SMARTCHAIN

SMART SOLUTIONS IN SHORT FOOD SUPPLY CHAINS

Deliverable 4.5 Consolidation report on consumer attitudes and recommendations

Work Package 4

UOC

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Executive summary

This report presents the highlights of the results from the three studies conducted within WP4 on consumer attitudes, values, expectations, and purchase behaviour in relation to short food supply chains (SFSCs). The first study involved 32 stakeholder interviews with consumers, producers, and other SFSC actors (e.g., HoReCa, regulatory authorities) in seven EU countries (BE, CH, DE, EL, ES, HU, NL), and two at the EU level. The second study included eight consumer focus groups from DE, ES, EL, and HU, four in urban areas and four in rural. The third study consisted of an online consumer survey in the same four EU countries, and generated about 450 usable responses per country. The highlights in this report have been primarily based on the consumer survey.

As far as grocery shopping is concerned, in line with the focus groups' findings, the survey results showed that the most frequently purchased products are vegetables and fruit, followed by eggs, honey, and bread, while the least frequently bought were jams, juices, and cereals & legumes. Moreover, most participants reported principally using supermarkets, local grocery shops, and discount supermarkets. The majority of survey participants (85% in DE, 67% in ES, 70% in EL, and 70% in HU) also reported buying from SFSCs, at least sometimes, with "farmers' markets" being the most popular (pure) SFSC channel, especially in EL and HU.

The main reasons why consumers buy from SFSCs are that SFSCs give them the chance to support local producers and know where food comes from, as well as the naturalness of food from SFSCs. These results confirmed the findings from the qualitative studies (i.e., the first and the second), where consumers identified SFSC products as local food (attaching importance to the origin of the products) and perceived them as more natural. In contrast, high product prices, SFSC inaccessibility, and the lack of promotion turned out to be the chief reasons why consumers do not buy from SFSCs.

The pandemic seemed to have positively affected the perception of SFSCs in all four countries. It also increased consumer awareness towards SFSCs and slightly stimulated purchase intentions, particularly in ES. Similarly, most respondents in the four countries agreed that SFSCs helped their countries better prepare for similar crises. Nonetheless, the pandemic seemed to have slightly reduced consumers' overall shopping frequency from SFSCs.

In a "drivers vis-à-vis barriers" inquiry, ethical benefits (e.g., "knowledge about the producer", "reducing food miles") were shown to be the only significant driver of actual buying behaviour in all four countries. Some barriers seem to play a role, too, like the "hard to trust" factor in DE and ES, and the "hard to access" factor in ES and EL. These results suggest that ethical considerations lie at the heart of motivation for those who buy from SFSCs; thus, benefits relating to ethical aspects might be emphasized in SFSC communication. Of course, drawing upon one of the most widely used approaches to understand and predict human behaviour (i.e., the concepts of the Theory of Planned Behaviour), we ran a market segmentation analysis, which showed that the consumer market seems to consist of four distinct segments with differing attitudes towards SFSCs. This report provides extensive profiling of the four segments to be used for target marketing instead of mass marketing.

Finally, based on the studies' outcomes, some recommendations for SFSC practitioners are offered: communicate the ethical aspects of SFSC; enhance the accessibility and justify the prices; highlight naturalness and adjust your offering; establish trust and show the SFSC difference; and know your different customers. Likewise, recommendations for SFSC policymakers are also provided in this report: regulate SFSCs and end the "grey zones"; get farmers together; facilitate knowledge transfer; and run public campaigns to help consumers see the SFSC difference.

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1. Introduction

Short food supply chains (SFSCs) have become a topic of growing interest among consumers, researchers, practitioners, and public bodies in Europe. SFSCs lie at the heart of the SMARTCHAIN project, whose principal aim is to foster them. Similarly, Work Package 4 (WP4) takes centre stage at the SMARTCHAIN project, as it aims to shed light on SFSC-related consumer behaviour, and generate knowledge and recommendations for practitioners and policy officials alike. To achieve WP4's goal, WP4 partners conducted both qualitative and quantitative research. The qualitative part included stakeholder interviews across Europe and focus groups with consumers in four European countries (i.e., Germany, Spain, Greece, and Hungary). The quantitative counterpart involved a large-scale online survey in the same four European countries. The outcomes from both parts were compared and informed with the findings from a thorough literature review.

This report presents a summary of key topics and findings from all parts of WP4 research. However, we placed particular focus on the survey outcomes, as the findings from the qualitative studies have been covered in two special reports (i.e., Deliverables 4.1 and 4.2 for the stakeholder interviews and the focus groups, respectively) as well as in a consolidated report (i.e., Deliverable 4.3). Besides, the findings from the qualitative studies also served as input for the survey. Moreover, this report is not an exhaustive summary of the survey findings either, as a special report focusing on them (i.e., Deliverable 4.4) has already provided extensive documentation of the associated insights. Hence, in this report, we offer the highlights of the WP4 results, organized into different essential topics (see the following paragraph). In doing so, we first revisit critical insights from the survey, and visualise them in one infographic per topic. Of course, we contrast them with the insights from the qualitative research and/or the literature review to paint a complete picture per topic.

We begin with a short overview of the research conducted and the key features of each research component. We carry on with a spotlight analysis of what consumers typically buy from SFSCs, how often they shop from SFSCs, why they buy from SFSCs, why they do not buy from SFSCs, and how the pandemic influenced their predispositions towards SFSCs. Subsequently, we revisit the role of food drivers *vis-à-vis* obstacles on the decision to purchase from SFSCs, and re-examine the consumer segmentation and profiling. Eventually, reflecting upon the highlights presented in this report, we compile the associated recommendations, and organize them according to their practical and policy relevance.

2. What did we do, and what are the key features of our research?

Infographic 1 shows the basic background features for the two qualitative studies. Both were conducted in the summer and autumn of 2019. The focus group took place in four European countries, namely Germany, Spain, Greece, and Hungary. In each country, two focus groups were conducted, one with participants from an urban region, and the other with participants from a rural region (< 5,000 inhabitants). In total, about 40 consumers were involved from each region type. The stakeholder interviews involved 20 experts from the four target countries, nine experts from two other countries that are part of the SMARTCHAIN project (i.e., the Netherlands and Switzerland), and three experts from the heart of Europe (i.e., one from Belgium and two Belgium-based stakeholders representing the EU outlook). All in all, a series of 32 interviews were carried out with experts representing the perspectives of consumers, producers, policymakers/policy analysts, and other actors in SFSCs, such as regulatory authorities and the HoReCa industry.

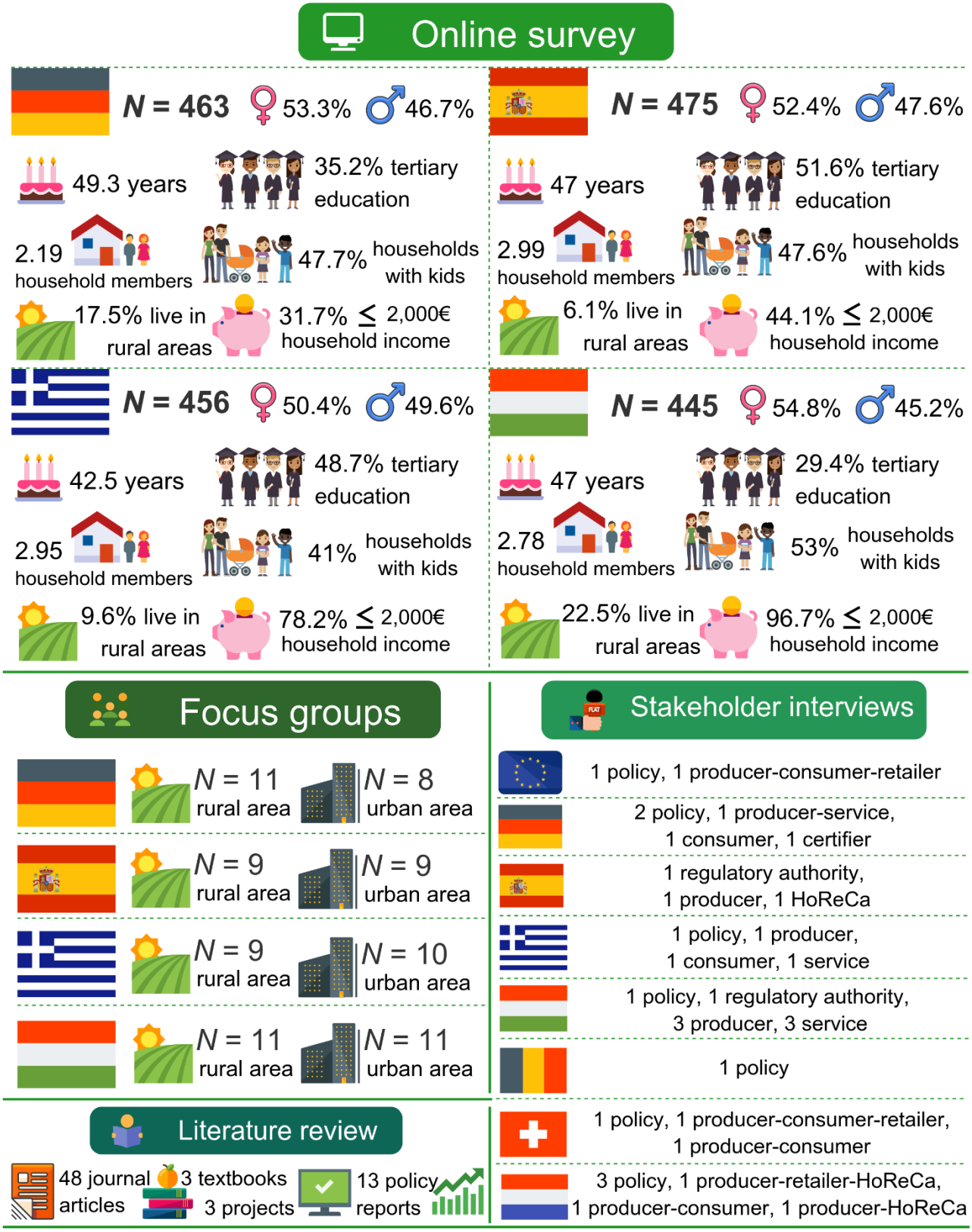
As pointed out in the introduction, however, the basis for the WP4 highlights in this report is the large-scale online survey. A total of N = 2,020 EU citizens were surveyed online in Germany, Spain, Greece, and Hungary. Participants were recruited via a market research agency using an existing consumer panel, and the data collection took place in November 2020. Each respondent was the main food purchaser in the household or at least one of the primary food purchasers. After quality checks and data cleaning, a usable sample of N = 1,839 was obtained.

Infographic 1 shows the basic background features for each country. The online survey samples were largely representative of the population of each country with regards to age and gender, with older consumers being slightly underrepresented (as they typically are in online panels). Only the Greek subsample has a significantly younger age, as the data provider was unable to draw responses from older age groups. Moreover, across all countries, individuals with higher levels of education are overrepresented. Still, the data for the rest of the features (i.e., household size, monthly household income, kids in the household, community size) were representative of the population characteristics. Of course, commonalities and differences between the subsamples can be spotted (e.g., on average, German respondents live in smaller households and have a higher income).

The survey's principal aim was to understand the attitudes, preferences, value perceptions, and behaviours of consumers toward SFSCs. To construct the research instrument (i.e., the online questionnaire in the four native languages), we drew upon the findings from other researchers and the results from our qualitative studies, since they had examined similar topics, such as consumer attitudes, values, expectations, and preferences in relation to SFSCs.

Finally, it should be noted that a literature review of different sources "fed" all of our empirical studies. Notably, the findings and conclusions from journal articles, textbooks, policy reports, and other H2020 projects were critically reviewed and utilized throughout the empirical investigation and analysis.

Overview of research studies & key features



Infographic 1. Research studies & key features

3. What do consumers buy from SFSCs?

It should be pointed out that, before asking participants what they typically buy from SFSCs, we gave them a short explanation of the topic of SFSCs, and provided the definition used in the Regulation (EU) No 1305/2013 (i.e., "a SFSC is defined as a supply chain involving a limited number of economic operators, committed to cooperation, local economic development, and close geographical and social relations between food producers, processors, and consumers. Further, short food chains have as few intermediaries as possible between the food producer and the consumer"). Accordingly, we presented some examples of SFSCs: directly from the producer, farmers' shops, farmers' markets, agritourism, restaurants using local products, community-supported agriculture, online shops, and local foods sold in supermarkets directly from the producer.

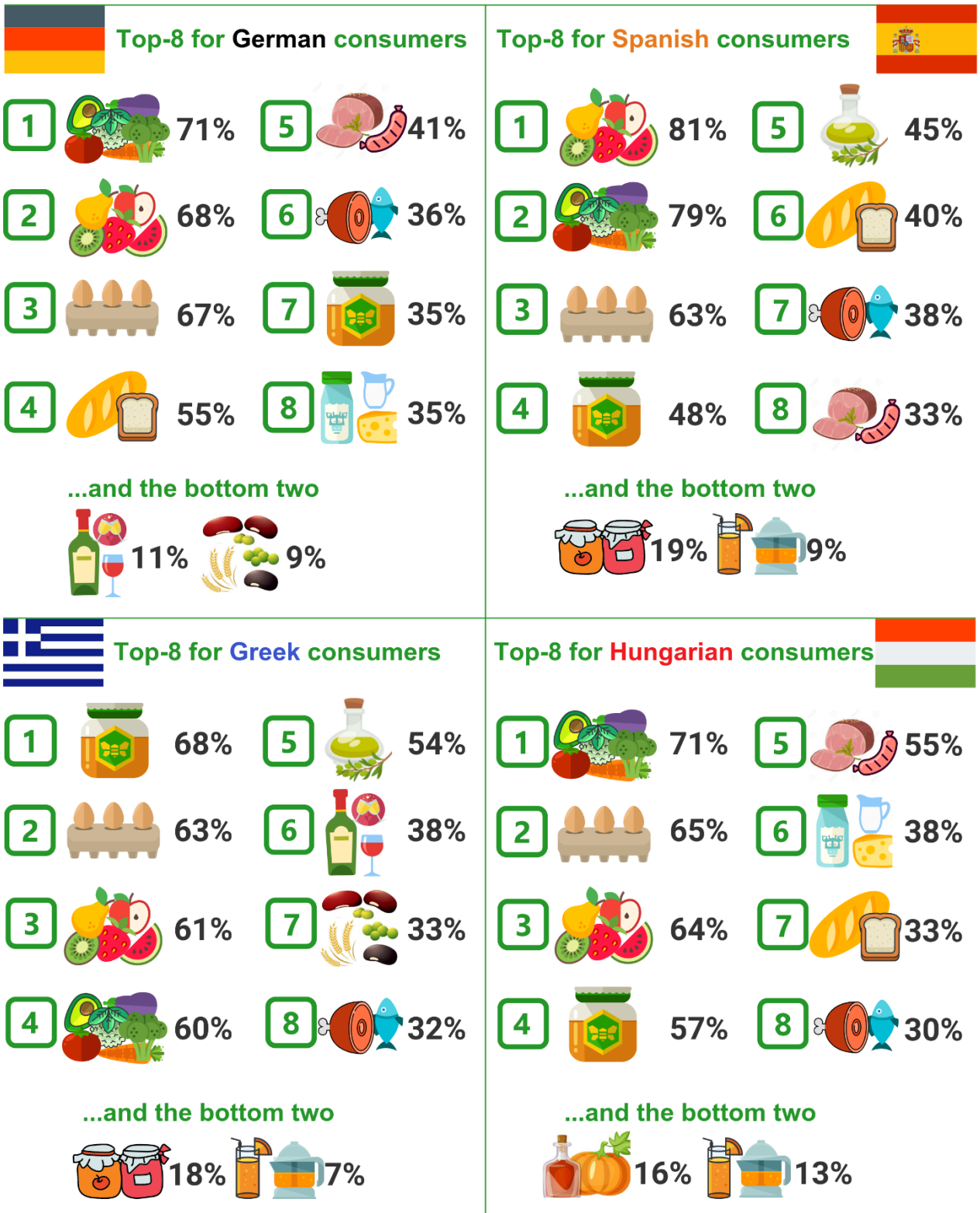
When looking into what consumers typically buy from SFSCs, the survey findings suggested that some common ground can be found across all countries. First, in all countries, consumers purchase fresh food items more often than processed ones. Second, in all countries, certain food categories are part of consumers' top-4 choices. That is, when asking for specific categories, vegetables, fruits, and eggs make it to the top-4 in all four countries, and at least with 60%. In other words, at least 60% of respondents who purchase from SFSCs buy goods from these three categories. Perhaps this should not be surprising considering that such food products can be consumed on a rather regular (even daily) basis. Actually, as far as fruit and vegetables are concerned, the results were also in line with the focus group outcomes, where consumers reported that they mainly buy such products. Third, in all countries, fresh meat and fish make it to the top-8, but no more than one out of three participants purchase them from SFSCs.

Infographic 2 shows the top-8 most frequently purchased food items from SFSCs for all countries as well as the bottom two, revealing some further commonalities but also some differences. As we can see, honey is in the top-4 of Spain, Hungary, and Greece. Actually, in Greece, honey is the top choice. Honey's popularity is not unexpected, as these three countries are amongst the biggest EU producers in relative terms, and the number of honey producers is customarily large. Besides, honey is habitually sold in farmers' markets and weekly markets. Furthermore, participants in the focus groups had also named honey as one of their top choices. In Germany, honey is part of the top-8, but it is bread that makes it to the fourth position, although it was not named in the focus group discussions. In contrast, Spanish participants in the focus group did name bread as one of their regular choices. Accordingly, bread is a popular choice in the Spanish sample.

Not surprisingly, some food categories that were mentioned in the focus groups and have been associated with certain countries, are also part and parcel of consumers' SFSC choices. More specifically, olive oil is a popular choice in both Greece and Spain, while processed meat products and dairy goods appear to be prevalent in Hungary and Germany.

Finally, it is also interesting to consider what consumers prefer to buy the least. As we can see from Infographic 2, in Spain, Greece, and Hungary, juices stand at the bottom. Interestingly, in the two countries of Southern Europe, jams constitute the second least popular choice. In Hungary, this choice is oil (e.g., pumpkin seed oil or poppy seed oil). In Germany, the two bottom choices are two categories that, in Greece, are preferred by at least one in three participants, namely that of wine and that of cereals and legumes.

What consumers typically buy from SFSCs



Note: The "%" denote the % of respondents who reported to buy from the respective food category. Only the respondents who reported to buy at least sometimes from SFSCs have been taken into account.

Infographic 2. What consumers prefer to buy from SFSCs

4. Where do consumers do their grocery shopping? How about SFSCs?

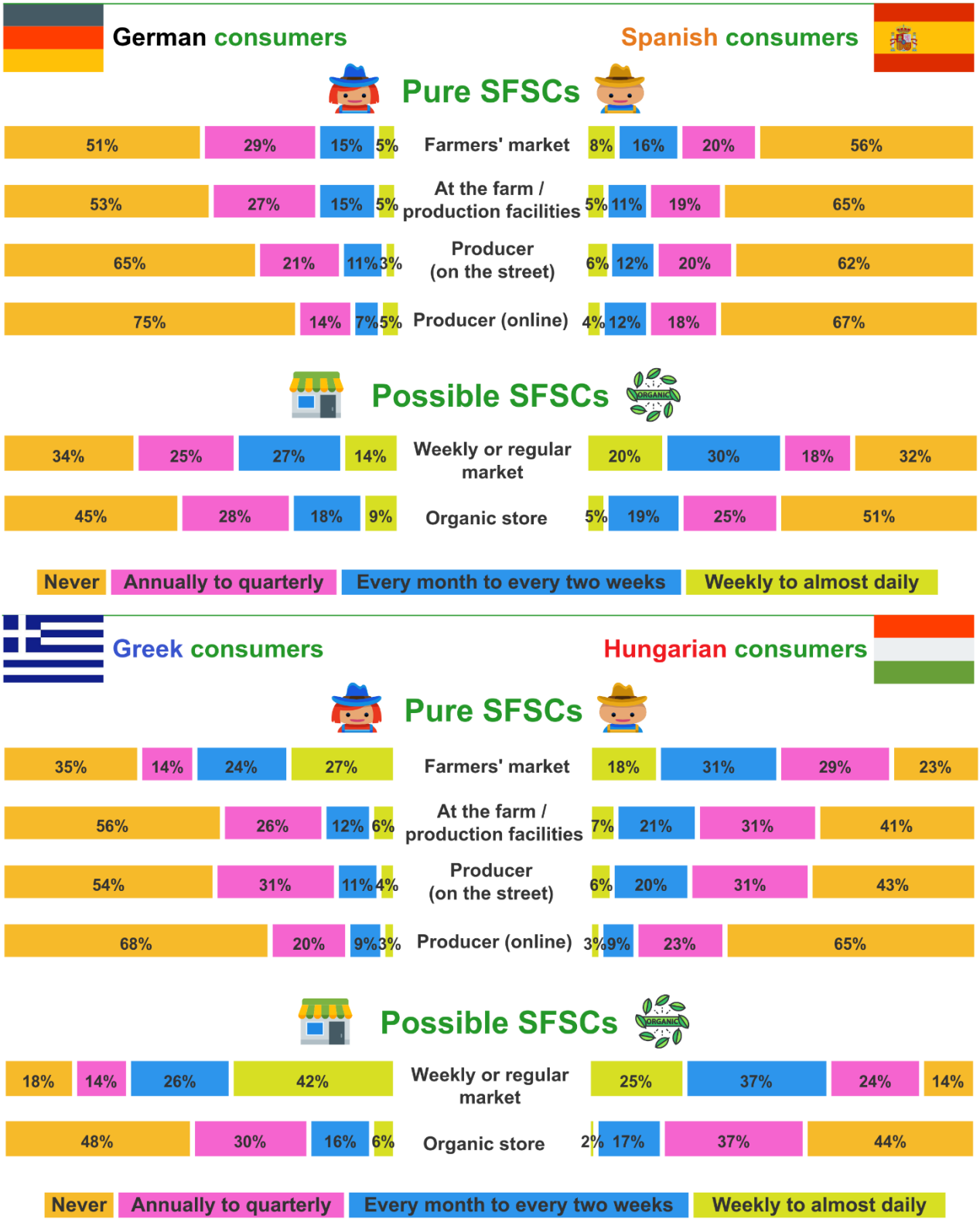
Before asking about which products participants buy from SFSCs and before explaining to them what is meant with the concept of SFSCs, we inquired about their shopping frequency from different channels. The five most frequented channels over all countries are (1) supermarkets, (2) local grocery stores, (3) discount supermarkets, (4) specialist shops, and (5) weekly or regular markets (non-farmers). Notably, 83% of respondents do their groceries from supermarkets on a daily or weekly basis. In Hungary, the local grocery stores are the top choice, while in Germany, discount supermarkets come second. These findings confirm the domination of retailers across Europe and signal the importance of accessibility that is typically secured by the widespread presence of local grocery stores and local specialist shops.

Naturally, we also inquired about SFSC outlets, either in their pure (uncontested) form (i.e., farmers' market, at the farm, directly from the producer on the street, and directly from the producer online) or in their possible form (i.e., weekly or regular market, organic store). We do not classify the latter strictly as SFSCs, considering that several intermediaries might be involved (e.g., in weekly markets, products are often sold by traders who buy them from wholesalers) or that certain products might travel a very long distance when they come from non-EU countries.

As we can see in Infographic 3, when looking at the pure SFSCs, the farmers' market is the most frequently used SFSC channel across all countries. Particularly in Hungary (18% at least weekly) and Greece (27% at least weekly), respondents reported visiting farmers' markets frequently. In comparison, German (5% at least weekly) and Spanish (8% at least weekly) respondents reported being much less likely to visit a farmers' market. On average, the respondents indicated that they use direct sales infrequently and rather irregularly. More than half of the respondents indicated that they never use direct sales, regardless of whether it is online, mobile street sales, or direct purchases at the place of production. Of course, despite the common pattern, some differences can be spotted between countries. Hungarian consumers, for instance, seem to visit production facilities more frequently than others, perhaps partly because they have the highest share of rural residents and, as a result, live closer to the production points.

As far as the possible SFSCs are concerned, the prevalence of weekly or regular markets is evident, particularly in Greece (42% at least weekly) and Hungary (25% at least weekly). In contrast, organic stores appear to be less popular overall, as about half of the participants in all countries never buy food from them. Still, in Germany and Spain, one in four participants visit them at least once a month.

Shopping frequency from pure & possible SFSCs



Infographic 3. Shopping frequency from SFSCs

5. Why do consumers buy from SFSCs?

After shedding light on what consumers buy from SFSCs, and where they buy food products from, we zoom into why they prefer or would prefer to buy from SFSCs. In other words, we focus on the principal reasons why consumers purchase (or would purchase) from SFSCs. We also considered the potential buyers as the analysis suggested that the share of respondents who agreed with different reasons for buying from SFSCs exceeds the actual percentage of buyers in all four countries.

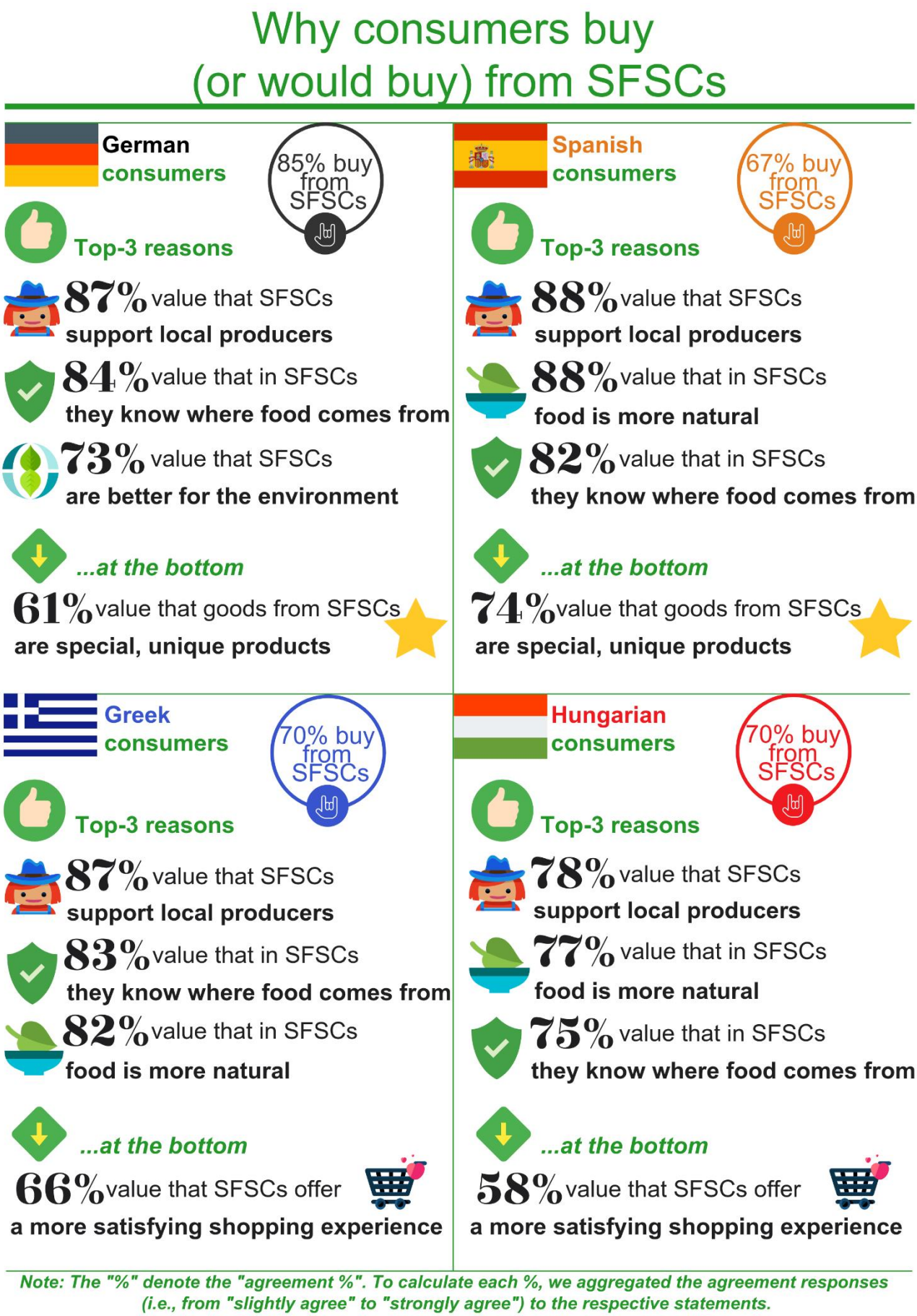
In reality, at the time of the survey, 73% of all participants stated that they buy - at least sometimes - from SFSCs. As Infographic 4 illustrates, more buyers can be found among the German participants, while in the other three countries, about two out of three respondents are SFSC buyers.

In Infographic 4, we have aggregated and weighed (with a statistical test[1]) the agreement responses (from "slightly agree" to "strongly agree") to obtain the agreement percentage with each reason at hand. As we can see from Infographic 4, the support of local producers is the primary reason to buy from SFSCs in all countries. Hungarian consumers seem to be a bit more reserved in their stance, as a smaller share agrees with the statement that "SFSCs support local producers" compared to other countries. Similarly, knowing where the food products come from is ranked second in Germany and Greece, and third in Spain and Hungary. In Germany, the environmental merits serve as a good reason, as 73% of respondents agree that they buy (or would buy) from SFSCs as the latter are better for the environment. In the other three countries, quite a large share of respondents appreciates that the food from SFSCs is more natural.

These findings confirm and extend the outcomes from the qualitative research. According to these outcomes, consumer understanding of SFSC is tied to the concept of local food and focuses on the origin of the food in terms of regional or national borders. Furthermore, in the focus group discussions, consumers emphasized that they perceive SFSC products as more natural and environmentally friendly.

At the bottom of the reasons why consumers buy from SFSCs, the shopping experience and the uniqueness of products can be found. Although both constitute good reasons to prefer products from SFSCs, they seem to lag behind the top-3.

[1] We used a repeated-measures ANOVA F-test coupled with follow-up post-hoc tests.



Infographic 4. Top reasons for buying from SFSCs

6. Why do consumers not buy from SFSCs?

Next to the reasons why they buy from SFSCs, participants were also asked to indicate their (dis-)agreement with possible reasons that prevent them from buying food from SFSCs. The top three reasons against buying from SFSCs are: (1) SFSC products are expensive, (2) it is hard to get there, and (3) SFSCs are not well promoted.

As we can see from Infographic 5, in all four countries, the price issue ranks in the top-3. Interestingly, this is the top reason for Germany, even though German respondents appear to have a higher income than participants from the other countries. Still, the share of respondents who find this as an important barrier is lower than that of Greek participants. A statistical test[2] further reveals that it is the Spanish participants who treat it as less imperative than Greeks and Hungarians. In fact, for Hungarian respondents, it is the top reason too.

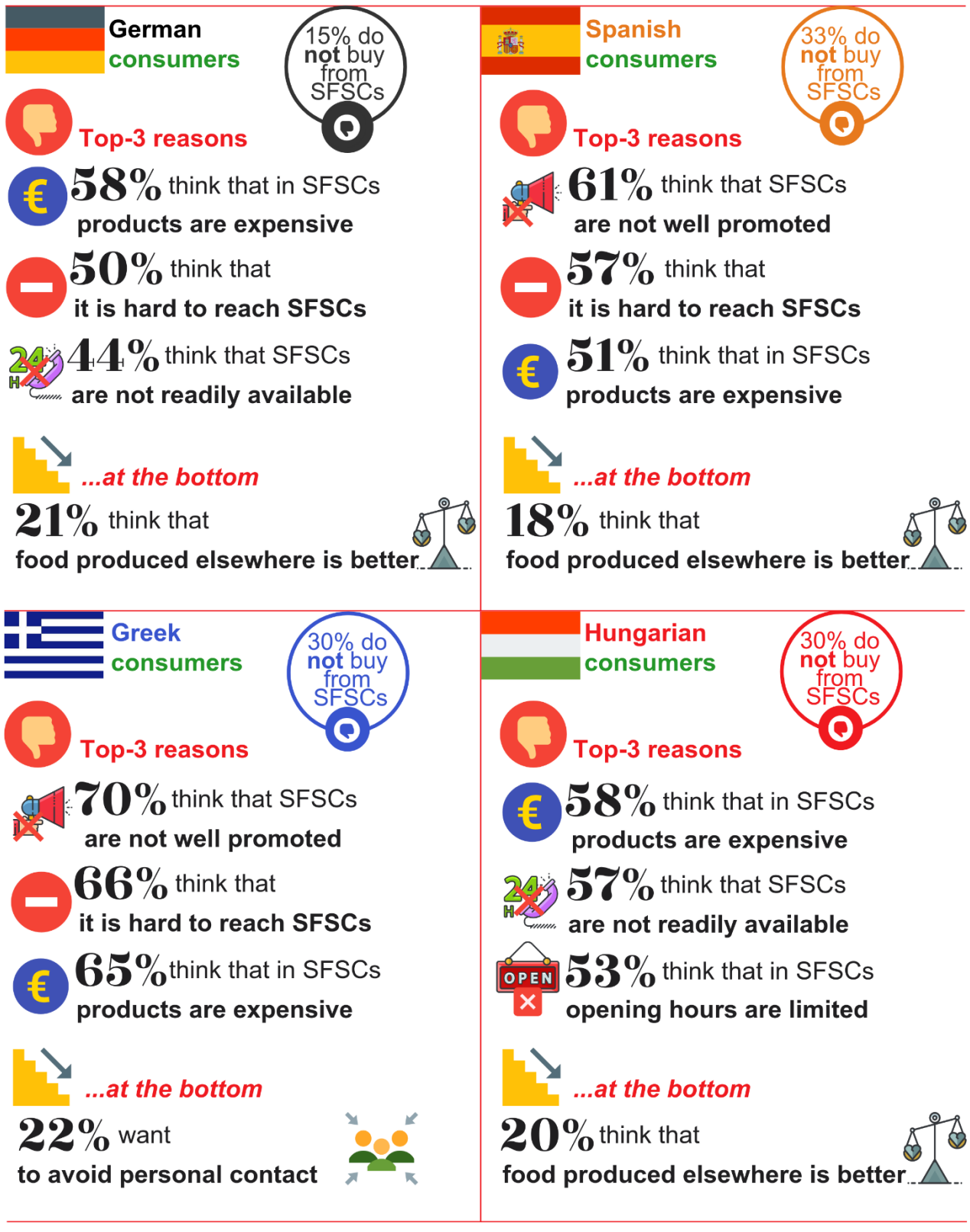
In Spain and Greece, the promotion barrier is the most important reason. Of course, the sheer percentage and a statistical test[3] show that Greeks consider it more important than Spanish respondents. Similarly, Spanish and Greek participants treat the physical accessibility issue as critical. In Germany, this is the second most crucial barrier too. A statistical test[4], however, suggests that Greeks attach more importance to this barrier.

The accessibility issue seems to be captured indirectly too. A large part of German and Hungarian respondents believes that SFSCs are not readily available. The Hungarian participants even dislike the opening hours range, as the "limited opening hours" concern is ranked third.

These results seem to confirm the findings from the qualitative studies. In the focus group discussions, consumers felt that buying from SFSC was not convenient enough for them to perform on a regular basis. Some of them also thought that food from SFSCs was unaffordable. What has not been entirely confirmed is the mistrust towards the food that comes from SFSCs. As we can see in Infographic 5, the least important barrier in the German, Spanish, and Hungarian subsamples is the belief that food produced elsewhere is better. This is the second least important issue in Greece. Yet, considering that about 30% of respondents in the four countries think that hygiene rules are not transparent, it seems reasonable to deduce that there is room for improvement in the issue of food safety and the associated levels of trust.

[2] As we illustrate in Deliverable 4.4, an ANOVA F-test was first performed to detect whether there was at least one statistically significant difference in the mean value of the respective statements between the four countries. Follow-up post-hoc tests showed where the differences lay. In this case, the "statistical test" is one of the post-hoc tests.
[3] See footnote 2.
[4] See footnote 2.

Why consumers do *not* buy (or would *not* buy) from SFSCs



Infographic 5. Top reasons for not buying from SFSCs

7. How did the pandemic influence consumers' tendencies towards SFSCs?

Because of the unusual circumstances caused by the COVID-19 pandemic during the time of the survey, participants were asked about changes in their mindset and behaviour regarding SFSCs. The positive changes in consumers' tendencies towards SFSCs are presented in Infographic 6.

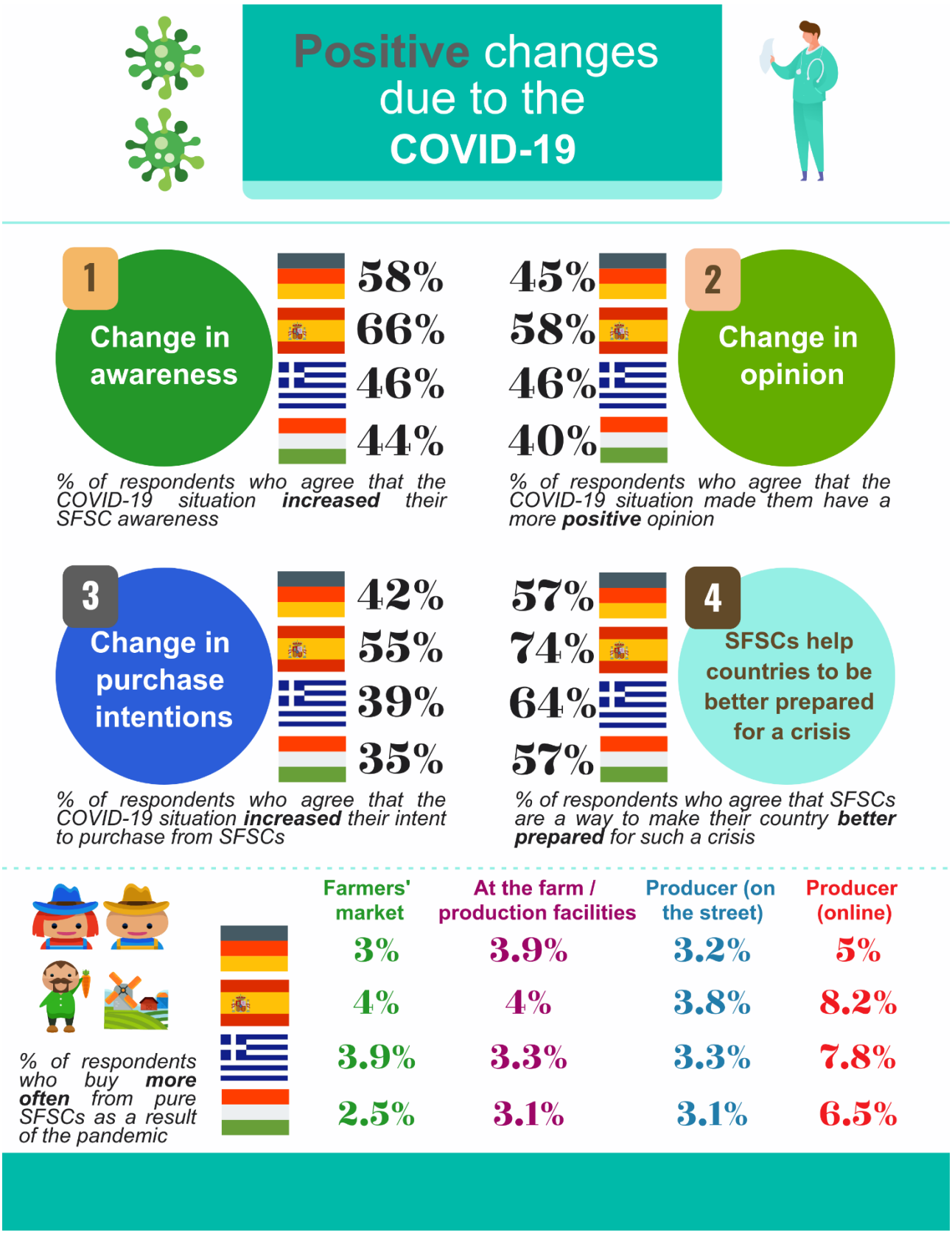
Notably, about half of all respondents agree that their SFSC awareness increased (from slightly to highly) as a result of the pandemic. The Spanish respondents show the highest increase, followed by the German respondents. Similarly, the COVID-19 situation seems to have positively affected the perception of SFSCs in all four countries. Almost 50% of the respondents reported an improved opinion for SFSCs. Once again, the most improved opinions are found for Spanish participants compared to all other countries, as the highest percentage suggests and as a statistical test[5] confirmed. Likewise, respondents generally see SFSCs as a good way to better prepare a country for a crisis such as the COVID-19 situation, especially again in the case of Spain, where no less than 74% of respondents agree with the associated statement.

Inevitably, a certain share of participants disagrees with the above statements, but it does not amount to more than 10%. For example, in the shift in opinion, the maximum percentage of respondents who report a negative change is 5%. Only in the case of Hungarian respondents and the last statement regarding the SFSC contribution to better preparing a country for a crisis, the disagreement accounts for about 16%. Still, the positive responses significantly outnumber the negatives ones. So, we can safely assume that the COVID situation positively affects the perception of SFSCs.

In a similar vein, although 50% of the consumers stated that the changes in purchase intention from SFSCs did not increase, 43% of them reported an increased intention to buy from SFSCs due to COVID-19. Only a small proportion of 7% would buy less from SFSCs. Once again, the responses of the Spanish participants stand out, as their positive responses outstrip the responses from the other three countries.

How about the shopping frequency? Due to the COVID-19 pandemic, although most consumers stated that they had not changed their shopping behaviour, the results show that consumers have moderately reduced their overall shopping frequency. While online shopping seems to have been increased, this was not observed for SFSC's online sales overall. Still, Infographic 6 suggests that the increase in online sales vis-à-vis the other pure forms of SFSCs is higher (about 7% on average). Nevertheless, we need to consider that, at the same time, about 17% of respondents reported that they buy less often online from producers as a result of the pandemic. Similar patterns can be observed for the other pure SFSC forms. Interestingly, out of all shopping channels, only the online shopping form of supermarkets attracted more positive than negative responses.

[5] See footnote 2.



Infographic 6. Positive changes due to the COVID-19

8. The role of food drivers vis-à-vis barriers on buying from SFSCs

Past studies[6] have found that consumer drivers to purchasing food from SFSCs include ethical considerations, such as support for local farmers, organic produce, and food provenance. Our focus groups' studies also showed that consumers generally have a positive view of SFSCs in terms of such considerations. Hence, we decided to test an advanced model that is set to predict actual buying behaviour from SFSCs. In doing so, we pitted different potential consumer drivers of food purchasing against possible deterrents of buying from SFSCs. We were careful to include as many ethical consumption drivers as possible without enticing respondent fatigue.

So, in our driver set, we included several ones related to ethical consumption, such as "fair prices for the producers", "organic produce", "animal welfare", "knowledge about the producer", "regional origin of products", "home country products", "reducing food miles", "direct contact with the producer/retailer", and "ethical employment". Practical buying drivers were also included (i.e., "convenience", "low prices", "overall quality", "taste", and "freshness"). In the barriers set, we included aspects relating to "insufficient labelling", "limited range", "insufficient promotion", "limited opening hours", "high price", and "non-transparent hygiene rules", among others.

Before constructing the actual model, we opted to reduce the data set to a more manageable size while retaining as much of the original information as possible. Hence, we ran a series of factor analyses, which helped us come up with a set of three drivers and a set of three barriers. Infographic 7 shows the two sets and which factors belong to each set.

In the actual test model, apart from the two sets, we included all possible background variables, namely "age", "gender", "education", "living area", "household size", "children at home", "household income", and "grocery shopping responsibility".

Then, we ran the model[7] for each country separately. Interestingly, across all countries, out of all background variables, only income turned out to have a statistically significant effect in Germany and Greece. Strikingly, the "ethical benefits" factor emerged as the single most important predictor of actual buying behaviour in all countries. Some commonalities were also found between pairs of countries. More specifically, in Germany and Spain, the "hard to trust" factor turned out to have a negative effect, implying that consumers who signified SFSC mistrust as a reason for not buying, also have higher chances of not buying from SFSCs at all. In Spain and Greece, the accessibility issue (i.e., in physical and monetary terms) seems to act as a barrier. Finally, in Greece and Hungary, the limited range issue seems to have an unexpected positive effect. Perhaps, actual buyers in these countries wanted to signal that if the range were not limited, they would buy more or more often from SFSCs.

Overall, the results confirm and extend previous work on the ethical consumption literature[8]. Ethical considerations lie at the heart of motivation for those who buy from SFSCs. Clearly, benefits relating to ethical aspects might take precedence over other more traditional benefits (e.g., taste, price), which do form the basis for fair competition but do not seem to create a level playing field against food products from conventional outlets.

[6] The documentation of the findings from past SFSC studies can be found in Deliverables 4.4 and 4.2.
[7] We ran a binary logistic regression model for each country.
[8] The documentation of the findings from the ethical consumption literature can be found in Deliverable 4.4.

Infographic 7. An advanced model to predict SFSC buyers

9. Consumer segmentation and profiling

Food companies and producers cannot always appeal to all customers in a broad market, such as that of food. The customers are too numerous and diverse in their stance and preferences. Hence, many food companies and producers typically embrace target marketing, distinguishing the major market segments they wish to attract and communicating the key distinctive benefits of their offering. A market segment consists of a group of (potential) customers who share a similar set of wants. The marketer does not create the segments but instead identifies them and decides which ones to target. A well-established analytical tool for market segmentation is cluster analysis, which is a class of techniques used to classify objects into relatively homogeneous groups called clusters.

For this deliverable, we performed a new cluster analysis (see Appendix A). In performing this analysis, we drew upon one of the most widely used approaches to understand and predict human behaviour, namely the Theory of Planned Behaviour (TPB) by Ajzen (1991)[9]. The TPB postulates that behavioural intention is determined by the combination of three factors, attitudes (ATT), subjective norms (SN), and perceived behavioural control (PBC). The first refers to the degree to which a person has a favourable or unfavourable evaluation of the behaviour. The second refers to the perceived social pressure to perform or not to perform the behaviour. The third relates to people's perception of the ease or difficulty of performing the behaviour of interest. More favourable ATT and SN, and greater PBC correspond to a greater likelihood of consumer intention to engage in the associated behaviour. On top of using the three TPB-related constructs, we also integrated the questions which inquired whether the pandemic changed respondents' attitude towards SFSCs.

The cluster analysis yielded a four-cluster solution. Marked differences could be identified for all the clustering variables and across the four clusters (see Appendix A). Based on the scores of the four dimensions/clustering variables, we named each cluster accordingly. We also tried to use a single word for each name that would preferably start with the same letter. Hence, we came up with the following names: the "fans", the "folks", the "foes", and the "friends". About one-third of respondents belong to the 1st cluster, the "fans". Members of this cluster are rather enthusiastic about SFSCs. The 2nd cluster consists of the so-called "folks". It is the biggest one, and its' members do have a positive score across the four dimensions, but they do not seem to be excited. The members of the 3rd cluster, the "foes", even dislike SFSCs and experience a major difficulty in buying. Finally, the 4th cluster consists of the "friends", who are enthusiastic about SFSCs but find it hard to buy from SFSCs.

Infographic 8 also shows the results of the profiling, which was based on statistical testing (e.g., ANOVA with post-hoc tests, χ^2 tests). Naturally, only statistically significant differences were used for the profiling. For instance, the mean age for all segments did not differ (about 47 years). For other profiling variables, differences were found. As we can see, for example, more respondents with higher income belong to the "fans". Moreover, more respondents with tertiary education can be found in the "fans" and the "friends". The latter, along with the "foes", find the "hard to access" factor as more important than the other two segments, which explains their low PBC (difficulty in buying). Interestingly, even one in four members of the "foes" buys from SFSCs. Overall, SFSCs could use the results of this cluster analysis to decide whether to engage in target marketing and how.

[9] Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211.

Consumer segmentation for SFSCs

1 The "fans" 33%

- *very* positive attitude towards SFSCs
- *very* supportive social environment
- the pandemic enhanced their attitude *a lot*
- no difficulty in buying from SFSCs *at all*

36%
38%
31%
27%

- more women
- more households with kids
- more respondents with tertiary education

more respondents with higher income

93% buy from SFSCs

Core benefits

Ethical benefits

The "fans" attach more importance to core and ethical benefits than all other segments

2 The "folks" 38%

- positive attitude towards SFSCs
- *somewhat* supportive social environment
- the pandemic *slightly* enhanced their attitude
- *almost* no difficulty in buying from SFSCs

41%
35%
37%
39%

- more men
- all other background characteristics appear to be balanced

Hard to trust

Pragmatic benefits

70% buy from SFSCs

The "folks" have less trust than the "fans" and the "friends", and attach less importance to pragmatic benefits than all other segments

3 The "foes" 10%

- *almost* negative attitude towards SFSCs
- *not* supportive social environment *at all*
- the pandemic *slightly* worsened their attitude
- *major* difficulty in buying from SFSCs

7%
7%
11%
16%

- less households with kids
- less respondents with tertiary education

more respondents with lower income

Hard to trust

Hard to access

26% buy from SFSCs

The "foes" have less trust than the "fans" and the "friends", and more difficult access to SFSCs than the "fans" and the "folks"

4 The "friends" 19%

- *very* positive attitude towards SFSCs
- supportive social environment
- the pandemic enhanced their attitude
- *great* difficulty in buying from SFSCs

16%
20%
21%
18%

- more women
- more respondents with tertiary education

more respondents with lower income

Core benefits

Hard to access

70% buy from SFSCs

The "friends" find the core benefits more important than the "folks" and the "foes", and have difficult access to SFSCs

Notes: The general % denotes the % of total respondents; the country % denote the % within countries; the profiling of each segment was based on suitable statistical tests (e.g., ANOVA with post-hoc tests, χ2)

Infographic 8. Consumer segmentation

10. Key conclusions and recommendations

To paint a comprehensive picture of SFSCs in their relation to the consumers, we performed both qualitative (i.e., focus groups and in-depth interviews) and quantitative research (i.e., a large-scale online survey), supported by findings from different studies (e.g., journal articles, policy reports, textbooks). After having presented a condensed overview of the major findings from WP4, we derive some key conclusions and recommendations.

Although SFSCs still represent a niche market, as most consumers purchase the majority of their groceries from conventional channels, our findings suggest that SFSCs offer great potential that can be tapped. SFSCs offer several benefits that are valued by consumers, with a positive trend to expect for the future, as sustainability issues are becoming increasingly important. However, producers and consumers have to find the way to each other. To improve and accelerate this process, we give several tips in Infographic 9. Our tips are based on the central findings of the topics discussed. As we can see in Infographic 9, SFSCs could communicate the ethical aspects of their endeavours, highlight the naturalness of the food they offer, and consider adjusting their offering or teaming up with others who offer products that seem to be a "qualifier" (e.g., fruit & vegetables, honey, and eggs). On the negative side, SFSCs have to enhance their accessibility, boost consumer confidence, justify their prices, and show their difference from conventional chains. Of course, as the analysis in the consumer segmentation suggests, not all consumers are the same. Different segments may be identified, so SFSCs need to monitor their markets and decide whether they engage in target marketing.

Moreover, from the consumers' side, a rapprochement could be fostered. It may be worthwhile to inform consumers, for example, by regional or local public campaigns, about the benefits provided by SFSCs not only for themselves but also for the entire community or region. As these benefits are often based on credence attributes that consumers cannot detect either prior to purchase or at the time of consumption, public campaigns would increase their credibility. In Infographic 10, we provide some further recommendations for policymakers. For instance, policymakers need to end any "grey zones" and regulate SFSCs. Similarly, policymakers may find novel ways to get farmers together, such as by supporting the creation of food and/or innovation hubs. Such solutions would help farmers overcome inherent SFSC difficulties (e.g., the accessibility issue). At this juncture, we would like to mention that a closer look at policy recommendations is taken in WP7 of the SMARTCHAIN project.

If SFSCs can be further established and strengthened, they have the potential to contribute to sustainable development. An entire region can benefit when it is home to solid and well-integrated SFSCs. To achieve this, however, it is important that citizens, consumers, and policymakers understand the contribution of SFSCs to this development. Another remark to make is that in current public debates on sustainability, the focus typically lies on environmental aspects, whereas social sustainability is less emphasized. However, SFSCs can also make an important contribution here, for example, by helping to achieve fair working conditions and fair prices for farmers, or by integrating a workforce of all ages. Often referred to as ethical benefits, such aspects are at the centre of the movement towards achieving higher levels of social sustainability.

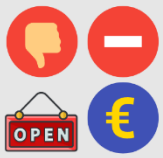
5 tips for SFSCs: How to appeal to consumers

1 Communicate the ethical aspects of your SFSC

Ethical consumption aspects, such as supporting the local producers, animal welfare, ethical employment, and consuming in an environmentally friendly way, are major drivers for purchasing from SFSCs. Emphasize them in your marketing communication.

2 Enhance your accessibility and justify your prices

Accessibility is key to increasing the uptake of SFSCs as an alternative purchasing channel. Bring your products to places that are nearer to consumers and adjust your opening hours. Also, explain production processes and consumer benefits to justify your pricing.



3 Highlight naturalness and adjust your offering

Consumers value the naturalness and freshness of food from SFSCs and, at the same time, favour certain categories, like fruit, vegetables, honey, and eggs. So, highlight these aspects and make sure you offer products from these categories or team up with others who offer them.

4 Establish trust and show the SFSC difference

Consumer confidence needs to be improved on the issues of food safety and higher prices. Run information campaigns that address doubts about these issues, and help consumers see the difference between your SFSC and conventional channels.

5 Know your (different) customers

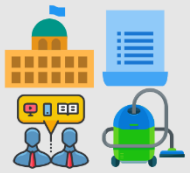
Across countries, consumers have diverse preferences and attach importance to different barriers. Even within a single country, various segments with differing profiles can be found. Do market research or at least observe your market to know more about your customer groups.

Infographic 9. 5 tips for SFSC practitioners

5 policy tips: How to support SFSCs

1 Regulate SFSCs and end the "grey zones"

A common legal definition of SFSCs needs to be agreed upon at a European level. Similarly, all forms of SFSCs need to be regulated at European and national levels. Accordingly, operating in a legal vacuum ("grey zones") has to be terminated.



2 Farmers involved in SFSCs: Get them together

Through their Rural Development programs, EU countries have the chance to support the most popular (pure) SFSC form, the farmers' markets, among others. Novel forms of farmer co-operation and co-ordination, like food and innovation hubs, can be equally reinforced.

3 Create special quality assurance systems

Territorial development programs may establish regional quality assurance systems that will stimulate local sourcing and connect the HoReCa industry with local producers. The HoReCa industry will then serve as one of the primary gatekeepers for SFSCs.

4 Facilitate knowledge transfer

Bolster Rural Development measures that bring together farmers with the scientific community. Make use of co-operation brokers, if necessary. Create focused extension services to diffuse SFSC-related knowledge, particularly to small farmers.

5 Public campaigns to show the SFSC difference

Regional or local public campaigns can inform citizens about the benefits provided by SFSCs not only for themselves but also for an entire community or region. Likewise, such campaigns will help consumers see the SFSC difference and show trust.

Infographic 10. 5 tips for SFSC policymakers

11. Limitations

Like any research project, our approach and research design choices involve limitations, particularly as far as the online survey is concerned.

First, while we were careful to draw samples from four countries with different characteristics, there is a need to gather further evidence of generalizability in order to guarantee the accuracy of our findings. In fact, the sample population does not in every respect exactly represent the population of the selected countries. Overall, our study participants are better educated than the European average, especially in the Greek subsample. This sample characteristic may lead to a positive bias regarding the acceptance and evaluation of SFSCs. Thus, in reality, the evaluation of and support for SFSCs may be somewhat weaker. Another unintended characteristic of the sample is the lower average age of the Greek sub-sample compared to the other countries. This may also bias the results and limit comparability between countries.

Second, it should be mentioned that the four countries differ substantially with regard to their income levels. This obviously influences people's shopping behaviour and must be taken into account when interpreting the results. Of course, in the advanced model, we technically controlled for that, as we performed a median split within each sample, and essentially compared those respondents with a household income higher than the median value to those with an income equal or lower than the median level.

Third, we could note a methodological issue that arises when concepts (e.g., attitude towards SFSCs, drivers of food shopping) are assessed in different countries and languages. The meaning and understanding of such concepts can be influenced by the specific sociocultural and also geographic background and, thus, may differ in the different countries we surveyed. Even if the translation process is carried out to the highest standards and with the utmost care, this problem still exists. Moreover, it is not unlikely that response patterns may differ for respondents from different countries. In other words, it is possible that participants from a certain country might give higher (lower) scores on average than participants from a different country.

Fourth, in the survey, we relied upon single-source self-reports, which often produce data that may be biased by methodological artifacts. We took several precautionary steps and implemented plenty of the most common procedural and statistical remedies to free our measure of such biases and diminish the likelihood that our data were plagued by systematic measurement error (e.g., we implemented a spatial separation of statements relating to different concepts, we assured anonymity). Nevertheless, we cannot rule out that common method and/or social desirability biases may have exerted some influence.

Finally, we would like to mention that the COVID-19 situation influenced the survey. The sampling time was initially postponed so as not to fall into the very first period of the pandemic. This time in the spring of 2020 was marked by a high degree of uncertainty and was experienced quite differently in the various countries. When sampling took place in autumn 2020, we could expect consumers to have adjusted to the pandemic situation to some extent. Nevertheless, the situation has undoubtedly affected consumers, which is reflected in their answers, even though we asked them to answer some questions as if it were before the pandemic. On the positive side, we were able to capture the influence of the COVID-19 pandemic on the attitude and behaviour towards SFSCs.

12. Appendix A – Cluster analysis

To conduct the segmentation for SFSCs, we ran a cluster analysis. Cluster analysis typically assembles statistical units (in this case, the individual responses from survey participants) into clusters depending on their similarity in chosen dimensions (in this case, the three TPB-related constructs and the change in attitude due to the pandemic).

To determine the groups and the group membership, we relied upon a *two-stage* cluster analysis. In the first stage, we employed an agglomerative hierarchical method. Hierarchical methods seek to build a hierarchy of clusters based on distance as a measure of (dis)similarity between the statistical units across the clustering variables (Field, 2009[10]). Agglomerative clustering starts with each object in a separate cluster. For the agglomeration, we used Ward's linkage, which is a variance method in which the squared Euclidean distance to the cluster means is minimized (Izsak et al., 2015[11]; Malhotra, 2010[12]). So, the means of all dimensions were first computed for each cluster. Then, for each case, the squared Euclidean distance to the cluster means was calculated. These distances were summed for all the cases, and, at each iteration, the two clusters with the smallest increase in the overall sum of squares within the cluster distances were combined. In other words, our agglomerative hierarchical method initially treated each response as a separate cluster, but then progressively grouped them into larger clusters, in successive iterations.

Subsequently, with the help of an agglomerative hierarchical clustering schedule (Malhotra, 2010), complemented by the visual aid of a dendrogram (Izsak et al., 2015), we determined the optimal number of clusters. A dendrogram is used to visualize hierarchical clusters (Izsak et al., 2015). It shows how many distinctive clusters can be visually identified (Malhotra, 2010). Each case in a dendrogram typically comprises its own unique cluster at the bottom and is fusing with other cases progressively. A conclusion could be drawn based on the visual inspection of the dendrogram and the clustering schedule regarding the solutions that seem to yield well-separated clusters. In our case, four clusters seemed to give the best fit, with a satisfying rate of internal homogeneity.

In the second stage, we used the number of clusters and cluster centroids obtained from the first stage as inputs to a non-hierarchical optimizing partitioning method (K-means cluster analysis) (Izsak et al., 2015; Malhotra, 2010). This allowed us to re-assign responses to different clusters and optimize the cluster solution.

Finally, marked differences between clusters and across the four dimensions were determined with the use of analysis of variance (ANOVA) and post-hoc pairwise comparisons. ANOVA is typically used for group comparisons. If the ANOVA F-test is significant, post-hoc tests are used to compare all different groups and locate the differences, while controlling for Type I error (Field, 2009; Malhotra, 2010). We utilized Gabriel's pairwise test because it is designed to cope with groups of different sizes without losing statistical power (Field, 2009). Notably, we found marked differences for all four dimensions and clusters, all of which were statistically significant at the 0.01 level.

[10] Field, A. (2009) Discovering Statistics using SPSS, 3rd ed. Thousand Oaks, CA: Sage.
[11] Izsak, K., Markianidou, P., and Radošević, S. (2015). Convergence of national innovation policy mixes in Europe - has it gone too far? An analysis of research and innovation policy measures in the period 2004-12. *Journal of Common Market Studies*, 53(4), 786-802.
[12] Malhotra, N.K. (2010) Marketing Research: An Applied Orientation, 6th ed. Upper Saddle River, NJ: Pearson Education.