International Food Marketing Research Symposium 2022

San Antonio, Texas, USA June 14-16

PROCEEDINGS

International Food Marketing Research Symposium 2022

SCIENTIFIC PROGRAM

*Indicates that the extended abstract for this presentation is included in this proceedings volume

Tuesday, June 14

17.30-20.00	**Welcoming Reception and Registration** Guadalajara Grill, 301 South Alamo, San Antonio, Texas, USA Private dining room (2nd floor)

Wednesday, June 15

08:00-09.00 *Ballroom A&B*	**Registration**
08:30-9.00 *Pre-Function*	***Breakfast***
09.00-09.15 *Ballroom A&B*	**Opening session** ***Klaus G. Grunert***, Aarhus University, Aarhus, Denmark ***Oral Capps, Jr.***, Texas A&M University, College Station, Texas, USA ***Mark Lang***, University of Tampa, Tampa, Florida, USA
09.15-10.30 *Ballroom A&B*	**Session 1: Communication and customer value perception** **Perceived customer value and loyalty for different customer journey segments: Insights from a study of fresh pork meat in China** *Klaus G. Grunert, Maartje Mulders, Susanne Pedersen, Karen Brunsø* Aarhus University, Aarhus, Denmark *Yanfeng Zhou* Sun Yat-sen University, Guangzhou, China **Impact of an innovative video demonstration on perceptions and attitudes toward McDonald's product quality** *Mark Lang, Gary Beemer, Paula Fernandez Gaviria* The University of Tampa, Tampa, Florida, USA **Assessing the effectiveness of promotion campaigns for fluid milk** *Oral Capps, Joshua Strine* Texas A&M University, College Station, Texas, USA
10.30.11.00 *Pre-Function*	***Morning break***

11.00-12.30
Ballroom A&B

Session 2: Consumer behaviour and seafood

***Food-related consumer decision-making styles: Effect on food shopping behavior**
Kåre Skallerud
UiT—The Arctic University of Norway, Tromsø, Norway
John Armbrecht
University of Gothenburg, Gothenburg, Sweden

***Adventurous or neophobic? A cross-country exploration of food consumers**
Juliet Memery
Bournemouth University, Bournemouth, United Kingdom
Marina Tomić Maksan, Daniel Matulić, Željka Mesić
University of Zagreb, Zagreb, Croatia

International consumer segments based on food-related lifestyle and their preferences for value-added attributes of new food products
Violeta Stancu, Karen Brunsø, Rikke Nyland Christensen
Aarhus University, Aarhus, Denmark
Athanasios Krystallis
American College of Greece (ACG), Athens, Greece
Irene Peral
AZTI, Bizkaia, Spain
Sonia García Muñoz, Luis Guerrero
IRTA Monells, Girona, Spain

***We need more seafood influencers!**
Siril Alm
UiT The Arctic University of Norway, Tromsø, Norway

12.30-13.30
Minuet Room

Lunch

13.30-15.00
Ballroom A&B

Session 3: Sustainable consumption

***The necessity of climate-food labelling**
Brigitte Schober-Schmutz
Schloss Beilstein, Beilstein Württemberg, Germany

***Which factors influence consumers when assessing the trustworthiness of an organic food? Evidence from a choice based conjoint study**
László Bendegúz Nagy, Brigitta Plasek, Ágoston Temesi
Hungarian University of Agriculture and Life Sciences, Budapest, Hungary

***The effect of scientific and non-scientific information stimuli on consumers' attitudes and intention to eat insect proteins**
Toula Perrea, Elena Chatzopoulou, Athanasios Krystallis
The American College of Greece (ACG), Athens, Greece
Elena Markatou
The American Farm School (AFS), Greece, Thessaloniki, Greece

(Un)believably green: The role of credibility in sustainability perceptions of green packaging information
Milica Mladenovic, Hans van Trijp, Betina Piqueras-Fiszman
Wageningen University & Research, Wageningen, Netherlands

15.00-15.30 *Pre-Function*	***Afternoon break***

15.30-16.45

Session 4: Technology acceptance

***Sweets for my sweet, sugar for my honey: Anti-sugar message effect enhanced by feeling of guilt**
Marija Banovic
Aarhus University, Aarhus, Denmark

***The role of farmer's spatial proximity and consumer technology acceptance in food product purchase intention**
Ekaterina Salnikova, Marija Banovic
Aarhus University, Aarhus, Denmark

***Uncertainty and novel food processing technologies: What are the organic consumers' preferences?**
Busra Kilic, Emilia Cubero Dudinskaya, Migena Proi, Simona Naspetti, Raffaele Zanoli
Università Politecnica delle Marche, Ancona, Italy

16.45-17.30

Session 5: Research methodology

Predicting food consumer and customer behavior
Ágoston Temesi, Zoltan Lakner
Hungarian University of Agriculture and Life Sciences, Budapest, Hungary
Karen Brunsø, Klaus G. Grunert
Aarhus University, Aarhus, Denmark
David Dean
Lincoln University, Lincoln, New Zealand
Mark Lang
The University of Tampa, Tampa, Florida, USA
Juliet Memery
Bournemouth University Business School, Bournemouth, United Kingdom

***Assessing consumers' survey engagement through ordering and time effects in discrete choice experiments: a hybrid model approach**
Emilia Cubero Dudinskaya, Simona Naspetti, Raffaele Zanoli
Universita' Politecnica delle Marche, Ancona, Italy

Thursday, June 16

09.00-10.30
Ballroom A&B

Session 6: Values, identities, and ethics

Relevance of multiple self-identities in consumer food-related behaviours across the consumption-cycle
Catalin Stancu, Liisa Lähteenmäki, Alice Grønhøj
Aarhus University, Aarhus, Denmark

Differences in food related lifestyle across America's great socio-political divide
Morten Høst Haugaard, Klaus G. Grunert, Karen Brunsø
Aarhus University, Aarhus, Denmark
Mark Lang
University of Tampa, Tampa, Florida, USA

***Why consumers choose palm oil free food products? Examining ethical consumer behaviour using the theory of planned behaviour**
Brigitta Plasek, Zoltán Lakner, Ágoston Temesi
Hungarian University of Agriculture and Life Sciences, Budapest, Hungary

10.30-11.00
Pre-Function

Coffee break (Location: Pre-Function)

11.00-12.30
Ballroom A&B

Session 7: Farming, production, and pricing

Upgrading smallholder producer groups to meet food quality standards in premium markets: Case studies in southern Myanmar
Randel Esnard, Michael Lyne, Kevin Old, Ani Kartikasari
Lincoln University, Christchurch, New Zealand

A market-oriented cropping system approach to improve the competitiveness of Texas tomatoes
Samuel Zapata, Xavier Villavicencio
Texas A&M University, Weslaco, Texas, USA

12.30-13.30
Minuet Room

Lunch

13.30-15.00
Ballroom A&B

Session 8: Retailing and in-store behaviour

***Food retailers' motivation and barriers for donating surplus food to schools**
Siril Alm
UiT - The Artic University of Norway, Tromsø, Norway
Nofima, Tromsø, Norway

The effect of bottom-up factors on consumers' visual attention and choices
Migena Proi, Emilia Cubero Dudinskaya, Emel Ozturk, Simona Naspetti, Raffaele Zanoli
UNIVPM, Ancona, Italy

Student perceptions of the food retailing industry
Renee Hughner, Mark Manfredo, Steven Vickner
Arizona State University, Mesa, Arizona, USA
Claudia Dumitrescu
Central Washington University, Des Moines, Washington, USA

15.00-15.30
Pre-Function

Afternoon break

15.30-16.45
Ballroom A&B

Session 9: Local food, origin branding and food choice motives

***Exploring consumer preferences for local fresh produce foods with added value attributes**
Petjon Ballco, Azucena Gracia, Miguel Gomez
Universidad de Zaragoza, Zaragoza, Spain
Cornell University, Ithaca, New York, USA
Instituto Agroalimentario de Aragón, Zaragoza, Spain
Agroalimentaria de Aragón (CITA), Zaragoza, Spain

***A cross-national comparison of fresh fruit choice motives and consumption patterns**
Lijun Angelia Chen, Lisa House
University of Florida, Gainesville, Florida, USA

***Profiling wine consumers and tourists by cultural capital and willingness to pay: The case of PDO Wines**
Jiří Zelený, Dávid Melas, Petr Studnička, Jan Hán
Institute of Hospitality Management and Economics, Prague, Czech Republic

16.45-17.00
Ballroom A&B

Closing session

Karen Brunsø
Aarhus University, Aarhus, Denmark
Jiří Zelený
Institute of Hospitality Management and Economics, Prague, Czech Republic

18.00-21.00	**Closing Reception and Awards** The Texas Ranger Museum at the Buckhorn Saloon & Museum, 318 E Houston St, San Antonio, Texas, USA 18.00 Doors open 18.30 Reception begins and dinner is served

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We need more seafood influencers!

Siril Alm
School of business and economics by UiT The arctic university of Norway, Tromsoe, Norway

Abstract

Introduction

Despite the fact that people have become more concerned with having a healthy diet, seafood consumption has been declining for several years - especially among the young population. The health authorities recommend eating seafood for dinner two to three times a week, ie 300 to 450 grams of fish, to provide a basis for good health [1]. Norwegian statistics indicates that it is the oldest consumers who eat the most seafood, while 18 to 34-year-olds ate 46 percent less seafood from 2012 to 2017 [2]. If this trend continues, we will hardly have seafood eaters in the future. We see similar statistics in other European countries.

The young adults are especially important segment for seafood producers, because they are in a phase of life where they often break with their parents' eating habits and form their own eating habits. This will in turn affect their children’s diet. If the seafood industry manages to meet this target group with good measures, we may be able to turn the statistics around.

Thus, the aim of this study was to explore what motivate and prevent young adults from eating more seafood for dinner.

Method

We conducted in depth interviews with 26 Norwegian consumers, age 18-35. The participants were recruited by an advertisement on facbook and Instagram. The ads had a link to a short questionnaire which asked for demographic information. 40 of the 86 informants were selected to give a most possible varied sample. Thus all male

and participants with children where invited, while others were chosen by geography. The final sample consisted mostly of single women in their 20ties, without children and higher education level. They all were asked to photograph their dinner plates for two weeks. These were then discussed in individual interviews conducted by and recorded by the software Teams, and transcribed by a professional agency. Transcripts and documents where content analyzed by the software NVivo [3].

To get an impression of how present seafood actors are on digital platforms, we also explored how many seafood recipes are found on websites and social media that the participants told us they used for inspiration for cooking.

Results

Most participants wanted to eat more seafood, even though the number of seafood dinners varied from once a month to six times a week. These dishes usually consisted of salmon or trout, which were rarely cooked the same way as their parents served in their childhood. Dishes such as poke bowl and sushi were described as exciting dishes that digital platforms, using delicate images, had inspired them to make. This was also reflected in the 367 photographs that were submitted. 30 percent of the photos contained seafood and over half were with salmon or trout.

Digital sources of inspiration

The participants in the study said that they often used social media and influencers on Instagram, Pinterest, Youtube, and blogs to get inspiration to try new dishes. We asked them to send us names and internet links to the sources that they knew for sure had inspired them to make new dinner dishes. A closer examination of these sources, which were 18 websites, 8 Instagram profiles and 9 blogs, showed that these contained almost 30,000 dinner recipes, of which 21 percent contained seafood - mainly with salmon.

As a rule, participants searched for recipes via Google, which often led them to various websites. It also happened that they went directly to the website because they knew they would find good recipes there. The most used website (mentioned by 14 participants)

was matprat.no, which promotes eggs and meat on behalf of the Norwegian agricultural industry.

Only 3 participants had taken inspiration from godfisk.no, which is the seafood industry's marketing channel. Some had never heard of godfisk.no. Of the nine blogs we researched, four were vegetarian blogs. We could see the same trend from the eight Instagram accounts. These were often sponsored by food producers of, for example, vegetarian food products. The bloggers did not list any seafood actors as sponsors or partners.

Vegetarian trend

Several of the participants had either been vegetarians or wanted to eat more vegetarian. There were mainly two reasons why they stopped eating only vegetarian. Three of the women had recently moved together with their boyfriends and experienced that their partner wanted to eat meat. The compromise was then to have a lot of vegetables together with the meat. Another explanation was that they wanted to eat more variety by including animal foods in their diet.

Most participants wanted to cut back on red meat and eat foods that are more sustainable, such as vegetables, chickpeas and beans. They were particularly interested in eating less red meat, due to animal welfare, environmental impact and their own health. There were few who replaced meat with fish, but switched to a more vegetarian diet. Meat was something they indulged when barbequing, ate at a restaurants and bought take-away. With the exception of sushi, seafood was rarely eaten on these occasions. Wild-caught seafood such as cod was considered a sustainable alternative, and something they could eat more of.

Exciting cod dishes

Several of the participants said that they had traveled a lot and lived abroad. They were therefore inspired by the dishes and ingredients of other cultures that they had tasted on these journeys. Typical exciting dishes were inspired by Asian, Korean, Indian, Mexican or Italian food traditions, and the photographs confirmed this. For example, three had bought a pizza oven and some had prepared

unusual foods such as horse meat, Jack fruit, seaweed and kelp for dinner.

There were several who said that they wanted to learn how to make more dishes with white fish and especially cod. Several was used to eat boiled cod, and they did not know how to cook cod in a more tasty and exciting way than their parents had made.

Several of the participants said that they often forgot to make seafood. When we asked if they could imagine having seafood with the vegetarian dishes, most people were positive about it. They used blogs and influencers to learn how to make vegetarian dishes, and therefore had not considered seafood as an alternative.

Conclusion

Our findings indicate that the seafood industry can benefit from getting online - in the right channels. By collaborating with influencers and websites that inspire young adults to create new dinner dishes, especially with white fish, you can market seafood as exciting, sustainable and tasty - as part of a healthy and active lifestyle.

References

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Food retailers’ motivation and barriers for donating surplus food to schools

Siril Alm
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Abstract

Introduction

The word is facing a food crisis that could affect millions of people worldwide. The newest reports estimate that that 811 million people go to bed hungry every night, and that the number of those facing acute food insecurity has more than doubled since 2019- from 135 million to 276 million [1]. Conflicts are the main driver for hunger. The war in Ukraine illustrates how conflicts force people out of their homes and wipes out their sources of income. The climate changes destroy lives, crops and livelihoods, weaking people’s ability to feed themselves. The economic consequences of the COVID-19 pandemic are driving hunger to unprecedented levels as well. Prices for food is increasing, and we all have to use more of the household income to put food on the table.

This situation is in large contrast to all the food which are wasted globally. About one third of all food produced for human consumption is wasted [2]. Food waste does not only impact the environment negatively, but it also represents loss of recourses which could limit hunger. Food waste represents one of our most prevalent global challenges we have today [3, 4], and halving food waste by year 2030 is one of the most important goals of the UN [5].

Norway is a developed country in Northern-Europe. According to the government, Norway has eradicated hunger, and food security is generally good. However, the eight food banks, which distribute surplus food to people in need, recently reported an all-time high for the number of recipients of food [6]. Food distribution have increased by 70 percent since 2020, and they are asking for more

food donations from the food industry. Donation of surplus food from the food industry to charity is one of the main strategies to reduce food waste [7].

Norway is a long country with a scattered population. This is the main explanation to why Norway is among the countries in Europe with the most grocery stores per capita [8]. Most of these stores are small stores, which gives consumers access to groceries independently if the live in central areas or districts. This is one of the explanations to why grocery stores represents the third sector which waste most food after private households and food industry [9].

However, grocery stores in rural areas, especially those in the northern regions, do not have food banks or other charity organizations which can redistribute surplus food to people in need. Tromsø Matsentral, which is Northern-Norway's largest food bank, are not able to redistribute all surplus food which is available in the region to their users [10]. In addition, the region has less agriculture which may use surplus food for animal feed, than other regions have.

This situation have given Tromsø municipality the opportunity to test a new redistribution model of surplus foods [10]. They use surplus food from local stores to prepare and serve for their children at the after-school program for children in first to fourth grade. These children come from families with all kinds of socioeconomical background. One of the primary schools in this municipality began this model in 2013, and more schools want to adopt this model. The intention is to improve the schools food offer, give all children equal starting point for learning and health, and teach the future generation to limit food waste.

To make the municipality's project successful, they are dependent of the retailer's goodwill to have access to their surplus foods. No study that we know of have investigated which attitudes retailers may have to donate surplus foods to public organizations, because such model implies that schools receive free food and may buy less food from the retailers. Thus, limiting the retailers sales.

The aim of this research project was to explore the perceived motivations and barriers the three main food chains in Norway have,

as well as other stakeholders, to donate and receive surplus food to primary schools.

Method

We conducted in depth interviews with 13 persons from private and public organizations. The participants were strategically recruited, by how relevant they were the project. Thus, we interviewed merchants, wholesaler, distributers and food producers which potentially could donate food to the municipality's schools, as well as the local food bank to explore a possible collaboration with the municipality. Employees at schools responsible for the food offer were interviewed as well.

I addition, we also analyzed relevant regulations, reports, guidelines and websites illuminate important factors that may influence the actors' motivations and barriers. All interviews were conducted by and recorded by the software Teams, and transcribed by a professional agency. Transcripts and documents where content analyzed by the software NVivo [11].

Results

Findings on the drivers for food donation, indicate that two of the three retail chains did not differentiate between whether the surplus food goes to charity or public schools. They did not see any economic benefit to choose one over the other. Three of the informants emphasized the importance of educating children, the consumers of the future, to reduce food waste from private homes and daring them to eat less "perfect" food with spots etc. Thus, inviting them to prepare surplus food at school, may teach them to evaluate the food security of food, and make better use of the food, such as making French toast of dried bread.

One interesting finding was that the wholesalers have their own expiration date, which implied that food cannot be commercially sold in stores but could be redistributed to charity or schools with a longer expiration date than food donated from grocery stores. Such donations would be of larger quantities than food donations from groceries.

When discussing how we may prevent schools and charity organisations to compete for the same surplus foods one of the retail chains suggested that schools could buy surplus foods with 40-50% discount. In that way carity organisations could receive whatever is left. The local food bank emphasised that they did not have enough recourses to redistribute large packagings for commercial kitchens, such as 5 kilograms with cheese, because their users needed consume packings. Such products would fit better to the use of schools.

The main barriers for donating food to schools was the retailer’s hesitation to invite one more actor to handle the surplus foods. The collaboration with the local food bank was perceived as efficient, because they collected food on a regular basis from the groceries and wholesalers. They also claimed that selling surplus food themselves at their discount counters was considered more profitable than donations. One of the retailers expressed that they would prioritize donation to charity over schools, because it is not the retialers obligations to support public organisations which had their own financial system.

One interesting finding was that neither of the merchants, wholesaler, distributers and food producers knew that they could get a VAT exemption when they donated food to charity, but not to public actors, such as schools. In their consideration, it was all loss, and registered as waste in their systems.

Interviews with employees at the schools revealed several barriers, such as limited food knowledge and motivation amongst those preparing food, as well as difficulties picking up food from the groceries and storing food, especially freezing food at the schools.

The document analysis revealed that the food banks statutes does

not allow for collaboration with schools on a permanent basis. Thus, changes are needed if schools and food banks want to collaborate.

References

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8

Exploring consumer preferences for local fresh produce foods with added value attributes

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Abstract

1. Introduction

Local fresh produce consumption has become a popular growing trend as consumers perceive them to be fresher and more sustainable due to the short transport distances and lower greenhouse gas emissions while promoting biodiversity conservation (Richards et al., 2017). Even though this increase in demand may be seen as a new market opportunity for local fresh produce growers, in addition to the many challenges in a highly competitive food market, they should also consider to truly differentiate their products with respect to conventional varieties in order to sustain higher prices. To start this new differentiated marketing strategy, fresh produce growers need to know the value consumers place on their locally grown products, and the willingness to pay (WTP) for their characteristics. Measuring WTP is key for the design of appropriate price strategies. This research aims to study consumers' acceptance of a locally grown potato and measure the WTP for its most important product characteristics. The unique characteristic of this potato is that it does not burn and does not absorb oil during frying, and does not dissolve or harden thus absorbing all the flavors of the stew.

To reach this objective, a choice experiment (CE) valuation method is

used with different levels of the three most important potato characteristics: price, presentation (washed/unwashed), and product origin (locally- or not locally grown). The CE was applied due to its ability to value multiple attributes simultaneously, its consistency with the random utility theory (McFadden, 1994), and its food choice process is similar with a real shopping decision (Adamowicz et al., 1998). The CE allows us to also estimate the attribute non-attendance (ANA). In the analysis of CEs, it is commonly assumed that respondents pay attention to all the proposed attributes presented to them. However, studies have shown that during experiments consumers may not attend to all of the attribute information presented to them due to different food product evaluation strategies and other factors that are unknown to the researcher (Caputo et al., 2017; Van Loo et al., 2018). This heuristic decision is referred to as ANA in the choice modeling literature. Results from previous applications indicate that not considering ANA may affect model choice outcomes and lead to biased estimates on preferences (Hensher et al., 2012). Therefore, to account for all aspects of the decision-making process we also incorporate ANA into our analysis.

2. Materials and Methods

2.1. Data collection

The data were obtained from an artefactual experiment with actual shoppers conducted in the largest town in the producing region (Northeast Spain) in spring 2018. A total of 13 sessions with around 12 participants were carried out. The population consists of people living in the town who are 18 years of age or older and who were the primary food purchases and cooks in the household. The total sample consisted of 151 participants.

2.2. Experimental design and procedures

The experimental design consisted of three stages. In the first stage, respondents visually inspected and evaluated various unlabeled potato packages with different characteristics and prices (washed/unwashed, size, etc.) as in a real supermarket. In the second stage, respondents evaluated a choice experiment with three alternatives (A, B, and no-buy) based on the extrinsic information:

price, presentation (washed/unwashed), and product origin (locally or non-locally grown). These attributes and their levels were selected based on market research across various supermarkets in the period of that the research was conducted (Table 1). In the third stage, respondents filled out a questionnaire reporting purchase and consumption behaviors and their socio-demographic characteristics.

Table 1. Potatoes attributes and levels

Attributes	Levels
Price (Euro/kg)	0.8 €/kg, 1.0 €/kg, 1.2 €/kg and 1.4 €/kg
Presentation	“Washed” “Unwashed”
Origin of production	“Locally grown” “Non- locally grown”

Upon arrival, participants received information consisting of the main purpose of the experiment, were familiarized with the procedures, and signed an informed consent of participation. An identification number was assigned to each respondent to guarantee anonymity. First, they inspect different unlabeled potatoes as sold in the supermarket with different characteristics (origin of production, presentation (washed/unwashed), different sizes, etc.). To get a better visualization of the potatoes inside the package, we provided small bulk displays of the types of potatoes used in the study on a counter near each package. Then, participants received a full description of the attributes and levels in the experiment to ensure that they were aware of the alternative products to be selected in the choice tasks. In addition, participants read a cheap talk script to encourage and motivate respondents to reveal their actual preferences and to minimize the possible hypothetical bias. Participants were asked to make eight choices among alternative potatoes or the non-buy option. At the end of all choice tasks, participants were asked to indicate which of the attributes they considered when making their choices. This allowed us to estimate the self-reported serial ANA. Finally, participants filled out a questionnaire on their purchase and consumption habits of potatoes and selected socio-demographic characteristics. After completing the

questionnaire, they were thanked for their participation and debriefed.

2.3. Model and econometric specifications

The data gathered in the experiment were modelled based on the Lancastrian consumer theory of utility maximization framework (Lancaster, 1966), which proposes that the total utility of a good can be decomposed into separate utilities for their attributes. The researcher observes some attributes of the alternatives, but some components of the individual utility are unobservable and are treated as stochastic (McFadden, 1974). Thus, the utility is taken as a random variable from the nth individual facing a choice among j alternatives within choice set J in each of t choice occasions. Our utility function includes as explanatory variables the product attributes and levels in the choice experiment and the alternative specific constant (α), representing alternatives A and B. This is specified as follows:

(1)

where n is the number of respondents, j represents the alternatives in the choice sets (A and B, and the non-buying option) and t being the number of choice sets. The constant α represents the alternative specific constant (ASC), coded as a dummy variable taking the value of 1 for alternative A and B and 0 for the non-buy option. The price was defined as continuous by the price levels in the design (Table 1). The other two variables (UNWASHED and LOCAL) were defined as a dummies, where 1 indicates that the product is unwashed or locally grown in the region and 0 otherwise. Finally, the is an observed random term that is distributed following an extreme value type (Gumbel) distribution, i.i.d. over alternatives, and it is independent of β and the attributes.

The assumption of homogenous consumers' preferences had been found commonly not appropriate in most empirical choice experiment studies. Therefore, heterogeneous preferences were assumed in this empirical application and an Error Component Random Parameters Logit Model with Correlated errors (ECRPL-correlated) was specified. Two approaches have been used in the

literature to capture attribute non-attendance: respondent self-reported non-attendance and analytical (or inferred) non-attendance (Hess and Hensher, 2013). In our study, respondents were asked at the end of all choice tasks to indicate which of the attributes they took into account when making their choices. Therefore, this self-reported serial ANA was introduced in our specification model. Considering the above, we estimated two models. Model 1is the baseline model that does not consider the ANA, and Model 2 is the standard model used for the self-reported ANA. In this model, the ignored attribute parameters were restricted to zero assuming that respondents ignored the attribute because they have a zero WTP for that attribute. The model specifications were estimated using NLOGIT 5.0.

3. Results

Table 2 presents the estimation results for the different specifications. As expected, for both specifications the ASC is positive and significant indicating that consumers' utility increased by choosing any alternative than the non-buy option. Further, as expected the price variable is negative and statistically significant in accordance with the economic theory. In both specifications, preferences for the two non-monetary variables were heterogeneous. In addition, the standard deviations of the latent random effects were statistically significant indicating that the error associated with alternatives different from the non-buy option was statistically significant. Results indicate that model 2 presented a better statistical fit because the absolute value of the log-likelihood and the AIC/N was lower and the adjusted R2 was higher in this model.

In both models, the parameter estimates for the UNWASHED variable were negative and statistically significant, while vice versa for the LOCAL variable. These results indicate that the utility for the unwashed potatoes was lower than for the washed ones while the utility for the locally-grown potatoes was higher than for their non-local counterparts. The results from the WTP estimates were also in line with the aforementioned results. More precisely, consumers' WTP increased for locally compared to non-locally produced potatoes in both models. Most consumers preferred the washed over the unwashed potatoes. However, they were willing to buy unwashed

potatoes if they were sold 20% cheaper than the washed ones.

Table 2. Results from the ECRPL-CORR for models

Parameters estimates	Model 1	Model 2
ASC	4.84*** (9.34)	5.83*** (8.51)
Price	– 3.01*** (–13.64)	– 4.94*** (–14.19)
UnWashed	– 0.55*** (–3.06)	– 0.99*** (– 4.75)
Local	1.84*** (11.45)	2.22*** (12.10)
Standard deviation of parameters		
UnWashed	1.46*** (8.6)	1.44*** (7.14)
Local	1.16*** (5.09)	0.98*** (2.77)
Standard deviation of latent random effects	2.35*** (5.14)	4.29*** (8.64)
Log L	– 659.21	– 614.61
Adj.R2	0.397	0.438
AIC/N	1.334	1.245
Marginal WTP estimates		
UnWashed	– 0.18*** (-2.96)	– 0.20*** (– 4.54)
Local	0.61*** (11.02)	0.45*** (10.50)

Notes: ***, **, * indicate significance at 1%, 5%, 10% levels, respectively. z-values are in parentheses.

Regarding the ANA, the preliminary results suggested that only 24% of the respondents attended the three attributes in the choice task (Table 3).

Table 3. Number and attributes ignored by the respondents in the experiment

Number of attributes ignored	% Respondents	Attributes ignored	% Respon
0	24.0	Price	56.0
1	33.6	Presentation	39.2

2	42.4	Local	23.2
3	0.0		

The whole sample attended at least one of the attributes while 42.4% considered only one of them. The most ignored attribute was price (56%) followed by the presentation (washed/unwashed) (39.2%). These preliminary results indicate that ANA is important to and should not be ignored in the model estimates.

4. Conclusions

Overall, we found consistent economic results regardless of the specified model. The results from Model 2, which exhibited the best fit can be considered important information for local producers and stakeholders. Consumers were willing to pay 0.45 € to buy a kilogram of local potatoes instead of a kilo of non-local ones. Most consumers would only buy unwashed potatoes when there is a price discount of at least 0.20€ per kilo. The results highlight growing opportunities for selling local foods, but the success depends on how they are marketed. This knowledge can help local growers and stakeholders design successful marketing strategies and pricing policies.

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3

Sweets for my sweet, sugar for my honey:Anti-sugar message effect enhanced by feeling of guilt

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Abstract

Abstract

There is still no consistent indication if emphasizing on positive or negative health effects in a persuasive message would be most effective. Whereas initial framing research measured the attitudinal and behavior outcomes to be the determining factor, little attention has been oriented towards how individual differences and feelings of guilt can further motivate consumers to follow a recommended course of action. In this study, we focus on the negative appeals and how perceptions evoked by the latter could be further stimulated by feelings of guilt towards more positive outcomes. The result of this study shows that feelings of guilt moderate the effect that the message appeals and health perceptions have on consumers' subsequent attitudes. Guilt enhances consumers' attitudes in such a way that this effect is particularly powerful when message appeal elicits higher levels of health perceptions. Using anti-sugar messages for alternative ingredients, such as sweet proteins, by describing the negative health outcomes of adhering certain behavior, such as being overweight or obese, is more effective among those consumers with higher feelings of guilt.

Introduction

The excessive sugar consumption is consistently, positively related to overweight and obesity, which joint occurrence rose in the recent

years (EC, 2020; EUROSTAT, 2021b). In contrast, the overall incidence of tobacco smoking decreased over the same period (EUROSTAT, 2021a). Sugar is often compared to tobacco, and lessons learned from strategies used for tobacco such as health messages should be also considered in sugar-based products. However, the sugar reduction would require changes both on the product and the consumer level. Recently, healthy alternative solutions have appeared on the market in form of sweet proteins as another approach to product reformulations and sugar reduction among consumers (Banovic, 2021). Accordingly, anti-sugar messages on such new foods could be proposed as a health intervention to discourage sugar consumption, and at the same time introduce new healthy ingredients, such as sweet protein. Nevertheless, little is known about the efficacy of health messages for prompting consumers to accept these new sweet proteins as sugar's healthy equivalents.

Health message framing plays an important part in food marketing and communication (e.g. Banovic & Otterbring, 2021). Prior research has shown support for the use of both negative and positive health messages frames when targeting preventive behaviors such as eating healthy foods or reducing unhealthy behavior with increased behavior change self-efficacy and improved behavioral outcomes (Gallagher & Updegraff, 2012). However, even though negative messages prevail, there are still no clear guidelines to the question of when to emphasize on positive or negative health outcomes in a persuasive message (Cesario, Corker, & Jelinek, 2013).

Guilt is an emotion often associated with eating unhealthy food, born when consumers feel responsible for bringing a negative health outcome through their consumption behavior and this negative feeling may lead them to participate in activities intended to mend the previous actions (Dillard, Kim, & Li, 2018). Thus, when message emphasizing on the negative health outcomes and evoke negative (versus negative) health perceptions this could further trigger feelings of guilt and likely to enhance the consumers' attitudes. As a result, guilt can further motivate consumers to follow a recommended course of action (Boudewyns, Turner, & Paquin, 2013).

Background

The health messages, such as anti-sugar messages, which communicate negative health-related outcomes coupled with healthy (vs. unhealthy) information on the product, may generate health perceptions that can be moderated by consumers' own feeling of guilt on subsequent product evaluations (Dillard et al., 2018). Thus, the main goal of this research is to examine whether anti-sugar messages depicting negative health outcomes, that are reinforced with healthy (vs. unhealthy) information on possible substitutes (i.e. sweet proteins) affect consumers' health perceptions, and, in turn, are moderated by the individual feeling of guilt, that enhance the effect of message appeals on subsequent attitudes. The guilt is defined as an activation state that relates to one's behavior where the focus is on the assessment of a specific behavior or evaluation that might lead to a failure, which can elicit some corrective action to make up for this failure (Conradt et al., 2007).

Method

In an experimental study, we investigated the role of anti-sugar messages and guilt has on acceptance of novel sugar substitutes, i.e. sweet proteins. Specifically, we examined whether anti-sugar messages related to sweet proteins depicted as sugar reducers (i.e. healthy) versus alternatives to existing sweeteners (i.e. unhealthy) would lead to more favorable product attitudes, and whether such expected effect would be meditated by health perceptions and moderated by guilt evoked by the product evaluation. A total of 1028 consumers from Denmark were randomly assigned to one of the two experimental conditions (i.e., healthy – sugar reducer N=521; unhealthy - sweetener N=507). Previous manipulation checks confirmed significant differences between the message treatments ($p < 0.001$), and that participants on average perceived sweet proteins' as healthier when depicted as sugar reducers (versus as sweeteners).

After reading the introduction message, participants were randomly assigned to the healthy vs. unhealthy condition where they received

separate messages. Subsequently, they stated their health perceptions with regards to sweet proteins that were measured on two items depicting if the product would be: “low calorie” and “slimming” using a 7-point scale (1-not at all; 7-exteremly). Next, they specified how they generally feel when eating more, something fatting or high caloric food on a “guilt scale” (Conradt et al., 2007). Finally, participants rated their attitude towards the sweet proteins, using three 7-point semantic differential scales (bad-good, negative-positive, and unfavorable-favorable).

Results

The items measuring health perceptions, guilt, and attitudes were checked for reliability, and all showed satisfactory Cronbach’s alphas (for health perceptions: $\alpha = 0.88$; for guilt: $\alpha = 0.90$; for product attitudes: $\alpha = 0.97$). Generally, the results indicated that the healthy condition (i.e. sweet proteins as sugar reducer) elicited increased health perceptions ($t=3.28$, $p < 0.001$) when compared to the unhealthy condition (i.e. sweet proteins as sweeteners). To examine the moderating effect of guilt and whether the effect of experimental conditions on attitudes would be mediated by health perceptions, we conducted a moderated mediation analysis (PROCESS Model 14; Hayes, 2022). Experimental condition was a predictor, participants’ health perceptions were the mediator, while guilt (continuous) served as the moderator, and product attitudes acted as the dependent variable. As expected, we found that the effect of experimental conditions on attitudes was completely mediated by health perceptions (main effect: $p < 0.001$) and moderated by guilt ($p < 0.001$). We also found interaction effect of health perceptions and guilt on attitudes ($p < 0.001$). The index of moderated mediation was likewise significant (Index: -0.02, 95% CI = $[-0.04, -0.01]$). Participants had more positive attitudes towards the sweet proteins in the healthy (vs. unhealthy) condition and participants with a higher vs. lower level of guilt had more positive attitudes towards the product. Figure 1 shows that participants health perceptions were boosted by the feeling of guilt, which in turn enhanced the effect of message appeals on attitudes towards sweet proteins. This effect was particularly distinct among those participants with higher level of guilt.

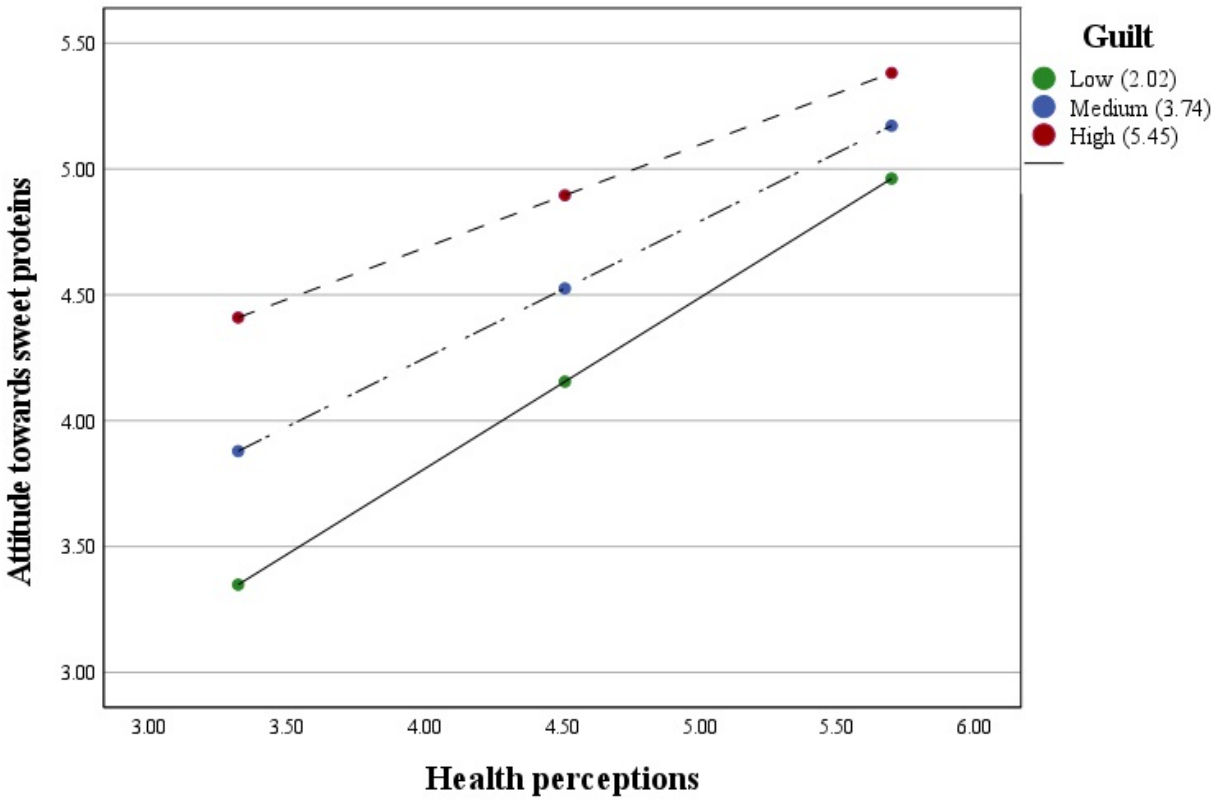

Figure 1. Effect of health perceptions and guilt on attitude towards sweet proteins.

Conclusion

The results show that using anti-sugar messages with evoking guilt can be used in food marketing and health communication as a way to encourage more positive attitudinal and behavioral outcomes. The negative framing of health communication related to sugar, such as using description that sugar provokes overweight and obesity, coupled with possible healthy solutions as sweet proteins, can be used to promote products that could induce more healthy dietary practices. However, this strategy seems to be more effective among people who are more interested in assessing the specific behavior which may lead to a failure, and thus attempt to produce some corrective actions to correct for the failure. Indeed, in our sample, those participants with higher body max index (i.e., obese;

BMI > 30) had a significantly higher feeling of guilt then when compared to those with normal weight (p = 0.008). From a marketing perspective, these findings indicate that could be more feasible to target consumers using negative health message framing and showing negative outcomes of sugar consumption, while at the same time providing alternatives (i.e. sweet proteins), as this could especially benefit those vulnerable consumers who are in dare need of changing their sugar intake.

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6

Understanding the link between knowledge sharing and sustainable performance of micro-dairy firms: multiple parallel mediations and heterogeneity effect

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Abstract

The motive behind the paper is two-fold. First, map out the multiple parallel mediation effects and examine the relationship between knowledge sharing and sustainable performance. Second, the paper describes how the observed heterogeneity influences the relationship between knowledge sharing, sensing capability, agility, and sustainable performance. The paper proposed two methods. The paper leveraging the dimension reduction method, PLS-PM, generates the bootstrap sub-samples to consolidate the multiple parallel mediation effects. And second, we framed the segmentation tree and highlighted the influence of social-demographic variables—firm size, education levels, and occupancy level on knowledge sharing and sustainable performance using the unique PATHMOX-PLS technique. The findings show that sensing capability and agility significantly mediate the relationship between knowledge sharing and sustainable performance. At the same time, the manager's and employee's firm size, education, and occupancy levels have signaled different interpretations of the relationship between dynamic capability drivers and sustainable performance. The paper posits the practical applications as results of underpinned findings that could be scalable to other firms in Tanzania as well as globally.

Keywords: Knowledge Sharing, Sustainable Performance, Heterogeneity, Managers and Employees, PLS-PM, Pathmox tree.

1. Introduction

Understanding the knowledge-sharing processes is critical for micro-dairy firms to enhance sustainable performance. But many questions are edging on the sustainability of the dairy micro-firms due to a lack of research investigating the relationship between knowledge sharing and sustainable performance while using the multiple parallel mediators, which is significant to reducing environmental disruptions. Of course, researchers have treated knowledge sharing effects on sustainable performance using a single model, as if it is homogeneous, which results in an unrealistic conclusion. Along similar lines, scholars have ignored testing the role of segment variables in evaluating the above relationship. Therefore, the paper set out the following research questions to fill the empirical literature gap. Does the sensing capability and agility have a parallel mediation effect on the relationship between knowledge sharing and sustainable performance for micro-dairy firms? And second, to what extent observed heterogeneity influence the relationship between knowledge sharing and sustainable performance?

Following the above backdrop and the research questions, the paper has proposed the conceptual research model and hypotheses (see figure 1).

The extended abstract is organized as follows; the paper with the conceptual research model, methods and data, study findings, and we end the layout with the conclusion.

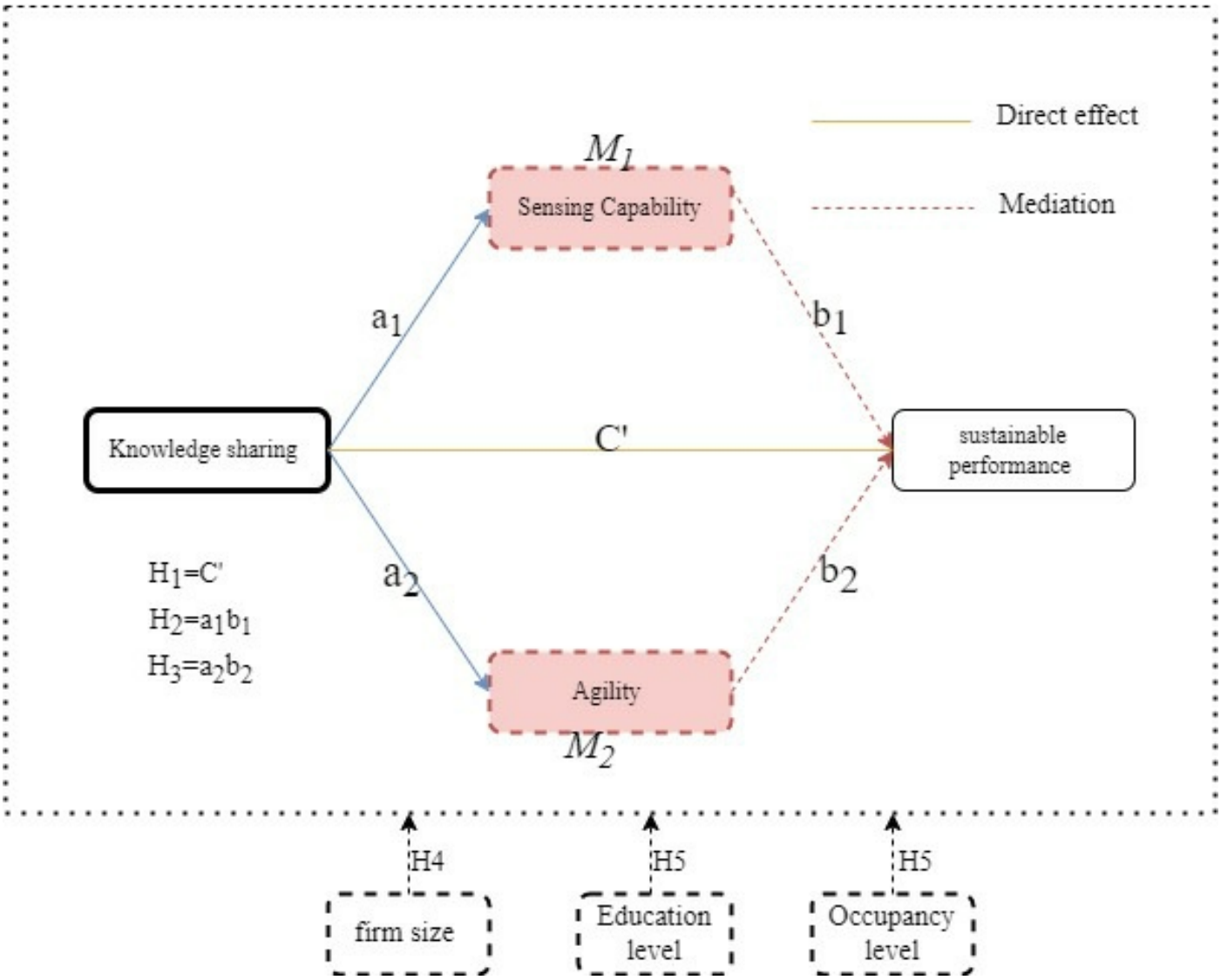

Figure 1: Conceptual research model

1. Methods and data

The paper has tested the above conceptual research model through the Partial Least Squares Path Modeling (PLS-PM). The PLS-PM is the dimensional reduction technique and is potent regarding the higher dimensional data. The selection of the PLS-PM was essential in this case to answer research questions that were underpinned by the complex conceptual research model and its embedded hypotheses. The latent constructs that built the conceptual research model have been considered the causal for creating the manifest variables—reflective indicators. The rationale behind picking up the reflective indicators of the latent constructs is to validate the condition of the multiple parallel mediation test implicitly to the segmentation tree.

The paper tested the parallel multiple mediator variables using a method proposed by Nitzl et al. (2016) and Hayes (2018). The paper has availed from the method to suggest new dynamics and scrutinizes the parallel multiple mediations tests intensely. Of course, this method enhances parallel mediations analysis by cloning the (10,000) bootstrap sub-sample from R and picking 5,000 sub-sample randomly. The bootstrap sub-sample was pasted into a spreadsheet (excel) afterward. This is because PLS-PM software provides the results as the direct effects in most cases. Thus, this paper proposes the advanced mediation test to circumvent this caveat. In that sense, the paper built the parallel multiple mediations summary through the spreadsheet with the help of the bootstrap procedure with 5000 sub-sample from R. After validating path coefficients considering the conceptual research model. The paper constructed the bootstrap percentile and adjusted bias correction reflecting the lower and upper values.

This study used the plspm software in R (version 0.4.9) and a spreadsheet for models estimations (Gaston et al., 2017; Nitzl et al.,2016). The conceptual research model (figure one) stated hypotheses in positive directions. Thus, we will use the one-sided test to measure the above parallel multiple mediation effects, see summary in Table 2 with the estimation of 90% CI. However, our paper does not postulate the hypothesis about the differential impact between the two parallel mediators. Thus, we would undergo the two-sided test for bootstrap percentile and bias-corrected adjusted with the estimation of 95% CI to test the differential effects tests (See table 3).

Observed heterogeneity, this paper used the segmentation tree to deeply explore the effects of segmentation variables such as gender, firm size, education, and occupancy levels. This method is significant in splitting the populations into the sub-sample to examine the influence of each group. The paper used a unique Pathmox tree method. This pathmox tree technique is similar to Breiman’s proposed—Classification Regression Tree (CART). The CART is often used in regression methods (Breiman, 2001). The Pathmox tree has the essential tool for examing sources and heterogeneity effects in PLS-PM, and we used the PLS-PATHMOX algorithm, which is a workhorse method to unfold the segmentation tree. We used the

genpathmox package in R (version 0.7) to estimate the segmentation tree while underscoring the standardized principles of the PLS-PATHMOX algorithm (Lamberti, 2015).

1. Findings

Table 1: structural path summary for global and pathmox terminal node

Global Model					Pathmox Terminal Node		
Constructs	Original /S.Error	.025	.975	f (rate)	Original/S.Error	.025	.9
KS-> SC	0.885 (0.019)	0.844	0.918		0.898 (0.018)	0.861	0
KS-> SP	0.286 (0.090)	0.127	0.481	0.03	0.261 (0.116)	0.068	0
KS -> AG	0.865 (0.019)	0.835	0.912	0.04	0.882 (0.018)	0.850	0
SC -> SP	0.417 (0.096)	0.223	0.600	0.4	0.412 (0.110)	0.182	0
AG -> SP	0.257 (0.074)	0.109	0.405	0.06	0.290 (0.083)	0.125	0
GoF=0.68							
R2 Sensing=0.779 Agile= 0.767 Sustainable=0.848					R2 Sensing=0.806, Agile= 0.785, Sustainable=0.857		

Notes: S. Error=Standard Error (), GoF=Goodness of the Fit Improvement Index, R2=Coefficient Determination, f (rate)=Effect Sizes, Bootstrap based on 10,000 sub-samples, KS=knowledge sharing, SC=sensing capability, AG=Agility, SP=sustainable performance

Table 1 shows the global model and Pathmox terminal node results after putting into the test articles' conceptual research model resulting from PLS-PM as well as Pathmox PLS. The Pathmox terminal

node and global model explicitly show the structural models were statistically significant—two-sided bootstrap percentile. The multiple parallel mediation effects are worth examining after validating the path coefficients for the two models above through bootstrapping.

1. Mediation test summary

Table 2: Mediation test summary

		Bootstrap 90 C1			
		Percentile		BC	
Direct Effect	β - values	P. lower (.5)	P. upper (.95)	B. lower (.5)	B. upp
KS->SP, H1: C’	0.286 sign	-1.011	1.329	-1.012	1.327
KS->SC (a1)	0.885 sign	0.016	0.887	0.552	1.423
KS->AG (a2)	0.865 sign	0.017	1.429	0.359	1.772
SC->SP (b1)	0.417 sign	-1.552	1.230	-1.018	1.763
AG->SP (b2)	0.257 sign	0.026	1.500	-0.476	0.997
Indirect Effects					
H2: a1 * b1 (M1)	0.369sign	-0.800	0.815	-0.552	1.063
H3: a2 * b2 (M2)	0.222sign	-0.002	1.102	-0.286	0.813
Total indirect effects	0.591sign	-0.563	1.342	-0.603	1.301

Notes: β=Coefficient, P. lower (.5)=percentile lower, P. upper (.95)=percentile upper, B. lower (.5)=bias correction lower, B. upper (.95)=bias correction upper, VAF=Variance Accounted For.CI=confidence Intervals, KS=knowledge sharing, SC=sensing capability, AG=Agility, SP=sustainable performance

Table one presented the parallel multiple mediations effects tests; both direct and indirect effects are significant. The estimated points for the direct effect (C’,β=0.286sign, BC.upper=1.327), thus,

supporting hypothesis one, knowledge sharing is positively associated with sustainable performance. The estimates point to the indirect effect; (H2: a1 * b1 (M1), VAF =54.2, BC=1.063). Therefore, it supports hypothesis two. Sensing capability significantly mediates the relationship between knowledge sharing and sustainable performance. About estimate point for hypothesis three, (H3: a2 * b2 (M2), VAF=45.7, BC=0.813). Thus, it supports hypothesis three. Agility positively mediates relationships between knowledge sharing and sustainable performance in a similar spirit.

Mediation type and magnitude; following the estimates of the direct and indirect results, we argue that the agility and sensing capability falsify the relationship between knowledge sharing and sustainable performance. Of course, the paper argues that partial mediation exists (Coutts et al., 2019). We add ingredients to this narrative by explaining the Variance Accounted For (VAF), which states the extent parallel multiple mediators' variables adequately explain the dependent variable variance (99.9%). These findings suggested that the two mediators' variables, agility, and sensing capability, jointly influence knowledge sharing on the sustainable performance of dairy micro-firms in Tanzania.

Comparison of parallel mediations tests; the paper chronicles a comparison through differential effects test (Hayes, 2018). The differential effects test is most important to determine which mediator has a more decisive influence than the other—the paper assigned agility (M1) and sensing capability (M2).

Table 3: Comparison of parallel multiple mediators' effects (agility and sensing capability)

Comparison of parallel mediators'		Bootstrap 95% CI			
Differential Effects	β - values	P. lower (.5)	P. upper (.95)	B. lower (.5)	B. upper (.95)
M1 – M2 (a1 * b1) - (a2 * b1)	0.117	-1.550	0.545	-0.0.13	1.083

Notes; M1=mediator one(Sensing Capability),M2=Mediator two(Agile), β=beta, CI=Confidence interval, P.lower=Percentile

lower,P.upper=Percentile Upper, B.lower=Bias Correction lower,B.upper= Bias Correction lower.

Table 3 demonstrated no significant differential impact between the agility and sensing capability considering the two-sided test (95% CI), given that both lower percentile and bootstrap CI contain zero. Therefore, we cannot state that either agility or sensing capability has more substantial mediation effects than the other and vice versa is true. Next section, the paper clarifies the heterogeneity effects.

1. Pathmox tree

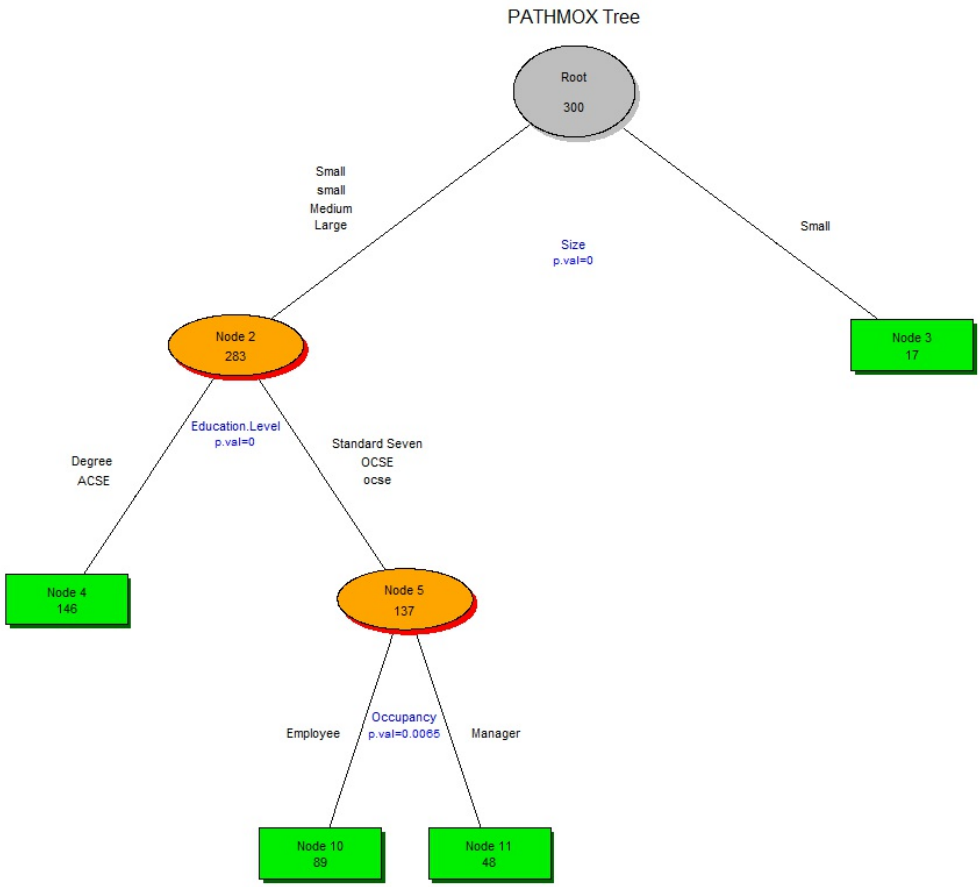

Figure 3: Pathmox tree

We presented the obtained pathmox tree. The first split of the tree shows the firm size. The split is significant, giving the F-test of 7.425 with a p-value of 0.000. The split continues to node 3, which presents the education levels of managers and employees, and this

split has an F-test of 4.561 with a p-value of 0.000, split is significant. The next node is five, which shows the occupancy levels of managers and employees, which has an F-test of 2.706 with a p-value of 0.006. This is an ending process about splitting with a maximum depth of two levels.

Table 4: F-Coefficients test for each partition’s node

	Firm size		Education levels		Occupancy levels	
Paths	fc.statistic	fc.pvalue	fc.statistic	fc.pvalue	fc.statistic	fc.pvalue
KS ->SC	0.218	0.640	0.157	0.691	0.070	0.790
KS ->AG	7.351	0.006	0.819	0.365	5.147	0.023*
KS -> SP	4.174	0.041*	3.903	0.048*	0.950	0.330
SC -> SP	0.163	0.686	0.094	0.758	2.378	0.123
AG ->SP	1.703	0.192	9.007	0.002**	0.208	0.648

Note:fc.statistics=F-coefficients stastics,fc.pvalue=F-coefficients.pvalue,Signif. codes: 0 '***' 0.001 '**' 0.01 '*'

Table 4 above shows the predictors responsible for the partitions in the root node. The paths responsible for the partitions of the firm size depend on the coefficient value (fc.statistic=4.174, p-value=0.041*). The link is between knowledge sharing and sustainable performance. Regarding education levels, the partition depends on the two coefficient values, first (fc.statistic=3.903, p-value=0.048*). This echoes the firm size path. The second coefficient has (fc.statistic=9.007, p-value=0.002**), the path link between agility and sustainable performance. Lastly, the partitions’ of occupancy levels depend on the coefficient value of (fc.statistic=5.147, p-value=0.023*). The path is between knowledge sharing and agility.

Table 5: PLS-PM Tree model (terminal nodes comparison)

Path coefficients of terminal nodes						Explanatory Power			
Paths	R.Nod	Nod.3	Nod.4	Nod.10	Nod.11	R.No	Nod.3	Nod.4	Nod.1
KS->SC	0.884	-0.770	0.898	0.899	0.943	KS=0.000	0.000	0.000	0.000
KS->AG	0.864	-0.409	0.887	0.894	0.932	SC= 0.782	0.593	0.807	0.807
KS->SP	0.284	0.632	0.137	0.415	0.705	AG=0.747	0.168	0.787	0.799
SC->SP	0.419	0.973	0.355	0.491	0.112	SP= 0.848	0.887	0.866	0.868
AG->SP	0.258	0.332	0.469	0.054	0.141				

Notes:R.Nod=Root Node, Nod.3=node partition three, Nod.4=node partition four,Nod.10=node partition ten,Nod.11=node partition eleven,KS=knowledge sharing, SC=sensing capability, AG=Agility, SP=sustainable performance

A candid explanation for this paper lies in estimating the path coefficients score of terminal nodes and predictive relevance to get an appropriate verdict about the existing heterogeneity. Table 5 above presents the four profound models resulting from the above Pathmox tree. The path coefficients of the terminal nodes above revealed significant differences in examining the relationship between knowledge sharing, agility, sensing capability, and sustainable performance of the micro-dairy firm in Tanzania. Similarly, the path coefficients revealed in the global model (see Table 1) differ greatly compared to terminal nodes. Therefore, it supports hypotheses 4,5, and 6. To this end, the findings have revealed different interpretations among segmented variables—firm size, education, and occupancy level of the managers and employees on understanding the linkage between knowledge sharing and sustainable performance of the micro-dairy firm.

1. Conclusion

The paper proposed the multiple parallel mediators and observed heterogeneity effects to examine the relationship between

knowledge sharing and sustainable performance. The paper has empirically tested the sensing capability and agility of the multiple parallel mediators and uncovered that variables significantly influence knowledge sharing and sustainable performance concerning micro-dairy firms (Kirdar, 2018; Barać and Muminović,2013). The social-demographic variables—size, education levels, and occupancy levels have signaled different interpretations of examing the relationship between knowledge sharing, agility, sensing capability, and sustainable performance. To this end, the parallel multiple mediation effects and the observed heterogeneity are scalable to other fields such as micro start-up firms and small-medium enterprises and propel sustainable performance.

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8

A Cross-national Comparison of Fresh Fruit Choice Motives and Consumption Patterns

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Abstract

Introduction

Health benefits of fruit consumption have been well documented in scientific literature and the supporting evidence has only been growing. Epidemiologic researchers find fruit consumption is related to reduced Relative Risk (RR) for chronic diseases such as specific types of cancers, heart disease, cataracts, and hypertension (La Vecchia, 2004; Slavin & Lloyd, 2012; Van Duyn & Pivonka, 2000). To promote fruit consumption and its associated health benefits, government authorities in different regions of the world have proposed nation-specific recommended intake levels in accordance with the World Health Organization's (WHO) guidelines. As an example, the Dietary Guidelines for Americans 2015-2020 recommend a 2 cup-equivalent fruit intake per day. However, general fresh fruit intake in cross-cultural settings (e.g., the United States, European and Asian countries) is lower than the respective government recommendations and varies considerably across the globe (Cheung et al., 2021; Joffe & Robertson, 2001; Onwezen & Bartels, 2011; Slavin & Lloyd, 2012).

While the extant literature has explored reasons for fruit intake lower than government recommendations, two gaps emerge. First, the evaluation of fruit consumption focuses on the quantity of fruit intake but overlooks the variety of fruits consumed. The scientific literature has long stressed the importance of dietary diversity and its association with nutrient adequacy, especially the phytochemical diversity, in promoting food-based health (Kennedy, 2004; Thompson & Thompson, 2010). Second, while the effects of socioeconomic factors and food environment on dietary choices have been

extensively studied, less is known about the behavioral drivers of consumer's decision-making about fresh fruit. Steptoe, Pollard, and Wardle (1995) proposed using food choice motives to understand food-related behavior. The cross-cultural applications of the food choice motive measurement not only validate its predictive power, but also introduces the need to customize context-specific and/or product-specific measurement of choice motives (Cunha et al., 2018; Onwezen et al., 2012). While several studies draw the link between general food choice motives and fruit consumption (e.g., Milošević et al. 2012; Konttinen et al. 2012; Verain et al. 2020; Marty et al. 2021), only one study, to the best of our knowledge, examines fruit-specific choice motives. Onwezen and Bartels (2011) identified four distinct consumer segments based on nine fruit choice motives and found that consumer intention to purchase innovative fruit (e.g., cholesterol-lowering peach) vary across these segments.

To fill the gaps, this study aims to evaluate effects of fruit-specific choice motives on consumers' fruit consumption patterns characterized by two components, intake and diversity. Further, to achieve a fuller understanding of fruit consumption with cross-national validation, this study is conducted in eight countries spanning three continents: Canada and the United Stated in North America; South Korea and Japan in Asia; Belgium, France, the Netherlands, and the United Kingdom in Europe. The conceptual framework is shown below.

Methods

Data collection

Data on consumer perspectives of fresh fruit consumption were collected through an international survey administered in eight countries, including Belgium (n=984), Canada (n=992), France (n=1,059), South Korea (n=977), Japan (n=982), the Netherlands (n=993), the United Kingdom (n=987), and the United States (n=1,036). The data collection period was April through May in 2021. The survey was originally developed in English and translated into other languages, such as French, Korean, Japanese, and Dutch. The translations were produced by professional translators and then checked against the English version by bilingual researchers with a background in agricultural economics. Respondents from each

participating country were: (1) randomly drawn from the panel company Toluna's representative panel, and (2) screened to meet the criteria of being female food shoppers, above 20 years of age, from households with an income above the 30th percentile level in their country. The survey includes questions about fresh fruit choice motives, fresh fruit consumption patterns, food-related attitudes, and demographic characteristics. To control for data quality, a screener was included to verify whether or not participants read the survey carefully (Jones et al., 2015).

Measures

Fresh Fruit Choice Motives (FFCM), Food Involvement (FI), and Food Neophobia (FN) were measured on five-point Likert scales anchored from 1 (very unimportant) to 5 (very important). Our 16-item FFCM scale was developed based on two major references: (1) the 9-item fruit choice motives proposed by Onwezen and Bartels (2011), and (2) the Food Choice Questionnaire and its cross-cultural applications (Cunha et al., 2018; Steptoe et al., 1995). The 16 items are categorized into five motives, including utilitarian motive (freshness, taste, appearance, and nutrition), hedonic motive (advertising, being trendy, and recipe diversity), quality motive (organic, origin, local, and seasonality), price motive (price and on-sale), and ease of consumption (convenience, availability, and familiarity). The FI scale was adapted from Bell and Marshall (2003), including four items: "I actively seek out information about nutrition/diet"; "I plan my food shopping using a shopping list"; "Compared with other daily decisions, my food choices are not very important (reverse coded)"; and "I care whether or not a table is nicely set". The FN scale includes two items, "I like foods from different countries (reverse coded)" and "I am afraid to eat things I have never had before" adapted from Pliner and Hobden (1992).

Fresh fruit consumption patterns are reflected by two components: (1) daily fresh fruit intake, takes the value from zero to six, measured in the number of servings of fresh fruit the respondent eats in a day, and (2) fruit consumption diversity, takes the value from zero to 15, measured by the number of different fruits the respondent has purchased in the past six months.

Analysis

We first carried out pair-wise comparisons of Fresh Fruit Choice Motives (FFCM) with Tukey's method between the eight countries, illustrating differences in consumers' perceived importance of the five motives when purchasing fresh fruits. Then we employed Poisson and Negative Binomial regression analysis to evaluate factors influencing daily fresh fruit intake and consumption diversity, respectively. The model specification features three considerations. First, both fruit intake and diversity are count variables, making the Poisson regression model a suitable estimation approach. Second, Negative Binomial regression relaxes the equidispersion assumption held by the traditional Poisson regression and, therefore, was used when the dependent variable exhibits an overdispersion pattern (Hardin & Hilbe, 2014). Third, to test whether there are cross-cultural differences of factors influencing fresh fruit consumption patterns, we used a seemingly unrelated estimation through the post-estimation command "suest" in Stata, allowing for computing standard errors under the assumption of unknown error covariance across equations.

Results

Our data indicate significant differences in fresh fruit consumption patterns across the eight countries. For example, French consumers had the highest level of daily fresh fruit intake while Japanese consumers had the lowest. In the ranking of fruit consumption diversity, the United Kingdom consumers had the highest level of fruit diversity while Japanese consumers had the lowest. Significant, cross-cultural differences in attitudinal constructs were also observed. When purchasing fresh fruit, utilitarian and price cues had the highest rating among Canadian consumers, quality cues were mostly valued by French, hedonic cues were perceived to be the most important among South Korean consumers, and ease of consumption was prioritized by consumers in the United States. In addition, French consumers had the highest level of food involvement whereas South Korean consumers had the lowest. Japanese consumers were least open-minded about trying new foods and British consumers were the most likely to do so.

Cross-equation equality tests indicate significant cross-national differences in the effects of fruit choice motives on fruit consumption patterns. Health perception has significantly positive effects

(Incident Rate Ratio, IRR, >1) on daily fresh fruit intake in all countries except for the Netherlands, meaning that improving health perception leads to increased fruit intake. Similarly, health perception also has a positive effect on fruit consumption diversity in the United Kingdom and Japan. Among the five fruit choice motives, ease of consumption and price have significantly negative effects on both intake and diversity, although the effects vary across the eight countries. For example, the importance of ease of consumption is associated with: (1) a lower level of fruit intake in all countries except for France and South Korea, and (2) fewer varieties of fruit consumed in Canada, Belgium, and the Netherlands. Hedonic, utilitarian, and quality motives have varying positive effects on fruit consumption patterns. For example, the hedonic motive is significantly associated with daily intake in all countries except for Japan but accounts for consumption diversity in only three countries, Canada, Belgium, and the Netherlands. Last, the significant effects of food involvement and neophobia on fruit consumption diversity are cross-nationally consistent but in differing magnitudes. In general, a higher level of involvement and a lower level of neophobia are associated with a higher level of fruit consumption diversity.

Conclusion

This study examines and compares fresh fruit consumption patterns in a cross-national setting involving eight countries, Belgium, Canada, France, South Korea, Japan, the Netherlands, the United Kingdom, and the United States. We contribute to the literature by: (1) accounting for not only the intake but also the diversity of fresh fruit consumption, and (2) introducing five fruit-specific choice motives and using them to predict the levels of fruit intake and diversity. The varying effects of the five motives on fruit consumption patterns are twofold. First, there exist cross-national differences in the associations between choice motives and fruit consumption patterns. Second, the effects of fruit choice motives on fruit intake differ from that of diversity. Further, improved food involvement and mitigated neophobia help improve fruit consumption diversity. Instead of using a one-size-fits-all approach, promoting fresh fruit consumption in the international setting needs to be customized to prioritize the valued fruit choice motives in specific countries.

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17

Assessing consumers’ survey engagement through ordering and time effects in discrete choice experiments: a hybrid model approach

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Abstract

Discrete choice experiments (DCEs) conducted online are widely used to study consumers’ food preferences, especially when the behaviour of interest involves discrete or qualitative choices (Louviere et al., 2008). DCEs are based on the Lancastrian consumer theory (Lancaster, 1966) and the random utility model (RUM) framework (Mcfadden, 1974). DCEs simulate a trading market in which consumers are presented with a set of choice sets configured by various products with different combinations of attributes. Choice sets configurations are estimated a priori according to unbiased and efficient principles of statistical estimation. Consumers are requested to state their preferred alternative in each choice set. Based on this information, researchers can estimate the effects of the attributes on consumers’ preferences and choices.

Although previous research established important advantages of using DCEs to collect data on consumers’ food preferences (Byun et al., 2018; Schlereth et al., 2012; Telser & Zweifel, 2009), significant disadvantages have also been highlighted (Lindhjem & Navrud, 2011). DCEs often rely on surveys conducted online, in which pre-recruited online panels composed of semi-professional and recurrent respondents frequently exhibit a strategic time-saving behaviour and rush through the questionnaire without carefully considering their choices (Börger, 2016; Campbell et al., 2018; Schwappach & Strasmann, 2006). Such behaviour compromises the quality and the validity of the collected data (Malhotra et al., 2008).

Consumers’ engagement with the survey is especially relevant given the increasing reliance on data collected through online surveys,

where few controls are available to guarantee consumers' attention and engagement (Hess & Stathopoulos, 2013). Moreover, consumers' incentives for participating in online studies are frequently directly linked to the time taken to answer the surveys. Response time might also be highly correlated with any decision heuristic (Campbell et al., 2018).

Earlier research suggests using response time as a proxy for respondents' cognitive effort and engagement with the survey (Campbell et al., 2016; Rose & Black, 2006). Nevertheless, measuring survey engagement is challenging. Relying on proxies as explanators of scale heterogeneity can lead to endogeneity bias. As a result, previous studies suggest using a hybrid discrete choice modelling approach, as it allows the incorporation of consumers' survey engagement as a latent variable in the DCE (Hess & Stathopoulos, 2013).

Hess and Stathopoulos (2013) operationalized survey engagement as a combination of survey time measures and additional questions to respondents regarding their survey engagement. Nevertheless, several limitations arise. First, asking respondents additional questions implies a more extended survey and higher response fatigue. Second, as highlighted by the authors, considering response time for the entire survey or as one measure for the complete choice experiment is a limitation as it ignores the individual time taken in each choice task. When examining the gain-loss asymmetry in stated choice experiments, Börjesson and Fosgerau (2015) analyzed the time per choice task. However, no previous research has analyzed the relationship between the time per choice task and consumers' survey engagement. Moreover, the time spent on each choice task also requires considering the order in which each choice task is displayed. Previous research suggests that consumers exhibit relatively unstable preferences over the sequence of choice tasks (Nguyen et al., 2021).

Based on the limitations mentioned, the present research question is: what is the link between the length of time spent by consumers on each choice task and the order in which each choice task is displayed with consumers' survey engagement? To answer the research question, the authors tackle the limitations of previous studies in the following way. First, to address the endogeneity bias,

the research followed Hess and Stathopoulos (2013) to implement a hybrid model structure (Ben-Akiva et al., 2002), treating the consumers' level of engagement as a latent variable. Second, the latent variable is specified considering the response time per each choice task for each respondent. Third, the authors also incorporate into the latent variable the order effect in which each choice task was displayed to each consumer to account for consumers' unstable preferences (Nguyen et al., 2021). As a result, the current study contributes to consumer research by proposing a hybrid model in which consumers' survey engagement is operationalized as a latent variable that explains scale heterogeneity without leading to higher response fatigue while also accounting for choice display ordering effects.

We applied the model to a dataset of stated choices of tomato purée. The stated choice experiment presented respondents with twelve choice sets with two options of tomato purée and a no-choice. Each alternative was described by four attributes: tomato seeds type, vitamin-C natural content, product origin and price. The type of seeds, vitamin C content and origin, were specified to vary randomly across respondents and following a normal distribution. The attributes varied according to a D-efficient design (D-error = 0.57) estimated using the Ngene software with priors from a pilot survey. Three sociodemographic interactions (gender and frequency of purchase of organic products) were also incorporated as shifts in the means of the estimated parameters. The data was collected in September 2020 in eleven countries: Denmark, France, Germany, Hungary, Italy, Latvia, Netherlands, Slovenia, Spain, Switzerland and the United Kingdom. A total of 4.208 usable responses were collected, yielding 50.496 observations.

Results from the hybrid choice model show that the parameters were statically significant for all attributes. The latent variable was positive and significant, although a lower value for the latent variable was observable for respondents under 34 years old. Results from the measurement model show that increases in the latent variable are associated with a higher probability of increases in the time taken to familiarise with the attributes, the cheap talk, the label definitions, and each choice task. Respondents with a more positive value for the latent engagement variable are more likely to take

longer to complete the survey, possibly confirming the hypothesis of their higher concentration on the task (Börger, 2016).

Moreover, by separating the full time taken to complete the survey into the time taken to complete different parts of the choice task, it is possible to observe that the time to complete each choice task presents the highest estimate. This result highlights the key role of the time taken per choice task over the total time of the survey or the DCE. Future research should include the time per choice task in their analysis and avoid using proxies that do not have the same weight.

Regarding the role of the ordering effects, the results support previous research in which consumers exhibit relatively unstable preferences over the sequence of choice tasks (Nguyen et al., 2021). Specifically, for the first two choice sets displayed to any respondent, a lower level of consumers' survey engagement was observed. This result is in line with previous literature in which very high error variances were found for the first two choice sets (Carlsson et al., 2012). According to the authors, such results suggest learning effects. This means that it might be wise to include one or two additional practice choice tasks at the beginning of the choice experiments so that consumers can familiarize themselves with the task.

Several limitations arise in the current study. First, as the response time is measured on a click by click basis, there is no way to ensure that the consumer was not exposed to any distractions or multitasking when compiling the choice experiment. Second, all response times are included as a continuous variable, not allowing the possibility to warrant for consumers who require significantly more time because of being faced with other distractions (Campbell et al., 2018). The authors believe the study should be extended by including the response times as a categorical value to identify if too prolonged response times might be a sign of less engaged consumers.

Third, although this study includes different national settings, it is important to highlight that it examined only one empirical context: a specific product's food choice. The authors believe that the impact of response time and the ordering effects introduced in this study

should be of wider interest. However, as there is no certainty that consumers' decision processes won't change among diverse products, future research should inspect a wider variety of settings and choice contexts. Finally, further research is necessary to analyze possible diverse outcomes and address the role of extreme response times and their effect on the parameter estimates.

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7

The effect of bottom-up factors on consumers' visual attention and choices

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Abstract

Eco-labels play a key role in allowing consumers interested in environmental issues to recognize sustainable products easily. However, due to time restrictions, consumers do not fully process all the information (Ballco et al., 2019). In this sense, visual attention becomes a scarce resource that consumers selectively allocate among all the labels on the product packaging. Different studies demonstrated that gazing behaviour has downstream effects on decision-making, limitating the choice to fixated objects (Orquin & Mueller Loose, 2013). In particular, bottom-up factors (e.g. visual saliency, size, position, etc.) are among the most prominent factors to drive consumers' attention automatically and involuntarily (Janiszewski, 1998). Despite the large body of literature in this area, few of these studies (e.g., Van Loo et al., 2015, Peschel et al. 2019) have investigated whether increasing the visibility of food labels through bottom-up factors can affect the choice of this product. Since size and visual saliency have been recognized as the most prominent bottom-up factors by vision research (Itti & Koch, 2001), in this study, we focus solely on size and saliency (colour, shapes and contrast) to determine the effect on product choice. A combined approach was applied to investigate consumers' choices via eye-tracking technology and a discrete choice experiment (DCE).

Two studies were developed to evaluate the role of bottom-up factors on consumers' attention and choices. Both studies included a discrete choice experiment, although the Study A combined it with an eye tracking study. Study A was conducted at the Consumer Research and Neuromarketing Laboratory in Ancona (Italy) where consumers' gaze were tracked through a Tobii X2-60 Hz eye tracker.

To validate the study in different socio-economice and cultural contexts, study B was conducted online. In this last case, no eye-tracking data were recorded.

The discrete choice experiment (DCE) is a survey-based methodology widely used for modelling consumers' preferences. Based on the Lancastrian consumer theory (Lancaster, 1966) and the random utility model framework (RUM) (McFadden, 1973), the method simulates a trading market in which the respondents choose several alternatives with different attributes. Each participant was exposed to 15 choice sets with three alternatives and a no-choice option. The alternatives varied in terms of product type (smoked salmon or smoked seabass), label (four eco-labels), eco-label size (big/small), eco-label saliency (high/low) and price (three different levels according to the market offer). The selection of eco-labels was based on the results of a previous study using a Tobii X2-60 Hz eye tracker. The position of the eco-label was the same for each alternative and their saliency was calculated with a visual saliency model called GBVS (Graph-Based Visual Saliency) algorithm. The design was generated through a fractional D-efficient design using the Ngene software (D—error = 0.22). The survey was developed on the Qualtrics platform. The data was collected in two steps.

In the study A, 61 students and workers from the Marche Polytechnic University (UNIVPM) were invited to the Consumer Research and Neuromarketing Laboratory in Ancona (Italy) to participate in the study in presence on October 2020. Of them, 54% were female. Participants also presented a variety of education levels, ranging from high school diploma (30%) to Postgraduate with a doctoral degree (34%).

In study B, 279 participants were recruited across different countries through Amazon Mechanical Turk (MTurk). Most respondents had higher degree education, including Postgraduate with master's (37%), Bachelor's (27%) and Postgraduate with a doctoral degree (25%).

In both studies, all subjects were between 18 and 64 years old, partially or fully responsible for household food shopping and declared to purchase smoked salmon or smoked sea bass at least once a year. They also had normal or corrected to normal vision and

were tested for colour blindness using the highly reliable Ishihara test. A multinomial logit model (MLN) was used to estimate the effects of eco-labels, size, saliency, product type and price on consumers. The data was analyzed using the APOLLO package in R.

Results from the DCE laboratory study confirm consumers' interest in eco-labels (Grunert, 2011). Indeed, participants focused their visual attention mainly on the eco-labels before making their choice. Moreover, consumers preferred eco-labelled products over alternatives not carrying any eco-label.

The price had a significant and negative coefficient. The salmon was preferred to the seabass. These results were fully confirmed by the online DCE as well. Nevertheless, the attention data collected in the laboratory study using eye-tracking provide some interesting results. Consumers tend to fixate faster, longer and more often eco-labels presented with a larger size and a higher saliency. However, even though consumers' fixations were influenced by size and saliency, no effect was found on consumers' choices.

Our findings contribute to the ongoing research on the role of visual attention decision-making in food marketing. In line with previous literature (e.g., Gidlöf et al., 2017), eye-tracking measures showed that ' 'manipulating size and saliency significantly influences consumers' attention. However, despite the previous literature (e.g. Peschel et al., 2019), no correlation was found among visual attention and decision making. Despite consumers significantly fixated for a longer time on more salient and bigger eco-labels, they do not choose products carrying this kind of label. This means that a downstream effect of visual attention on decision making was not found in the case of eco-labels. Thus, visual attention does not play a part in constructing decisions. This issue needs to be further explored to understand the role of visual attention in 'consumers' choices in the case of food labels.

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7

Student Perceptions of the Food Retailing Industry

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Abstract

Introduction

The Food Marketing Institute (FMI), a trade association for food retailers and wholesalers, recently noted the ability to hire a talented workforce as a key challenge to the food retailing industry. “The demand for omnichannel retail and constant technological advancement will change the way companies operate, with competitive advantages going to those with strong data and analytics capabilities. As a result, food retailers will compete more against other industries to attract new talent, not only to support traditional workforce roles but also to meet these newer technical demands.” (Baum 2018). Indeed, the food industry is an exciting one. It is high-tech, essential, dynamic, resilient – and has ample opportunities for career-track jobs for college graduates. Despite the opportunities, there remains significant challenges in attracting college graduates to the food retail industry given a number of negative stereotypes (e.g., low pay; long hours; perceived lack of sophistication and lack of advancement). As educators, it is incumbent upon us to ensure students understand the possibilities available and that business stakeholders in all industries have access to bright, young talent. A question which thus arises is how can we make career opportunities in the food industry – in particular, food retailing – more tangible and attractive to college students? This research aims to examine student perceptions of the food retail industry and to incorporate a teaching innovation to further broaden students’ perceptions of the food retailing industry.

Research Design and Methodology

Currently, Food Retailing is taught at our university as an online, asynchronous class in both the fall and spring semesters. Generally, enrollment falls between 60 and 80 students each term. The format of the Food Retailing course is comprised of a combination of lectures, readings, assignments and cases. The course is taught by the same professor each term and the share of students who are obtaining a Bachelor's of Business Administration with a Food Industry Management major, and of those pursuing the Certificate in Food Industry Management and Marketing, is roughly 10 percent of total class enrollment. The continuity of instructor and format, we believed, provided an opportunity to design a quasi-experiment. In the spring 2021, the teaching format of text, cases, articles, assignments and quizzes was employed. At the end of the spring term, a detailed survey assessing student perceptions and knowledge of the industry, along with demographic and other questions, was administered. Additionally, because the nature of the Food Retailing course is an asynchronous online course, we ascertained students' perceptions of asynchronous online education – their beliefs about what works and does not work, as well as their format likes and dislikes. The survey also included open-ended questions intended to help guide our teaching innovation intervention, which was to be employed in the following term. In the following term, fall 2021, Food Retailing was again taught by the same professor, using the same teaching format, with the incorporation of the teaching innovation. The same survey that was administered in the spring term, was again administered at the end of the fall term.

Survey Development & Data Collection

In the spring of 2021, a comprehensive survey instrument was developed and administered in Food Retailing. In order to better understand students' perceptions of the food retailing industry, the survey included several validated scales that queried respondents on: perceptions of careers in food retailing, advancement opportunities, and attractiveness of jobs with various food retailing firms. To better understand individual respondent motivations, questions pertaining to desired employment upon graduation, preferred job attributes, current stage in job search, and reasons for

taking Food Retailing were asked. Additionally, open-ended, exploratory questions pertaining to students' experiences with online courses were included, with particular focus on students' perceptions as to what contributes to a "good" online course as well as their opinions towards activities that could have enhanced the current course. Finally, demographic information was obtained. The survey was deployed towards the end of the course thus, students did have the benefit of being exposed to the course material.

There were 95 students enrolled in Food Retailing during Spring 2021. Eighty students voluntarily responded, resulting in a response rate of 84.2 percent. The incentive to complete the survey was 20 extra-credit points in a class worth 1,000 points total. Students were informed that the survey would take approximately 20 minutes (the time estimated by Qualtrics, the platform on which the survey was constructed and administered). Students were assured that the survey would be completely anonymous, with no way for the instructor to identify the student. An independent professor retrieved the data and removed the last question, which asked for student names in order for extra credit to be awarded. For students who wanted to earn extra credit, but did not want to complete the survey, they were told an assignment taking about the same time as the survey could be provided. There were no takers on the alternative assignment. Below, we provide some analysis and insight into the qualitative responses that were used to further consider a meaningful, efficient, and scalable experiential learning innovation conducive to online asynchronous instruction.

Qualitative Findings

We analyzed three open-ended, qualitative questions (presented below) to help guide our thoughts on a teaching innovation.

- *Think about the best online class you have taken. In a few words, what made it the best class?*

Three themes clearly emerged as to what students desire in online courses: 1) courses that are well-organized, predictable, have a clear structure and include no surprises; 2) professors that are passionate about their field and subsequently good at engaging students; and, 3) content that is relatable to students' careers and/or the real-world.

Pertaining to the first theme, students appreciate when online courses are well-structured, well-organized, and contain no changes (or “surprises” as several respondents referred to changes). This finding is not surprising, as students appreciate these attributes in all courses. However, in online courses, the value placed on these attributes is probably heightened, as the lifestyle of the online student is typically different. This is particularly relevant in the current course, as approximately half of the enrolled students are online degree students. For these students, there is a higher likelihood that they work full-time, have a family and/or children, and have other household provider responsibilities. Thus, it is highly important to these individuals that they be able to plan their schedules in as predictable a manner as possible. With respect to the second theme, several students emphasized engagement and demonstrated passion of the instructor, with examples including engaging students in private conversations outside of the learning management system, personal notes, recounting subject-related anecdotes, and willingness of the instructor to give their time. The third theme that emerged is “relevance”, with relevance to work, the real-world, and the subject matter, all mentioned in the open-ended responses. Students valued relevant textbooks, assignments and activities. Students eschewed “busy work”, videos that did not tie into the subject matter, and endless reading. Many stated they appreciated information that held relevance to their everyday lives. These observations are consistent with ideas put forth by Galea (2007) suggesting that educators need to adapt to different learning needs required for a knowledge-based economy.

- *Please indicate if there was something that you would have liked this course to have included (e.g., different types of activities, a project, guest speakers, etc.)*

Seventeen respondents (21 percent) indicated “no change” was desired to the current course. Several mentioned the interesting and relevant reading material, as well as the current structure of the course. One respondent synthesized these feelings by stating, “I enjoyed the transparency and the ease of navigating the course.” Another stated, “I absolutely LOVED this class. The information I learned, the readings were fascinating and very relevant to what is happening in the economy today.” However, other responses

indicated that there was certainly room for course improvement. There were a few recommendations that were especially prevalent. They are listed below, in order of magnitude, as measured by the number of respondents mentioning a given recommendation. There were several other suggestions, but the ones outlined below were the most prevalent.

Guest Speakers: Twelve respondents (15 percent) indicated that guest speakers would be a welcome addition to the course, and a few indicated the value of guest speakers bring to the relevance of the course material. As exemplified by this respondent, "Additionally, guest speakers is something that I would have liked to seen to get a deeper understanding of the food retailing industry." Corresponding to this sentiment, three respondents wanted more discussion of real-world application and/or discussion of food retailing topics.

Videos: Seven respondents (8.8 percent) indicated their preference for more videos (each week, the instructor includes a brief introduction of the week's topic via video. There is also a video case mid-term that the students are assigned).

Project: Six students (7.5 percent) indicated a project in which to apply learned concepts, might be something interesting to work on.

Greater Variety of Activities. Seven respondents (8.8 percent, separate from the above respondents) indicated that a greater variety of activities could be incorporated to help reinforce class material, and that these additions would be valued.

- *Why, or why not, would you consider a career in food retailing?*

Eighty students answered this question, and 60 percent responded positively. Focusing on positive comments, one student noted "After this course, food retailing seems like an interesting field. In this career, you get the opportunity of working with a variety of different people in the supply chain, from suppliers and manufacturers all the way to consumers." Additional comments elaborated upon the dynamic landscape and opportunities in food retailing, while others simply stated they were already in the food industry and planned on staying there. Thirty-two students (40 percent) indicated that they had no interest in a career in food retailing. A majority of these

responses were not explicit in their reasoning, making passive statements like “not interested.” Some student responses suggested their majors that were simply out of the realm of business (e.g., medicine and the sciences) and thus did not have a strong interest. However, there were six individual responses that clearly reflected a misunderstanding of the industry. While we recognize that 6 out of 80 is not a large percentage, we believe that these comments are important. They emphasize that even upon completing a class focused on food retailing, there are still misconceptions among students and opportunities to incorporate innovations to change these preconceived notions while simultaneously improving learning outcomes. These comments are summarized below: 1) I prefer a 9-5 job for flexibility with a work/life balance; 2) Retail is most busiest on the weekends and I would prefer to not work weekends in my future; 3) I already have my mind set on real estate, but if I didn’t I would definitely consider for retail; 4) I was a waitress for many, many years, though it would be rewarding for anyone wanting to, it just was not the industry for me; 5) I have worked in retail and I was not fond of the environment. I am assuming Food Retailing would be the same experience for me; 6) I prefer a career in human resources - managing people, not food. Indeed, several of these responses reflect common stereotypes of the industry without appreciation for the positive aspects of the industry.

The Teaching Innovation

The above findings from the initial deployment of the survey instrument helped us further refine our ideas for an effective learning innovation. Our preliminary idea was to incorporate a live case study sponsored by an actual food retailer. However, based on the findings of students’ preferences for online courses, as well as insights into “what worked” and “what was desired” in the food retailing course, we realized that incorporating a live group project would not be optimal in an asynchronous setting in a class size of nearly 100 students. We concluded that an intensive group activity, especially for online learners who may be working full-time and juggling other commitments, can involve uncertainty and dependence upon other group members, and thus this type of project may actually deter committed students.

Therefore, relying on the revealed themes of real-world and course

relevance, instructor passion, and reliable structure and organization, we opted to immerse guest speakers into the course in an asynchronous manner, directly aligning the guest speakers' expertise with key topics currently covered in the class through the weekly modules. That is, these guest speakers were not only asked about their careers and daily tasks (which is often the case with most guest speaker interactions), but also were asked to contribute directly to the pedagogy of the class. These "conversations" (an important distinction from guest lecturing) were strategically placed in the course modules corresponding directly to key topics and case studies. Currently, three business case studies are assigned throughout the term. As part of the conversations with the guest speakers, they were asked to offer their opinion on the case and/or provide their insights relative to their functional expertise and past experiences dealing with similar situations, allowing the format to be more engaging and personal. The conversations were kept short to maintain student interest (e.g., 15- to 20-minutes). The videos were professionally edited with PlayPosit quizzes incorporated to ensure students obtain the desired information from the video. Additionally, a brief (two-question) survey was placed in the course module in which the video appeared to capture timely student feedback. It is believed that the incorporation of these select guest speakers would help students better understand the opportunities and business complexities of the food retailing sector, as well as enhance their class engagement, provide context for the body of knowledge presented, improve their knowledge retention, and provide variety of thought (Metrejean et al., 2002 and Riebe et al. 2013).

The videos were recorded in the summer of 2021 and deployed in the fall 2021 session of Food Retailing. To engage students further, all guest speakers contacted were alumni of the institution, all had careers and experiences relevant in addressing the case studies and weekly topics, and were rapidly advancing in their careers. Four conversations were inserted in the same-format course in the fall semester. The speakers included a Director of Communication and Public Affairs for a large regional grocery store; a Territory Sales Manager for Mars Wrigley Confectionary; a Regional Manager for two Eataly stores, and a Business Development Representative who works for Oppy.

Next Steps

The same survey deployed in the spring 2021 was again administered in the fall 2021session. The survey was conducted at the end of the course. This will allow for comparison of survey responses between the group of students who were exposed to the teaching innovation and those who have experienced the usual Food Retailing course teaching method with no teaching innovation. Currently, we are in the midst of data analysis; it is expected that the main results and their implications will be presented at the summer conference.

References available upon request.

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UNCERTAINTY AND NOVEL FOOD PROCESSING TECHNOLOGIES: WHAT ARE THE ORGANIC CONSUMERS' PREFERENCES?

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Abstract

INTRODUCTION

Consumers' growing concerns about health and environmental issues have increased interest in organic food consumption (Jensen et al., 2011; Smith & Paladino, 2010). Moreover, the changes in human lifestyle and eating habits (Grunert, 2013) have resulted in the organic food sector becoming a more varied market with a wide range of processed food options (Anghelcev et al., 2020). Nevertheless, processed food is a chaotic conception (Sadler et al., 2021) that lay consumers may perceive negatively in different contexts. Hence, the increasing public interest in how these processes affect food quality has led to the focus on novel food processing technologies such as high-pressure processing (HPP), pulsed electric field processing (PEF), etc. (Jaeger et al., 2015; Knorr & Augustin, 2021). Interest in these technologies is mainly led by the possibility of obtaining better quality and added value (Jermann et al., 2015; Li & Farid, 2016). Therefore, their effective implementation may meet the needs of organic consumers who want safe, tasty, and easy-to-use organic processed products with more fresh-like characteristics (Asioli et al., 2017; Zanoli & Naspetti, 2002).

Nonetheless, consumers' perceptions of risk and uncertainty are two characteristics of novel food technologies that influence their preferences (Bearth & Siegrist, 2016; Popa & Popa, 2012). Therefore, the introduction of any novel technology can create uncertainty and a feeling of a lack of control on the consumers' side, even if technologies such as PEF and HPP may provide some advantages to

consumers in terms of sensory and nutritional quality (Jermann et al., 2015; Priyadarshini et al., 2019). This is especially true for organic consumers' who have the motivation to have fewer human interactions in their food.

Moreover, emotions are short-term stimuli that can affect food choices and perception (Köster, 2009; Leng et al., 2017). Although previous research has focused mainly on the role of different emotions of the same valence in product evolution (Chen et al., 2021; Kim et al., 2010; Pocheptsova & Novemsky, 2010), less attention has been given to the differences in the uncertainty appraisals of these emotions (Tiedens & Linton, 2001). Future-oriented emotions, such as anxiety with uncertainty appraisal, are defined as affective reactions to future events (Baumgartner et al., 2008). When people are faced with two options that differ in terms of their risk and benefit, the individuals experiencing states of anxiety tend to prefer the uncertainty-reducing option (Raghunathan et al., 2006; Raghunathan & Pham, 1999; Todd et al., 2015; Wyer et al., 2019). As a result, incidental anxiety may influence consumers' attitudes, resulting in avoidance of behaviour toward what is unknown (Renström & Bäck, 2021). Factors such as incidental and future-oriented emotions (anxiety) with uncertainty appraisal leave room for shaping organic consumers' choices and preferences (Maner et al., 2007). Hence, the hypothesis has been developed that incidental negative emotions (e.g., anxiety) will affect food choices in such a way as to avoid unfamiliar (novel) processing methods to reduce the uncertainty. A communication scheme (care-score) based on a working definition of careful processing (Kilic et al., 2021) was developed and tested in the organic processed food context. The present research includes two experiments developed in the Qualtrics platform with diverse subjects between studies. All participants were organic consumers older than 18 years old who reported buying more than 5% of their household food as certified organic. The subjects were recruited from Amazon's Mechanical Turk between August and November 2020.

STUDY 1

Measure and Procedure. 192 regular consumers of cow milk, soy drink, apple juice, and orange juice were randomly assigned to one of the groups (anxiety-evoked vs. neutral) in an experiment

embedded survey. Both groups followed the same procedure. Respondents were asked to choose among three options of the same organic product (orange juice, apple juice, soy drink, milk) that differ only in the processing technology or a no-choice alternative. Among the processing technologies, pasteurisation and the no-choice alternative were considered the status-quo choice. In contrast, HPP and PEF were considered the novel option, given the respondents' lack of familiarity with these methods.

Emotion Manipulation. Considering the success of short video clips to elicit emotions in individuals (Cabral et al., 2018; Gross & Levenson, 1995; Rottenberg et al., 2007), a short video clip in a shopping context, tested in a previous study, was used to evoke anxiety in the treatment group.

Results. A Pearson chi-square showed that there were no not statistically significantly differences on consumers preferences between control and anxiety-evoked groups for orange juice (Chi2(1) = 0.514, p-value = 0.473), apple juice (Chi2(1) = 1.841, p-value = 0.175), milk (Chi2(1) = 0.366, p-value = 0.545) and soy drink (Chi2(1) = 0.007, p-value = 0.931). Most respondents preferred to select the status-quo choice (pasteurisation or none). However, the preference between status-quo preferences varied from one product to another. In the case of orange juice and cow milk, the status-quo (pasteurisation or none) was preferred over novelty (HHP or PEF). For apple juice and soy drink, most respondents chose the novel alternative. There were no significant differences in food neophobia between the control and the treatment group (p-value = 0.996).

STUDY 2

Measure and Procedure. 128 regular cow milk and orange juice consumers were randomly assigned to one of the two groups (orange or milk) and one of the two treatments (anxiety-evoked vs. neutral) in an experiment-embedded survey. All respondents were presented with a discrete choice experiment (DCE) displayed in randomized order. The DCE included eight choice sets designed using a D-efficient approach (D-error = 0.99). In each set, consumers were presented with two products packages with different attributes and levels, and a no-choice alternative. The two product alternatives could differ in one or more of the following characteristics: organic

production (organic/conventional), the care-score color scheme (monochromatic vs polychromatic), and the care-score level (low-care vs high-care). All attributes were binary dummy variables. Participants selected their most preferred option.

Emotion Manipulation. The same procedure as in study 1 was used in study 2 to evoke anxiety in the treatment group. A short video clip in a shopping context was applied to evoke anxiety.

Results. The collected data from the DCE was analyzed using a multinomial logit model (MNL) in Apollo software in R. Induced anxiety did not statistically significantly affect consumers' preference for orange juice or milk. The care-score was the most valuable attribute for both products.

GENERAL CONCLUSION

In most countries, organic is the well-accepted and legally defined label that lets consumers learn about how their food is produced at some level (Seufert et al., 2017). However, it is a farm-to-fork system; hence, there is a clear need to understand consumer perception regarding organic processed food (Bügel et al., 2014; Kahl et al., 2014). Particularly, organic consumers may have difficulties assessing the possible benefits of these new processing technologies, as they perceive organic food as a food product that is being processed with less-human interaction (Harper & Makatouni, 2002; Naspetti & Zanoli, 2009). The present work provides insights regarding current and potential processing methods that might be considered in processing organic processed foods. These results contribute to uncertainty and anxiety association theories in food consumer research.

The results show that no matter the emotional state, consumers prefer the conventional method for organic juice and organic milk. On the other hand, consumers are more likely to choose novel processing technologies for soy milk and apple juice. This is an important result that shows that organic consumers' processed drink preferences are product-dependent. Future research might examine the processed organic products of different categories to confirm this finding.

Moreover, the significant value of the care-score scheme estimator shows that consumers give value to this kind of communication for organic products. Such additional information might unload the cognitive pressure on consumers when making choices, decreasing their uncertainty. This scheme may be useful as a starting point to communicate organic food processing on the label, increasing transparency and consumer trust. These preliminary results showed that this aspect should not be overlooked by the organic industry, especially when one considers organic consumers' vital role in accepting or rejecting new technologies (e.g., GMO-produced food products). Further work on understanding other future-oriented emotions such as hope may be considered in further food consumer studies, given its same appraisal but different valence.

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2

Adventurous or Neophobic? A cross-country exploration of food consumers

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Introduction

By 2050 the global population is estimated to reach 9.8 billion (UN 2017). This growth will put pressure on food production worldwide as the demand for food rises, which in turn will impact the environment, as well as consumers health and well-being. One answer to reduce the environmental and societal impact of food production is to look towards sustainable diets, with literature recommending moving away from animal-based diets toward plant-based diets (Irz et al. 2018). This means moving towards more sustainable plant foods, but potentially ones that may be 'novel' or less familiar to many consumers, particularly those in western societies, such as seaweed, so requiring them to be more 'adventurous' in their eating.

Background

Demand for environmentally and socially produced products is increasing across Europe, and seaweed is a plant-based protein that offers both nutritional and environmental benefits (CBI 2021). The production of seaweed worldwide more than tripled between 2000 to 2018, up from 10.6 million tons to 32.4 million tons (FAO 2020). Whilst seaweeds are widely

produced and consumed in Asia, they are largely unknown in the Western world (Hotchkiss 2010; SAPEA 2017). Indeed, in the EU, seaweed is considered a 'novel' food under EU Regulation 2015/2283 (European Commission 2015).

Modern lifestyles and eating habit changes have resulted in increasing cases of obesity and chronic metabolic diseases, particularly in Western societies. Despite much research reporting a strong nutritional and environmental case for increasing consumption of aquatic plants (Askew, 2018) and the numerous therapeutic properties of seaweeds (Suhaila et al. 2012), seaweed consumption is not high in Europe, due to lack of tradition for eating this type of protein. Whilst products containing seaweed should inspire both healthy and sustainable eating habits (Vasvada 2019), consumer understanding of such benefits represents a significant hurdle. Changing consumers' acceptability of new food product alternatives and dietary patterns to incorporate such products is also challenging, as food acceptability and food choices are influenced by many factors, and sensory preferences play an important role (de Beukelaar et al. 2019).

Food neophobia is primarily the fear of a negative sensory food experience and has been found relevant in understanding peoples' willingness to consume seaweed (Birch et al. 2019; Moons et al. 2018). This is confirmed by Losada-Lopez et al. (2021) who found food neophobia affects the intention to consume seaweed, along with Camire and Banus (2020) who reported the limited consumption of seaweed by neophobic consumers in north-eastern states of the USA. On the other hand, consumers of seaweed products tend to be adventurous with food and willing to try new products (Altintzoglou et al. 2016), with Onwezen et al. (2018) using the adjective "innovative" to typify consumers who are more in favour of edible seaweed. Indeed, there is recent evidence in Western societies that the market for algae-derived foods is growing (Birch et al. 2019), with studies reporting increased consumer interest in some European countries (Barbier et al. 2019; Lucas et al. 2019), positive attitudes towards seaweed foods in

Sweden (Wendinabl & Undeland 2020) and low levels of neophobia among consumers of seaweed in Italy (Palmieri & Forleo 2020).

Given this, the aim of this current research is to identify consumer types within three different countries who generally follow 'westernised diets', and all of which have extensive coastlines with biodiversity of seaweed varieties. By segmenting these consumers based on food neophobia and innovation with food, and profiling them based on different characteristics, the potential for seaweed consumption in western diets, and its target market can be further understood.

Methodology & Measures

The study employed an online survey instrument utilising commercial consumer panels that allowed for the identification and measurement of consumer types (adventurous; neophobic) and seaweed consumption behaviour (past behaviour; future intention). Data was collected from three countries (n = 1,621): Australia (n = 521); the United Kingdom (n = 526); Croatia (n = 574). Respondents were filtered to ensure compliance with the study's requirements i.e. over 18 years of age; main/shared responsibility for purchasing and cooking food in the household. Analysis of the data was conducted in SPSS v.28 and utilised exploratory factor analysis, cluster analysis, and comparative statistical tests.

Measures in this study utilised five scales taken from previous research. Food Neophobia (14 items) was measured through a combination of the 10 item Food Neophobia Scale (Pliner & Hobden 1992), and four newly developed items (I only eat foods which are familiar to me; I dislike anything that will change my eating habits; When traveling, I search for familiar foods to eat; I am quite adventurous with food) to reflect contemporary issues and behaviour. Innovation with Food utilised 4 items taken from Brunsø et al. (2021). Seaweed consumption behaviour employed single item measures for both past behaviour (How often have you eaten seaweed products in the past 12 months?) and future intention (How likely is it that you will eat

seaweed products in the next 12 months?). Past behaviour was measured on 10 items: an 8-point scale from 'Daily' to 'Less than once in the past 12 months' and the options of 'I have never eaten seaweed products' and 'I don't know if I have eaten seaweed or not'. Future intention was measured on a 7-point scale from 1 = not at all likely to 7 = highly likely.

Analysis & Preliminary Findings

Sample characteristics

Females dominated the sample in all three countries (Australia: n=315 (60.5%); UK: n=355 (68.4%); Croatia: n=358 (62.4%)) and is likely reflective of the requirement that participants were the person with the main/shared responsibility for purchasing and cooking food in the household. All age ranges were reflected in the data collected, however those aged 30-44years were the dominant age range in all three countries (Australia: n=153 (29.4%); UK: n=242 (46.6%); Croatia: n=223 (38.9%)) followed by 45-49 years, under 30 years, and 60+ years respectively. In terms of the highest level of education achieved, this varied by country with Australia finding the highest number of respondents had obtained a trade or technical certificate (n=171 (32.8%), whilst in the UK it was secondary school (n = 186 (35.8%), and in Croatia an undergraduate degree (n=201 (35.0%). However, despite this difference, the majority of respondents had one of these three levels of education, with just a small number only having finished primary school (Australia: n=2 (0.4%); UK: n=5 (1.0%); Croatia: n=4 (0.7%)). Croatian respondents were more likely to have a postgraduate degree (n=131 (22.8%)) than either respondents in Australia (n=65 (12.5%)) or the UK (n=61 (11.8%)).

Identifying food neophobia and innovation with food factors

Exploratory factor analysis (EFA) was conducted on the 14 food neophobia items and 4 innovation with food items using principal components extraction with varimax rotation as the estimation procedure (Kline 2000). Parameters were organised to assess solutions with eigenvalues in excess of

±0.5, as if loadings are ±0.5 or greater they are considered practically significant (Hair et al. 2009). A forced 2-factor solution was utilised. Following this procedure, one unsatisfactory item (I will eat almost anything) was removed due to cross loading (i.e. >0.50) (Hair et al. 2009). The EFA was re-run and the resultant rotated components matrix (Table 1) reveals a clear and substantively explainable pair of factors (Nunnally & Bernstein 1994).

Table 1. Exploratory factor analysis.

	Australia		UK		Croatia	
	Adventurous	Neophobic	Adventurous	Neophobic	Adventurous	Neophobic
I am constantly sampling new and different foods	.826		.762		.749	
I like to try out new recipes	.822		.795		.822	
I like to try new ethnic restaurants	.818		.715		.796	
I am quite adventurous with food	.806		.762		.780	
Recipes and articles on food from other culinary traditions encourage me to experiment in the kitchen	.801		.794		.808	
I like to try new foods that I have never tasted before	.781		.732		.730	
At dinner parties, I will try a new food	.750		.724		.546	
I look for ways to prepare unusual meals	.729		.755		.844	
I like foods from different countries	.715		6.76		.665	
I only eat foods which are familiar to me		.804		.797		.710
I am afraid to eat things I have never had before		.750		.689		.642
Food from other cultures looks too weird to eat		.732		.693		.671
I don't trust new foods		.721		.667		.646
I dislike anything that will change my eating habits		.712		.700		.708
When travelling, I search for familiar foods to eat		.697		.674		.712
If I don't know what is in the food, I won't try it		.679		.637		.588

I am very particular about foods I will eat		.656		.638		.542

Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalization
a. Rotation converged in 3 iterations.

Distinguishing Consumer Types

To identify the different types of consumer with regard to seaweed consumption a two-stage clustering process was conducted (Hair et al. 2009). Firstly, a hierarchical cluster analysis was performed to define the number of clusters (2). Then a k-means cluster procedure was used to actually form the clusters.

The results of the cluster analysis are presented in Table 2. Two clusters were identified in all countries, namely 'adventurous' consumers and 'neophobic' consumers. Results show that Australian consumers are significantly more food neophobic compared with UK and Croatian consumers (60.7% versus 42.8% and 43.2%).

Cluster 1 - 'Adventurous'. This segment has low levels of food neophobia and high levels of food innovation. Consumers in this cluster have more experience with seaweed consumption and have eaten seaweed products more often in the last 12 months. They are also significantly more likely to consume seaweed in the next 12 months. There is a significantly higher share of younger adventurous consumers in Croatia and the UK. Furthermore, adventurous consumers in the UK are more educated, while in Croatia there is a significantly higher share of females in this segment.

Cluster 2 – 'Neophobic'. Consumers in this cluster have high levels of food neophobia and low levels of food innovation. There is a significantly lower share of neophobic consumers who have eaten seaweed previously, and a significant amount being unlikely to consumer seaweed in the next 12 months. In Croatia and the UK, this segment is significantly older, and in Croatia more composed of males. Regarding education level, neophobic consumers in the UK have a lower level of education.

Table 2: Cluster Profiles

		Australia (N=521)			UK (N=519)			Croatia (N=574)		
		Adventurous (n=205; 39.3%)	**Neophobic** (n=316; 60.7%)	**P****	**Adventurous** (n=297; 57.2%)	**Neophobic** (n=222; 42.8%)	**P****	**Adventurous** (n=326; 56.8%)	**Neophobic** (n=248; 43.2%)	**P****
Gender	Male	35.6%	40.8%	n.s.	31.0%	32.4%	n.s.	32.8%	42.7%	0.00
	Female	63.9%	58.2%		69.0%	67.6%		66.6%	56.9%	
	Prefer not to say	0.5%	0.9%		0.0%	0.0%		0.0%	0.0%	
Age	<30 years	18.5%	27.2%	n.s.	25.9%	20.3%	0.00	18.7%	12.9%	0.00
	30-44 years	28.8%	29.7%		51.5%	40.1%		42.0%	34.7%	
	45-59 years	29.3%	23.7%		18.2%	32.0%		30.1%	33.5%	
	60+ years	23.4%	19.3%		4.4%	7.7%		9.2%	19.0%	
Highest educational level	Primary School	0.5%	0.3%	n.s.	0.3%	1.8%	0.00	1.2%	0.3%	n.s.
	Secondary School	24.9%	33.5%		28.6%	45.5%		29.8%	23.9%	
	Trade/Technical certificate	36.1%	30.7%		25.6%	20.7%		14.1%	15.6%	
	Undergraduate degree	24.9%	27.7%		32.3%	22.1%		32.3%	37.1%	
	Postgraduate degree	13.7%	11.7%		13.1%	9.9%		22.6%	23.0%	
How often have you eaten seaweed products in the past 12 months?	Once or more in the past month	52.2%	27.8%	0.00	20.2%	11.7%	0.00	27.0%	5.2%	0.00
	Once or more in the past 6 months	21.5%	13.0%		27.6%	14.0%		20.2%	8.1%	
	Once or less in the past 12 months	17.1%	20.6%		32.7%	29.3%		24.8%	28.6%	
	I have never eaten seaweed products	5.9%	25.6%		11.8%	35.6%		27.9%	58.1%	
	I don't know if I have eaten seaweed or not	3.4%	13.0%		7.7%	9.5%		0.0%	0.0%	
	Unlikely	15.3%	43.0%	0.00	26.9%	50.0%	0.00	37.4%	74.2%	0.00

How likely is it that you will eat seaweed products in the next 12 months?	Neither likely nor unlikely	10.8%	18.4%		16.8%	24.8%		11.3%	8.9%	
	Likely	73.9%	38.6%		56.2%	25.2%		51.2%	16.9%	

**Chi-square test

Future Research

Whilst this study looks at profiling adventurous and neophobic consumers across three westernised countries, future research could go further to identify what factors may lie behind these types. Future investigations may look to include measures of psychological determinants (e.g., food involvement; health consciousness; symbolic value) to assess their contribution to such behaviour.

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4

Which factors influence consumers when assessing the trustworthiness of an organic food? Evidence from a choice based conjoint study

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Abstract

Purpose of the Research

The aim of our research was to measure the importance of credibility factors in the case of organic food.

Background

Consumer trust in the food chains is a major concern in today’s society. As food is part of daily life, consumers are more interested about what they eat. In most cases, they can evaluate the quality of food quite easily by the smell, the taste, and the look, but there are certain attributes which are not detectable by consumers, such as the presence of pesticides or the production method. This is the reason, why organic food is hard to trust, and many consumers are skeptic if a product is really organic.

This fact highlights the importance of trust. It is well documented, that the level of trust must not be considered as general, constant phenomenon, but its level shows consideralbe spatio-temporal changes. For example, Euromodule survey has shown, that 60% of South Korean and 32% of West German people accepted the statement that Most people can be trusted, but in case of Hungarian population this share has been no more than 18% (Delhey and Newton, 2003). Social psychology has well proven, that the level of trust is extremely low to different institutions in former socialist

countries People in these countries developed circles of private and unofficial contacts among people who could help each other solve the daily problems of scarce resources and services, within a wider society that was pervaded by general suspicion and mistrust created by the state.

Methodology

To measure different extrinsic credibility factors of organic food, we developed an online questionnaire based on choice based conjoint method. The online questionnaire was distributed to participants on social media platforms between 14th October and 7th December 2021. During that period, we collected 723 participants, from which 652 respondents' answers could be analyzed, as those respondents were excluded, who only chose "None of them" option.

Table 1. Socio-demographic characteristics of the participants

Gender		
Male	174	27%
Female	478	73%
Age group		
18-25	249	38%
26-35	160	25%
36-45	93	14%
46-55	84	12%
56+	66	10%
Education		
Primary school	3	0%
Vocational school	8	1%
High school	241	37%
Diploma	400	62%
Place of living		
Capital city	207	32%
Town	292	45%
Village	153	23%
Perceived income		

Low	100	15%
Average	344	53%
High	208	32%

To develop the questionnaire, we chose the measured factors and their levels based on previous research as a first step. The following attributes were selected: type of packaging, product appearance, communication of organic origin, country of origin, price, and place of purchase. Organic rice was selected as the subject of the study for various reasons. The above-mentioned factors could be assessed in the case of organic rice, it is a widely consumed cereal in the world, and most consumers have knowledge about this product.

In the second step, we created the choice sets. For this purpose, we used R program, and we followed the instruction of Aizaki and Nishimura (2008). In the questionnaire, we showed 16 choice sets to the participants, where they needed to choose, which theoretical product do they trust more. There was a none of them option.

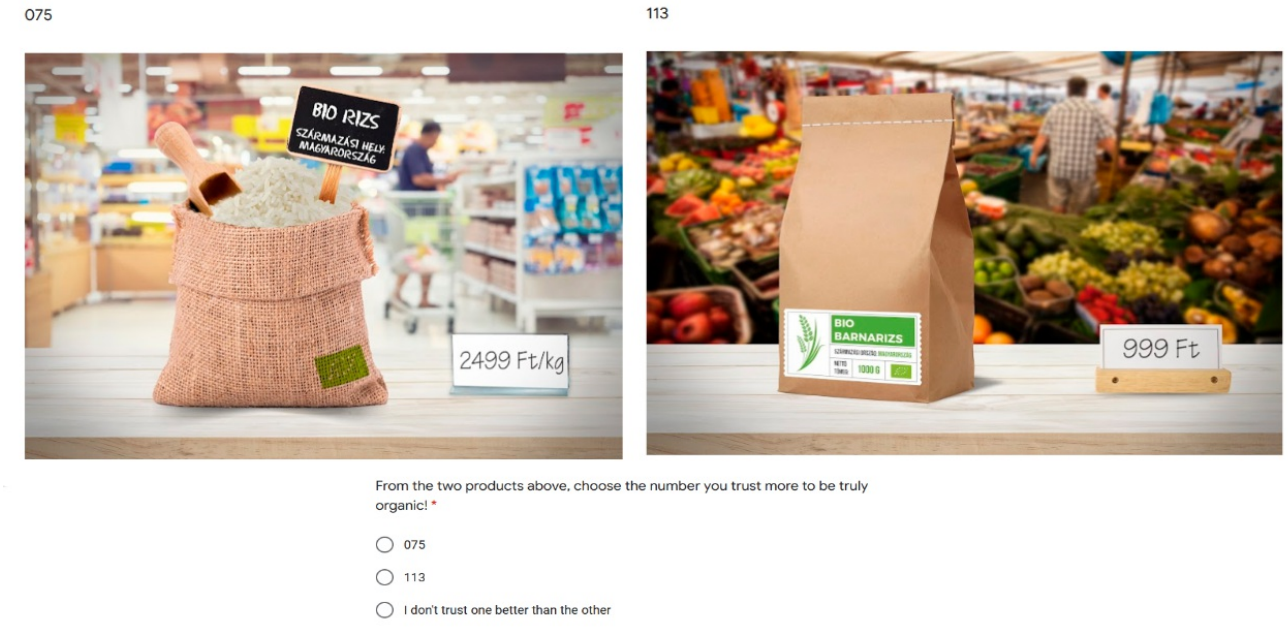

Fig. 1. Choice set

Results

Table 2 shows our findings regarding the importance of each attributes' organic food trusting effect. At each attribute, the last level is a reference, where the coefficients are 0, so they are not showed in the table.

Table 2. Results of the conditional logit model

Level of attribute	Coefficients	Exp (coef)	se (coef)	z-value
Packaging				
Plastic	-0.377	0.686	0.043	-8.735
Paper	0.515	1.673	0.039	13.058
Without package	0.000	0.000	0.000	0.000
Appearance				
Brown	0.236	1.266	0.032	7.339
White	0.000	0.000	0.000	0.000
Communication				
Claim	0.167	1.181	0.032	5.151
Without claim	0.000	0.000	0.000	0.000
Country of origin + organic logo				
Domestic + EU logo	0.681	1.975	0.036	18.712
USA + USDA logo	-0.152	0.859	0.043	-3.513
India + India Organic logo	0.000	0.000	0.000	0.000
Price				
Low	-0.229	0.795	0.041	-5.599
High	0.107	1.113	0.042	2.549
Average	0.000	0.000	0.000	0.000
Place of purchase				
Organic market	0.149	1.161	0.036	4.179
Online	-0.265	0.767	0.043	-6.171
Supermarket	0.000	0.000	0.000	0.000

As it can be seen from Table 1, all attributes have some effect on the

level of trust, in some cases the coefficient is negative, which means that that level of attribute is less trustworthy compared to the reference attribute level.

The most influencing factor seems to be the country of origin, which was displayed by the respective organic logo as well in the choice sets. Domestic origin positively impacts the credibility of organic food. In the case of rice, Indian origin is more credible, than rice from the United States. These results correspond with the findings of previous research. As Pedersen et al. (2018) pointed out, the image and trust in the exporting country can influence the trust in the imported organic food.

Surprisingly, the type of packaging was the second most important factor, when consumers evaluated, if they trust organic rice. Paper packaging created trust amongst respondents, on the other hand plastic packaging is discouraging consumers to trust the organic origin of a food product. We investigated package free products, as it gains popularity among environmentally conscious consumers (Rapp et al., 2017), although it was less trustworthy from organic perspective compared to paper packaging.

Another, less researched attribute became the third most important factor of believability of organic origin. Appearance of the product significantly influenced respondents trust of organic rice. Namely, if the product was brown, they more likely believed that the product was produced according to organic standards.

The other attributes significantly, but not to such an extent influenced the credibility of organic rice. The presence of “From controlled organic farming” claim strengthen the trust in organic rice. Place of purchase was displayed by the background of the products in the questionnaire, from which organic market seemed trustworthy from the respondents’ point of view. Organic rice displayed in an online shop was less credible than displayed in a supermarket. Price showed the smallest effect on the believability of organic food, thus significant differences were found. If the price of organic rice was cheaper, than the average price, consumers doubt the organic origin of the product, as Yin et al. (2016) proved it in the case of organic milk. On the other hand, higher price increased the trustworthiness of the organic product.

Contributions to Theory and Practice

Our results support many previous findings, although it provides new insights about the influencing factors of organic food trust. All the investigated factors significantly influenced the consumers' perceived trust of organic rice, although the differences between levels of attributes were not that numerous by each case.

According to the results, an organic product should be from domestic origin, in a paper packaging with a natural appearance, sold in an organic market on a higher price to generate trust in consumers.

It is important to highlight, that during evaluation of the choice sets respondents chose based on combinations of attributes, and some attributes could influence each other, and some attributes are not applicable to other types of food products. In the case of country of origin, organic logo of the respective country was displayed on the packaging. The consumers' knowledge of logo could be different, and presumably more known logos create more trust. In the case of place of purchase there was limited possibilities to display the different scenarios since data collection happened online.

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4

The effect of scientific and non-scientific information stimuli on consumers' attitudes and intention to eat insect proteins

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Abstract

1.Introduction.

Insects have gained a broad interest as a source of proteins for human and livestock consumption. The advantages on humans of insect consumption are significant in number, including high levels of protein and nutrients (House 2016), higher food provision security because of the less required production land (Chang et al., 2019), and enhanced sustainability because of lower greenhouse gases emissions (Huis and Arnold 2013) and the exploitation of food-wasted biomass for insect feed in the frame of circular economies (Coderoni and Perito, 2020). Admittedly, there is considerable interest among industries and scientists who push towards EU-level regulations to permit the use of insects for both human and livestock consumption and define the rules on safety, health, marketing and animal welfare (Lähteenmäki-Uutela et al., 2017). The new EU Regulation 1372/2021, as well as the characterization of insects as a novel food safe for human consumption by the European Food Safety Authority (EFSA) opened new avenues for the commercial exploitation of insect proteins.

One of the main barriers in this direction is consumer acceptance. Within Western societies, the attitude consumers hold towards eating insects or insect protein-based foods is led by skepticism, negativity or even phobia, since insect consumption is considered a

questionable behavior from a cultural and social standpoint. Certain early surveys on European consumers' acceptance of insect proteins as animal feed showed encouraging results, with many consumers in Italy (Mancuso et al., 2016), Belgium (Verbeke et al., 2015) or Germany (Ankamah-Yeboah et al., 2018) holding positive attitude towards fish and livestock products fed with insect proteins. These surveys, however, also showed a clear need for more information to raise public awareness and engagement, which will lead to an increased acceptance of insect-based feed and food. To this end, the objective of this study is to explore the effect on consumers' attitude and intention to eat insect proteins specific communication stimuli have in the form of: a) scientific facts about the benefits of insect protein consumption by livestock or humans, shown in the form of textual or visual information, as well as: b) a non-scientific stimulus, i.e., an influencer (a world-famous celebrity) endorsing the specific protein source.

2. Conceptual framework.

"Humans, along with other omnivorous animals, have been characterized as being neophobic concerning food" (Pliner and Hobden, 1992, pp 52). Cox and Evans (2008) support that one predictor of the lack of acceptance of novel food products is likely to refer to a neophobic personality trait. The results of these surveys have introduced neophobia as a reason for rejecting anything new or beyond our understanding and conventional reality. Food neophobia, an aversion towards novel food, is a natural reaction in individuals that protects them from the risk of being in "health danger", like poisoning by consuming a potentially harmful food (Al-Shawaf et al., 2015). In-depth, it accounts for a person's unwillingness to eat, or avoidance of either new or unusual food, based on one's culture, habit, and current diet (Perrea et al., 2015). People are among the several species that present food neophobia and although there is availability of unfamiliar foods in modern society, uncertainty about these food items continues to have a crucial effect on dietary intake (Alley & Potter 2011).

Humans may perceive and expect how foods should smell and taste according to their culture and dietary habits. As a result, a food that is not familiar to an individual and falls out of their acceptable category is being rejected. There are individual differences in

willingness to try new food products, and three segments related to willingness have been identified: Neophobics, Ambiguous, Neophilics (Helland et al., 2017). Tuorila et al. (1994) explain that three main factors play a vital role in the acceptance and the adoption of a novel or foreign food: sensory quality, available information concerning the product (or lack of it), and attitude of potential consumers. More recent studies have shown that repeated exposure to novel foods could increase one's propensity to accept and adopt a novel food (Alley and Potter, 2011). According to Pliner and Hobden (1992); and Pliner et al. (1993), food exposure and providing information about novel food tend to decrease food neophobia levels, since personal experience and knowledge are influential variables in trying unfamiliar food and making people less neophobic. People with higher levels of food neophobia tend to consume some types of food (e.g., poultry and fish) more frequently (Siegrist et al., 2013). Food neophobia tends to decline as education (Tuorila et al. 2001) income (Siegrist et al., 2013) and socio-economic status increase (Flight et al., 2003). Men tend to be more food neophobic (Nordin et al., 2004; Tuorila et al., 1998), though other studies (Pliner and Melo 1997; Hobden, 2018) show that there is no gender-related difference. Lastly, food neophobia is common among children, it affects food choice and limits dietary variety (Dovey et al., 2008).

As far as insects for human consumption is concerned, there are still taboos in the Western world, making acceptance of insect-based foods and food ingredients a crucial barrier. Thus, the need to find alternative feeding sources that are acceptable and sustainably produced demand broad public debate (Huis and Arnold 2013). Many studies have indicated that food neophobia as an individual trait is one of the most crucial predictors in understanding the willingness of consumers to try insect-based foods. It has been found that the degree of insect-based food consumption was influenced by a number of factors that one would expect to be associated with the consumption of conventional food products or an aversion towards novel ones, such as availability, taste and current eating habits and culture (House, 2016). Moreover, insect-based food consumption and purchase intention would be positively affected by general interest or curiosity, and a feeling that insect proteins are more sustainable and may offer more benefits to human health and nature (House,

2016; Halloran et al., 2018).

3.Methodology

To explore whether specific scientific and non-scientific information stimuli influence consumer acceptance of animal proteins either as livestock feed or for direct human consumption, an experiment was designed with consumers in a South European country with a medium-to-low level of novel food product phobia. Specifically, a sample of N=194 consumers who consumer farmed fish at least once a month was recruited and assigned into three groups of A=61, B=72 and C=61 participants respectively. The three groups were compatible (non-significant differences at $p<0.001$) in terms of gender (50-50 split) and age (mean sample age 39.5y.), across several other socio-demographic characteristics (mean household size 2.91 members, 50% married, 50% university graduates) and monthly household income. Each group was exposed to a different communication stimulus, as follows: Group A to a 1.5 page long scientific text that explains in the local language and in a simple manner: a) the principles of insect protein production in the frame of the circular economy and the issue of food waste, b) the environmental issues of fish farming that can be addressed with the use of insect proteins as fish feed, and c) the benefits from using insect proteins in human consumption. Group B to an 8´34´´ long informative video (in English with subtitles in the local language) on the same topics (a) and (b) as above. Lastly, group C to a non-scientific stimulus, namely a 3´15´´ long video showing a world-famous Hollywood actress cooking and eating insects, without any other information provided.

The questionnaire used for data collection comprised in its Part A the stimulus described above (assigned per group). Part A also included four types of test variables: a) perception of fish being fed on insects (“Fish being fed on insects is something natural”); b) intention to buy fish/farmed-fish fed on insects and eat insects/insect traces-containing recipes (“How probable it is that you …”); c) barriers towards eating insects (“I won’t eat insects because of their appearance/taste/texture”), as well as attitudes towards the action of eating insects (Insect Phobia Scale, Menozzi et al., 2017), i.e. “eating insects is not a socially acceptable action/not compatible with our culinary habits/not safe for consumption/will soon be a

“necessary evil”/a behavior that shows our respect to the environment”); and d) emotions about eating insects (“eating insects make me feel curiosity/interest/disgust/fear/indifference”. All variables were measured on 7-point agreement scales (intention questions on a 10-point probability scale) before and after the exposure of each group to the respective stimulus.

In addition, in its Part B the questionnaire included the manipulation checks, all on 7-point agreement scales: the Food Neophobia Scale (Pliner and Melo, 1997), i.e. “I try frequently new and different food”, one item on marine sustainability attitude (“To me, it is important to avoid overfishing the oceans by means of fish farming”, as well as past insect eating behavior. Lastly, the 2 scientific stimuli have been evaluated for their credibility trustworthiness and self-relevance; while the celebrity for her credibility and trustworthiness as far as eating insects is concerned, the behavior of her eating insects being acceptable and “worth-imitate”, as well as the level of congruence between her and the participants.

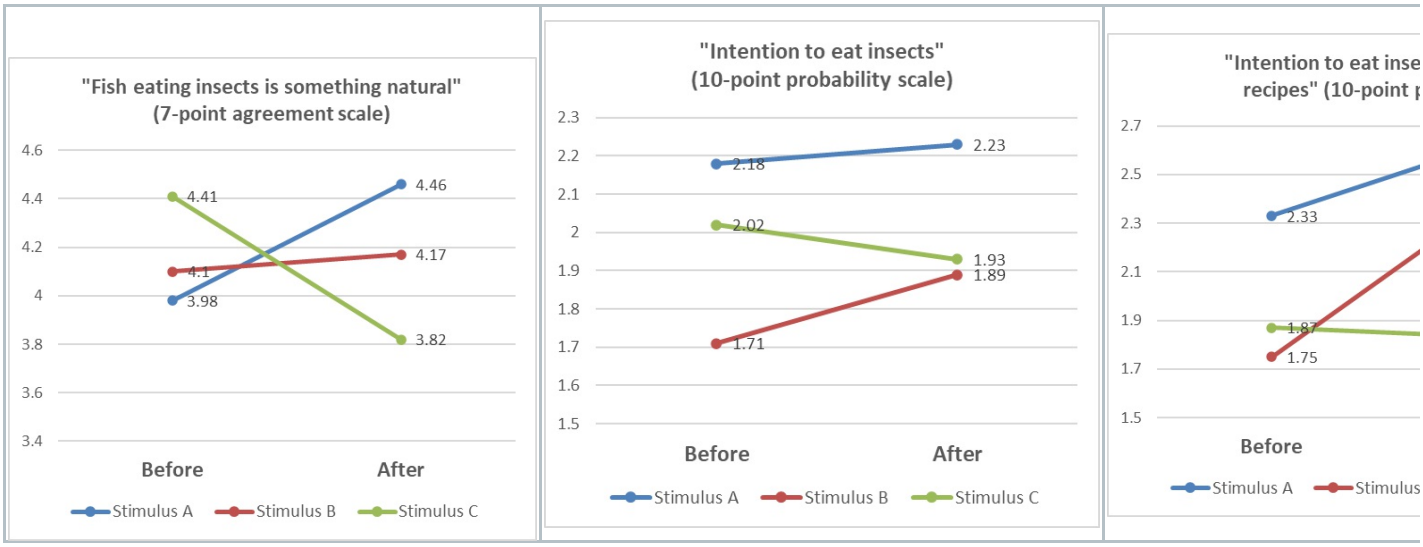
4.Results

The manipulation checks showed that the sample of South European consumers in this study hold mildly phobic attitude towards novel foods (mean Food Neophobia =4.53(1.62)), a strongly positive attitude towards marine sustainability (mean=5.23 (1.46)), and very limited past insect eating behavior (about one in ten participants had consumed insects in the past). The two scientific stimuli have been evaluated as generally credible (mean=4.55(1.75)) and trustworthy (mean=4.47(1.78)), but rather little self-relevant (mean=3.81(1.90)). On the other hand, the celebrity was found less credible and trustworthy as far as her eating insects is concerned (means=3.03(2.14) and 2.41(1.91) respectively), her behavior of eating insects as much less acceptable and “worth-imitating” one (mean=2.56(2.01) and 1.93(1.69) respectively), while the level of congruence between her and the participants was also too low (“I believe Angelina and I have many things in common”, mean=2.00(1.63)). All the above results showed non-significant differences across groups A-C at $p<0.001$.

ANOVA tests have been applied to explore the significance and direction of the main effects of the stimuli on the four test variables

in the three experimental groups. Regarding the perception of fish fed on insects being “… something natural”, results revealed that after the exposure to the scientific stimuli (i.e., the text and the video) all mean scores changed in the intended direction (Figure 1), increasing the perception of

Figure 1: Main effect of stimuli on naturalness perceptions and intention to eat (p>0.05)



naturalness (Δmean A=+0.48 and B=+0.07), while for the celebrity stimulus the direction of change was the opposite (Δmean C= -0.59). However, all changes across groups have been non-significant (p>0.05). The same trend of the scientific stimuli increasing the mean score and the celebrity stimulus decreasing it, but at a non-significant level (p>0.05) appears for the intention to buy fish and farmed-fish fed on insects (Δmeans A=+0.43, B=+0.18, C= -0.68 and A=+0.33, B=+0.23, C= -0.65 respectively), as well as the intention to eat insects and insect traces-containing recipes (Δmeans A=+0.05, B=+0.18, C= -0.09 and A= +0.31, B= +0.67, C= -0.05 respectively).

Moreover, the scientific stimuli soothed whereas the celebrity stimulus aggravated the perceived barriers towards eating insects, albeit always at a non-significant level (p>0.05) (appearance: Δmean A=0.00, B= -0.07, C= +0.31; taste: Δmean A=0.00, B= -0.06, C= +0.40; texture: Δmean A= -0.04, B= -0.21, C= +0.41); as well as the perceived culinary compatibility of eating insects (“eating insects is

not compatible with our culinary habits”: Δmean A= -0.49, B= -0.29, C= +0.10). On the other hand, all stimuli aggravated the social rejection of eating insects (“eating insects is not a socially acceptable action”: Δmean A= +0.51, B= +0.26, C= +0.23).

Interestingly, the scientific stimuli increased at a statistically significant level (Figure 2) the environmental friendliness attitude towards eating insects (“eating insects is a behavior that shows our respect to the environment”: Δmean A= +0.41, $p<0.05$; B= +1.02, $p<0.001$; C= -0.31, $p>0.05$), as well as induced a fatalistic attitude on eating insects (“eating insects will soon be a “necessary evil”: Δmean A= +0.69, $p<0.05$; B= +0.68, $p<0.05$; C= -0.13, $p>0.05$).

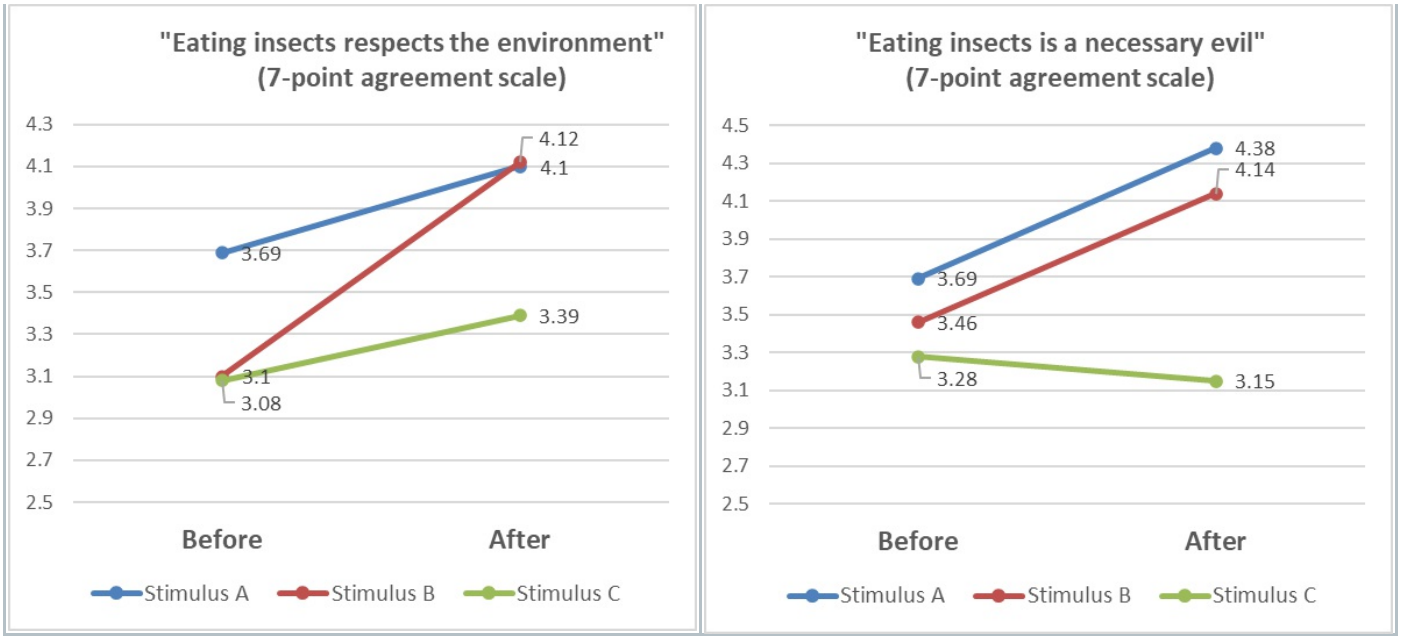
Lastly, all stimuli tested had no significant effect on the emotions evoked by eating insects (curiosity/interest /disgust/ fear/indifference, all Δmeans at $p>0.05$).

5.Discussion

A key finding from this experiment is that the scientific stimuli enhanced the positive perception and the intention to buy (farmed) fish fed on insects, as well as the intention to eat insects and (mainly) insect traces-containing recipes; moreover, the scientific stimuli soothed the perceived barriers towards eating insects, as well as the perceived culinary compatibility of eating insects. The changes are non-significant, yet in the intended direction, revealing that factual scientific information, perceived as credible and trustworthy, can be effective as communication stimulus in an intervention campaign aiming at improving consumer acceptance of insect proteins. However, the level of low perceived self-relevance of the scientific stimuli selected for this experiment may explain the lack of statistical significance of the changes appeared.

On the other hand, the non-scientific stimulus selected in the form of the specific

Figure 2: Main effect of stimuli on sustainability of eating insects (Stimulus A: $p<0.05$; Stimulus B: $p<0.001$) and fatalistic attitude towards eating insects (Stimuli A and B: $p<0.05$)



celebrity persona created reversed main effects: the positive perception and the intention to buy (farmed) fish fed on insects decreased further against their already low levels, and the same was the case for the intention to eat insects and insect traces-containing recipes; moreover, the non-scientific stimulus made the perceived barriers of eating insects even higher, and its perceived culinary incompatibility even larger. Like the low perceived self-relevance of the scientific stimuli for consumers potentially being the cause of lack of statistical significance in the changes provoked by this type of stimuli, low perceived congruence between the celebrity and the consumers, aggravated by the low perceived credibility, trustworthiness and overall acceptance of the celebrity's insects' eating behavior may explain the appearance of reverse effects.

The most important finding of the experiment, however, is the strongly positive and statistically significant improvement in the perceived environmental friendliness of eating insects on the one hand, as well as the sense of unavoidable that surrounds this type of behavior on the other, induced by the scientific stimuli. The variation in the attitudinal construct underlying the above finding, i.e. environmental concern, may indicate the controversies that eating insects involve for the contemporary Western consumer between cultural incompatibility and a sense of responsible eating behavior.

6.Conclusion

The experiment conducted in this study aims to explore the effect scientific and non-scientific information has on consumer attitude and intention to eat insect proteins. The scientific stimuli worked in the intended direction, seemingly being an effective mechanism for enhancing consumer acceptance; while the non-scientific stimulus worked in the opposite direction, corroborating well-established findings in the literature about the risk around the choice of endorsers and the issue of their perceived congruence with consumer personalities (e.g., Balabanis and Chatzopoulou, 2019).

Despite the nutritional, environmental and economic benefits of insect-based food consumption, the growth potential of insect-based foods as part of consumers' everyday diet is still no clear (Srivastava, Babu & Pandey 2009). In the current experiment, all intention scores, pre- and post-exposure, are very low, the stimuli tested aggravated the social rejection of eating insects, while the emotions surrounding the act of eating insects remained under all conditions very negative. Perhaps the biggest push towards insect-based food consumption will be the urgent need for societies to reduce the environmental footprint; and in this direction, factual scientific information seems to be an effective means in causing a positive attitude change.

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5

Why consumers choose palm oil free food products? Examining ethical consumer behaviour using the theory of planned behaviour

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Abstract

What drives a consumer to buy food that is in line with the trend of ethical consumption? Why is ethical consumption becoming increasingly important? What ethical consumption is, although it has been described by many researchers, there is no well-defined, uniformly accepted definition. It is generally understood as consumer choices and behaviours based on morals, and described as green consumption, sustainable consumption, responsible consumption, mindful or conscious consumption, critical consumer behaviour (Manyukhina, 2018). Looking at the growth of the market for some products that demonstrate ethical consumption (e.g. fair-trade, vegan, organic), there is a clear trend towards the rise of these types of products (Wunsch, 2021, Bedford, 2022). Although the market growth is evident from the figures, it is still a narrow group of consumers who are truly ethical consumers, as the share of ethical products in the total market is small ("Ethical Consumer Market Report," 2012).

The two main strands of ethical consumption can be considered to be the environmental (Carrier, 2010; Sudbury-Riley & Kohlbacher, 2016) and social impacts (Auger et al., 2010; Morgan et al., 2016) associated with consumption. This suggests that there are a number of product development directions and consumer trends in the market that fit into this, such as fair trade and organic products.

Boycotting different food ingredients for whatever reason, such as social or environmental impacts, is a common manifestation of

ethical food consumption. Palm oil is the most widely produced vegetable oil and the most consumed vegetable oil in food products (Shahbandeh, 2022). Many reasons have led to the uptake of palm oil in products, such as its versatility, productivity, price and availability, but a countertrend has also emerged. Several large NGOs (e.g. Greenpeace) have drawn attention to the damage that palm oil production can cause (Shimizu & Desrochers, 2012). There are health, social and environmental problems associated with palm oil as perceived by consumers. This may have led to some countries having the second highest growth rate in the free-from market for palm oil-free products (Statista, 2022).

This has led to the objective of our research. We extended the basic elements of the theory of planned behaviour with the three main factors, health issues related to palm oil (from a consumer perspective) and consumer thoughts about the social situation and environmental impacts on the line of ethical food consumption behaviour. Among these factors, we would like to assess which ones contribute most to consumers' consumption of palm oil-free products and which ones are missing in the development of this behaviour.

The first figure presents the conceptual model of the research and our objective.

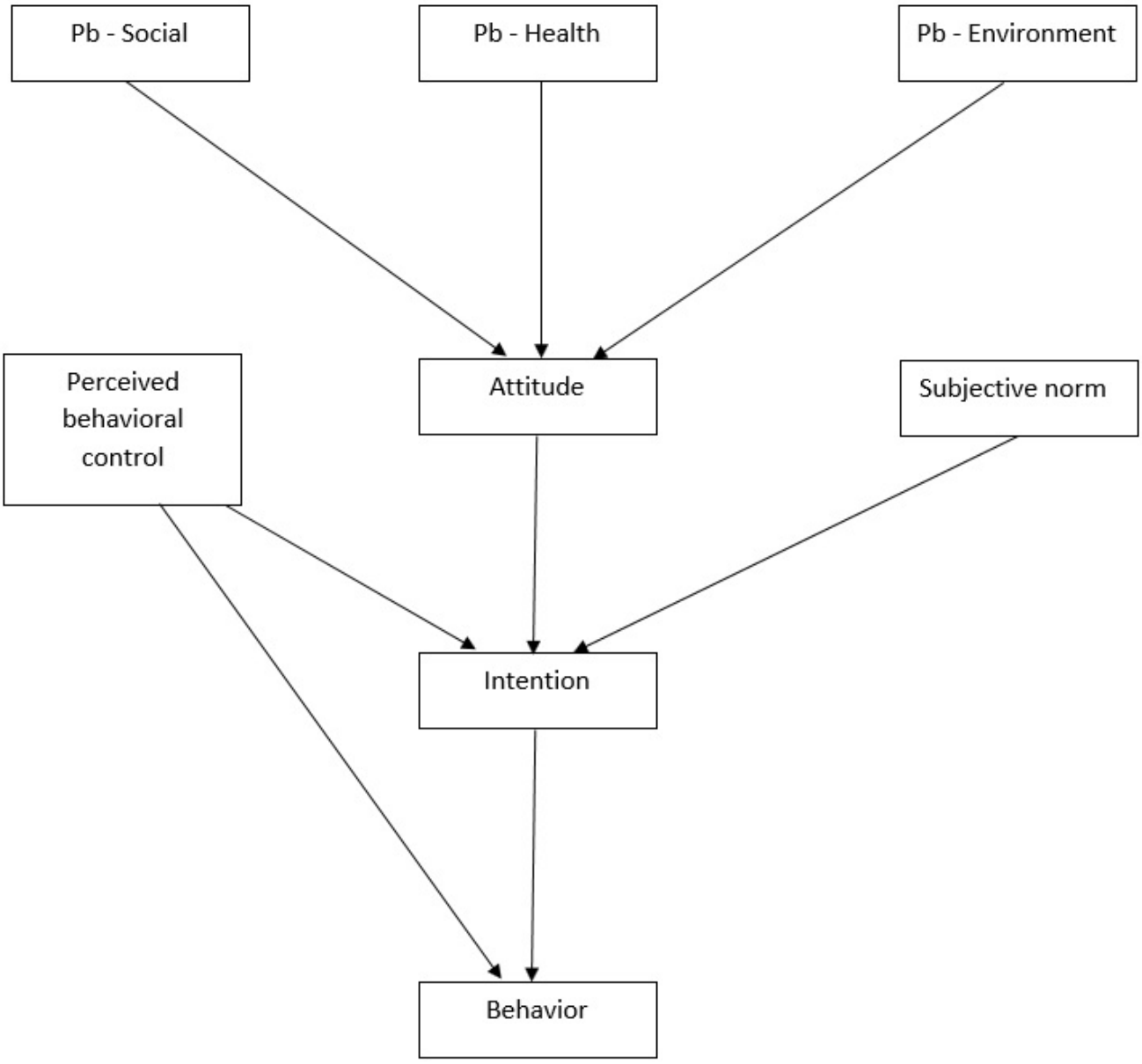

Figure 1. Conceptual model of the research

Materials and methods

Consumer survey

To answer our research question, we conducted a primer survey in July-August 2021. The questionnaires were completed online and 327 people were interviewed. In all cases, respondents gave their written consent for their answers to be analysed.

The elements of the Theory of planned behaviour by Ajzen (1991) were considered as a primary consideration in the construction of

the questionnaire and the statements it generated were used in our research (Fishbein & Ajzen, 2011). In addition, we formulated the claims for each category based on several other studies, such as Zemore and Ajzen (2014) for the scales of Intention, Parveen and Ahmad (2020) and Shin and Hancer (2016) for the subjective norm. In addition, the questionnaire also asked respondents about issues specifically related to palm oil, palm oil-free products, and consumer beliefs about the environmental, social and health impacts of palm oil. These statements are based on research by Capecchi et al. (2019). Demographic and other characteristics of respondents were measured at the end of the questionnaire.

Data analysis

In order to construct the proposed model, the data were analysed using structural equation modelling (SEM). The analysis was performed using SmartPLS software (Ringle et al., 2015). The previously mentioned statements were applied in the model construction.

The statements used in the model are summarized in Table 1.

Table 1.: Items and constructs (based on (Ajzen, 1991; Capecchi et al., 2019; Fishbein & Ajzen, 2011; Parveen & Ahmad, 2020; Shin & Hancer, 2016; Zemore & Ajzen, 2014))

Behavior	
Over the past six months, I have taken care to buy palm oil-free food when shopping in grocery stores.	
Intention	
I intend to buy palm oil-free food products in the near future.	
I expect to buy palm oil free food products in the coming months.	
I am willing to encourage or persuade others to buy palm oil free food products.	
I will try to avoid food products containing palm oil.	
I plan to avoid food products containing palm oil.	
I intend to avoid food products containing palm oil.	
Perceived behavioral control	
For me, it is easy to buy palm oil-free food products.	
It is entirely up to me whether I buy palm oil free food products.	
If I really wanted to, I could buy palm oil free food products.	
Avoiding foods containing palm oil is completely out of my control.	
Avoiding foods containing palm oil is... not at all in my control/entirely in my control	
Subjective norm	
I think my family and friends think it is a good thing to buy palm oil free food products.	
I think most of my family and friends buy palm oil free food products.	
I think my friends and family don't care whether I buy palm oil free food products or not.	
Most people who are important to me think I should buy palm oil free food products.	
They expect me to buy palm oil free food products.	
Attitude	
If I would avoid products that contain palm oil, that…	
...would be very bad	... would be very nice
...would be very unpleasant	...would be very pleasant
...would be very harmful	...would be very beneficial
...would be totally unnecessary	... would be very useful
Personal beliefs – environment	
Reducing palm oil production will help reduce deforestation.	
Reducing palm oil production can help offset the effects of climate change.	
Reducing palm oil production can slow the extinction of many animal species.	
Personal beliefs – health	
Consumption of refined palm oil can be harmful to human health.	
Consumption of refined palm oil increases the risk of developing cancer.	
Consumption of refined palm oil increases the risk of cardiovascular disease.	
Personal beliefs – social	
Reducing palm oil production can help reduce child labour.	
Reducing palm oil production could reduce abuses against plantation workers.	
Reducing palm oil production in producing countries can help improve working conditions for farm families.	

Results

We built our model using the statements already mentioned in the consumer survey and summarised in Table 1. The reliability of the model is supported by a number of indicators, including Cronbach's alpha, Composite Reliability and Avarage Variance Extracted (AVE)

and individual outer loadings.

Based on the intercorrelation between the claims used, the reliability is estimated using Cronbach's alpha values (Joseph F Hair et al., 2014), which are usually above the 0.7 value suggested by the literature (Cortina, 1993). Our lowest such value is 0.759.

Our Composite Reliability values, which are similar in content to Cronbach's alpha values (Netemeyer et al., 2003), should also exceed 0.7 (Joe F Hair et al., 2011). In our study, they fell between 0.757 and 1.000.

Important indicators for examining the correlations between the statements that give rise to the main elements of the model are Average Variance Extracted (AVE) and outer loading values (Joseph F Hair et al., 2014). The Average Variance Extracted (AVE) values ranged from 0.514 to 1.000, also meeting the minimum value of 0.5 expected in the literature (Joseph F Hair et al., 2019).

The outer loading values were between 0.626 and 1.000. Basically, a value above 0.7 is acceptable for this indicator (Bagozzi & Yi, 1988). However, in social research, it is common for this value to be less than 0.7 (Hulland, 1999), as is the case in two of our cases. According to Hair and colleagues (2017, p113), in such a case, "…. indicators with outer loadings between 0.40 and 0.70 should be considered for removal from the scale only when deleting the indicator leads to an increase in the composite reliability…above the suggested threshold value". Accordingly, we tested the model without the two statements in question, but the composite reliability values did not show a significant increase, so we decided to keep the two statements in the model. Overall, based on the results presented so far, the reliability of our model can be considered good.

The explanatory power of the model is presented in terms of R2 and Adjusted R2 values. The model explains 54.8% (Adjusted R2 = 0.548) of the actual behaviour and 62.9% (Adjusted R2 = 0.626) of the intention to purchase.

Results of the structural model

Consistent bootstrapping was used to determine the significance level of each correlation and the T- and f2 values. The results are presented in Table 2.

Table 2: Results of structural equation modelling

Relation	Direct effect		Indirect effect		Total effect		Cohen's f2
	Effect size	T value	Effect size	T value	Effect size	T value	
Attitude -> Behavior	–	–	0,430**	8,73	0,430**	8,73	
Attitude -> Intention	0,690**	11,25	–	–	0,690**	11,25	1,113
Intention -> Behavior	0,623**	16,73	–	–	0,623**	16,73	0,815
Perceived behavioral control -> Behavior	0,281**	6,36	0,043n.s.	1,24	0,32**	6,62	0,166
Perceived behavioral control -> Intention	0,068n.s.	1,21	–	–	0,068n.s.	1,21	0,011
Personal beliefs - egészség -> Attitude	0,137n.s.	1,9	–	–	0,137n.s.	1,9	0,021
Personal beliefs - egészség -> Behavior	–	–	0,059n.s.	1,77	0,059n.s.	1,77	
Personal beliefs - egészség -> Intention	–	–	0,095n.s.	1,81	0,095n.s.	1,81	
Personal beliefs - környezet -> Attitude	0,392**	3,81			0,392**	3,81	0,148
Personal beliefs - környezet -> Behavior	–	–	0,169**	3,15	0,169**	3,15	
Personal beliefs - környezet -> Intention	–	–	0,271**	3,28	0,271**	3,28	
Personal beliefs - társ -> Attitude	0,103n.s.	1,38			0,103n.s.	1,38	0,009
Personal beliefs - társ -> Behavior	–	–	0,044n.s.	1,34	0,044n.s.	1,34	
Personal beliefs - társ -> Intention	–	–	0,071n.s.	1,36	0,071n.s.	1,36	
Subjective norm -> Behavior	–	–	0,115**	3,64	0,115**	3,64	
Subjective norm -> Intention	0,184**	3,85			0,184**	3,85	0,074

In models built from the elements of the theory of planned

behaviour, it is important not only to know which characteristic has a significant effect, but also which does not. The model assumes that if all three factors have a significant influence, i.e. if the people in the environment and family members are supportive, if the opportunities to form the intention and then to carry out the behaviour are available, and if the consumer's attitudes are appropriate, then the intention is formed in the consumer and this can be developed into concrete behaviour. Based on our model, we can conclude that the intention to purchase palm oil free products is most influenced by the consumer's attitudes (ß = 0.690, p = 0.000), followed by the subjective norm (ß = 0.184, p = 0.000), which is also significant but weaker, but the perceived behavioural control is absent and its effect is not significant.

However, we also examined whether the perceived behavioural norm has a direct effect on the purchase behaviour of palm oil-free products and found a significant effect there. These suggest that although some palm oil free product purchase does occur, it is not necessarily conscious, the consumer just takes the product off the shelf and sees that it is palm oil free. Therefore, there is an awareness that he or she has just bought palm oil free products, but this is not the result of a deliberate search.

As an objective of our research, we also wanted to determine whether and to what extent consumer beliefs about environmental, health and social impacts affect attitudes towards palm oil and, indirectly, intentions and actual behaviour. Our results show that the only one of the three factors that significantly influences attitudes is consumer thinking about environmental impacts (ß=0.392, p=0.000).

Discussion

In addition to the basic elements of the theory of planned behaviour, our research investigated the social, environmental and health-related thoughts related to palm oil and their impact on the intention to consume palm oil-free products and on actual behaviour. Our results show that two factors directly contribute to the realisation of behaviour, an existing, already established intention and the extent

to which consumers have the means to purchase such products. However, of the two factors, intention is the stronger influence on behaviour. Several factors in the model already play a role in the formation of consumer intention. The consumer's attitudes towards palm oil play an important role in shaping consumer intention, i.e. if a company aims to sell palm oil-free products, it should aim to shape consumer attitudes, for example through various communication campaigns. Our model also shows that attitudes are strongly influenced by consumers' thoughts about palm oil, so if a company's long-term strategy is to focus on attitudes, it is worth designing its communications to highlight the environmental impact of palm oil, as this is the factor that has the strongest impact on attitudes.

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3

The Role of Farmer’s Spatial Proximity and Consumer Technology Acceptance in Food Product Purchase Intention

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Abstract

The Role of Farmer’s Spatial Proximity and Consumer Technology Acceptance in Food Product Purchase Intention

Introduction and Hypotheses Development

The spatial proximity of food production creates a value for local foods gaining popularity among consumers (Siegrist and Hartmann 2020). Local foods are considered to have superior taste and quality as well as broader social, economic, and environmental benefits (Reich et al. 2018). However, for more efficient and sustainable production, farmers often have to utilize modern food technologies even when they are catering to the community in their proximal vicinity. For example, it could be necessary for farmers to use various food processing technologies to cut food waste (Conner et al. 2009). However, the use of processing technologies could yield mixed results on the relationship between farmers’ proximity and purchase intentions toward their products. Acceptance of food processing technologies has been controversial, with consumers still showing some negative bias toward food processing despite the wide use of these technologies in modern food production (Lusk et al. 2014).

This study builds upon research streams on food production origin to examine the effects of spatial proximity of the farmer on purchase intentions. Furthermore, current research accesses the mediating role of consumer technology acceptance and moderating role of locavorism, natural motives, and the desire for food authenticity in

this mediating effect.

Farmer’s spatial proximity as antecedent

Food origin has become a crucial parameter in food consumer research, shown to influence consumer purchasing behavior (Rezvani et al. 2012). Local food origin has a positive direct and indirect impact on purchase intentions for food products (Diamantoupolos et al. 2011; Thøgersen et al. 2019). As farmer’s proximity relates to the origins of food production, we hypothesize:

H1: Farmer’s spatial proximity is positively related to food product purchase intention.

Technology acceptance as a mediator

In the last few years, a number of food processing technology innovations have been implemented to address growing challenges in achieving a resilient food system (Siegrist and Hartmann 2020). Consumers, however, are critical of many new or innovative food technologies in the current food production (Lusk et al. 2014). The acceptance of the new technologies can depend on improved product characteristics or alternative benefits (Zhang et al. 2009), perceived naturalness, trust, authenticity, and other food choice-related motives and values (Siegrist and Hartmann 2020). Therefore, we hypothesize:

H2: Technology acceptance mediates the relationship between farmer’s spatial proximity and food product purchase intention.

Locavorism, natural food motive, and the desire for food authenticity as moderators

Locavorism is an emergent consumer ideology (i.e., a set of beliefs) that determines consumer preferences for local foods (Reich et al. 2018). Locavorism is shown to be driven by three sets of beliefs: intrinsic superiority of local foods (superior taste and quality; Anderson 2008; Onozaka and McFadden 2011), preference for small-scale production (concerns about safety and transparency; Costanigro et al. 2014; Halweil 2002), and building and supporting one’s own/local community (farmers markets and local co-ops are

abundant, community-enhancing space; Brown and Miller 2008). Therefore, locavorism can alter attitudes toward food production technologies in the local vicinity.

Food choice motives drive consumer food choices in general, such as the desire for health, convenience, weight control, naturalness, familiarity, taste, and price (Steptoe et al. 1995). Food naturalness has been associated with minimal processing (Pula et al. 2014) resembling traditional, homemade, handcrafted, artisan, and small-scale production (Hemmerling et al. 2016). Steptoe et al. (1995) proposed that naturalness, i.e., contains no additives, natural ingredients, and no artificial ingredients, is one of the critical motives that explain food choice. Lusk et al. (2014) propose that the perception of food naturalness can explain and predict preferences for specific technologies.

Beyond carrying out locavorism and natural food motives, locally produced foods can fulfill consumers' desire for food authenticity (Autio et al. 2013). The marketing literature distinguishes four cues of the authenticity of the product: craftsmanship, naturalness, a particular location, and historical rootedness (O'Neill et al. 2014). Therefore, the desire for authenticity was constructed from the naturalness (Hemmerling et al. 2016) and food consumption constructs (Aprile et al. 2016) to capture the possible effect of consumer desire for authenticity on the mediation effect of technology acceptance. Taking these into consideration, we hypothesize the following:

H3/H4/H5: The locavorism / natural food motive / desire for food authenticity moderates the positive indirect effect of farmer's local spatial proximity on the food product purchase intention through technology acceptance, such that this mediation effect is more substantial when the locavorism / natural motive/desire/ desire for food authenticity is stronger.

Methods

We recruited 1,578 consumers from three European countries with the high agricultural output among the EU Member States, i.e., France, Spain, and the Netherlands (Eurostat 2016), to participate in an online questionnaire. Participants were, first, randomly assigned

to one of two conditions of farmer's spatial proximity. In each condition, the participants read the paragraph about the mild processing technologies used by farmers in the near proximity versus farmers worldwide. Technology acceptance was recorded following an attitudinal scale from Spears and Singh (2012; 4 item 7-point bipolar scale: Unappealing – Appealing, Unfavourable – Favourable, Undesirable – Desirable, Negative – Positive). Then, participants read the description of the food product made with the help of the technologies described on the previous page and their purchase intention ("What are the chances you will buy this product?" 1 - No chance, almost no chance, 7 – Certain, almost certain; Morwitz and Schmittlein 1992) was recorded. Further, we collected measures of Locavorism (Reich et al. 2018), Consumer Food Choice of Natural Content (Steptoe et al. 1995), and the Desire for Food Authenticity (developed based on Aprile et al. 2016 and Hemmerling et al. 2016). Finally, we recorded several behavioral and socio-demographic characteristics, such as age, gender, household size, children under 18, education, financial situation, employment, and purchase and consumption frequency of fresh fruit and vegetables.

Results

The mediating effect of technology acceptance

We used PROCESS (Model 4, Hayes 2017) to test the mediating effect of technology acceptance on the relationship between farmer's spatial proximity and food product purchase intention covarying country. Farmer's spatial proximity has a positive effect on the product purchase intention ($b = .31$, $SE = .09$, $t = 3.37$, $p = .001$, 95%CI [.13; .49]) supporting H1. Further, results indicate that farmer's spatial proximity is a significant predictor of technology acceptance ($b = .59$, $SE = .08$, $t = 7.75$, $p = .000$, 95%CI [.44; .74]), and that the technology acceptance is a significant predictor of product purchase intention ($b = .53$, $SE = .03$, $t = 19.48$, $p = .000$, 95%CI [.48; .59]) supporting mediational H2.

When controlling technology acceptance into the model, the farmer's spatial proximity is no longer significant predictor of product purchase intention ($b = .53$, $SE = .03$, $t = 19.48$, $p = .000$, 95%CI [.48; .59]) consistent with full mediation. The coefficient for the

indirect effect was also significant (effect = .17, SE = .02, 95%CI [.13; .22]), suggesting that local farmer’s spatial proximity was associated with the purchase intention that is .17 points higher as mediated by technology acceptance. Country was not a significant covariate (b = .00, SE = .02, t = .09, p = .926, 95%CI [-.04; .04]).

Moderated mediation relationship

To analyze H3/H4/H5, we used PROCESS (Model 7, Hayes 2017), testing three models with locavorism, consumer food choice of natural content, and desire for authenticity as moderators covarying the country. The analyses resulted in significant interaction effects of farmers’ spatial proximity and locavorism, farmers’ spatial proximity and consumer food choice of natural content, and farmers' spatial proximity and desire for food authenticity (Table 1). Consistent with H3/H4/H5, indexes of moderated mediation show that the effects of proposed moderators are significant in moderated mediation relationship (Table 1).

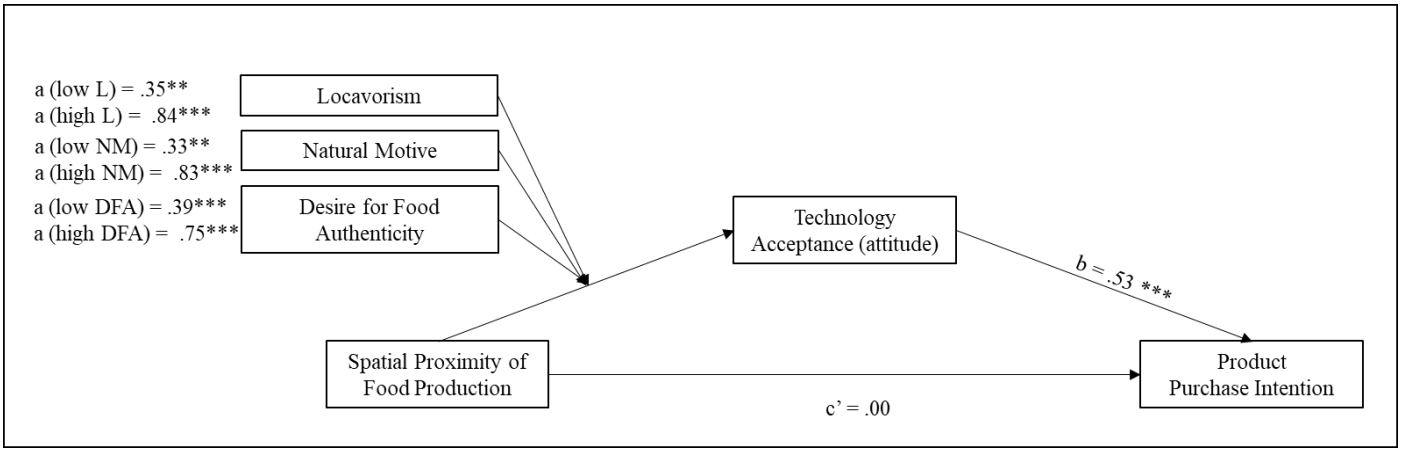
Table 1. Results of the moderated mediation models.

	B	SE	p	LLCI
Interaction effects				
Farmer’s spatial proximity x locavorism	.23	.07	.001	.088
Farmer’s spatial proximity x natural motive	.19	.06	.003	.064
Farmer’s spatial proximity x desire for food authenticity	.14	.06	.021	.021
		Index	BootSE	LLCI
Indexes of moderated mediation				
Locavorism		.12	.04	.041
Natural motive		.10	.03	.036
The desire for food authenticity		.08	.03	.012

The conditional indirect effect was the strongest in those scoring

high on locavorism, natural motive, and desire for authenticity (1 SD above the mean; effect locavorism = .45, SE = .07, 95%CI [.31; .59]; effect consumer choice of natural content = .44, SE = .07, 95%CI [.31; .58]; effect desire for food authenticity = .40, SE = .06, 95%CI [.27; .53]), and the weakest in those scoring low on locavorism, natural motive, and desire for authenticity (1 SD below the mean; effect locavorism = .18, SE = .05, 95%CI [.08; .29]; effect consumer choice of natural content = .17, SE = .05, 95%CI [.07; .28]; effect desire for food authenticity = .21, SE = .05, 95%CI [.11; .31]). Structural path estimations are shown in Figure 1.

Figure 1. Structural model.



The effect of the country was not significant in any of the three moderated mediation models (locavorism: b = .00, SE = .02, t = .09, p = .926, 95%CI [-.04; .04]; natural motive: b = .00, SE = .02, t = -.48, p = .630, 95%CI [-.05; .03]; the desire for authenticity: b = -.02, SE = .02, t = -.97, p = .334, 95%CI [-.06; .02]), showing that the above effects hold across all countries.

Conclusions

We show that the farmer's spatial proximity influences food product purchase intention and that this relationship is mediated by the consumers' technology acceptance. This shows that the technology acceptance can add value to the local foods, but could also be a hurdle for those farmers using less acceptable technologies

negatively influencing the purchase of their foods. We also find that the influence of farmers' spatial proximity on food product purchase intention through technology acceptance is further enhanced by higher levels of locavorism, natural food motive, and desire for food authenticity. This again points to the fact that the technology acceptance could be the key factor in improving the consumer's purchase intentions towards local foods where the possible negative bias towards some of the new technologies may be overcome if these are properly communicated among consumers in a way that they induce portrayal of technology that is local, natural and authentic.

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Appendix A

Stimuli for farmer’s spatial proximity – proximal [distant] conditions

Farmers in the Province of Valencia [worldwide] are working on ready-to-eat fresh-cut fruit and vegetable snacks, and fresh-cut fruits and vegetables prepared pieces for a smoothie, using sustainable packaging for ensuring the quality of the product for a longer time.

Fresh-cut products are a convenient way of encouraging the consumption of fresh fruits and vegetables, particularly for the infant public. But fresh-cut products are highly perishable, so if they are not protected with specific packaging, they are spoiled within hours. As fresh fruits and vegetables need to respire inside the packaging for preserving them properly (lasting some days instead of some hours),

a specific packaging is essential, and it will avoid food waste. But after the product is consumed and the packaging has accomplished its mission, the packaging becomes a waste. So, in order to avoid the packaging to be an environmental problem, it will be designed considering eco-design principles. The eco-design principles will include aspects like sustainable materials and recyclability.

As a result, these fresh-cut products are a convenient and sustainable way of encouraging the consumption of fresh fruits and vegetables for children and adults.

There is no need for the addition of preservatives, colorants, or aromas when using this process. The final products are all-natural.

Appendix B

Product description

As part of the sustainable food production system, your local farmers are working on launching new ready-to-eat Fresh-Cut Fruit and Vegetable Snack consisting of apricot, melon, cucumber, and snack peppers. This snack is produced in the mobile unit using mild processing technologies and sustainable packaging.

As a result, these fresh-cut fruit and vegetable snack is a convenient way of encouraging the consumption of fresh fruits and vegetables for adult and infant public. Moreover, the packaging system will be specially developed for ensuring the quality of the product for a longer time, using recycled and compostable materials, therefore creating healthy and tasty local fresh-cut fruit and vegetable snacks produced sustainably.

Appendix C

Scales

Locavorism (Reich et al. 2018)

- Locally produced foods just taste better

- All else equal, there is no taste difference between a locally produced food and one that was shipped from somewhere else
- Locally produced foods are more nutritious than foods that have been shipped from somewhere else
- I don’t trust foods that have been produced by large, multinational corporations
- Large, global food systems are destined to fail
- I would go out of my way to avoid buying food from a large retail grocery chain
- I feel uneasy eating something unless I know exactly where it was produced
- Buying locally produced foods supports sustainable farming practices
- Buying local foods helps build a more prosperous community
- I like to support local farmers whenever possible
- Supporting the local food economy is important to me

Food Choice Questionnaire (Steptoe et al. 1995)

It's important to me that the food I eat on a typical day:

- contains no additives
- contains natural ingredients
- contains no artificial ingredients

The Desire for Authenticity (Hemmerling et al. 2016; Aprile et al. 2011)

- I prefer food that tastes artisan/hand-crafted
- I prefer food that is produced by small (vs. large scale industrial) production
- For me, it is important to buy traditional products from my region
- For me, it’s important to know the production place of foods
- I choose foods closely related to a specific place
- I like foods based on traditional recipes and production methods

4

The Necessity of Climate-Food Labelling

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Abstract

The Necessity of Climate-Food Labelling

„How food must be labelled in general and what minimum information must be indicated on the packaging is uniformly regulated in the EU. This is based on the Food Information Regulation (EU) No 1169/2011 (FIC), most of which entered into force on 13 December 2014, with the nutrition labelling section following on 13 December 2016. This EU regulation is directly applicable in all member states. It can be fleshed out and specified in certain points by the member states.“(German Ministry of Food and Agriculture, EU-Wide uniform food labelling, p.1).

It shall be to the benefit of the consumer that the name of the food, the list of ingredients, the allergen labelling, the net quantity, the best-bevor Date, the company address, the origin country of making, the alcohol strength, the „ Big 7“ (calories, fat, saturated fat acids, carbohydrates, sugar, protein and salt are listed relative to 100 gr or 100 ml are indicated on the packaging. Vitamins have to be listed in relative quantity if additionally mentioned on the Package.(see above) The consumer must be informed about formed meat, refined oils, date of expiring, content of caffeine, nanomaterials, defrosting instructions. Every country can add more specifications, like the Germans do for beer.

With the climate change, the Fridays for future - movement and the UN Goal to achieve CO2-neutrality by 2050, comes the market growth for vegetarian food and some producers even ask for CO2-Labelling of food as for example Oatly: vegan milk. According to Unilever 40 million German people are flexitarians and the gastro-scene should bring out more soya products that look and taste like.

However, if the products are very intensively produced even vegetable “like meat products” can cause more CO2 than a meat from a animal that was not fed industrially.

And as 20% of the CO2-in the atmosphere are derived from the industrial production and packaging of food, the long transportation and the cooling or by keeping food on stock, the CO2- labelling would very meaningful to the young people that want to eat with sensitivity to the climate change. The information on the country of origin would be only one aspect of the sustainability of food to climate sensitive consumers.

In order to proof the necessity of an extension of the current food labelling-system, we have administered a pilot study on 178 young people (age 17-28;median 17,5 years; 69% female, 26.3% male) staying in groups of 30 people in a hotel for coursework for a whole week. The meals for each group were set ceteris paribus each day of the week. They all arrived on Monday and left in Friday.

First part of the study: We asked for their tendency to become vegetarians because of the climate change. After half an hour of group information on climate change and food production an CO2-labelling of the buffet they ate from 4 days in a row, we asked whether they had informed themselves about CO2- consequences of the food production before their participation in the study and whether they would be willing to change their advance notification of eating style to the next hotel. 69% of those who eat traditionally meat had informed themselves about climate sensitive food and as expected 77% of the vegetarians. Another 50% of the meat consumers have changed their advance notification of eating-style to vegetarian or flexitarian. It was interesting, that 53 people did not want to out their information status and that the one vegan participant was not vegan because of climate change reasons.

In order to get a sense of group dynamics and well-being factors the questionnaire contained a question about the overall life satisfaction on a 5-level Likert scale. Finding: 78, 2 % of the Sample was rather satisfied or satisfied with life, 14% did not know their satisfaction with life and 7.8% of the participating persons were dissatisfied or rather dissatisfied with life in general.

So we conclude, that overall life satisfaction did not interfere with the content. Hereby 71% are thinking climate change is an important or very important issue to them and only 11, 8 % do not care about climate change. Nevertheless 98,9% tried the vegetarian food in the week following the information session and 20,1% say that the own lifestyle matters to the climate change and 52% say that there is only minor effect of their own lifestyle to the climate change but they think that every small effort counts. 17, 9% are sure that there is a minor effect, but in total too few to the whole picture and 7.8% see no internal locus of control at all concerning the bettering of the whole picture.

The design of the study was further based on provoking the topic climate change and food during the time of decision-making by labelling every bowl of food (salad, meat, noodles etc.) with the CO2-value directly at the buffet. The CO2-values were derived from the tables of the governmental Institute for food and environment (IFEU: “Institut für Ernährung und Umwelt” in Heidelberg).

Second part of the study: The choices of the meal components for the next lunch were entered into an online ordering tool. Thus the decision-making during the week was monitored. Four meals were served in a Meat and a vegetarian or vegan way.

After the half hour information on food and climate issues on Monday the online choices for the Tuesday meal was 87% vegan and only 2 % chose for minced meat.

The Wednesday meal was lentils with spätzle that traditionally come with sausages. 70% chose to have sausages. On Thursday the Soya-chunks were chosen over the Chicken in 92% and on Friday, which was the final day of the stay the meat tortellini were the main choice. The choice of the dressing at the salad buffet was no significantly changed by the CO2-labelling.

Findings: The information on food and climate issues in the beginning of the week has had a strong impact on the decision-making on food alternatives only in the main course. And the food labelling with CO2-values at every lunch was having them refocused to the topic every day at lunch. However the traditional food was chosen as it was traditionally served: with sausage. While the

Thursday again was a very strong vote for the vegetarian version, it is not explainable that the tortellini had to be with meat. The young people were open to try vegetarian alternatives and discussions about the topic food and climate were ongoing the whole week.

We proofed, that the major part of the young people is interested in CO2-labelling of food and would take in account the CO2-value into their decision-making when choosing food products. This will be very much more relevant, if there will be a CO2-prizing or CO2-tax, as is discussed in different social media in Germany by the green party.

By adding the CO2-value to a food product the marketer would emphasize the future care for the world, which is a selling point for the young generation. For the good of all the producers would be forced to produce as sustainable as possible, because the CO2-value would bring facts and advantages to the marketing arguments of sustainability.

Precondition: The tables to calculate the CO2-value of a product must be of governmental origin and the labelling has to be controlled officially from time to time to secure consumer trust.

Outlook: Further data will be gathered with the same setting, so that time series analysis can be done. There are 500 more young people participating this year. International research cooperation as well as constructive feedback are welcome.

Dr. Brigitte Schober-Schmutz

2

Food-Related Consumer Decision-Making Styles: Effect on Food Shopping Behavior

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Abstract

Introduction

Imagine two customers – Pia and Ola - in a supermarket wanting to buy seafood. Pia chooses to buy seafood from the freezer. Ola chooses to buy seafood from the delicatessen. Why do customers choose different outlets in the store when they buy seafood? Answering this general question is important because understanding the consumer's shopping behavior is essential for grouping consumers into meaningful segments and approaching them efficiently. Sproles & Kendall (1986) have shown that consumers' decision-making styles (CSI) may influence their buying behavior. In this study, the purpose is therefore to examine the relationship between food-related decision-making styles and seafood consumers' supermarket shopping behavior in a Swedish context. In this study, the purpose is therefore to examine the relationship between food-related decision-making styles and seafood consumers' supermarket shopping behavior in a Swedish context. A typical Swedish supermarket offers three possible options for choosing seafood: (1) refrigerated display counters, (2) freezers, and (3) delicatessen. Specifically, the question we want to answer is: do decision-making styles influence consumers' preferred choice of where in the supermarket and in what form they normally choose their seafood?

The simplistic view of CSI as a relatively consistent pattern of cognitive and affective responses (Mohlis & Salleh, 2009) without

adaptation to product-specific domains (Bauer et al., 2006) or predictive validation, supports further research on food-related CSI and its potential effect on actual food shopping behavior. The CSI is characterized as a stable cognitive personality inventory (Park et al., 2010) and has been examined across countries and populations (e.g., Anic et al., 2014; Bakewell & Mitchell, 2006; Kamaruddin & Mokhlis, 2003; Shim, 1996; Siu et al., 2001). However, previous research suggests that consumers can have different decision-making styles for different product categories (Anic et al., 2014; Bauer et al., 2006; Sproles & Kendall, 1986). To the extent that the CSI has been put into nomological networks, the focus has been on its antecedents such as demographic variables (e.g., Anic et al., 2014), hedonic and utilitarian values (e.g., Griffin et al., 2000), or psychological variables (e.g., Lysonski & Durvasula, 2013). Only a few studies have addressed the consequences of CSI, and no research we are aware of has investigated its relationship with actual shopping behavior in supermarkets.

Table 1. Shopping styles (Sproles & Kendall, 1986).

Shopping styles:	*Descriptions:*
“Perfectionism, high-quality consciousness”	Includes consumers who search for the best quality products.
“Brand consciousness”	Includes consumers who are interested in buying more expensive and well-known brands.
“Novelty consciousness”	Includes consumers who are interested in new products and keep up-to-date with styles.
“Recreational, hedonistic shopping consciousness”	Includes consumers who find shopping pleasant and enjoyable activity.
“Price consciousness”	Includes consumers who are conscious of lower prices.
“Impulsiveness”	Includes consumers who do not plan their shopping.
“Confused by over-choice”	Includes consumers who have difficulty in making choices.
“Habitual, brand-loyal	Includes consumers who have their

purchasing orientation”	favorite brands they regularly buy.

Methodology

To examine the relationships between CSI and seafood shopping behavior, based on Anic et al. (2014), 28 CSI items were taken from Sproles and Kendall (1986). They were adjusted in wording for the food product context and measured on a 7-point Likert scale anchored by “Strongly disagree” (1) and “Strongly agree” (7). Seafood shopping behavior was measured by three single items: “How often do you buy seafood from…” (1) the freezers, (2) refrigerated display counters, and (3) delicatessen on a 7-point scale ranging from “never” (1) to “several times per week” (7). A median split of the scales determined infrequent and frequent seafood buyers.

Data were collected in Sweden in 2019. The Laboratory of Opinion Research (LORE) collected all data. The research is based on The Citizen Panel. In total, the panel includes more than 60,000 active participants. A probability sample (n = 3,600) was stratified according to age, gender, and education, and 2,207 (61.3%) completed the survey. The sample consisted of 48.2% females and 51.8% males.

Findings

First, initial EFA with varimax rotation of factors was performed on the 28 food-related CSI indicators. We removed four indicators with loadings greater than 0.3 on more than one factor and indicators with loadings lower than 0.5 on their primary factor. The remaining indicators loaded on the eight shopping style factors as predicted. Second, we used the ML simultaneous estimation procedures (Amos v.26) to validate the hypothesized structure among the constructs. The unidimensionality of the different constructs was evaluated. Six indicators were deleted based on modification indices and standardized residuals. Both indicators reflecting the recreational shopping style were deleted. The fit of the final model, without the recreational shopping style, was good (χ^2 = 589.46, df = 114 ($p <$ .001), RMSEA = .043, GFI = .97, AGFI = .96, and CFI = .97). The

individual item loadings on the constructs were all highly significant with values ranging from 0.56 to 0.94, which satisfies the criteria for construct validity. All scales also exceeded the recommended minimum standards with composite reliability greater than 0.74 and average variance extracted greater than 0.52. None of the correlations ± 2 standard errors included 1; thus, the discriminant validity of the constructs is considered satisfactory.

Table 2. The shopping styles of seafood buyers (means)

Shopping styles:	Freezers:		Refrigerated display counters:		Delicatessen:	
	Infrequent buyers	Frequent buyers	Infrequent buyers	Frequent buyers	Infrequent buyers	Fre buy
High-quality conscious	5.5	5.6*	5.5	5.8**	5.4	6.0
Brand conscious	3.5	3.7*	3.5	3.8**	3.5	3.8
Novelty seeker	1.9	2.1**	1.9	2.1**	1.9	2.1
Price conscious	3.2	3.1*	3.2	3.1ns	3.4	2.8
Impulsive	3.2	3.0**	3.2	3.1ns	3.2	3.0
Confused	2.9	2.9ns	2.9	2.9ns	2.9	2.8
Habitual/brand-loyal	5.4	5.4ns	5.4	5.4ns	5.4	5.3

The dominant shopping styles of the seafood buyers are shown in Table 2. Several significant differences between the sub-samples of seafood buyers resulted from the analysis. The table shows that frequent buyers of seafood from freezers are significantly more perfectionists/high-quality conscious, novelty seekers, and brand-conscious, but less impulsive and price-conscious than infrequent buyers. Frequent buyers of seafood from refrigerated display counters are significantly more perfectionists/high-quality conscious, brand conscious, and novelty seekers compared with infrequent buyers. Finally, frequent buyers of seafood from the delicatessen are also more perfectionists/high-quality conscious, brand conscious, and novelty seekers, but significantly less price-conscious, impulsive, and

habitual/brand-loyal than infrequent buyers.

Contributions to Theory and Practice

We expand the literature on decision-making styles by including consequences on actual shopping behavior in a food-related context. Our research contributes to new insight and helps to plug the gaps in the literature by using a specific product category (i.e., seafood) to (a) examine the CSI's applicability and reliability in a Swedish context, (b) identify the decision-making styles of Swedish seafood shoppers, and (c) link the decision-making styles to actual seafood shopping behavior.The purified inventory of decision-making styles revealed that seven out of the eight characteristics identified by Sproles and Kendall (1986) applied to the studied Swedish supermarket shoppers.

The findings of this study provide implications for food marketers and retailers. We see that frequent seafood shoppers are generally interested in new food products, and they want to stay up-to-date with food trends. This indicates that the seafood category is perceived as innovative. Shoppers with an impulsive buying tendency and price consciousness tend not to buy seafood in general. Instead, seafood shoppers plan their shopping. Retailers can use the seafood category to create an image of being innovative and up-to-date with new trends. Since the shoppers are planning their seafood buying, they are also more inclined to respond positively to in-store promotions and communications based on these principles.

Consumers buying seafood products from the freezers are characterized by being high-quality and brand conscious. They are interested in new food products, and they are planning their purchases. It is not confirmed that this segment of shoppers is price-conscious nor habitual in their behavior, i.e., not especially impulsive. This indicates that frozen seafood products do not need to be of low-end quality nor have a low price to attract those shoppers.

Consumers frequently buying seafood from refrigerated display counters are also searching for the best quality seafood products, but they are also interested in buying more expensive and well-known seafood brands even though they do not have favorite brands that they regularly buy. They are to a certain extent interested in

new food products, and their seafood shopping behavior is planned. High-quality and branded pre-packed fresh seafood products appear to attract seafood shoppers with these characteristics.

Consumers frequently buying seafood from the delicatessen are likely to search for the best quality seafood. They are interested in new food products, and they are not especially price-conscious. They are not likely to have favorite brands that they regularly buy, and their shopping behavior is not impulsive but more planned. Hence, the delicatessen can be used for displaying and selling whole fresh fish and new seafood products that are not packed or necessarily branded.

3

Predicting food consumer and customer behavior

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Abstract

Introduction

Importance of understanding food consumer behavior patterns has gained new emphasis with the appearance of the UN Sustainable Development Goals (sdgs.un.org, 2022), as the achievement of several goals is specifically linked to food consumer and customer behavior. The most visible of these are "zero hunger", "responsible consumption or production" or "good health and well-being", but almost all 17 goals can be linked to our food related behavior. But it is equally important for lifestyle-related diseases and the rise of healthy lifestyles in ageing societies (Chen and House (2021).

However, one of the keys to the broad utility of consumer behavior

researches, including food consumer behavior surveys, is to survey not only one country, but preferably several countries and continents. It has become a trend in international research to conduct international/cross-cultural surveys on food consumption. The number of such studies has been considerably increasing over the last 25 years, as illustrated by the fact that more than 10% of the 829 articles were written in the last year alone (webofscience.org, 2022).

With the increasing importance of international, cross-cultural research, the question arises to what extent the food consumption patterns of different countries correspond to each other, whether food consumption behavior understood in one country can be assumed to be similar in another country, while of course we know that there are many potential errors when comparing international research (e.g. Scholderer; 2010).

Aim of research

The aim of our research is to determine how accurately an algorithm trained on a sample of 6 countries, or on a social stratum in one country, can predict expected food consumer and customer behavior in other countries.

Q1: Our first research objective is to investigate the accuracy with which food consumer and customer behavior in a given country can be predicted by an algorithm trained on food consumption related statements in another country. Given that our database contains a representative database of food consumers in 6 countries, we aim to perform this analysis for each country.

Q2: Our second research objective is to identify the attitudinal statements that are most helpful in predicting food consumer and customer behavior.

Q3: Finally, our research aims to investigate whether training the algorithm on a social stratum rather than on a whole sample of a

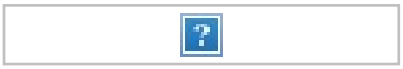
country can lead to more accurate predictions.

Methodology

Data sampling

Between 2017 and 2019, we surveyed consumers in 6 countries: Denmark, Australia and Hungary in 2017 and the United States, the United Kingdom and New Zealand in 2018/2019. In 5 countries we recorded responses online and in one country (Hungary) we recorded responses in person. Care was taken to ensure that respondents were always the food customer in their household. Respondents aged 18 and over were interviewed. All countries achieved representative sampling: the Danish sample followed the gender ratio of the population, the Australian, American and Hungarian samples followed the regional distribution within the country.

The sample composition is presented in Table 1.



Data analysis

The master questionnaire was originally written in English and translated into Danish and Hungarian. During the years of data collection, the questionnaire to be surveyed has undergone minor modifications, so only those questions from the originally longer questionnaire that were asked in exactly the same way in each country were kept for data analysis. Thus, the scaling statements, the questions on purchasing and consumption patterns and the demographic variables were brought together and only those statements and questions that were asked in the same way in all

countries were kept. Accordingly, the number of uniformly asked scaling statements that are exactly the same in each country and can be analysed accordingly is 84, and the number of statements measuring food purchase and consumption is 30.

In the analysis, first, factor and cluster analysis was performed using SPSS software to analyse the 30 food purchase and consumption statements. The factor analysis was performed using varimax rotation. The analysis resulted in 6 factors. Working further with these, we identified 3 clusters using K-means cluster analysis method.

These three clusters became the dependent variables in our next analysis, which was conducted using the Random Forest tool (Breiman, 2001) using the RandomForest machine learning package of the R software. 84 scaling statements describing food consumption behaviour were used to predict which cluster the respondent would be placed in. This was first tested on the full sample, then the program was trained on a sample from one country and its accuracy tested on the sample from another country, and finally comparisons were made for different social groups.

Results

The clusters of food consumer and customer behavior are illustrated in Table 2. Considering that the food consumption and purchase statements used to characterise the clusters are ordinal scales, the mode values have been chosen to represent the clusters.

The clusters are characterized by demographic variables as follows (all characteristics are significant differences at $p<0.01$). Most members of cluster "A" are Danish (25.0%), least members are Hungarian (5.4%). This cluster includes the largest number of single-adult households (34.4%) and the largest number of households without children (75.7%). This cluster includes older respondents:

most respondents aged 45-59 (32.6%) and 60+ (32.4) were in this cluster. This cluster has been named "simplicity-seeking" based on their food consumption, food purchasing and socio-demographic characteristics.

Most members of cluster "B" are American (35.4%), least members are Danish (6.3%). Cluster B has the highest number of respondents with tertiary education (52.1%). The cluster is characterised by younger respondents. It includes most respondents under 30 (34.9%) and 30-44 years old (32.7%). In addition, most households with 2 (16.0%), 3 (5.7%) and 4 or more children (3.6%) are also in this cluster. This cluster has been termed "demanding" and includes working (large) family respondents by socio-demographic characteristics.

Cluster "C" was composed mostly of Hungarian respondents (27.4%) and least of Danish respondents (10.1%). This cluster has the highest proportion of women (58.2%) (and the lowest number of men) respondents and the highest proportion of people with secondary education (64.1%). The third cluster is therefore composed mainly of "practical housewives" who are often involved in cooking and baking.

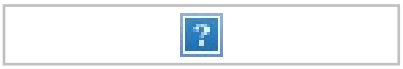
Predictions

In the first analyses, we investigated the accuracy with which the randomForest algorithm trained in each country can predict the cluster to which a respondent belongs in another country, using the 84 scaling statement (see Table 3).

Given that we have distinguished three clusters based on food consumer and customer behavior, our results can be considered relatively accurate at a value of at least 0.5 (compared to a random

value of 0.33), which is true for 17 out of 25 cases. The Danish sample was the most lagged in terms of predictability, which can be predicted with reasonable accuracy by the behavior of British, New Zealand and especially American shoppers. The Hungarian sample was the least accurate in predicting the behavior of respondents from other countries in the sample.

The second projection was only carried out among those with tertiary education. Our results are presented in Table 4.



Among those with tertiary education, our results show only a few cases of notable change compared to the overall sample. The Danish sample is even more accurately predicted by all countries except the algorithm taught on the Hungarian sample. The algorithm taught on the US sample can more accurately predict the UK sample. Hungarian consumers with higher education, on the other hand, seem to be far from the food consumption patterns of the other five countries, neither can explain these patterns of behavior nor can they explain the pattern of behavior of other countries.

For our third analysis, we have chosen a trend that is currently shaping food consumer behaviour: responsible food consumer and customer behavior. In our previous article (Brunsø et al., 2021) the "food responsibility" scale has been created. In our analysis, we did not include respondents who tended to disagree with these statements (those who answered 1-3 on the 7 point scales – 5 scales). Our results are illustrated in Table 5.

Table 5 shows that the responses of British, American and New Zealand respondents who are responsible in their food consumer and customer behavior are even more accurate in predicting the behavior of similar Danish consumers.

In Table 3, it is noticeable that scales that measured food consumer and customer behavior related to technology and social media were the most useful in helping the algorithm to work. In our final analysis, we therefore excluded respondents who tended to disagree

with these statements (those who gave responses from 1 to 3 on the 7 point scales – 5 scales). Our results are illustrated in Table 6.

Our results show that those who are avid users of technology and social media show the greatest similarities across the 6 countries. In almost all cases, a training algorithm on this respondent group in one country made a relatively accurate prediction in another country.

Summary

The aim of our research was to examine the comparability of food consumption patterns. Using the Random Forest method, we conducted pairwise comparisons on a representative sample of food customers from 6 countries. To carry out the prediction, factor and cluster analysis were performed and three clusters ("simplicity seekers", "demanding" and "practical housewives") were distinguished. In the analysis, the algorithm was applied to food shopper respondents in one country and the accuracy of the algorithm was tested in the other countries. Our results also further clarify the differences and similarities in food consumer behaviour across the 6 countries. Our results show that the Danish food consumption pattern is the most predictable. In particular, the responses of British, American and New Zealand respondents are the most suitable. It can also be seen from our results that geographical proximity does not necessarily give a country sample a good predictive ability. Finally, we have shown the homogenising effect of technology and social media use on food consumption and purchasing behaviour.

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boolean: TS=(("cross-cultural" OR "cross cultural" OR "international" OR "across nations") AND ("food consum*"))

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8

Profiling Wine Consumers and Tourists by Cultural Capital and Willingness to Pay: The Case of PDO Wines

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Abstract

Profiling Wine Consumers and Tourists by Cultural Capital and Willingness to Pay: The Case of PDO Wines

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Abstract:

Purpose of the Research

This study aimed to identify clusters of PDO wine consumers in an innovative way that includes cultural capital (CC) as one of the clustering factors. The wine classification system, abbreviated PDO (protected designation of origin), should ensure regional typicity, tradition, and controlled viticultural and vinification procedures. As a concrete example, Czech PDO wines with the designation VOC were employed. A mixed research methodology encompassing both a quantitative approach (online questionnaires) and a qualitative approach (following-up in-depth semi-structured interviews) was used.

Background/Motivation/Support

Wine consumers' market segmentation has been widely used in food marketing research (e.g., Geraghty & Torres, 2009; Pickering et al., 2014; Calvo-Porral et al., 2020). It applies to both newly emerging wine regions, as shown by Kolyesnikova et al. (2008) when examining wines from Texas, USA, and well-established PDO wine regions as explored by Santos et al. (2006). These studies included various methods of clustering, such as hierarchical or *K*-means. Two-step clustering has also been used, and studies using such an approach overlap with tourism when clustering wine tourists, e.g., in Veneto, Italy (Bitsani & Kavoura, 2012), Rheingau, Germany (Szolnoki, 2018) or Northern Grece (Alebaki & Iakovidou, 2010).

Factors used for clustering vary widely. Clustering market segments using the two-step cluster analysis, including willingness to pay (WTP), can be seen in the food marketing field, but in general, it is widely spread for ranged products (He et al., 2019). Clustering of customers can also serve as a basis for setting prices and variables for multivariate analysis, as demonstrated by Mesías Díaz et al. (2010). Using a logistic regression model and creating three main consumer clusters enabled them to examine the clusters' WTP for

organic tomatoes in Spain.

The approach most similar to our study was used by Miranda-de la Lama et al. (2018), who examined attitudes toward animal welfare-friendly products in the Mexican market. Specifically, to construct the final model, they added interviews with Mexican consumers to identify their attitudes, followed by WTP conception and education level. The result was the creation of three basic consumer profiles. Nonetheless, more studies used face-to-face interviews to characterize the examined clusters (Szolnoki, 2018).

Concerning the second clustering dimension used in our study, most matching research was done by Lappeman et al. (2019) in South Africa. They segmented participants based on their WTP, personal values, and product knowledge for fair trade coffee. Mesías Díaz et al. (2010) also included consumer knowledge as one of the variables in their study. Lastly, some clustering studies employed precise wine knowledge, aesthetics, and ephemerality (Hall, 2016).

Methodology

The research included both quantitative and qualitative methodologies, and the data collection was divided into two phases. An online questionnaire was published through the university website as a voluntary response sample with multiple conditions in the first phase. The participants had to be at least 18 years of age, consume wine regularly (to manifest CC), and buy wine regularly (to manifest WTP). Another condition for completion was at least one experience with the Czech PDO wines (i.e., VOC wines) and a promise to participate in a semi-standardized interview during the second phase of the research.

Agents' WTP was collected by indicating their most ordinary average spending per bottle of wine (in the CZK currency). CC as the second clustering factor was assembled by 15 questions in the form of a semantic differential. The questions examined selected extrinsic and intrinsic characteristics of wines. Each question acquired positive or negative values of CC according to the approach of Bacon (2014) and Beckert et al. (2016). The resulting value of CC was then the mean value of values obtained from all 15 questions. In particular, embodied CC was examined as described by Pierre Bourdieu and as

researched by Beckert et al. (2016) in the wine field. Embodied CC represents knowledge acquired by socialization in a culture, such as the ability to appreciate luxurious wines or describe the wine sophisticatedly. The questionnaire also included a set of identification questions.

The questionnaire was completed after 113 records as the second phase of the research was qualitative and included in-depth semi-standardized interviews with all participants. The obtained values of WTP and CC from the first phase were standardized to z-scores in SPSS statistical program and then classified using two-step cluster analysis with automatic determination of numbers of clusters and Akaike's Information Criterion (AIC) as the sample size was considered to be smaller.

In the second phase, these agents were asked to attend semi-standardized interviews. Of 113 agents who completed the questionnaire, 101 agents attended the interview. Regarding the number of participants, our study resembles mostly approach of Alebaki and Iakovidou (2010), which had 133 participants. The second phase of the research aimed to explore attitudes and constructions of meanings to receive a better and more detailed description of the created clusters. The scenario of the questions mainly included the identification of attitudes towards wines with PDO compared to wines without this designation. Possible tourism activities associated with PDO wine-producing regions were explored as well. Complete transcripts were coded, and a final evaluation was performed using interpretive synthesis.

Findings

Based on the automatic determination of the number of clusters, obtaining WTP and CC values for 101 agents led to the creation of the three main segments abbreviated CLA (cluster A), CLB (cluster B), and CLC (cluster C). Good quality of the whole model was achieved. The lowest WTP z-scores and negligible z-scores for CC characterize the CLA (n = 43). The CLB (n = 36) did not show significantly higher WTP values but achieved significantly higher CC values. Based on this result, it can be argued that the exclusive use of WTP without other characteristics cannot serve for detailed segmentation among wine consumers. Therefore, the CC value

proved to be a suitable classification characteristic when distinguishing two various types of wine consumers.

The CLC (n = 22) showed CC values ranging between CLA and CLB, but its WTP values were significantly higher than CLA and CLB. It can be stated that consumers with the highest WTP do not have to have the highest CC, reflected, for example, in their inability to appreciate luxurious wines. Vice versa, consumers with the highest CC values did not necessarily report the highest WTP values for wines.

However, a more detailed description of consumers' attitudes within individual clusters was achieved in the second phase of the research. Despite their previous experience with Czech PDO wines, CLA agents did not attach particular importance to these wines, and the purchase of such wines was somewhat random for them or based on the recommendations of family or friends. There is a pronounced tendency for them to adapt their preferences to agents with a higher CC and consider especially the low price of purchased wines.

The CLB agents with the highest CC values but with the same WTP values as the CLA are the core group purchasing PDO wines. Their perception of wines proved to underline regionality and a guarantee of origin. This cluster often communicates the quality of the wines directly with the winemakers during visits and tastings when participating in wine tourism activities. For CLB agents, the sensory aspects of the wines are essential, which they were able to describe in great detail. They do not associate the typicality and regionality with the higher prices of wines.

The last segment of the CLC is an abnormal example that, like the CLA, came into contact with PDO wines somewhat accidentally. These agents proclaimed the visual unattractiveness of Czech wines with the VOC label and instead preferred wines appearing in various promotional campaigns or sales events, in which media celebrities also participate. The bottle's design and label's appearance are essential for them, and PDO wines would be attractive to them only if there were significant innovations in appearance. Unlike CLB agents, for CLC agents, high prices indicate quality and opportunities to differentiate themselves from other consumers and demonstrate their social status.

The results show the need for qualitative research as a follow-up to the quantitative clustering of consumers, mainly to reveal their attitudes and social context that contributes to quality construction. The unpublished results also describe the importance that individual clusters of consumers attach to distinct intrinsic and extrinsic attributes of wines. They also point out that each identified cluster manifests different attitudes toward tourism activities connected with possible visits to regions where PDO wines are produced.

Contributions to Theory and Practice

Clustering of wine consumers using CC has most likely not yet taken place. Therefore, one of the novelties of this study is the use of a new clustering factor, which overlaps with sociological theory. The use of multiple factors for clustering, mainly including a combination of qualitative and quantitative research, is also sporadic. In this manner, in-depth interviews with an appropriate qualitative evaluation of data are rare as the previously published studies were more commonly of quantitative nature, even when using qualitative research. An example of the Czech Republic is appropriate for comparing the well-established Germanic appellation wine system with the newly emerging PDO system. The planned expansion of our research could also have implications for conducting qualitative research based on the pre-clustering of consumers.

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