 *	0.058	8.193
Hungary + EU logo	Education	0.793	2.209 *	0.047	16.755
Hungary + EU logo	Organic buying frequency	0.883	2.419 *	0.073	12.078
Hungary + EU logo	EU logo knowledge	0.834	2.304 *	0.054	15.575
Hungary + EU logo	India logo knowledge	0.322	1.379 *	0.073	4.381
Hungary + EU logo	Ethnocentrism	0.892	2.441 *	0.062	14.302

		Place of purchase			
Organic market	Organic	0.254	1.289 *	0.070	3.604
	buying				
	frequency				

* $p < 0.001$

Among Hungarian male respondents, we observed a positive effect of paper packaging on credibility, albeit to a lesser extent compared to the average sample. Conversely, no significant difference was observed for Polish men.

Young Hungarian respondents appeared to be less influenced by high prices or the country of origin when determining credibility, but they exhibited higher perceived credibility in organic rice when the price was higher. Polish young respondents, on the other hand, demonstrated a greater influence of product appearance compared to the average sample.

Respondents with higher education assigned greater importance to the attributes that were also deemed significant by the average sample. Specifically, Hungarian respondents with higher education displayed a higher coefficient for country of origin, while Polish respondents with higher education exhibited a similar difference for packaging. Additionally, for Polish respondents with higher education, appearance and country of origin held greater importance compared to the average sample.

Regarding place of residence, no notable differences were observed in the importance of credibility factors. However, Polish respondents with high income displayed a more significant distinction.

Individuals with higher education, similar to those discussed earlier, placed greater importance on paper packaging and Hungarian origin when assessing the credibility of organic rice.

Table 14. Results of the conditional logit model: Interaction effects of Polish respondents.

Level of attribute	Interaction effect	Coefficients	Exp (coef)	se (coef)	z-value
Packaging					
Paper	Education	0.800	2.226 *	0.108	7.436
Paper	Income	0.733	2.081 *	0.101	7.253
Paper	EU logo knowledge	0.501	1.651 *	0.103	4.858
Paper	USDA logo knowledge	0.425	1.530 *	0.160	2.663
Paper	Higher WTP	0.808	2.244 *	0.144	5.604
Paper	Ethnocentrism	0.651	1.918 *	0.229	2.841
Appearance					
Brown	Age	0.349	1.418 *	0.060	5.804
Brown	Education	0.371	1.449 *	0.091	4.057
Brown	Organic buying frequency	0.398	1.489 *	0.098	4.048
Brown	EU logo knowledge	0.349	1.417 *	0.082	4.429
Brown	Higher WTP	0.422	1.525 *	0.122	3.458
Country of origin + organic logo					
Hungary + EU logo	Education	0.335	1.397 *	0.097	3.446
Hungary + EU logo	Income	0.363	1.438 *	0.086	4.194

Hungary + EU logo	EU logo knowledge	0.366	1.442 *	0.089	4.093
Hungary + EU logo	USDA logo knowledge	0.487	1.628 *	0.145	3.368
USA + USDA logo	India logo knowledge	-0.711	0.491 *	0.184	-3.860
Place of purchase					
Organic market	India logo knowledge	0.388	1.474 *	0.157	2.468

* p<0.001

A distinction arises between Hungarian and Polish respondents based on the frequency of organic food purchases. Polish consumers who purchase organic food more frequently than the average demonstrated higher credibility in brown rice compared to white rice. In contrast, Hungarian regular organic food buyers placed greater perceived credibility in domestically sourced products and viewed the organic market as a reliable place of purchase.

Familiarity with logos also influenced consumers' perceptions of product credibility. Hungarian and Polish consumers who were more familiar with the EU organic logo were more inclined to consider products bearing this logo as credible. For Polish respondents, knowledge of the EU organic logo was also positively associated with credibility in paper-packaged brown rice.

Among Polish respondents who were more familiar with the USDA logo, products featuring this logo were considered more credible than those with the Indian organic logo. These respondents also viewed brown rice as more credible. However, they exhibited less credibility in the organic market as a place of purchase compared to other respondents.

Conversely, Polish respondents who were more familiar with the Indian organic logo expressed

greater perceived credibility in the organic market as a place of purchase and exhibited less credibility in products originating from the USA and Europe. Hungarian respondents who were more familiar with the Indian logo also displayed lower credibility in the EU organic logo, with product appearance assuming greater importance for them.

Polish respondents with a higher willingness to pay demonstrated distinct behavior when evaluating the importance of specific credibility factors. They perceived brown rice in paper packaging as a more reliable product, and a higher price instilled greater confidence.

As expected, Hungarian respondents with higher levels of ethnocentrism exhibited greater credibility in Hungarian-origin organic rice compared to respondents with lower levels of ethnocentrism. In the Polish sample, however, we observed the opposite pattern. Rice bearing the EU organic logo but originating from Hungary garnered significantly less credibility among ethnocentric Polish respondents. Furthermore, the appearance of the product did not factor into their assessment of the credibility of organic rice. Nonetheless, these consumers displayed a stronger preference for paper-packaged products available at the organic market, considering them more credible from an organic standpoint. While the organic market background inspired confidence among Polish ethnocentric respondents, online sales evoked explicit distrust regarding the organic status of the product.

The findings of this study corroborate previous research while also uncovering new relationships between factors influencing credibility in organic food. Overall, all the examined factors demonstrated an influence on consumers' credibility in organic rice, although the differences between attribute levels were not consistently large, and not all results achieved statistical significance.

The significance of country of origin has been established in previous studies (e.g. Yip & Janssen, 2015; Lee et al., 2020; Thorsøe et al., 2016; Padel & Foster, 2005). However, in our

research, this attribute was presented alongside logos. Our findings support prior research, such as Pedersen et al.'s (2018) assertion that the image and credibility of the exporting country can influence credibility in imported organic food. It is worth noting that knowledge of logos had a positive impact on credibility in products bearing those logos, similarly to the findings of Zander et al. (2015), highlighting the importance of education in improving consumers' perceived credibility in organic food. We observed some differences in the perceived credibility among Hungarian and Polish consumers concerning the country-of-origin attribute, namely Hungarian consumers were more in favor of the Hungarian rice, on the other hand Polish participants considered it less trustworthy, though still more credible than imported organic rice. For both groups, products displayed with the EU organic logo were indicated as "Produced in Hungary" since rice production does not exist in Poland. Consequently, for Polish respondents, the product was not considered domestic. Overall, these findings can confirm Hypothesis 1.

Historically, there has been limited research on the packaging of organic food (Hemmerling et al., 2015). However, for both Hungarian and Polish respondents, the type of packaging emerged as a notably significant aspect, which corresponds with the findings of Danner & Menapace (2020), that packaging plays a crucial role for the products' credibility for European consumers. We investigated packaging-free products, which are gaining popularity among environmentally conscious consumers (Rapp et al., 2017), and they appeared to be a preferable option compared to plastic packaging, although paper packaging garnered even greater credibility, confirming Hypothesis 2. One possible explanation is that the natural brown color of the paper packaging in the questionnaire conveyed a sense of naturalness, aligning with consumers' perception of organic products. This explanation is verified with the research of Marozzo et al. (2020), who tested natural colors' consumer perceptions. According to their findings, 'au naturel' colors of packaging can increase willingness to pay and perceived authenticity in the case of healthy

products. Additionally, paper packaging is considered a more sustainable choice, which holds considerable importance for organic food consumers (De Canio & Martinelli, 2021). While our current research did not directly address this aspect, the results suggest that product color may also impact the credibility of organic products, as evidenced by Šola et al.'s (2022) finding that the color of organic food packaging influences consumers' decision-making processes.

The appearance of organic products has likewise received limited research attention, but our study demonstrates that product type does affect credibility, namely brown rice appears to be more credible to respondents compared to white rice, supporting Hypothesis 2. Consumption of brown rice is much lower compared to white rice, and consumers' sensory preferences are biased towards white rice (Gondal et al., 2021). On the other hand, brown rice can be considered as a healthier option compared to white rice (Saleh et al., 2019). This "less tasty=healthy" intuition of consumers (Raghunathan et al., 2006) perfectly resonates with brown rice, thus the natural appearance of brown rice lends it an organic and authentic look, potentially enhancing its perceived credibility.

Price plays a paradoxical role in the perceived credibility of organic food products. Organic rice cost more to produce (Suwanmaneepong et al., 2020), making it a more expensive option for consumers, although consumers are price sensitive, especially in Hungary and in Poland (Ferenczi et al., 2017). As Hughner et al. (2007) highlighted, consumers are looking for low prices, although low price can hinder the credibility of the product. Our results support this finding and Hypothesis 3, namely that low price creates skepticism among consumers, although high price was not a strong aid to build credibility of organic product.

The purchase environment of the organic product was influential both for Hungarian and Polish participants, which corresponds to previous studies, that consumers' perception of the retailers has an impact on the organic products' credibility which it sells (Bonn et al., 2016; Hwang &

Chung, 2019; Konuk, 2018). The importance of online retail is rapidly growing in Central-Eastern Europe (Bartók et al., 2021), although our results show that consumers still do not consider products purchased online credible compared to traditional retail channels. As organic food become more mainstream, most of the purchase happens in supermarkets (Szente, 2004, Willer et al., 2022), but this does not reflect the level of credibility, as Hypothesis 4 suggests. Consumers considered organic farmers' market as the most credible source of organic food in our research, especially among ethnocentric and regular organic food buyers. One explanation of this phenomena can be found in the research of Hamzaoui-Essoussi et al. (2013), that the size of farm influences the credibility of organic food produced by them. In organic farmers' market usually only small farmers can sell their product, on the other hand, supermarkets mostly sell so called "industrial organic" products, which were produced by much larger farms, which are considered less trustworthy.

The results indicate that for organic products to build credibility, they should originate from the consumer's own country, be packaged in natural-looking paper packaging, and be sold at a higher price. The order of importance may slightly differ for Polish consumers, but the aforementioned findings hold true for both groups.

Despite differences in demographic characteristics between the Hungarian and Polish samples, the results exhibited remarkable similarity, likely due to shared cultural and social backgrounds. While there are variations in the food markets of the two countries, there are many similarities in consumer habits (Potori et al., 2014).

5.3. Value of sustainable packaging

Table 15 provides an overview of the willingness to pay (WTP) for the four different products used in our experiment, both in the full sample and within the control and treatment groups. Generally, products in plastic packaging without a Product Environmental Footprint (PEF) logo

had the lowest WTP value in both the control and treatment groups. Products in plastic packaging with a PEF logo saw an average price premium of 18% across the entire sample. Meanwhile, biodegradable packaging without a PEF logo commanded a 24% price premium compared to pasta in plastic packaging. The combined effect of the PEF logo and biodegradable packaging amounted to a 41% increase in value compared to the benchmark product. Importantly, the measured WTP values did not exhibit statistically significant differences between the control and treatment groups.

Table 15. Pasta WTP

	Full sample (n=105)	Control (n=53)	Treatment (n=52)
Plastic (Product A)	524.6 (285.6)	536.8 (293.5)	512.3 (279.7)
Biodegradable (Product B)	631.9 (319.7)	630.7 (332.4)	633.2 (309.5)
Plastic + PEF (Product C)	619.9 (330.6)	635.8 (336.8)	603.6 (326.6)
Biodegradable + PEF (Product D)	713.1 (387.1)	726.8 (416.8)	699.1 (357.8)

Note: Values are displayed in Hungarian Forint (HUF). 1 HUF is appr. 0.0025 EUR. Mean WTPs are significantly different according to Kolmogorov-Smirnov tests (at $p < 0.005$) for all possible pairs. Standard deviations are given in brackets

Table 16 presents the average price premiums calculated on an individual level, with Product A as the benchmark. Participants who received information about the harmful nature of microplastics demonstrated higher price premiums for eco-friendlier products, particularly for Products B and D, which were packaged in biodegradable material. In the case of biodegradable packaging without a PEF logo, the treatment information had a statistically significant effect ($t = -2.0391$, $Pr = 0.0440$) on the price premium, specifically a 31% increase compared to the control group's 17% price premium.

Table 16. Price premiums

	Full sample (n=105)	Control (n=53)	Treatment (n=52)
Biodegradable (Product B)*	23.8% (35.6)	16.9% (31.1)	30.8% (38.8)
Plastic + PEF (Product C)	18.5% (30)	15.3% (31.4)	21.9% (28.5)
Biodegradable + PEF (Product D)	41.2% (53.9)	36% (56.8)	46.4% (50.8)

*Notes: Price premium Product B = $((WTPB-WTPA)/WTPA)*100$; Price premium Product C = $((WTPC-WTPA)/WTPA)*100$; Price premium Product D = $((WTPD-WTPA)/WTPA)*100$; *Statistically significant difference of price premium of product B between control and treatment groups within 95% confidence interval.*

Figure 12 illustrates the bid distribution in 200 HUF (approximately €0.5) increments. Notably, 10% of the participants were unwilling to pay more than 400 HUF (about €1) for any of the products, while the top 10% of participants were willing to pay over 900 HUF (approximately €2.25). Figure 11 also demonstrates that the WTP distribution for the four different products follows a parallel trend, with no outlier data observed.

The level of trust and the perceived sustainability of the product exhibits a similar pattern as the WTP values, as shown in Figure 13. Both trust and sustainability scored the lowest for the product in plastic packaging and reached their highest levels for the product with biodegradable packaging and a PEF logo. The score variance is greater for sustainability compared to organic trust, but no statistically significant differences were observed between the responses of the control and treatment groups.

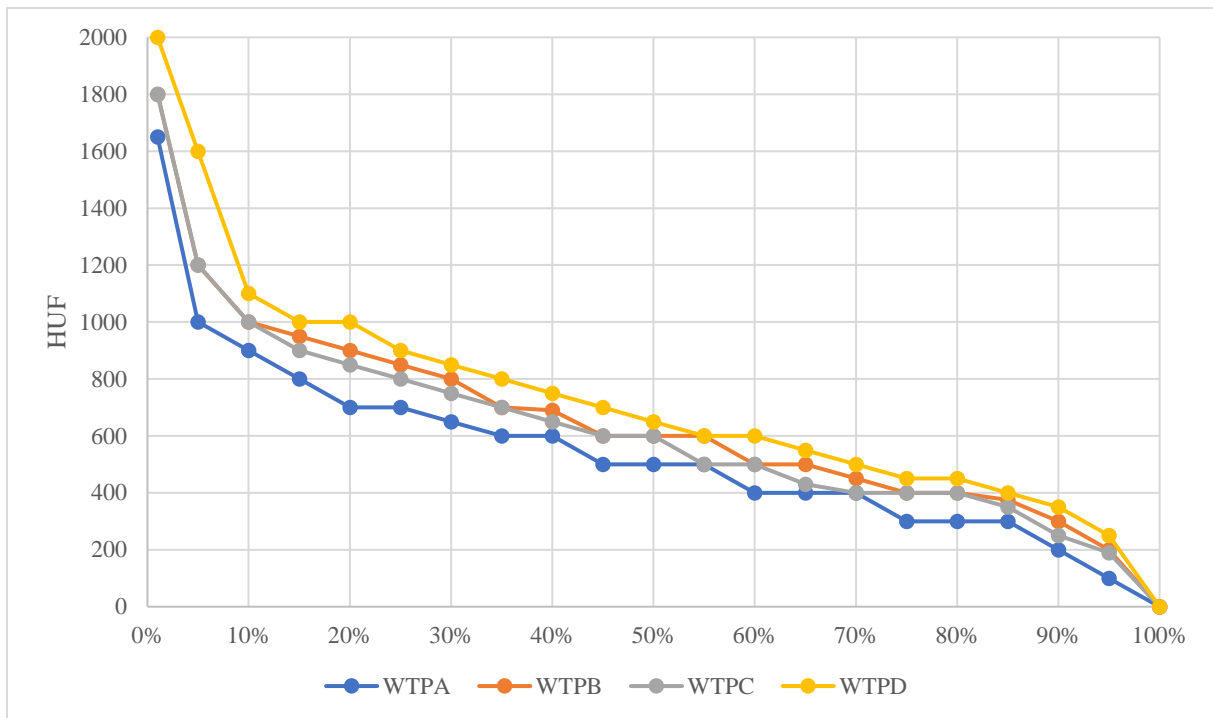


Figure 12. Distribution of the bids of 4 product variants

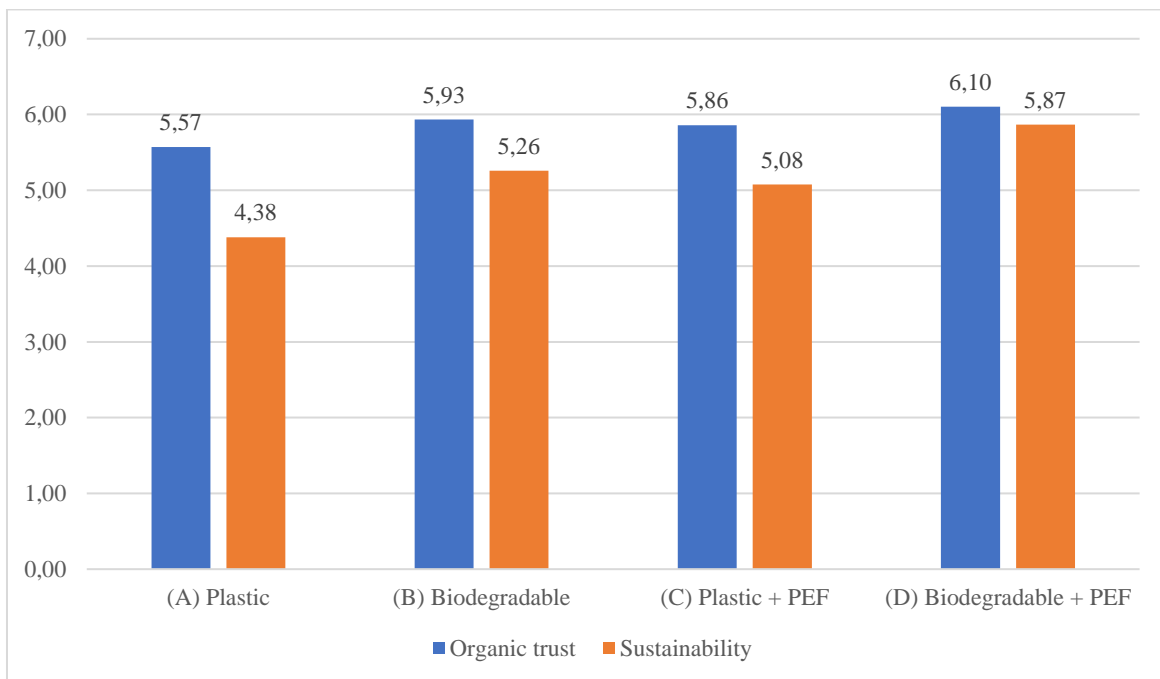


Figure 13. Organic trust and Sustainability

To uncover correlations between demographics, consumer attitudes, and the proportion of price premiums, we run ordinary least squares (OLS) regressions. The model used for this analysis

included the following factors: gender, age, education, income, frequency of organic food purchase, the importance of sustainability, and the New Environmental Paradigm scale.

Table 17. Preference drivers

	Full sample (n=105)	Control (n=53)	Treatment (n=52)
Price premium Product B			
Female	1.84*	1.26	2.01**
Age	0.20	-0.24	0.52
Education	-1.66*	0.24	-3.18**
Income	0.79	-0.54	2.13**
Organic purchase	0.53	0.21	0.84
Sustainability	0.08	-0.09	0.16
NEP ^a	-0.06	-0.51	1.10
Constant	0.69	-0.03	1.24
R^2	0.052	0.043	0.207
Chi^2	5.83	2.39	13.61
p	0.559	0.935	0.058
Price premium Product C			
Female	2.17**	2.07**	1.41
Age	1.39	0.73	1.12
Education	-1.28	-0.35	-1.89*
Income	0.83	-0.62	2.14**
Organic purchase	0.67	1.15	-0.20
Sustainability	0.57	0.65	0.28
NEP ^a	1.23	-0.01	2.12**
Constant	-0.37	-0.96	0.54
R^2	0.081	0.136	0.156

Chi^2	9.30	8.37	9.60
p	0.231	0.301	0.212
Price premium Product D			
Female	2.38**	1.74*	2.34**
Age	0.73	-0.04	1.23
Education	-1.08	0.41	-3.07**
Income	0.91	-0.56	2.66**
Organic purchase	-0.35	-0.00	-0.19
Sustainability	-0.05	0.03	-0.27
NEP ^a	0.26	-0.69	1.88*
Constant	0.42	-0.23	1.28
R^2	0.061	0.076	0.238
Chi^2	6.89	4.35	16.27
p	0.441	0.739	0.023

Note: * $p < 0.1$; ** $p < 0.05$; Cronbach's alpha values: 0.498^a

Breusch–Pagan test of independence: $chi^2(3) = 150.408$, $Pr = 0.0000$ (full sample); $chi^2(3) = 66.486$, $Pr = 0.0000$ (control group); $chi^2(3) = 85.273$, $Pr = 0.0000$ (treatment group).

Our analysis revealed that gender, education, and income significantly influenced price premiums (see Table 17). Female respondents, in general, were willing to pay higher prices for Products B, C, and D. In the control group, female respondents provided significantly higher price premiums for products with a PEF logo. In the treatment group, biodegradable products had significantly higher price premiums among female participants. Age did not play a role in price premiums.

Education level showed an inverse relationship with price premiums among the treatment group respondents, indicating that participants with higher education were less willing to pay a price premium for eco-friendlier products. On the other hand, income had the opposite effect, with

higher-income participants showing a greater willingness to pay a higher price premium. However, this effect was only observed in the treatment group, as higher income did not significantly affect price premiums in the control group.

Respondents who expressed concern for environmental issues, as indicated by the New Environmental Paradigm scale, gave higher price premiums for products with a PEF logo among the treatment group respondents. The frequency of organic food purchase and sustainability considerations during food purchase did not significantly impact the price premiums.

The research findings point to a general willingness among respondents to pay a premium for environmentally friendly and sustainably produced products, aligning with previous studies (Ruggeri et al., 2021; Li and Kallas, 2021; Herrmann et al., 2022) and supporting Hypothesis 5. However, the extent of this price premium is influenced by various factors.

The research findings elucidate noteworthy treatment effects on consumer willingness to pay (WTP) for products with distinct packaging attributes, particularly under the influence of information regarding the deleterious effects of microplastics. Consistently, products featuring biodegradable packaging and the PEF logo commanded the highest WTP, signifying a discernible consumer preference for environmentally conscious choices. Concurrently, traditional plastic packaging elicited the lowest prices, indicative of a discernible market shift toward sustainability.

An in-depth analysis of the treatment group unveils a significant revelation. Despite the recognized sustainability symbol in the form of the PEF logo, the introduction of targeted information highlighting the adverse effects of microplastics led to a substantial increase in the price premium for biodegradable packaging. This underscores the potent impact of focused knowledge dissemination, even in the presence of established sustainability markers.

Drawing parallels with the findings of Steenis et al. (2022), our results align with the notion that informed consumers are inclined to pay a premium for products with eco-friendly packaging. The treatment effect, particularly in emphasizing the repercussions of microplastics, underscores the pivotal role of information in shaping consumer behavior and preferences.

Moreover, the nuanced response observed across demographic segments adds complexity to our understanding. Female respondents, in particular, exhibited a significantly higher WTP for both biodegradable packaging and products featuring the PEF logo, reinforcing the efficacy of disseminating general information about the harmful effects of microplastics, as noted by Van Asselt et al. (2022).

Nevertheless, the variability in the treatment effect across diverse consumer groups introduces a layer of intricacy. In the treatment group, factors such as education level, perceived income, and environmentally friendly behavior emerged as influential in shaping how respondents processed negative information about microplastics. This nuanced interplay suggests the necessity for tailored communication strategies to maximize the impact of sustainability information across heterogeneous consumer profiles.

Interestingly, respondents with higher education levels were willing to pay a smaller price premium for environmentally friendly products, indicating that information treatment was less effective for them. Conversely, lower-educated respondents were willing to pay a higher price premium, suggesting that educational efforts were effective. Higher perceived income often correlates with a higher willingness to pay (Li and Kallas, 2021), as observed in this study, but only in the treatment group, indicating that information treatment had a positive effect on the willingness to pay of higher-income individuals. Similarly, those who identified as environmentally conscious were significantly more willing to pay a higher price for environmentally friendly products when provided with information. Therefore, even

respondents with higher NEP scores needed encouragement to pay a higher price for products with biodegradable packaging and the PEF logo.

The presence of the PEF logo alone was unable to achieve a higher price premium compared to products with only biodegradable packaging, despite signaling higher sustainability expectations. A potential reason for the lack of a significant premium generated by the PEF might also be that respondents already perceive organic food to generally be more environmentally friendly. However, it is evident that when biodegradable packaging and the PEF logo were used together, a higher willingness to pay was achieved among respondents compared to when they were used separately. One possible explanation is that the PEF logo considers sustainability metrics that consumers cannot easily verify while shopping, making it a credibility attribute. This credibility is further supported by the environmental friendliness of the packaging, which is easily recognizable by consumers, reinforcing trust in the PEF logo and leading to a higher willingness to pay when both biodegradable packaging and the PEF logo are used together.

A similar situation was observed with organic trust and perceived sustainability. Biodegradable packaging significantly increased trust in the product's organic nature and perceived sustainability more than a product marked only with the PEF logo, but the combination of both achieved the highest value among the four products.

5.4. Consumer perception of packaging color

The participants' demographics, reflecting varied income levels and organic food buying frequency, offer crucial context for interpreting the willingness-to-pay (WTP) values. These factors may intersect with color preferences, providing insights into how diverse profiles influence consumer behavior in the experimental auction study.

Table 18 displays the participants' WTP values for pasta products with different color labels, along with standard deviation, minimum, and maximum values.

Table 18. WTP values of the different color labeled pasta products

	WTP	Std. Dev.	Min	Max
White	544,58	185,76	0	1000
Black	570,87	198,04	0	1000
Green	543,59	192,5	0	1000
Blue	538,71	194,41	0	1000

Note: values are displayed in Hungarian Forint (HUF). 1 HUF is appr. 0.0025 EUR.

Participants exhibited varying WTP across different colors, with mean values of HUF 544.58 / € 1.36 (white), HUF 570.87 / € 1.44 (black), HUF 543.59 / € 1.35 (green), and HUF 538.71 / € 1.34 (blue). Standard deviations ranged from 185.76 to 194.41, reflecting the dispersion of WTP values. Notably, all color-labeled products had a potential maximum WTP of 1000.

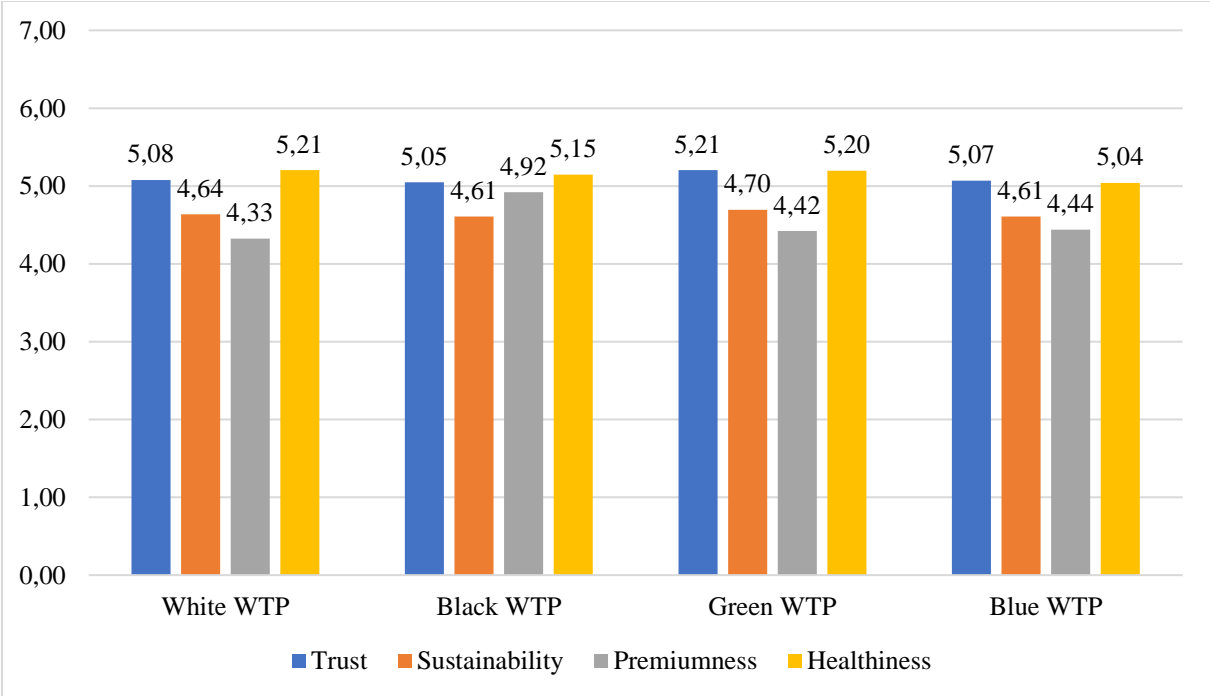


Figure 14. Perceived trust, sustainability, premiumness and healthiness of the different color packaging

Figure 14 presents the participants' perceptions of various attributes associated with pasta products labeled in different colors. The scale ranges from 1 to 7, with higher values indicating stronger agreement or perception.

Participants expressed a high level of trust across all color-labeled pasta products, with mean scores ranging from 5.05 to 5.21. The trustworthiness of the products appeared consistently strong regardless of the color. Sustainability perceptions were generally positive, with mean scores ranging from 4.61 to 4.70. Participants perceived the pasta products, regardless of color, as having a commitment to sustainable practices. Perceived premiumness varied across colors, with the highest mean score of 4.92 for black-labeled pasta. The white and green color labels also received positive evaluations, scoring 4.33 and 4.42, respectively. Blue-labeled pasta had a slightly lower score of 4.44. Healthiness perceptions were consistently high across all color-labeled pasta products, with mean scores ranging from 5.04 to 5.21. Participants perceived the products as being notably healthy, irrespective of the color label.

Table 19 provides a detailed insight into the factors influencing participants' WTP for pasta products with different color labels. The drivers include age, gender, income, place of living, organic purchase frequency, trust, sustainability, premiumness, healthiness, price consciousness, quality consciousness, general health interest, natural product interest, and food responsibility. The regression coefficients represent the strength and direction of the influence of each driver on WTP.

Age positively influenced WTP for all colors, with the highest impact observed for white-labeled pasta. Gender displayed mixed effects, with females showing a positive influence on WTP for white and blue labels but a negative influence on green-labeled pasta. Income had limited impact, with only white-labeled pasta showing a positive association with higher income. Participants residing in the capital city exhibited lower WTP for all colors compared

to other residence areas. Higher organic purchase frequency positively correlated with increased WTP for all colors.

Table 19. Preference drivers

	White WTP	Black WTP	Green WTP	Blue WTP
Age	0.88	0.59	0.35	0.67
Gender	0.96	-0.05	-0.97	0.26
Income	0.06	-0.31	0.40	0.28
Place of living	-0.57	-0.48	-0.12	-0.09
Organic purchase	0.87	1.43	0.69	0.41
Trust	2.79**	3.42**	2.49**	2.88**
Sustainability	0.23	0.79	0.33	1.02
Premiumness	4.23**	2.63**	2.33**	2.72**
Healthiness	1.98**	2.25**	1.04	2.31**
Price consciousness	1.44	1.95*	1.30	1.07
Quality consciousness	1.70*	1.02	-0.34	0.85
General health interest	0.18	-0.11	1.86*	0.93
Natural product interest	-0.73	0.35	-0.28	-1.03
Food responsibility	-0.31	-0.99	-0.54	0.67
Constant	-1.19	-0.84	-0.14	-1.01
R ²	0.159	0.264	0.196	0.257
Chi ²	77.07	105.45	52.43	95.46
p	0.000	0.000	0.000	0.000

Note: * $p < 0.1$; ** $p < 0.05$; Breusch–Pagan test of independence: $\chi^2(6) = 377.670$, $Pr = 0.0000$

Trust, premiumness, and healthiness significantly influenced WTP across all color-labeled pasta products, except for green color products, where healthiness was not influencing. Trust and premiumness had particularly strong positive effects, suggesting that these attributes played a pivotal role in participants' valuation of the products. Price consciousness positively influenced WTP for black-labeled pasta ($p=0.05$), while quality consciousness positively affected WTP for white-labeled pasta ($p=0.09$). General health interest positively affected WTP for green-labeled

pasta ($p=0.06$), whereas interest in natural products does not influence WTP significantly. Food responsibility had a mixed impact on WTP, with a negative influence on black-labeled pasta and a positive influence on blue-labeled pasta.

The results of our experimental auction study shed light on the intricate relationship between packaging color, consumer perceptions, and willingness to pay (WTP) for organic food products. As the organic food market continues to grow (Paull, 2023), businesses must strategically consider the impact of packaging colors on consumer behavior to effectively cater to evolving preferences and values.

Hypothesis 6 can be partly supported by the results. Green color increased perceived trust compared to other color options used in the experiment, although willingness to pay value of the green labeled product was not significantly higher.

The dominance of white and green colors in organic food packaging aligns with their associations with freshness, health, and organic qualities. These color choices reflect a conscious effort by businesses to appeal to consumers seeking environmentally friendly and nutritious options. However, our findings indicate nuances in consumer responses to different colors, urging businesses to adopt a more tailored approach in their packaging strategies.

The positive association of green color with the organic nature and environmental friendliness of a product is consistent with prior research (Chrysochou & Festila, 2019). These colors convey a commitment to sustainability, resonating with consumers who prioritize eco-friendly choices. Additionally, cooler colors like blue and green influence perceptions of healthiness and sustainability, aligning with the findings of Hallez et al. (2023). However, it's crucial to note the limited impact of these colors on taste perception, emphasizing that visual cues may not entirely translate to the sensory experience.

Our study supports the notion that packaging colors go beyond aesthetic appeal; they play a significant role in shaping consumers' trust, perceptions of premiumness, and evaluations of healthiness. The positive influence of black packaging on perceptions of premium quality, as highlighted by Pereira (2021) and Klimchuk and Krasovec (2012), is evident in our findings. However, the nuanced impact of black packaging on healthiness perceptions, as suggested by Karnal et al. (2016), underscores the complexity of color associations.

The analysis of demographic factors reveals intriguing patterns in WTP across different colors. Age, gender, income, and residence areas exhibit varying degrees of influence, emphasizing the importance of considering diverse consumer segments in marketing strategies. For instance, the positive influence of higher organic purchase frequency on WTP for all colors suggests a potential market segment that values and is willing to invest in organic products.

Moreover, the significant impact of trust and premiumness on WTP underscores the pivotal role these attributes play in consumer valuation. Businesses should prioritize building trust and conveying a sense of premium quality in their organic food products to enhance their market competitiveness.

6. CONCLUSIONS AND RECOMMENDATIONS

The interest in organic food is growing, however we can see a shift from developed to developing countries in terms of geographical focus of the articles. This shift and geographical difference in consumer attitudes could be detected by almost all identified factors of organic food credibility.

Certification is one of the most important factor to build consumer trust, as certification covers all those activities where compliance with organic requirements are assessed, so that should be a guarantee for consumers. Existing research shows a clear pattern regarding the credibility of certification bodies in different countries. Certifications from developed countries are much more trusted compared to certifications from developing countries.

Labeling has the role to inform consumers about the product. Without this information, consumers can not be sure if a product is organic. Besides certification, labeling is crucial to inform consumers about the organic characteristics of a product, which transfers the credence attribute to a search attribute. The importance of labeling can be explained with the fact, that labels contain most of the information about the product, so consumers can assess the product from other perspectives (e.g. nutritional values, origin, ingredients, etc.), which might influence perceived trust.

Labeling is well researched factor, however there are some kind of loose products, where the lack of labeling is common practice, like fruit and vegetables or bakery products. In those cases, credibility might be questioned by consumers, so research on these products is desirable.

The results of the credibility aspects of the country of origin seem to correlate with the results on certification, and the findings are strongly related to the results of the bibliometric analysis. Organic products from developing countries can cause doubt in consumers both from developed

and developing countries, which might indicate the general low institutional trust in these countries.

Research on the effect of place of purchase proves its importance, although it is incomplete in several areas. According to Ökobarometer (2019), German consumers mostly buy organic food in supermarkets and discounters, although traditional markets, specialty shops, and direct purchase also play an important role in organic food retail. However, these sales channels were not taken into account in the existing research, thus further research is needed.

In the case of certification, labeling, and country of origin, the findings of existing research seem to provide enough evidence to draw a reliable conclusion. All of these factors play an important role in the perception of trust towards organic food.

Brand was less researched in relation to credibility, but all evidence shows that it has a positive impact on the authenticity of organic food. Similarly, not much research has investigated the effect of price, communication, product category, and packaging of organic food on credibility, therefore further research is needed in connection to these factors. There are certain product attributes, which were not evaluated by previous papers, but the authors assumed that they might have a strong effect on organic food trust. As food packaging is getting in the scope of sustainability, it would be interesting to compare the influence of different type of packaging on the level of trust. Also, color of the package can influence consumers' perceptions of organic food.

The findings of the conjoint research confirm previous findings while offering new insights into the role of packaging, product appearance, and country of origin. The results highlight the importance of natural-looking paper packaging and the positive impact of the appearance of brown rice on credibility. Moreover, the study emphasizes the significance of consumer knowledge of organic logos and the influence of place of origin on credibility. The similarities

in results between Hungarian and Polish respondents, despite demographic differences, suggest shared consumer habits and cultural backgrounds. This study highlights the potential transferability of credibility factors across diverse cultural contexts, as evidenced by the similar responses of Hungarian and Polish participants. This observation opens possibilities for cross-cultural studies and encourages researchers to investigate how cultural factors interact with credibility perceptions in different regions.

The field study contributes insights into the influence of information on WTP, with a specific emphasis on treatment effects related to the harmful effects of microplastics. These findings carry significant policy implications, highlighting the imperative for targeted communication strategies to effectively convey the environmental consequences of product choices. As consumer awareness expands, policymakers can leverage these insights to formulate initiatives that not only promote sustainable practices but also harness the power of information to induce positive behavioral change in the marketplace.

The presence of environmentally friendly packaging and the PEF logo has a positive impact on both willingness to pay and consumer trust in the product's sustainability. Despite its holistic approach, the PEF logo does not increase the price premium as much as biodegradable packaging alone, but when used together, it seems to instill greater consumer trust that leads to a higher willingness to pay for a given product.

The information treatments about the harmful effects of microplastics were not effective for all consumer groups. However, for female, higher-income, and more environmentally conscious respondents, a significant increase in willingness to pay was observed. Therefore, it can be concluded that it may be worthwhile to share such information with these consumer groups. Unfortunately, for those who consider themselves less environmentally conscious, negative information treatment was less effective, making it difficult to reach the very group that should be encouraged to make more environmentally friendly purchasing decisions.

The organic food market's growth is indicative of the increasing consumer demand for healthier and more sustainable food options. The colors used in the presentation, packaging, and branding of organic food products play a significant role in shaping consumer perceptions and preferences. The experimental auction method provides a valuable avenue for researchers to explore the complex interplay of cognitive and economic factors that influence consumers' willingness to pay for organic foods based on color-related perceptions. Businesses in this market must consider the implications of color choices in their branding and packaging strategies to align with consumer values and effectively communicate the qualities of their products.

Organic producers should carefully consider packaging color choices based on their target market and objectives. For emphasizing healthiness and sustainability, white and green are suitable, while black may appeal to those emphasizing premium quality. The nuances in consumer responses to colors highlight the need for a tailored approach, ensuring alignment with the values and preferences of diverse consumer segments in the dynamic organic food market.

7. NEW SCIENTIFIC ADDITION OF CURRENT RESEARCH

- 1) A systematic review was conducted to identify extrinsic factors which influence consumers' perceived trust in organic food. The following factors were identified as influencing the credibility of organic food: labeling, certification, place of purchase, country of origin, brand, price, communication, product category, packaging.
- 2) The assessment of various factors influencing credibility was employed with a choice-based conjoint method. The findings reveal that the country of origin, appearance, and packaging exert the most substantial influence on the perceived credibility of organic food. Additionally, price and the place of purchase were identified as factors that also impact consumer perceptions.
- 3) We observed some differences in the perceived credibility among Hungarian and Polish consumers concerning the country-of- origin attribute, namely Hungarian consumers were more in favor of the Hungarian rice, on the other hand Polish participants considered it less trustworthy, though still more credible than imported organic rice.
- 4) Our studies demonstrated that packaging plays a crucial role for the organic products' credibility. We investigated packaging-free products, which are gaining popularity among environmentally conscious consumers, and they appeared to be a preferable option compared to plastic packaging, although paper packaging garnered even greater credibility.
- 5) The findings of the conjoint research confirms that product type does affect credibility of organic food, namely brown rice appears to be more credible to consumers compared to white rice, as the natural appearance of brown rice lends it an organic and authentic look, potentially enhancing its perceived credibility.
- 6) With BDM method I found that consumers are willing to pay more for products with both biodegradable packaging and Product Environmental Footprint (PEF) labels,

indicating heightened trust and perceived sustainability. Information about microplastics' adverse environmental effects influenced consumer choices, particularly among females, higher-income individuals, and those with stronger environmental concerns.

- 7) We determined varied consumer responses, suggesting a more intricate relationship between color, trust, premiumness, and healthiness perceptions. Demographic factors such as age, gender, income, and residence areas influence WTP for organic foods with different color. Trust and perceived premiumness significantly influence WTP, highlighting their pivotal role in consumer valuation.

8. SUMMARY

Consumers' trust in food has become an important issue in today's society. As eating is a part of everyday life, consumers are increasingly interested in what they eat. In many cases, the quality of food can be easily assessed based on factors such as aroma, taste, and appearance. However, certain characteristics are not perceptible to consumers, such as pesticide residues or the presence of genetically modified ingredients. This is why it is challenging for consumers to trust organic food, and many are skeptical about whether a product is truly produced according to organic standards.

The goal of my PhD research is to explore the factors influencing the trust of consumers in organic products. These factors can be product-specific (e.g., packaging, price) or external (e.g., place of purchase). In the first part of the research, I conducted a literature review, which serves as an important starting point for the main sections of my study.

Beyond uncovering the factors affecting the credibility of organic foods, it is essential to quantify the importance of these factors. This ensures the practical usability of the research findings. In the first half of the research, I used conjoint analysis to determine the relative importance of these factors. In the second half, using experimental auction methods, I assessed how each factor influences consumers' willingness to pay.

In the initial phase of the research, I conducted a literature review and published a systematic review article based on its results (Nagy et al. 2022). Following the PRISMA guidelines, I identified 429 articles during my search, of which I selected 55 studies for further analysis. Bibliometric analysis using VOSViewer and CitNetExplorer software was conducted to assess the connections between the selected articles. The identified factors influencing the credibility of organic foods include labeling, certification, place of purchase, country of origin, brand, price, communication, product category, and packaging. Among these, labeling, certification,

and country of origin are well-researched factors in terms of credibility. The significance of the other identified factors is supported, yet further research is needed to evaluate their impact on consumer trust.

Based on the preliminary literature review, the importance of product attributes influencing credibility can be analyzed using conjoint analysis, a method relying on consumer surveys. Participants are asked to rank "cards" with different product combinations according to their importance. This allows determining the importance of individual attributes from the consumers' perspective and the utility of different levels of these attributes relative to each other.

For measuring the various external factors influencing the credibility of organic foods, we developed an online questionnaire based on the conjoint method, which was administered in Hungary and Poland. The Hungarian questionnaire was shared on social media platforms between October 14 and December 7, 2021, collecting 723 participants during this period, with 652 responses deemed analyzable. The Polish questionnaire was administered through the Prolific online platform on June 20-22, 2022, reaching 299 Polish respondents, with 290 responses available for analysis.

The results of the conjoint analysis indicate no significant differences in the behavior of Hungarian and Polish consumers. The most influential factors affecting trust were the type of packaging and the country of origin of the product.

To investigate the willingness to pay for products with different credibility-influencing attributes, we employed experimental auction methods. Previous studies have confirmed that this method can mitigate biases in willingness-to-pay responses obtained through theoretical questioning.

In the research, we examined the consumer reception of the Product Environmental Footprint (PEF) labeling, which will be introduced in the European Union, and its impact on the

credibility of organic foods. This is crucial for practical usability, as no such research has been conducted yet, and it provides valuable insights for food producers. Sustainability strongly influences the credibility of organic foods, making it important for producers to know whether it is worthwhile to include such logos on their products. Data collection took place between February and March 2023 in Budapest, with 105 participants at the Csörsz Street organic market, using the Becher-DeGroot-Marschak (BDM) experimental auction method.

Colors play a significant role in the presentation, packaging, and branding of organic food products, influencing consumers' overall perception of quality, credibility, and sustainability. Examining the impact of colors on organic foods using the experimental auction method can provide valuable insights into the cognitive and economic factors influencing consumer decision-making processes. The survey was conducted on October 9-10, 2023, at MATE Budai Campus, with 102 participants. The Becher-DeGroot-Marschak (BDM) experimental auction method was employed in this phase of the research.

Certification is crucial for building consumer trust, guaranteeing compliance with organic requirements. Research indicates that certifications from developed countries are more trusted than those from developing countries. Labeling is essential in informing consumers about organic product characteristics, transferring credence to search attributes. The importance of labeling lies in providing information on nutrition, origin, and ingredients, influencing perceived trust. Loose products like fruits and vegetables may lack labeling, raising consumer skepticism and requiring further research.

Credibility aspects of the country of origin align with certification findings, indicating low institutional trust in products from developing countries. Research on the place of purchase proves important but is incomplete. Brand and price impact organic food authenticity positively, but further research is needed on communication, product category, and packaging. Conjoint research reveals insights into packaging, product appearance, and country of origin's role.

Similarities in Hungarian and Polish responses suggest shared consumer habits, encouraging cross-cultural studies.

The study on willingness to pay (WTP) emphasizes the influence of information on microplastics, highlighting the need for targeted communication strategies. Environmentally friendly packaging and the Product Environmental Footprint (PEF) logo positively impact WTP and consumer trust. However, microplastics information treatments are more effective for female, higher-income, and environmentally conscious consumers. Tailored packaging color choices, aligned with consumer values, are crucial for organic food market success, emphasizing healthiness, sustainability, and premium quality based on target market preferences.

9. APPENDICES

A1. Bibliography

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A4. Survey of the conjoint analysis

Bio élelmiszerek hihetősége fogyasztói szemmel

Tisztelt Válaszadó!

A Magyar Agrár- és Élettudományi Egyetem (volt Szent István Egyetem) Élelmiszerlánc-management Tanszékének kutatóiként arra keressük a választ, hogy mik azok a tényezők, amelyek befolyásolják a bio élelmiszerek hihetőségét.

A kérdőív kitöltése kb. 10-15 percet vesz igénybe, kérjük, hogy akkor kezdje el kitölteni, amikor ez az időtartam rendelkezésére áll.

A válaszadás önkéntes és anonim. Kérjük, hogy csak 18 éven felüliek és a háztartásában az élelmiszer beszerzéséért legalább részben felelősek töltsék ki a kérdőívet.

Köszönjük, hogy válaszaival hozzájárul kutatásunkhoz!

Amennyiben a kutatással kapcsolatban bármilyen további kérdése lenne, kérjük lépjen kapcsolatba a kutatás vezetőivel:

Nagy László Bendegúz

Magyar Agrár- és Élettudományi Egyetem

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Élelmiszerlánc-management Tanszék

temesi.agoston@uni-mate.hu

Háztartásában ki felelős az élelmiszer-beszerzésért?

- Én
- Nem én
- Én is

Hozzájárul ahhoz, hogy az Ön által megadott válaszokat elemezzük?

Az adatkezelő kötelezettséget vállal arra, hogy szolgáltatásával kapcsolatos adatkezelése megfelel a hatályos jogszabályokban meghatározott rendelkezéseknek. A kérdőívben megadott adatokat bizalmasan kezeli, ezeket az információkat nem bocsátja harmadik fél rendelkezésére, az összesített eredmények publikálásának kivételével. A kérdőív kitöltése és a kutatásban való részvétel önkéntes. A kutatásban résztvevő személy tudatában van annak, hogy személyes információkat adhat meg, és saját maga felelős azért, hogy milyen és mennyi információt szolgáltat. A résztvevő személy tudatában van annak, hogy minden általa megadott információ hozzáférhető a kutatók számára, akik azokat adatelemzésnek vethetik alá.

- Hozzájárulok

Bio élelmiszer fogalma

A bio élelmiszer olyan gazdálkodási rendszer terméke, amelyben tartózkodnak az ember által készített műtrágyák, növényvédő- és rovarirtó szerek, növekedésszabályozók és takarmánykiegészítők alkalmazásától. Mindezek alternatívájaként a rendszer a vetésforgóra, az állati és növényi eredetű trágyákra, a kézi gyomirtásra és a kártevők elleni biológiai védekezésre támaszkodik.

Bio élelmiszer hihetősége

A kérdőív első szakaszában 16 egymást követő kérdésben termékeket fog látni. Kérem, minden esetben válassza ki azt, amelyikről Ön inkább úgy gondolja, hogy valóban bio előírások szerint lettek előállítva. Kérem, alaposan nézze meg az egyes termékeket, mivel azok különböző információkat tartalmaznak!

Vásárlás helyszíne

Az alábbi képeken látható, hogy az egyes hátterek milyen vásárlási helyszínt jelenítenek meg.

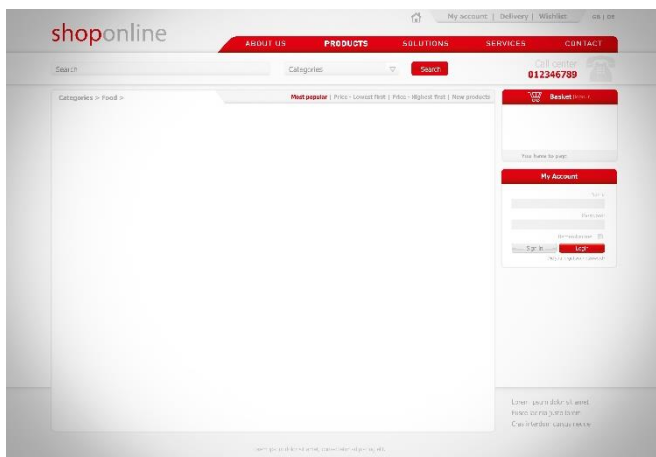
Biopiac



Szupermarket



Webshop



Csomagolás típusa

Az alábbi képeken látható, hogy milyen csomagolású termékeket jelenítünk meg a kérdőívben. A csomagolásmentes termék esetében a vásárló a saját, vagy a bolt által biztosított csomagolásba tudja kimérni a kívánt mennyiségű terméket.

Papír csomagolás



Műanyag csomagolás



Csomagolásmentes (lédig termék)

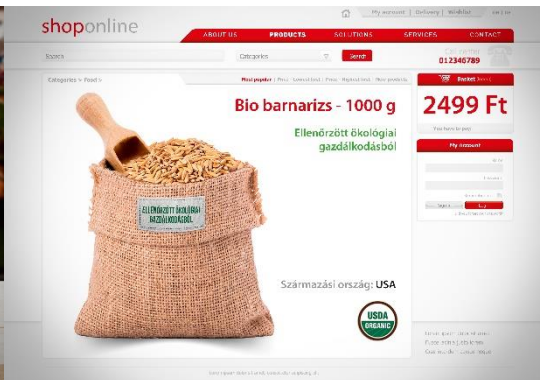


Bio élelmiszer hihetősége

177



312



A fenti két termék közül válassza ki annak a számát, amelyikben jobban megbízik, hogy valóban bio előírások szerint állították elő!

- 177
- 312
- Egyikben sem bízom meg jobban, mint a másikban

214



075



A fenti két termék közül válassza ki annak a számát, amelyikben jobban megbízik, hogy valóban bio előírások szerint állították elő!

- 214
- 075
- Egyikben sem bízom meg jobban, mint a másikban

043

162



A fenti két termék közül válassza ki annak a számát, amelyikben jobban megbízik, hogy valóban bio előírások szerint állították elő!

- 043
- 162
- Egyikben sem bízom meg jobban, mint a másikban

075

113



A fenti két termék közül válassza ki annak a számát, amelyikben jobban megbízik, hogy valóban bio előírások szerint állították elő!

- 075
- 113
- Egyikben sem bízom meg jobban, mint a másikban

314



181



A fenti két termék közül válassza ki annak a számát, amelyben jobban megbízik, hogy valóban bio előírások szerint állították elő!

- 314
- 181
- Egyikben sem bízom meg jobban, mint a másikban

064



095

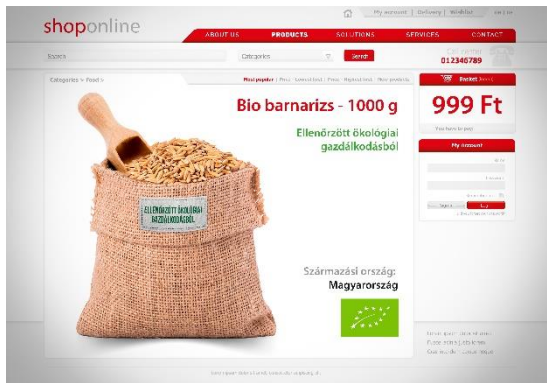


A fenti két termék közül válassza ki annak a számát, amelyben jobban megbízik, hogy valóban bio előírások szerint állították elő!

- 064
- 095
- Egyikben sem bízom meg jobban, mint a másikban

116

228



177



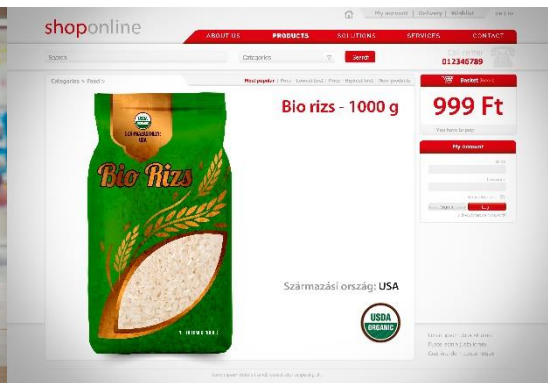
A fenti két termék közül válassza ki annak a számát, amelyben jobban megbízik, hogy valóban bio előírások szerint állították elő!

- 228
- 177
- Egyikben sem bízom meg jobban, mint a másikban

095



229



A fenti két termék közül válassza ki annak a számát, amelyben jobban megbízik, hogy valóban bio előírások szerint állították elő!

- 095
- 229
- Egyikben sem bízom meg jobban, mint a másikban

117

181

030



A fenti két termék közül válassza ki annak a számát, amelyikben jobban megbízik, hogy valóban bio előírások szerint állították elő!

- 181
- 030
- Egyikben sem bízom meg jobban, mint a másikban

113

043



A fenti két termék közül válassza ki annak a számát, amelyikben jobban megbízik, hogy valóban bio előírások szerint állították elő!

- 113
- 043
- Egyikben sem bízom meg jobban, mint a másikban

128



314



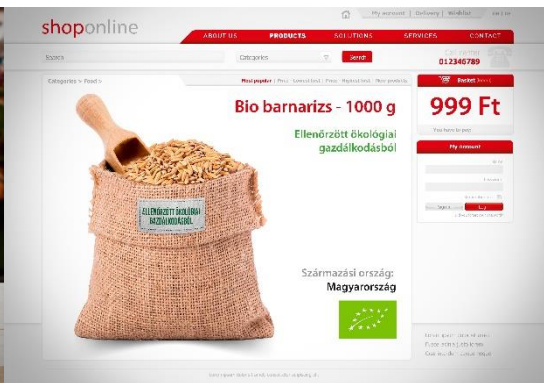
A fenti két termék közül válassza ki annak a számát, amelyikben jobban megbízik, hogy valóban bio előírások szerint állították elő!

- 128
- 314
- Egyikben sem bízom meg jobban, mint a másikban

162



228



A fenti két termék közül válassza ki annak a számát, amelyikben jobban megbízik, hogy valóban bio előírások szerint állították elő!

- 162
- 228
- Egyikben sem bízom meg jobban, mint a másikban

030

214

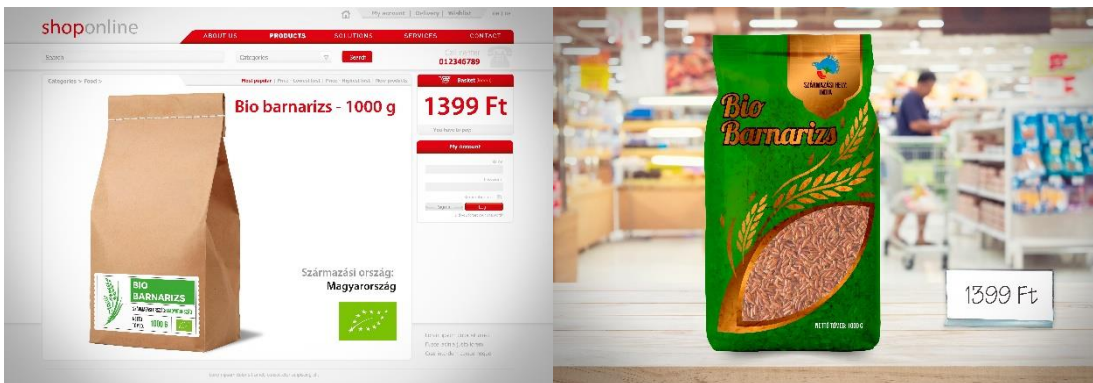


A fenti két termék közül válassza ki annak a számát, amelyikben jobban megbízik, hogy valóban bio előírások szerint állították elő!

- 030
- 214
- Egyikben sem bízom meg jobban, mint a másikban

257

064



A fenti két termék közül válassza ki annak a számát, amelyikben jobban megbízik, hogy valóban bio előírások szerint állították elő!

- 257
- 064
- Egyikben sem bízom meg jobban, mint a másikban

229

257

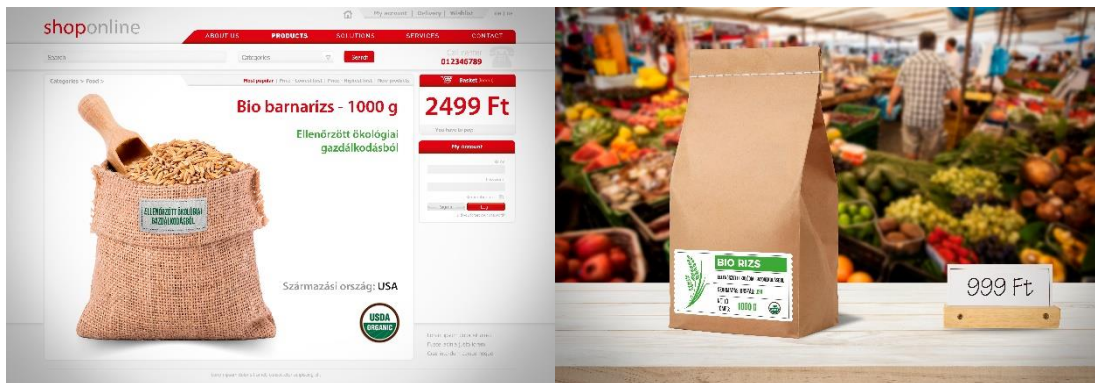


A fenti két termék közül válassza ki annak a számát, amelyben jobban megbízik, hogy valóban bio előírások szerint állították elő!

- 229
- 257
- Egyikben sem bízom meg jobban, mint a másikban

312

128



A fenti két termék közül válassza ki annak a számát, amelyben jobban megbízik, hogy valóban bio előírások szerint állították elő!

- 312
- 128
- Egyikben sem bízom meg jobban, mint a másikban

Vásárlói szokások, ismeretek

Milyen gyakran vásárol bio élelmiszereket?

- Soha / majdnem soha
- Kevesebb, mint havi egyszer
- Havi egyszer-kétszer
- Heti egyszer
- Heti több alkalommal

Kérem, jelölje be a következő skálákon, hogy mennyire ismeri az alábbi logót! (1- ez a logo teljesen ismeretlen számomra, 7- ezt a logót teljes mértékben ismerem)



1 – 2 – 3 – 4 – 5 – 6 – 7

Kérem, jelölje be a következő skálákon, hogy mennyire ismeri az alábbi logót! (1- ez a logo teljesen ismeretlen számomra, 7- ezt a logót teljes mértékben ismerem)



1 – 2 – 3 – 4 – 5 – 6 – 7

Kérem, jelölje be a következő skálákon, hogy mennyire ismeri az alábbi logót! (1- ez a logo teljesen ismeretlen számomra, 7- ezt a logót teljes mértékben ismerem)



1 – 2 – 3 – 4 – 5 – 6 – 7

Fogyasztói attitűdök

Kérem, jelölje be a következő skálákon, hogy mennyire ért egyet az egyes állításokkal! (1- egyáltalán nem értek egyet, 7- teljes mértékben egyetértek)

Megbízom a mezőgazdasági termelőkben, hogy a bio előírásokat betartva termelik meg a bio termékeket.

1 – 2 – 3 – 4 – 5 – 6 – 7

Megbízom az élelmiszer gyártókban, hogy a bio előírásokat betartva dolgozzák fel a bio termékeket.

1 – 2 – 3 – 4 – 5 – 6 – 7

Megbízom az élelmiszer kereskedőkben, hogy a bio előírásokat betartva forgalmazzák a bio termékeket.

1 – 2 – 3 – 4 – 5 – 6 – 7

Megbízom a hatóságokban és a tanúsító szervezetekben, hogy a bio előírásoknak való megfelelést hatékonyan ellenőrzik az élelmiszerlánc szereplőinél.

1 – 2 – 3 – 4 – 5 – 6 – 7

Olyan élelmiszereket próbálok választani, amelyek előállítása minimálisan terheli a környezetet.

1 – 2 – 3 – 4 – 5 – 6 – 7

Próbálok olyan élelmiszereket vásárolni, amik környezettudatos módon készültek.

1 – 2 – 3 – 4 – 5 – 6 – 7

Érdekelnek az általam vásárolt élelmiszerek elkészítésének körülményei.

1 – 2 – 3 – 4 – 5 – 6 – 7

Fontos, hogy tisztában legyünk az étkezési szokásaink környezeti hatásaival.

1 – 2 – 3 – 4 – 5 – 6 – 7

Ha van rá lehetőségem, mindig biotermesztésből származó élelmiszereket vásárllok.

1 – 2 – 3 – 4 – 5 – 6 – 7

Elfogadható többet fizetni ugyanazért az élelmiszerért, ha bio előírások szerint lett előállítva.

1 – 2 – 3 – 4 – 5 – 6 – 7

Hajlandó vagyok többet fizetni ugyanazért az élelmiszerért, ha bio előírások szerint lett előállítva.

1 – 2 – 3 – 4 – 5 – 6 – 7

Csak azokat a termékeket kellene importálnunk, amelyek hazánkban nem kaphatók.

1 – 2 – 3 – 4 – 5 – 6 – 7

A magyar termékeket részesítem előnyben mindenek előtt.

1 – 2 – 3 – 4 – 5 – 6 – 7

Egy igazi hazafinak mindig hazai előállítású élelmiszereket kellene vásárolnia.

1 – 2 – 3 – 4 – 5 – 6 – 7

A magyar embereknek nem kellene külföldi termékeket vásárolniuk, mivel ez árt a hazai gazdaságnak, és munkanélküliséghez vezet.

1 – 2 – 3 – 4 – 5 – 6 – 7

Habár többbe kerül, vásárlásaimmal szívesebben támogatom a hazai ipart.

1 – 2 – 3 – 4 – 5 – 6 – 7

Azok a magyarok felelősek honfitársaink munkahelyeinek elvesztéséért, akik más országban készült termékeket vásárolnak.

1 – 2 – 3 – 4 – 5 – 6 – 7

Demográfia

Az Ön neme

- Férfi
- Nő

Az Ön kora

- 18-25 év között
- 26-35 év között
- 36-45 év között
- 46-55 év között
- 56 éves vagy idősebb

Az Ön legmagasabb iskolai végzettsége

- 8 általános
- Szakiskola / szakmunkásképző
- Érettségi
- Felsőfokú végzettség

Az Ön lakóhelye

- Főváros
- Város
- Község

Milyennek ítéli meg háztartásának jövedelmi helyzetét?

- Nagyon szűkös
- Szűkös
- Átlagos
- Jó
- Nagyon jó

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