



Sustainability in Transforming Societies

PROCEEDINGS

of the 26th Annual Conference of the International Sustainable Development Research Society

15-17 July 2020, Budapest, Hungary



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Welcome Message by the Conference Chair

It is my great pleasure to present you the Proceedings of the 26th Annual Conference of the International Sustainable Development Research Society at the Budapest University of Technology and Economics.

The special topic of this year's conference, namely 'Sustainability in Transforming Societies' has been chosen to reflect upon the most important trends in today's societies all around the world and their implications for the notion of Sustainable Development, which entered the scientific discourse more than thirty years ago.

These trends, including, but not limited to shifts in demographics and the polarization evident in many societies; the impacts of rapid technological innovation including the digitisation of the economy; the shifting centres of economic power and the spread of new business models, as well as resulting changes in lifestyles raise many questions.

Are the underlying principles of Sustainable Development still valid? Are the tools developed over these years still adequate? Have the problems themselves changed over the years? What have we achieved and can we now foresee a better future?

We have stressed the timeliness and importance of these questions more times than one can count. And change we can see: businesses question their core competencies, governments implement innovative policy tools and more and more people turn to sustainable lifestyles. But are these changes enough? Can we preserve what is good and repair what is flawed? Can we build a prosperous future for everyone in the long run?

As scientists, our task is to ask and re-ask these questions until we find the right answers to them. We have to discuss and debate, to prove and persuade for which we need platforms such as the annual conferences of ISDRS.

I hope that the 2020 conference will provide another successful platform, which can take us closer to answer at least some of these questions.

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The social representation of sustainable food consumption and the role of SFSCs in the way towards sustainability

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Abstract

The global food system faces several challenges concerning ecological sustainability, and robustness in the face of shocks and global change (EC, 2019). We already know how to be sustainable; we are familiar with the planetary boundaries and future scenarios, and we have developed strategies (such as Sustainable Development Goals of the United Nations) based on vast scientific evidence. The necessary technology is present, sustainable diets are calculated. Still, the key and often missing element remains the consumer when we aim for real success in holistic change. What encourages some of them to make additional effort intending to act in a sustainable and responsible way? Why do they believe in one hazard, like GMO and not in the other, like health issues due to overconsumption of meat? The attention of this study is directed, on one hand, towards a special approach: social representation theory (Moscovici, 1961) examining what sustainable consumption means for end-users. On the other hand, we turn towards the farmers, and with field research, we examine how local farmers contribute to sustainable food production and what is the role of short food supply chains (SFSCs) in sustainable food systems. As we better understand the values and meanings of the food chain participants we get closer to the ideal tools and means to innovate resilient and sustainable food systems, what is the faraway objective. Social-psychological studies have unexploited potential to enrich and contribute to the studies of sustainability. Social representations are systems of social influence and communication that constitute the social realities of society. Turning back our reasoning to sustainable food consumption it might be interesting to see what given concepts mean to the consumers we try to incentive to act according to our understanding of the given concepts. In this study we assume that these understandings differ indeed, and for the sufficient incentivisation of consumers towards sustainable food consumption and general behaviour; a better understanding of their reality brings us closer. Also, examining the local farmers we can compare their representations with the consumers, and see if their practices correspond with the expectations of consumers. An altered version of the associative network technique (de Rosa, 2002); a free association game has been used, and 3 different groups participated: local food consumers, local farmers, and a control group of consumers. The local farmers markets (mostly also falling into the category of SFSCs) where the producers and consumers were included in the research were situated in the Balaton Upland, Hungary; while the control group of consumers was collected randomly. The free association research is still in progress, but some concepts representing a strong relation with the concept of sustainable consumption are already emerging, like local, rural, health, green, plastic, bio, vegetarian, chemical, food waste. The suggestions of the initial data and this exploratory research will be supported by word categorisation and analysis as well as with SPSS data analysis, where we hope for exploring connections between the personal characteristics and sustainable consumption concept of the consumers and the comparison with the local producers. This research has been supported by the European Union and Hungary and co-financed by the European Social Fund through the project EFOP-3.6.2-16-2017-00017, titled „Sustainable, intelligent and inclusive regional and city models”, and by the ÚNKP-19-2 New National Excellence Program of the Ministry for Innovation and Technology.



Keywords: sustainable food consumption, sustainable food production, social representation theory, local economic development, short food supply chain

1. Introduction

What potential does local economic development have in sustainable development and why is sustainable food consumption is so important? Local economic development practically is the process where the local economic capacity is expanding to raise the life quality of the local people and its economic future (Gwen et al., 2006). The research community is quite divided concerning the dilemma if short food supply chains (SFSCs) and Local Economic Development (LED) would provide the most sustainable tools concerning food system. Here we argue that solutions are always region and food type-specific and that we cannot generalise but must examine the different situations with field research and talking to the stakeholders is inevitable. A forceful local economy requires good practices and collaboration to adapt and improve their circumstances (Gwen et al., 2006). Even though local is not always better, the more widespread use of the classical tools provided by LED would bring us closer to a more appropriate and healthier food system according to our experience in the Balaton Upland. We assumed that the concepts in connection with “local” are already in connection with sustainable food consumption in the minds of the consumers and that values evoked about sustainable food consumption can be supported by the tools of local economic development. The key to LED success is the local community and people, and the better we understand the consumers and farmers the more successful the incentivisation process can be. The most known tool of LED is local food production and its sales and promotion. The first and most important role of this area is serving the local people’s need and supply, therefore understanding them better is inevitable. The local food development requires a strong focus on organizing fluent and effective local supply chain (Czene et al., 2010). Besides understanding what the sustainable food consumption means for consumers, we also wanted to examine what the local producers think about sustainable food consumption (and production of course) and to gain insight into their environment and current situation. As we live through now the vast changes the global epidemic COVID-19 brought to our everyday lives, we extended our research and asked the farmers how do they cope with the situation and by understanding the current special environment and changes, we could better handle the upcoming crises and new challenges due to emerging risks in the future, as small and medium-size organisations can be quite vulnerable in these situations, while being key stakeholders in sustainable food systems. Also, we aim to investigate the role of health in food systems and general food sustainability.

Food system sustainability, status quo and future prospects

The economic force of the food industry is unquestionable, and unfortunately, economic progress has been accompanied by environmental degradation, endangering the very systems on which our future development and our very survival depend on (ECOSOC, 2019). Food consumption is growing in general and expected to reach 3540 Kcal/person in 2050 (Alexandratos and Bruinsma, 2012) accompanied by rapid population growth, therefore we see that we have to produce more food in the future, keeping in mind that food scarcity and malnutrition is present in many regions at the moment (a worldwide estimated 821 million people – approximately 1 in 9 people – were undernourished in 2017, rising from the already distressing 784 million in 2015 (ECOSOC, 2019). In a world where avoidable food waste coexists with hunger, it also becomes a question of social justice since we could increase the food access for the undernourished (Britz et al., 2019). Our consumption patterns – besides containing too much of processed foods, foods high in sugar and fat – shifted towards a diet high in animal-based products and low in plants, but the former is generally less calorie-efficient, more resource-intensive and emit more greenhouse gases (West et al., 2014), and animal rights are often violated when we try to increase production.

Food waste in the developed areas has taken on such major proportions that mitigating its negative effects is a top priority in the European Commission's policy and strategy, no wonder, since the associated costs of food waste in the EU is estimated at 143 billion Euros (Stenmarck et al., 2016). Overexploitation of resources is unavoidable to feed the growing population with the current not-as-sustainable technology, considering that the food sector accounts for around 30 % of the world’s total energy consumption and accounts for around 22 % of total Greenhouse Gas emissions (Suh et al., 2006; ECOSOC, 2019). According to Herbert Stein, “If something cannot go on forever, it will stop”. We see that the food system already face issues and with the rising demand the social injustice, economic loss and degradation of the environment will grow, and strengthening food system sustainability is key. When we do so, all the three pillars of the sustainability equation should be taken into account, as they are fundamentally interrelated (Bell and Morse, 2012), and it can be argued that solutions that ignore one or more of these dimensions fail in terms of being sustainable. In the developed areas – keeping in mind all these

pillars – the end-users should be involved and understood better, as they have the power to shape the future trends, as well as their unsustainable consumption behaviour, is one of the root causes of the unsustainability of the system.

Local economic development and SFSCs

Considering the classical tools of LED, the local product and local production might contribute to the employment, quality of life, cultural richness, trust and social capital (therefore have the potential to strengthen the often neglected social pillar of sustainability). The most important elements of LED are the improvement and empowerment of the local community and the role of social capital, which are significant in the social and economic life of the settlements. Different forms of interpersonal and institutional trust and norms of cooperation are transformed into social networks (Füzér, 2016). With the help of these networks a given field can become sustainable and successful. From this approach, the main pillar of the local economy could be a strong community. Putman argues there is a correlation between social capital and economic development, from the theoretical point of view (Putnam, 1993). In our previous field researches, we have already found this kind of correlation between the settlements and among their citizens: where lots of NGO's and strong community with lots of activities were found, we could explore more initiations with strong stakeholders and engaged inhabitants related to the local value creation and protection.

For some, local means small, personal, human. When food is produced by big food companies outside of our towns, it is easy to struggle to reconcile the sense of personal ethics with our perceptions of the institutions that manufacture our food. As a result, we tend to measure our feelings by the distance between the producers and our plates. Local is not deterministically more sustainable. Global distribution can indeed be more cost-effective than forcing growth in unnatural environments. Staying on the ground of reality, usually, we do not have the problem that there is too much local food consumed that could have been produced in a more sustainable way; but that we have no connection with food any more, children have many misbeliefs about food, and the average food miles are getting higher and higher. We should realise the many positive aspects what the local food production bring to the regions, to people's lives and that it can contribute to social and environmental sustainability in a way that big-scale production could hardly do so. Local food also means jobs nearby, nutrition from homeland, cultural identity, and environmental integrity. As "low perceived availability of sustainable products explains why for some consumers intentions to buy remain low, although their attitudes might be positive" (Vermeir and Verbeke, 2006); the perceived availability of these products could be strengthened on these local markets due to the "transparent" and "short food supply chain" nature of these contact points.

Direct-to-consumer sales require a lot of effort by the farmer if they try alone. Equipment, time, besides the risk that is necessary to their core activity: producing the food. If the producer carries the food to the local market, trucks are often partially filled; consuming energy for a high cost per calorie, therefore innovation supporting the unification, cooperation of local farmers should strengthen in the future – like the well-functioning system of Leader organisations.

Short food supply chains and sustainability

What is more important, the distance between the producer and our plate or the number of intermediate actors? In the concept of SFSC, "short" might both refer to social and physical distance. Besides the unequivocal meaning of physical: when we talk about the social distance, short distance refers to the possibility for interaction and direct information exchange between the consumer and producer, as there are a very few or no intermediates involved. This information exchange can assure the consumer about not just the origin, but production methods, values of the farmer, ethics and identity; and trust can be easily built between the partners. 'Rewired' food system should reconnect producers and consumers to the biosphere while also enhancing the transparency between them (Gordon et al., 2017). Also, according to Galli and Brunori, short food supply chains can act as drivers of changes, and also as a method to increase sustainability (in all dimensions), trust, equality and growth (Galli and Brunori, 2013). This study does not aim to examine holistically the challenging topic of food system sustainability but nevertheless would like to start the train of thought drawing attention to its importance and actuality. The better we see the values, drives and understandings of the food chain participants we get closer to the ideal tools and means to develop and innovate resilient and sustainable food systems, especially considering emerging risks and unpredictable

future situations, like the issues COVID-19 brought to our lives in 2020. For this reason, a couple of thoughts should be given to the food system sustainability and related issues.

The COVID-19 epidemic

The first confirmed patient was registered for COVID-19 in Hungary on 4th March 2020. Beforehand the government established the task force on 31st January, to control the situation and for public bodies harmonisation (Hungarian Bulletin, 2020). The government decided to start distant learning on Universities relatively fast, 1 week after the first registered patient appeared. A couple days later, on the 16th March primary and secondary schools also have been switched to remote education and all the events over 500 participants – outdoor – and 100 participants – indoor – is cancelled (Coronavirus official, 2020a, 2020b; Index, 2020). Next to distant learning the government also reset the border control and all the incoming travellers must have been stayed in 14 days voluntary quarantine to avoid further infection (Coronavirus official, 2020c). On 19th March a government decree recorded that those economic areas that are most concerned by the epidemic exempt from wages tax duties until the end of June (Pwc, 2020).

How can producers adapt to the changes due to the epidemic?

Even though the government has not announced statutory rule specifically for farmers, the National Public Health Centre stated some suggestions to provide pieces of evidence for them. The farmers are advised to separate products from the money of exchange, the staff must be healthy, they should separate themselves from each other at least 1.5-2 meters far and of course, must provide the same for consumers. Frequent washing and sterilization of hands and regular airing in closed areas are also strongly recommended (Agrárszektor, 2019). Parallel with the centralised suggestions the producers started to adapt the situation therefore unique solutions instantly appeared e.g. Dunakeszi local market where the customers pre-ordering their shopping list then they appear on the market at a given appointment and they can take their ordered product directly to their car (Sokszínűvidék, 2020). Most of the farmers introduced new activities to their operation such as increased sanitation or distance takeover (54%). However smart ideas can delay the decrease in traffic, the producers can experience up to 50% fewer visitors on local markets and in shops (Magyarmezogazdaság, 2020).

2. Methods

The attention of this study is directed, on one hand, towards a special approach: social representation theory (Moscovici, 1961) targeting the initial question: what sustainable consumption means for end-users? On the other hand, we turn towards the farmers, and with field research, we examine how local farmers contribute to sustainable food production and what is the role of SFSCs in sustainable food systems. The free association games started in September 2019 and the database has been closed on the 04.12.2019 with 255 respondents, meaning 1275 associations, mostly including consumers from the central part of Hungary. We also examined the farmers in the Balaton Upland region of Hungary, where several field trips supported the research, the first in Balatonalmádi farmers market, on the 20-21th of September 2019, the second in the 6th Bakony Expo on the 8-11th of November 2019, and further examination in April 2020, when we also asked the involved 22 farmers about the changes COVID-19 brought to their lives.

Free association game

An altered version of the associative network technique (de Rosa, 2002) has been used; a free association game. In general, this game is an association exercise, and various ways of this game exist. The players say the first things they think about when experiencing something, like in our case: when they hear the stimulus word (evoking 5 expressions, also indicating if they are positive, negative, neutral (polarity) and putting them in order based on importance. According to Joffe and Elsey, if we directly ask a question about attitudes and behaviours, answers are unlikely to reflect how people see the issue in its full reality and complexity, but the free association technique can offer a window into implicit content (Joffe and Elsey, 2014). This technique has been already utilized in many practical areas, such as exploring the social representation of sustainability (Techio, Conclaves and Costa, 2016). After the data was cleaned and synonyms were collected, the grouping has been

conducted based on the meaning of words, and they were divided into 26 groups keeping in mind not to have overlapped. Furthermore, they were examined and grouped based on what which pillar of sustainability they supported. Basic indicators were calculated, following the recommendations of the previous studies (de Rosa, 2002; Orosz, 2008), amongst others: rank, frequency, the order of evocation, the order of importance, index of polarity and index of neutrality.

Field trip and online questionnaire

In the field trips in Bakony expo and Balatonalmádi, we observed the behaviour of the local farmers regarding sustainability, and asked them about what they think of their consumers' point of view regarding the sustainability of food consumption and production. Due to the epidemic, we must have been had to redesign the method of data collection for the further investigations, therefore we decided to ask local farmers and producers via online questionnaire in April 2020 through Éltető Balaton Upland Association, which is a trusted channel between local farmers and, producers and our research team. In the questionnaire, we prepared closed questions about the farmers' current food production sustainability, and willingness to raise their sustainability regarding food production or how their customers are thinking about the importance of sustainable food production. Multiple-choice questions were asked about their current sustainable activities and those potential activities they think they can increase their sustainable production. Local farmers mostly work independently from each other; therefore we prepared more open questions to collect individual answers which can bring a higher quality of response beside the fact that it was collected through an online channel. We asked them about the reason if and why they want or do not want to improve their sustainable activity and about those values they are present in their communication toward their consumers.

Software utilised

The results of the free association game were collected with Microsoft Excel Spreadsheet program, and basic index calculations and cross tables were created there. IBM SPSS Statistics software was also used for further calculations. The results about the field trips were qualitative observation notes and interview documents, used with Microsoft Word. For the online questionnaires, Google Form was used.

3. Results and Discussion

Indicators

Rank, OE and OI

Frequency (f) counts mentions of a given word. From the collected 1275 associations the most typically evoked concepts in connection with the expression 'sustainable food consumption' are 'bio' (87) and 'health' (76). The order of evocation (OE) can be used as an indicator of prototypic accessibility. Associative speed not only indicates the strength of an associative link and thereby its salience, but also of its accessibility in terms of a greater prototypical agreement (i.e. the most commonly associated word is not necessarily the most important one for a subject, but can be simply the most socially shared one (de Rosa, 2002). To look back at the associations and classify each word by order of importance (OI) is a double level evaluative task for the player, implying a cognitive process of a more rational nature, compared to the higher projective nature and higher speed which characterise the order of elicitation (de Rosa, 2002). Even though 'bio' was mentioned 87 times, only 5 times (5.75%) was it chosen as the most important. However, the expression 'health' was chosen 36 times as the most important expression (47.36%), therefore we see that 'bio' can be the most often evoked expression, it's importance is slight. Other words often chosen as most important were: 'environmental protection' (11), 'responsible' (9) and 'conscious' (9). Considering the evocation order, 'bio' was mentioned first 23 times (32.53%), and 'health' was mentioned 17 times as first (22.37%).

Table 1: Most frequently mentioned words, percentage, polarity, importance and rank, self-edited

num.	Expression	Frequency	Percentage of all	Percentage of more mentioned	Polarity	Importance	Rank
1	bio	87	6,82%	7,12%	0,69	3,70	2,94
2	health	76	5,96%	6,22%	0,92	1,97	2,88
3	food waste	28	2,20%	2,29%	-0,93	2,79	2,25
4	vegetables	27	2,12%	2,21%	0,59	3,15	3,15
5	conscious	24	1,88%	1,96%	0,92	2,46	3,21
6	local product /	22	1,73%	1,80%	0,73	3,23	2,45
7	GMO	19	1,49%	1,55%	-0,35	3,88	3,59
8	affordable	19	1,49%	1,55%	0,84	3,21	2,74
9	quality	18	1,41%	1,47%	1,00	2,33	3,17
10	no food waste	18	1,41%	1,47%	0,94	2,06	2,72
11	vegetarian	18	1,41%	1,47%	-0,17	3,78	2,78
12	hunger	17	1,33%	1,39%	-0,88	2,35	3,24
13	vegan	15	1,18%	1,23%	0,21	3,57	2,00
14	no packaging	14	1,10%	1,15%	0,86	3,21	3,29
15	domestic	14	1,10%	1,15%	0,79	2,86	3,57
16	environmental protection	14	1,10%	1,15%	0,93	2,33	3,17
17	environmentally	13	1,02%	1,06%	0,85	2,46	1,85
18	green	13	1,02%	1,06%	0,54	3,15	2,85
19	home made	12	0,94%	0,98%	0,92	2,50	2,75
20	meat	11	0,86%	0,90%	-0,55	3,27	2,36
21	water	11	0,86%	0,90%	0,36	1,91	3,36
22	fruit	10	0,78%	0,82%	1,00	2,40	3,20
23	agriculture	10	0,78%	0,82%	0,70	3,60	2,80
24	plastic	10	0,78%	0,82%	-0,40	3,30	3,00
25	plant	10	0,78%	0,82%	0,90	3,10	2,80
26	market	10	0,78%	0,82%	0,90	3,20	3,00

Index of polarity and neutrality (de Rosa, 2002)

Subjects were asked to attribute a polarity to each word, using positive, negative or neutral values receptively. In order to calculate the polarity on the basis of the total number of words associated with each subject, two specific indexes have been utilized: Index of polarity (P): a synthetic measurement of evaluation and attitude implicit in the representational field.

Equation 1: Index of polarity (P), self-edited based on (de Rosa, 2002)

$$(P) = [(N^{\circ} \text{ of '+' words}) - (N^{\circ} \text{ of '-' words})] / N^{\circ} \text{ of total words associated}$$

(P) ranges between (-1 ;1).

If (P) is between -1 and -0.5 most words are connotated negatively. If (P) is between -0.4 and +0.4 positive and negative words tend to be equal. If (P) is between +0.4 and +1, most words are connotated positively. The polarity index of sustainable food consumption is 0.427 only slightly positive, what must be due to the fact that people often think of the unsustainable food consumption, for example mentioning hunger, animal suffering, pollution and careless consumerism.

Index of neutrality (N): neutrality works as a control measurement, assuming that high positive polarity corresponds to lack of neutrality and vice versa.

Equation 2: Index of neutrality (N) self-edited based on (de Rosa, 2002)

$$(N) = [(N^{\circ} \text{ of '0' words}) - (N^{\circ} \text{ of '+' words} + N^{\circ} \text{ of '-' words})] / N^{\circ} \text{ of total words associated}$$

(N) ranges between (-1 ;1).

If (N) is between -1 and -0.5 few words are connotated neutrally. If (N) is between -0.4 and +0.4 neutral words tend to equal to the sum of positive and negative words. If (N) is between +0.4 and +1 most words are connotated neutrally, and there is a high neutrality. As the neutrality index is very low, -0.704, we see that only a few words are connotated neutrally, and people have strong opinion on the issue of sustainable food consumption as this concept evoke expressions with emotional component.

SPSS Calculations

OE, OI and Polarity

It was examined whether there is really a difference between the evocation order (OE) and order of importance (OI), as literature suggested. For this purpose a non-parametric rank correlations was used: Spearman's (rho) rank correlation to measure the strength of the relationship between these two variables considering our data.

Table 2: Spearman's rho for OE OI and polarity (SPSS), self-edited

Correlations			OE	OI	polarity
Spearman's rho	OE	Correlation Coefficient	1,000	,178**	-,080**
		Sig. (2-tailed)	.	,000	,004
		N	1275	1275	1275
	OI	Correlation Coefficient	,178**	1,000	-,256**
		Sig. (2-tailed)	,000	.	,000
		N	1275	1275	1275
	polarity	Correlation Coefficient	-,080**	-,256**	1,000
		Sig. (2-tailed)	,004	,000	.
		N	1275	1275	1275

** . Correlation is significant at the 0.01 level (2-tailed).

The model is significant ($r < 0.05$) and the correlation co-efficient is 0.178, meaning that there is only a weak connection between evocation order and importance order, therefore the assumption according to which there is a difference between OI and OE is true.

It was also assumed that the expressions holding some emotional charge will have connection with OI or OE. For this purpose the application of Spearman's (rho) rank correlation had to be considered as only variables that are either ordinal, interval or ratio can be applied. Polarity can take the values: -1, 0 and 1, therefore Spearman can be applied (values have been transposed). There is a minor connection between polarity and OI (-0.256), therefore presumably expressions having some emotional charge have connection with the OI, but OE was quite independent from polarity (-0.080).

Age and Polarity

It was assumed that there is a connection between the age and the polarity (if positive, neutral or negative associations the individuals evoke when hearing the stimulus). For this purpose a Pearson correlation was applied as both variables were metric and also the technique allows us to examine both relationship and strength.

Table 3: Pearson correlation for age and polarity (SPSS), self-edited

Correlations		age	Polarity
age	Pearson Correlation	1	-,096**
	Sig. (2-tailed)		,001
	N	1275	1275
polarity	Pearson Correlation	-,096**	1
	Sig. (2-tailed)	,001	
	N	1275	1275

** . Correlation is significant at the 0.01 level (2-tailed).

As $r < 0.05$, the correlation is significant. The Pearson's correlation coefficient between age and polarity is -0.096, the two variables are close to be independent from each other, the correlation is negligible.

Gender and sustainability pillar

Is there a connection between the gender and what sustainability pillar the evoked words belong to? With the Chi-square test these two variables were compared in a contingency table to see if they are related.

Table 4: Pearson Chi-Square for gender and sustainability pillar (SPSS), self-edited

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11,486 ^a	5	,043
Likelihood Ratio	11,112	5	,049
Linear-by-Linear Association	,384	1	,536
N of Valid Cases	1220		

a. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 16,51.

As $p=0,043$ our results are statistically significant, gender is not independent from sustainability pillar (which evoked word belong to).

Table 5: Cramer's V for gender and sustainability measures

Symmetric Measures			
		Value	Approx. Sig.
Nominal by Nominal	Phi	,097	,043
	Cramer's V	,097	,043
N of Valid Cases		1220	

Phi and Cramer's V are both tests of the strength of association. We can see that the strength of association between the variables is weak, but gender has an effect on what sustainability pillar the evoked words belong to.

Field trip and questionnaire

Besides the data collected in 2019 in Balatonalmádi and Bakonyexpo, we have collected 22 answers from farmers who operate or take part in Balaton Upland's local food supply chain. All of them stated that they are producing food in a sustainable way. To clarify this we collected what kind of sustainable activities they do and we can say that the most common answers are that they are producing their product without preservatives and additives (81.8%), producing healthy food (81.8%), by using natural raw materials (77.3%) and employ local residents (68.2%). Behind the most common activities, we can conclude that more than the half of the respondents said that they are selling their products locally which cause lower transportation cost (63.6%), using biodegradable or no chemicals (63.6%), using local services and products as raw material (63.6%), actively take part in community's life by organizing and supporting local events (59.1%) and reuse by-products (59.1%). All together the respondents have chosen more, than 8 option on average out of the 12 in the multiple-choice question. After all, we asked them to think about if they can do further about being even more sustainable and still 77.2% of the total respondents thought that yes, they could do better in sustainable food production. The most commonly mentioned reasons are environment protection, renewable energy usage (solar panels, bio energy, recycled packaging etc.) but thinking of the future and the next generations' wellbeing also appeared among the answers. Those who still think they can do even more about sustainable food production answered that better recycling and environmentally friendly package (45.5%), lower energy usage or renewable energy usage in processing (45.5%) and decreased transportation cost (31.8%) would be a good next step.



Figure 1: Local farmers answers for current sustainable activities

Next to sustainability activities we also wanted to examine the farmers' communication about their values toward customers. Among the most commonly mentioned values 'bio/eco/natural/health' expressions appeared altogether 12 times, 'chemical-free' expression appeared 9 times, 'local/rural/own/' and its synonyms appeared also 9 times, the expression of 'sustainability' and 'quality' appeared just 1-1 times among the answers. Next to their communication, we asked them to share their experience if the customers feel important to be sustainable as a local producer and 68.2% said yes, it is important. The most common sign is that the customers sharing their opinion with the producer, asking for reusable package or denying plastic bag, they are coming back to shop again and asking information about sustainable technologies and the production process itself. Therefore, we can conclude that those farmers and local producers who are focusing on their sustainable food production and energy usage can generate profit by satisfied customers.



Figure 2: Local farmers answers for possible sustainable activities for the future

Governmental limitation caused difficulties due to COVID-19

As we examined in Balaton Upland producers (N=22) the main issues during the epidemic are the followings: uncertainty (82%), masks and disinfectants procurement is difficult (36%), scope of activities has changed (22%), personal work is

stalling due to curfew (22%). Furthermore, 59% of the asked producers face huge difficulties with sales mainly due to decreased or stopped demand which directly leads toward minimum or zero income. Regarding the local markets those farmers who have been regularly visiting markets facing decreased number of customers and mentioned that they are not visiting anymore the marketplaces until the end of curfew.

4. Conclusions and lessons learnt

Sustainability in practice at local farmers

Taking into account the social representation of sustainable food consumption, the evoked words were either with negative or positive polarity, and neutral expressions were rarely evoked by the participant consumers, therefore we see that this is a high topic and people bond with it together expressions with emotional charge behind. We can also state that the local farmers in the Balaton Upland have high focus on sustainable production and operation altogether, both based on our observation in the field trips as well as on the answers of the online questionnaire. We see that the observed sample have reported 8.2 out of the 14 listed activities listed on average. This high number means that they are focusing on more areas side by side; it seems to be not just a side-effect but a significant part of their operation. Sustainability contains different understanding among the respondents therefore further details are shared under the following chapters.

Food product packaging is still in the spotlight

Asking the producers about their sustainability measures, quite often the first arising topic is in connection with the packaging – what also appeared in the representations ('no packaging' (14), 'plastic' (10)). As we mentioned previously, producers have a common feedback from customers that reusable packaging and denying plastic bag is a common and expected practice. We can also conclude that most of the examined producers are highly aware about sustainable food production still not mentioned packaging among the most common activities. However, they think it is an important part of the sustainable operation since almost half of them stated that they should improve their sustainable production by better recycling and environmentally friendly package.

Characteristics affecting representation

It was assumed, that demographic characteristics will be in connection with the representations. We examined whether age and polarity will have some connection, but as the Pearson's correlation coefficient between age and polarity is -0.096, we can conclude that age does not really matter in what kind of "charge" the associated words have when we consider sustainable food consumption, or at least not with N=1275. Furthermore, other demographic data were neither significantly linked to the representations. Characteristics that were not asked could be responsible for the representation differences, or extending the sample size would bring the causative factors to the surface. For better coverage of the social representation of the sustainable food consumption, it would be favourable to continue the research and reach better representativeness. Also, it is advisable for usable results to attain saturation, as it occurs when adding new data to the existing ones does not result in new information or perspectives.

Cultural – social sustainability better enforced locally

Considering the classical tools of LED, the local product and local production might contribute to the employment, quality of life, cultural richness, trust and social capital. More than the half of the farmers said that they actively take part in community's life by organizing and supporting local events, which means that they have an important role in social life and local resident's employment high rate confirming the strong community spirit. We can also state that professional consultancy is not a commonly practiced activity, so they are focusing more on community building than technical

knowledge sharing. According to Smith, alternative agri-food movements and other creative alternatives to mainstream agriculture, like organic (bio) food, Fair Trade, and the local food have been educating the public about sustainable food systems (Smith, 2013), increasing public awareness about the environmental and social impacts of the food systems and motivating social change (Feenstra, 2002). This is also confirmed by our research, as mentioning these movements frequently popped up in the minds of the consumers considering sustainable food consumption, having the possibility to alter the relationship between food consumers, and food producers. These movements offer practical, easy-to-understand and tangible solutions by establishing alternative food systems that reduce food miles, increase farmer cooperation and promote ecological farming practices (Lyson, 2004).

Environmental sustainability is still in the forefront

Several studies (Matos et al., 2012; Ramos and Kawamura, 2009) came to the conclusion that the socially shared knowledge is especially associated with the environmental dimension of sustainability; though some studies already suggest a transformation in the representation of sustainability concerning issues in association with awareness, responsibility, balance, and concern for the future (Techio, Conclaves and Costa, 2016). According to the findings of this study, the environmental pillar of sustainability is highly represented considering sustainable food consumption, as we have seen the dominance of the environmental pillar, but also considering the often mentioned words, we presume that this dominance is valid: 'environmental protection'(14), 'environmentally conscious'(13), 'green' (13), 'no packaging' (14), 'plastic' (10). According to the research conducted amongst the farmers, the most practised sustainable activities are producing their product without preservatives and additives, producing healthy food and natural raw materials, and employ residents. We can say that beyond the existing environmentally-friendly actions they also need to improve environmentally friendly or minimal packaging system and alternative energy sources or less energy usage of production is still need to be developed, which can be counted as expensive developments.

Food waste was a really important term in the representations, if we consider 'food waste' (28) and no food waste (18) as one, it would be the third most frequently evoked expression about sustainable food consumption, therefore the producers should strive for not just achieving prevention of waste and reuse, but also communicate it. Leftover food donation and reuse appeared just at 18,2% of the response of the farmers, and we also can see that the willingness to focus on this part is also relatively low, so it is not in the focus of local producers if we are thinking about sustainable development. Either we are thinking about food waste or a conscious food supply system.

Bio (organic), preservatives and additives

The producer's communication about sustainable values toward customers is focusing the most on 'bio/eco/natural/health', 'chemical-free', 'local/rural/own/' and its synonyms. The highest rate on sustainable food production already existed activities is producing their product without preservatives and additives and producing healthy food and using natural raw materials which means that the sustainable food consumption mainly means these activities for local producers. We can conclude that customers and producers have common importance and understanding of association in this field. In the representations we see a negative judgement of additives and preservatives ('chemical' (9) was every time judged to be negative, and 'chemical-free' (9) was a positive thing ($P=0.78$) as well as 'additive-free' (6) ($P=1$) according to the respondents); while natural, free and bio (87) represent positivity for them.

The importance of Health

We argue that health is the keyword for sustainable food consumption. Attention should be directed towards the order of importance, since 'bio' (87) was only 5 times (5.75%) chosen as the most important, while the expression 'health' (76) was chosen 36 times as the most important expression (47.36%) (Average OI=1.97), therefore we see that 'bio' can be more often evoked expression, its compared importance is slight. Experiencing the current changes, the COVID-19 virus brought

to our lives, many realise the importance of health – not just in the food system – but in life generally. The sustainable food system cannot exist without health – besides the health of humans: animal, soil and plant health are crucial. Looking from the epidemiology point of view, several modern diseases are zoonotic ones, such as Ebola, and according to the Centers for Disease Control and Prevention more than 6 out of every 10 known infectious diseases in people can be spread from animals, and 3 out of every 4 new or emerging infectious diseases in people come from animals (CDC, 2020). These diseases can occur due to many issues, including the unhealthy animal husbandry, not appropriate circumstances and unnatural practices (feeding pigs with pork for example). We can conclude that farmers take way more effort for sustainable development and health then they still want to improve if we look the number of existing activities (181) comparing to the wished number of activities (62). They have a high focus on additive-free or minimization and healthy food production, even though the highest need is for package minimization or a more environmentally friendly solution with renewable energy resource or energy minimization.

The food system is like a cobweb, and the health of one actor influences everyone and everything at the end. Health has an immense impact on the economy as well besides the social and environmental pillars of sustainability. In the upcoming years, it would be worth to examine if emerging risks strengthen the importance of health or not, and how they will affect the consumer behaviour regarding consciousness, altruism and efforts for sustainable behaviour.

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