SMARTCHAIN
SMART SOLUTIONS IN SHORT FOOD SUPPLY CHAINS

Deliverable D3.6: Comparative analysis report on SIAT application

Work Package No.3

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Executive Summary

The present report shows the results of a comparative analysis among the 16 case studies of the SMARTCHAIN Project that applied SIAT – Social Innovation Assessment Template[1]. SIAT is a self-assessment template, through which local actors in short food supply chains can improve their understanding of the local landscape and uncover their potential for social innovation (openness to new ideas, availability of resources, barriers to change and more).

The present report is divided into four sections: (1) an introduction in which there is a brief background of the SIAT tool and its linkage with the social innovation definition; (2) a section delving into the structure of the SIAT explaining the five dimensions that compose it (economic, environmental, socio-cultural, governance, influence); (3) a section explaining the methodology applied to conduct the comparative analysis and the tools used; (4) a final section with the key findings of the analysis.

[1] Out of the 18 case studies participating in the project, 16 of them fully completed the survey. Alce Nero (IT) and CTCPA (FR) did not participate to the survey. For Alce Nero justification for not participating to the survey, please refer to Annex 2 of D3.5.

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1. Introduction

The Social Innovation Assessment Template (henceforth SIAT) is a self-assessment template, through which local actors in short food supply chains can improve their understanding of the local landscape and uncover their potential for social innovation (openness to new ideas, availability of resources, barriers to change and more).

The SIAT has been developed following the social innovation definition identified by Smartchain project in D3.1:

Social Innovations (SI) are processes that change short food supply chain systems by altering the collective perspective of the actors involved and their corresponding action mode, thus leading to the achievement of, primarily, social goals that benefit all short food supply chain participants in sustainable ways.

This definition highlights the social goals pursued by the groups co-creating SIs and, at the same time, it maintains the need for these innovations to generate benefits in sustainable ways. The terms **collective perspective** and **action mode** are the ones characterizing the perspective of the definition that looks at the collective awareness of SFSC participants. Therefore, Social Innovation processes within SFSCs should enable the achievement of social goals and therefore sustainable/blended value creation, that imply (positive) social and economic performances.

The aim of SIAT is to grasp the level of 'social innovativeness' of SFSCs and it is tested within each case study of the project. To achieve this aim, the SIAT, as a self-assessment, takes into consideration (aside from a profile section) five dimensions:

- economic dimension
- environmental dimension
- socio-cultural dimension
- governance dimension
- influence dimension (positive impact on other sectors & stakeholders).

These dimensions have been identified both in coherence with literature on SFSCs assessment and EU policy reports[2] and with the aim of providing a self-assessment tool for the social innovation

[2] Malak-Rawlikowska, A.; Majewski, E.; Wąs, A.; Borgen, S.O.; Csillag, P.; Donati, M.; Freeman, R.; Hoàng, V.; Lecoeur, J.-L.; Mancini, M.C.; Nguyen, A.; Saïdi, M.; Tocco, B.; Török, Á.; Veneziani, M.; Vittersø, G.; Wavresky, P. Measuring the Economic, Environmental, and Social Sustainability of Short Food Supply Chains. Sustainability 2019, 11, 4004.
Chiffoleau, Y.; Millet-Amrani, S.; Canard, A. From Short Food Supply Chains to Sustainable Agriculture in Urban Food System: Food Democracy as a Vector of Transition. Agriculture 2016, 6, 57.
Marsden, T.K.; Banks, J.; Bristow, G. Food supply chain approaches: Exploring their role in rural development. Sociol. Rural 2000, 40, 424–426.;

definition provided above. The main difficulty of SIAT, as a self-assessment tool, is to function as an assessment of social innovativeness applied to SFSC. The measurability of social innovation itself has been researched and questioned broadly (see for instance Baturina, D., Bežovan, G. (2015)[3] in particular section "Social Innovation Impact – Unlit Road"). **Impacts, through the measurement of outcomes, are defined as the measurement of social innovation processes[4].** Applying this perspective (to create SIAT) to each dimension considered relevant in SFSC literature impact hypothesis, outcome areas and possible indexes have been studied. **The processes that bring change (social innovation) are mapped in each of the five dimensions**.

In March 2020, after the literature review analysis, a first SIAT model divided into 2 steps (the evaluability and the assessment) was presented. The first step was elaborated by the 18 case studies and precious feedbacks came back to re-design the SIAT, in particular those aspects related to the typology of data really available for the organizations. Then, the second step was analysed and commented. Finally, in July 2020, the final version of SIAT was launched incorporating the suggestions of different partners and adjusted according to the typology of available data. In addition, some interventions were made on the structure and on the wording of the survey, like, for instance, the name of the fifth dimension that changed from fertilization into influence, based on the recommendations of the mid-term evaluation.

The present report aims at presenting a comparative analysis among the 16 SMARTCHAIN case studies which fully completed the survey.

Galli, F.; Bartolini, F.; Brunori, G.; Colombo, L.; Gava, O.; Grando, S.; Marescotti, A. Sustainability assessment of food supply chains: An application to local and global bread in Italy. Agric. Food Econ. 2015, 3, 21.

3 Baturina, D., Bežovan, G. (2015) Social Innovation Impact-review No. 9. Seventh Framework Programme (grant agreement 613034), European Union. Brussels: Third Sector Impact

[4] For further in-depth analysis, please refer to Chantal Hervieux, Annika Voltan, (2019) "Toward a system approach to social impact assessment", Social Enterprise Journal, https://doi.org/10.1108/SEJ-09-2018-0060

2. The SIAT model

The purpose of this section is to analyse each dimension composing the SIAT in order to interpret the comparative analysis. The SIAT is structured as designed in the framework and the survey (here the link to the online survey monkey):

- **Profile** - The purpose of this section is to profile the organization corresponding to its sizing (Mailing address; Year of creation; Area of operations; Legal form; N° of workers; N° of members; Workers that are members; Agrifood sector; Economics (last year); Type of production). Moreover, it investigates if the organization operates only in SFSC or both in SFSC and in Long Food Chain (LFSC).
- **Prioritize** - The purpose of this section is to directly involve the respondent's perspective so that in the SIAT output the most important dimensions that drive the organization's vision emerge.
- **5 dimensions** (economic; environmental; socio-cultural; governance; influence). Each dimension is composed by different indexes based on items (item = translate the given answer into a % value). There are different types of answers: open answers; quantitative (number); qualitative (text); Likert scale 1-5 scale; binary answers 0-1. Most of them can be transformed into an item for calculating the index, others are just informative. The result of each dimension is summarized with the radar representation.

The SIAT, as a self-assessment tool, gives the organization a final score that is calculated using the average scores of each dimension.

Table 1. Distribution among dimensions, indexes and questions composing the SIAT

Dimension	Index	Questions
Economic	11	15
Environmental	9	19
Socio-cultural	13	23
Governance	2	4
Influence	4	5
Sub-total	**39**	**66**
Profile		13
Prioritize		1
Total		**80**

To better clarify, and as you can see from Table 1, from the 15 questions of the Economic dimension 11 indexes have been identified, each of one translated into a value. The average of the sum of all the values gives the % value of the dimension. The same has been done for all the five dimensions.

We remember that data collected through answers are divided into different categories:

- number
- text
- %
- scale (1-5)
- binary data (1;0)

A value has been given to each category in order to give homogeneity to the different types of questions and to arrive to the final percentage value of each dimension, which is the result of the average of all the indexes included in the dimension.

The final version of SIAT has been applied to the case studies and results have been elaborated into two directions:

- A **SIAT self-assessment result for each single organization**, available in a detailed report in deliverable D3.5. The single output is organized as follow:
    - First section showing the summary of the profile section, the SIAT score (through a radar where there is the score of each dimension), the visualization of the prioritization done by the organization
    - Central section consisting in a detailed analysis item by item. They are visualized through the use of coloured buttons - green, yellow, red and X (missing information). Not all the items are related to a score: for some of them it was not possible to create a routine and therefore, they have to be considered informative (for instance the number of food miles or the type or governance).
    - End section summarizing in a table the main results dimension per dimension.

- **A comparative analysis** among the case studies that is the object of the present report.

3. Methodology and tools for the comparative analysis

A short but important premise to this analysis regards the type of sample used. In this study the sample is very diversified, not only geographically but also in terms of size and sector of production; in addition, it presents a not relevant numerosity that does not allow to fully conduct quantitative comparative analysis.

The analysis of the 16 SIAT case studies is available in this excel file. This elaboration is the basis for both the single routine calculation of the SIAT (as self-assessment tool, the results and analysis

of the single case studies are available at deliverable 3.5) and for the comparative analysis here presented.

The comparative analysis is run through a software of business intelligence, **Power BI**, that provides users with tools for aggregating, analysing, visualizing and sharing data. Power BI works directly on the excel file and allows an interactive visualization of the dataset.
Here the link to the comparative analysis carried out with Power BI.
The data is interactive: each user can choose to select the filters he is interested the most to analyse data. The choice of an "open" tool that allows a continuous comparative analysis from different perspective has been chosen considering that each reader and stakeholder might have a different interest in analysing some aspects and the information selected in this report might not consider all of them[5].

The power BI is organized into 7 pages.
The first page provides a visualization of the profile data. The filters and variables, through which is possible to analyse data, are:

- Legal form
- Operational area
- Type of production
- Operating supply chain (only SFSC or both)
- Country (map or name of the single organization)

In the same page there is also a box with the average values of members, workers and economic data. Concerning the economic data, it is important to underline that there is an organization that is an outlier concerning the average cost/revenue ratio, this is why the average is above 100%[6].
Through this first page it is possible to visualize the heterogeneity of the sample concerning all the variables described above.

[5] Technical rules for using Power BI: 1) each graphic is interactive therefore clicking on it is possible to select the information for that area (for instance, it is possible to query the dashboard only for the organizations working in "meat sector" or per country); 2) it is possible to analyze the data also through the filters (each filter has ranges. For instance, I can decide to examine the data looking at only the organizations that have 50% of "buying from local suppliers" and "creation of community network"); 3) each graphic can be expanded to read it better. 4) In any moment it is possible to unselect the filters clicking on them and come back to the overall data.
[6] Latengui Batuak NAIA case study presents a cost/revenue ratio of 606%. The average cost /revenue ratio of the other 15 organizations is 79%.

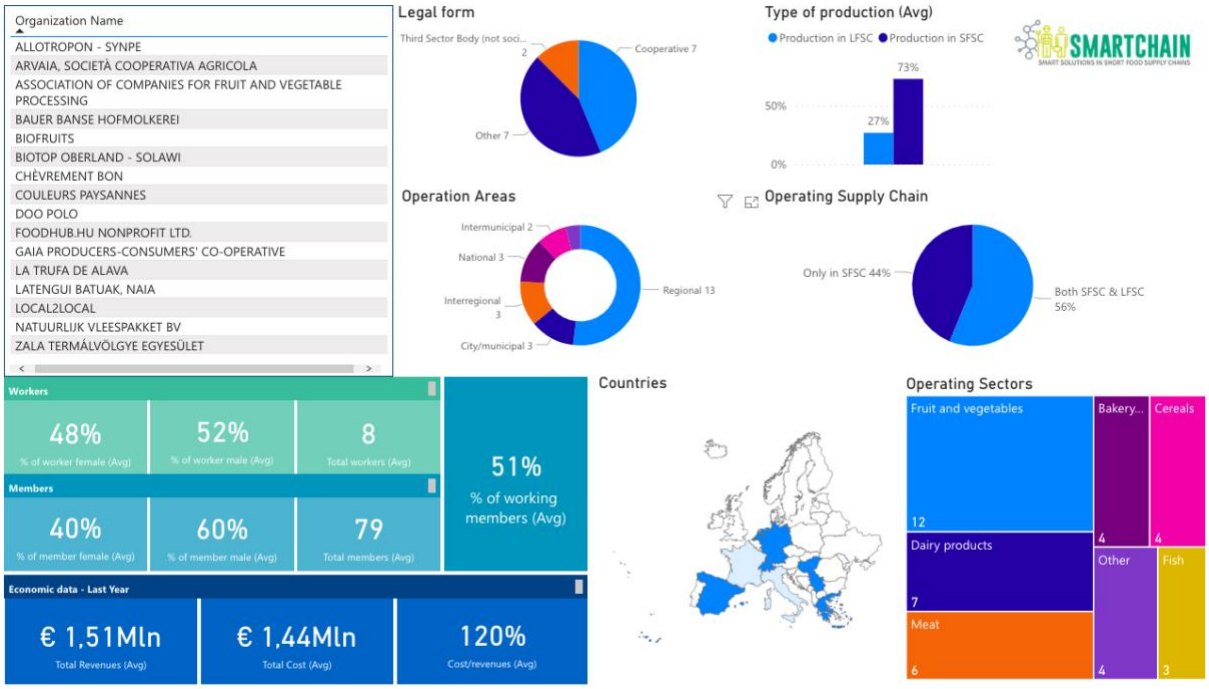

Fig. 1: Power BI visualization of SIAT comparative analysis – page 1

For instance, it is possible to examine data according to one or more variables, as hereafter in figure 2, where the visualization concerns only the organizations working at regional level. As you can see, all the visualization changes according to the driver selected.

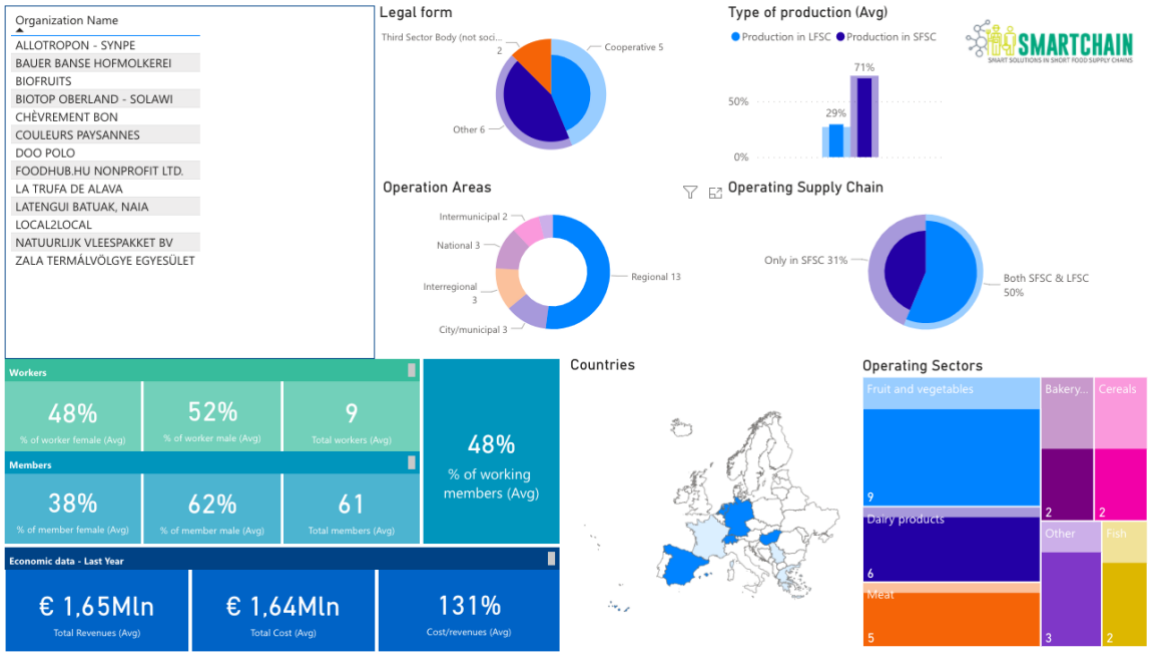

Fig. 2: Power BI visualization of SIAT comparative analysis – example of organizations operating at regional level - page 1.

The second page of Power BI visualization is the core visualization driving to the comparative analysis.

Each dimension is presented with a percentage, which is the result of the average of all the indexes included in the same dimension. **A value equal or greater than 50% shows an average value of the dimension considered positive in a social innovation analysis perspective**, because we give, for example, questions expecting binary answer a positive value of 100% if the answer is 1 and 0% is the answer is 0; questions with a likert scale a positive value of 50%, 75% or 100% if the answer is respectively 3, 4 or 5; questions with a quantitative number a positive value if the answer is above 20%. In this way, it is the same respondent, giving the answers to the questions, who give a positive or negative value to each item and therefore to the dimension.

Apart from reporting some longitudinal filters that are going to be always present (for instance legal form, sector, country and operating chain), this page allows different kinds of "readings" according to the different filters used:

- applying a filter to the average range of each dimension
- applying a filter to the average radar (SIAT value). The combination of these two kinds of filters gives the possibility to investigate if, at certain ranges of a single dimension, for instance of the socio-cultural dimension, there are corresponding improvement of other dimensions
- applying specific filters selected within each dimension.

The choice of the filters within each dimension is in coherence with the social innovativeness definition[7] and the purpose is to investigate the most transformative and collaborative items of the SIAT. The filters selected are:

- Buying form local suppliers
- Selling to local customers
- Organic production
- Distributing and selling with local actors
- Participation of local producers
- Community involvement and local activation
- Customers involvement in strategic decision

[7] *Social Innovations (SI) are processes that change short food supply chain systems by altering the collective perspective of the actors involved and their corresponding action mode, thus leading to the achievement of, primarily, social goals that benefit all short food supply chain participants in sustainable ways.*

- Creation of local networks

These filters have been selected as the most significant in investigating certain aspects such as: the role of the local dimension and the sustainability (social, environmental and economic) of the chain; the dimension of collaborative processes (or attitude toward a collective perspective); the strengthening of the relationships with all key stakeholders of the chain. Relationships are the base of social innovation concept, therefore the items that investigate the type of relationship and the level of involvement and participation are crucial to assess the level of social innovation of the organization. Moreover, it is interesting to combine them with the typology of operating chain of the organizations (only SFSC or both) to observe if there are some changes of values.

Applying the selected filters in all possible combinations (you will find the eight selected filters in all the pages of the power BI), all the variables can be analysed.

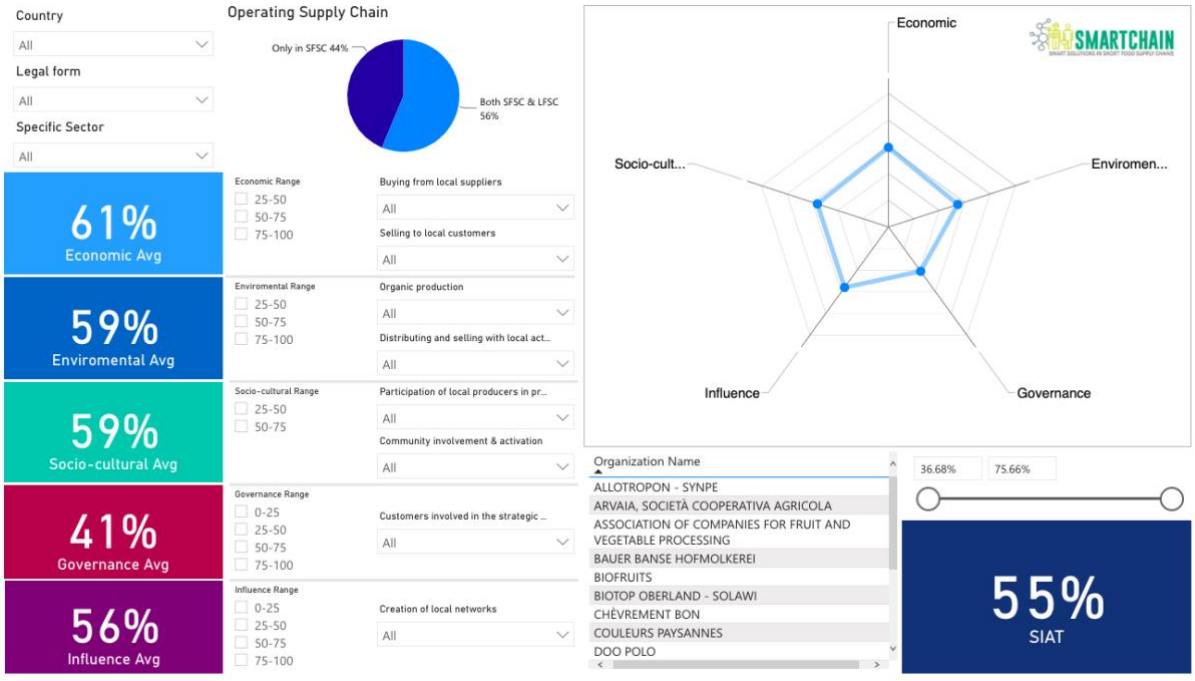

Fig. 3: Power BI visualization of SIAT comparative analysis – page 2

The average of the 5 dimensions gives a value of 55%. It means that in terms of Social Innovation the organizations have a general positive attitude. The positive value is more evident for the economic and environmental dimensions, which present a value respectively of 61% and 59% and

less evident for the governance dimension, which is the only dimension presenting a value below 50% (41%). A detailed explanation of the governance dimension is presented in paragraph 4.4.

The Power BI is composed of 5 further pages, each one dedicated to the five different dimensions of the SIAT. Each of these 5 pages is organized in filters as follows:

- Organization name: in this way each organization can read only its own results, but it is possible as well to analyse a specific group of organizations.
- Country
- Legal form
- Sector
- Comparative analysis key filters (presented in page 2 of the power BI)

It is possible to investigate each dimension's results through the 8 filters. Each of them is divided into ranges (25-50-75-100) according to the type of variables and data present in the database (for instance, if none of the respondents selected 25% in a certain filter, the choice of ranges starts from the first range chosen by the respondents). The only filters that have a different range are: "organic production" (here the respondent could insert its own percentage, therefore the scale of percentages that you find in the PowerBI follows the answers collected) and "creation of local networks" (here the answer was binary therefore the value is either 0 or 100%).

The main visualization is a big rectangle where it is possible to *see* inside the average percentage for each index composing the dimension. The size of the single rectangles composing the big one varies according to its value (percentage).

If some filters are activated, the rectangle visualization changes accordingly.

4. Discussion and main findings

The sample is composed by 16 case studies distributed among 9 countries (in Fig. 4 the blue countries present 2 case studies each; the light blue ones have only 1 case study).

Concerning the **operational area**, 53% of the sample operates at regional level and the **main operating sector** is fruit and vegetables (12 cases out of 16), followed by dairy products and meat (respectively 7 and 6 out of 16).

Almost half of the organizations (44%) operate only in SFSC; the remaining 56% operate both in SFSC and LSFC.

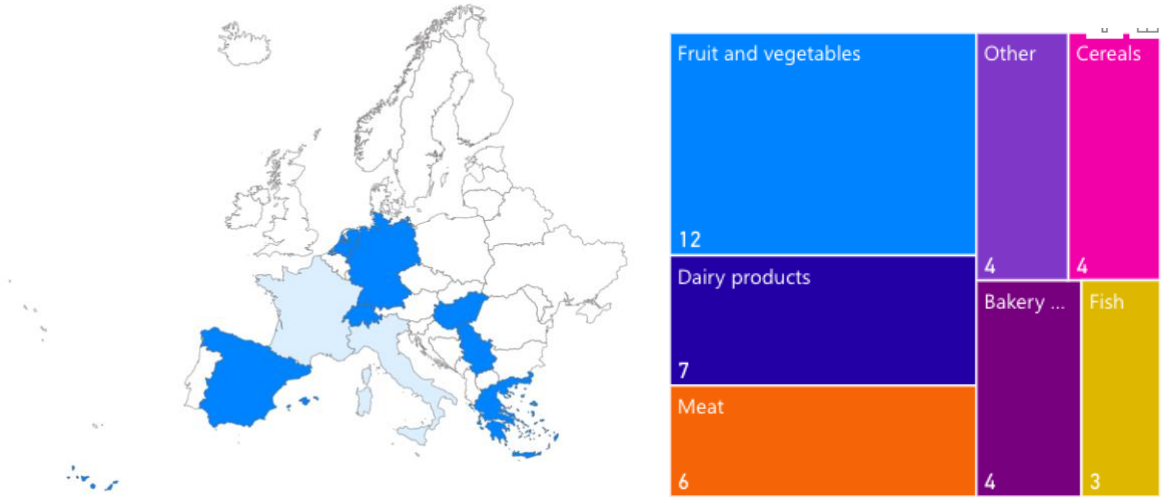

Fig. 4: SIAT comparative analysis – Country and Production sector

The average value of each dimension for all the case studies ranges between 50% and 60% with the only exception of the governance dimension that accounts for 41%, as shown in the radar representation.

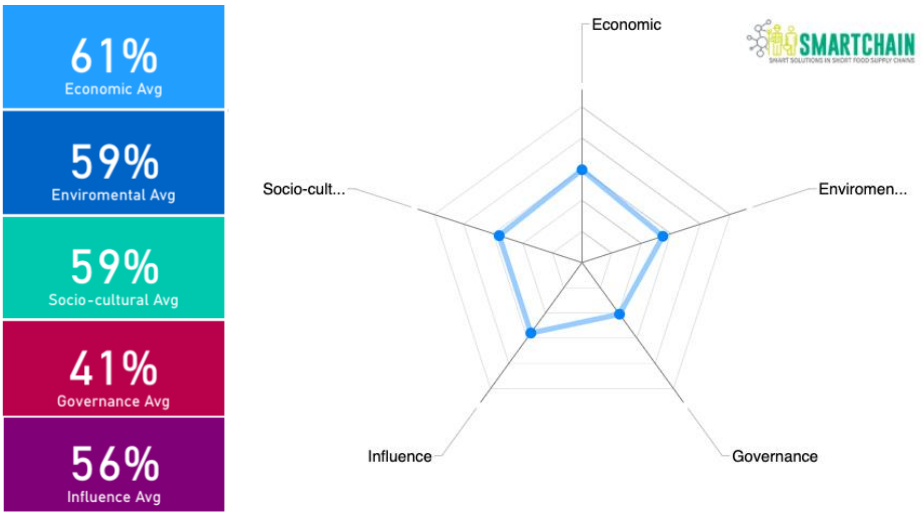

Fig. 5: SIAT comparative analysis – Radar and average % per dimension

As already specified, a value equal to or greater than 50% of each dimension means that the dimension has a positive position in a social innovation perspective.

It is interesting to analyse these averages putting each of them in relation with the variable "operating supply chain". The dimension that is affected the most is governance: organizations that

operate both in SFSC and LSFC present an average value of 34% in that dimension, while who operates only in SFSC has a value of 50%. Here after you can observe how the radar changes.

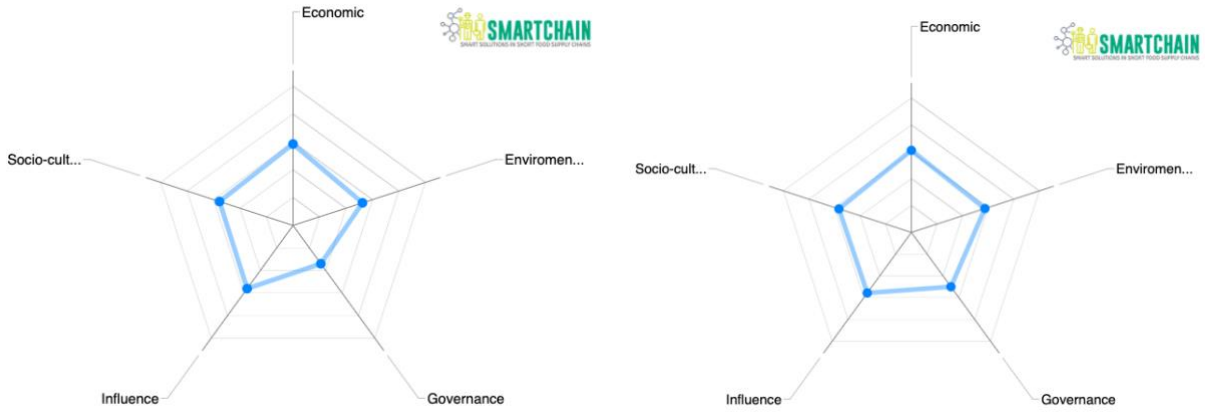

Fig 6: SIAT comparative analysis – Effects of "operating supply chain" on SIAT radar

Apart from *influence* dimension that has slightly higher values when the organization operates in both chains, the condition of operating only in SFSC determines higher values for each dimension even if the difference is not so evident like in the case of governance.

There are specific sectors that operate mainly in SFSC, such as producers of meat and cereals, while those producing fruit and vegetables are mainly working in both chains (the 66%).

Here after a brief comparative analysis for each dimension.

4.1 Economic dimension

The average range of this dimension is 61% (see fig. 7) and the items within the dimension with a higher percentage are:

- Transparent communication (82%)
- Equal distribution of generated value among the SFSC actors (81%)
- Stable and durable economic relationship (81%)

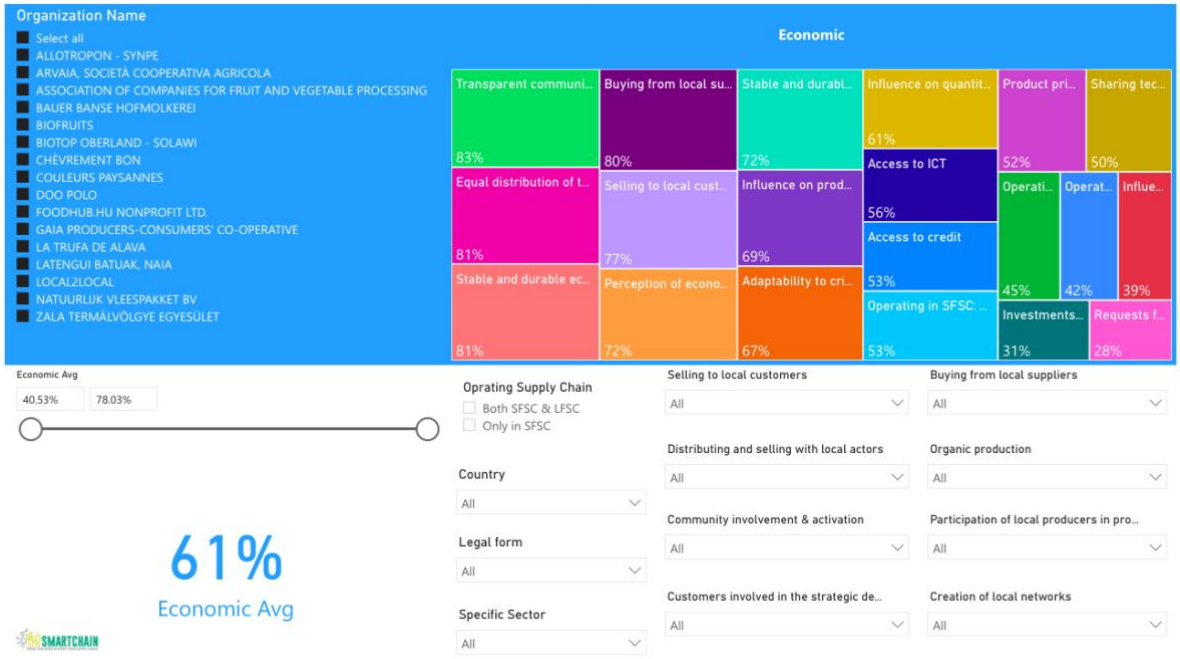

Fig. 7: Power Bi visualization of SIAT comparative analysis – Economic Dimension

This dimension is analysed through two-drivers "selling to local customers" and "buying from local suppliers" because the focus is towards the local dimension exploring the economic relationship among the actors.

If we set the range for both these two filters at 75%, it is possible to see who performs in a more positive way considering the local context (fig.8). It is interesting to observe that these organizations operate both in SFSC and LFSC. They are: Biofruits (CH), Doo Polo (RS), La Trufa de Alava and Latengui Batuak Naia (ES).

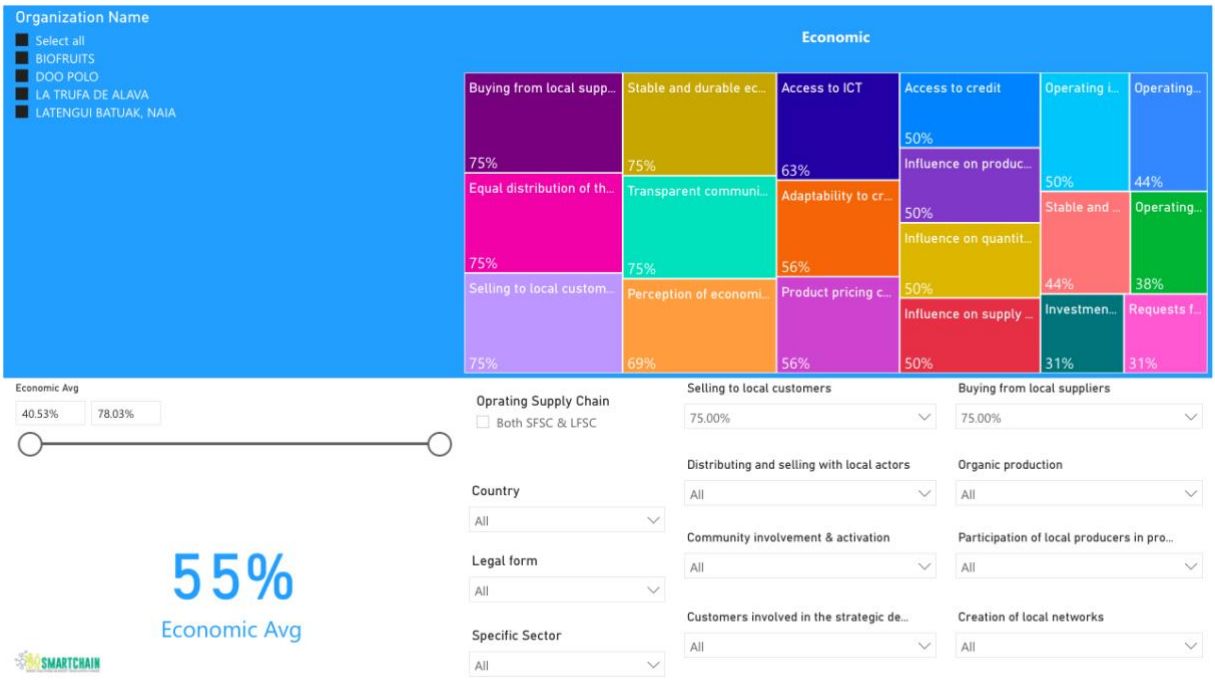

Fig. 8: SIAT comparative analysis – Application of two filters at 75% to the economic dimension

It is interesting to point out that the lowest values of the economic dimension are related to collective investments (31%) or collective request for credit access (28%). This is significant since it highlights that there are some limitations in financial collaboration among the SFSC actors.

Also, collaboration in terms of shared digital infrastructure is not diffuse.

4.2 Environmental dimension

The average range of this dimension is 59% (fig.9) and the items within the dimension with a higher % are:

- Production of local/traditional products (75%)
- Food miles: km travelled by products before reaching the final costumer (73%)
- Less packaging (72%)

There are specific sectors - such as meat, fish, cereals and bakery – that show as prevailing item the selection of suppliers based on socio-environmental criteria, underpinning that for some production sectors this issue is becoming strategic and at the centre of their value proposition.

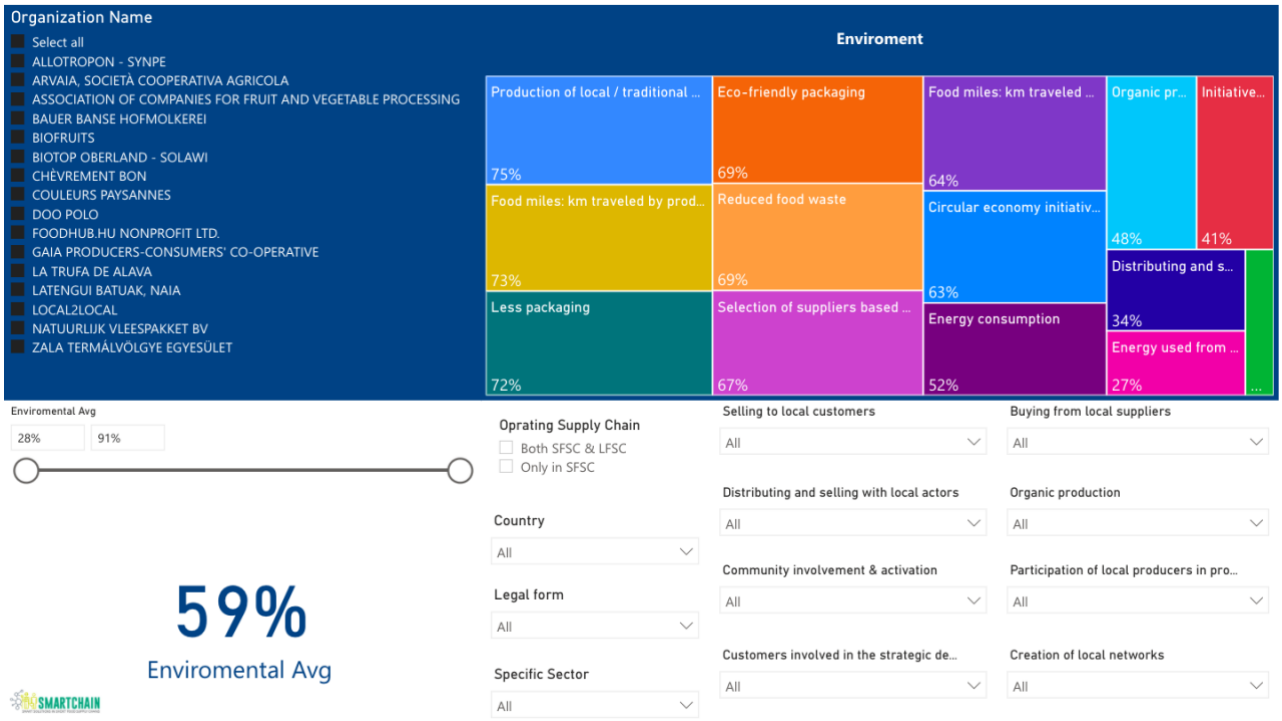

Fig. 9: SIAT comparative analysis – Environmental dimension

This dimension might be specifically investigated through two drivers chosen as key elements within the framework of social innovation:

- Distributing and selling with local actors. This item investigates the level of collaboration within the chain actors in the logistic process of distribution and selling
- Organic production. This item might be considered more a profile one, but it is relevant to understand the prevailing typology of production.

In this case, the performance regarding the first item improves for actors that operates both in LSCF and SFCS if we set the range above 75% (as for the previous dimension).
Concerning the organic production, it is interesting to notice that 7 organizations present very high percentages (90% and 100%) while the rest of the sample is below 25% of organic production. 4 out of 7 of those organizations - Arvaia (IT), Solawi (DE), Gaia (EL) and Natuurlijk BV (NL) - operates only in SFSC.

The items that present the lowest average percentages are:

- the CO^2 emission (maybe this is due to the lack of data or awareness)
- the energy from renewable source and
- the collective investment for a greener transition.

This dimension has very different results if the analysis concerns only SFSC organizations or organizations that work in both chains. As shown in the figures below (fig. 10a and fig.10b), actors operating in both chains are more advanced in circular economy initiatives compared to those operating only in SFSC who are more advanced in setting socio-environmental criteria for their suppliers.

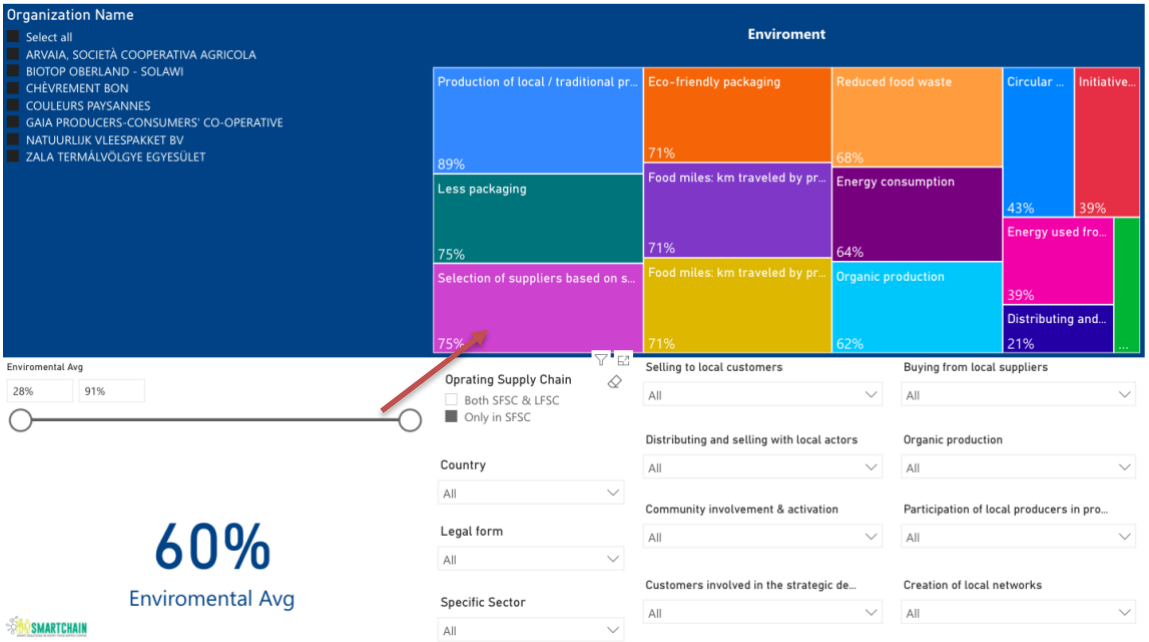

Fig. 10a: SIAT comparative analysis – Environmental dimension for only SFSC

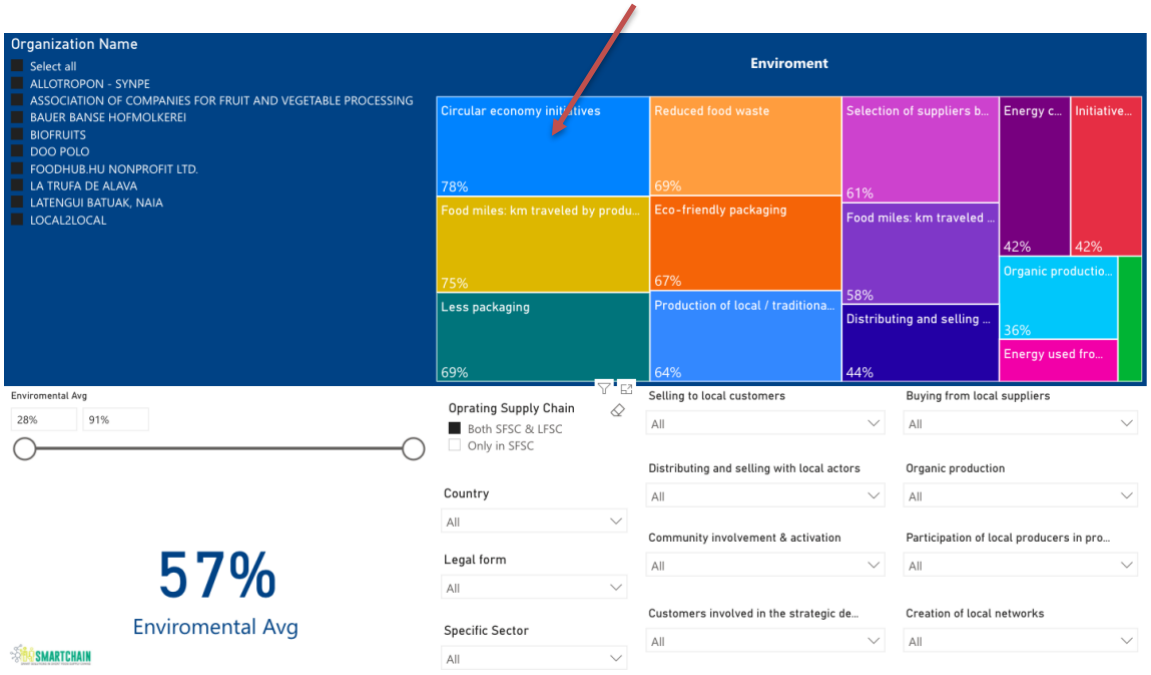

Fig. 10b: SIAT comparative analysis – Environmental dimension for both SFSC and LFSC.

4.3 Socio-cultural dimension

The average range of this dimension is 59% (fig.11) and the items within the dimension with a higher % are:

- Service design considering and analysing the needs of the community (100%)
- Equal pay for gender (94%)
- Redistributive balance (91%)

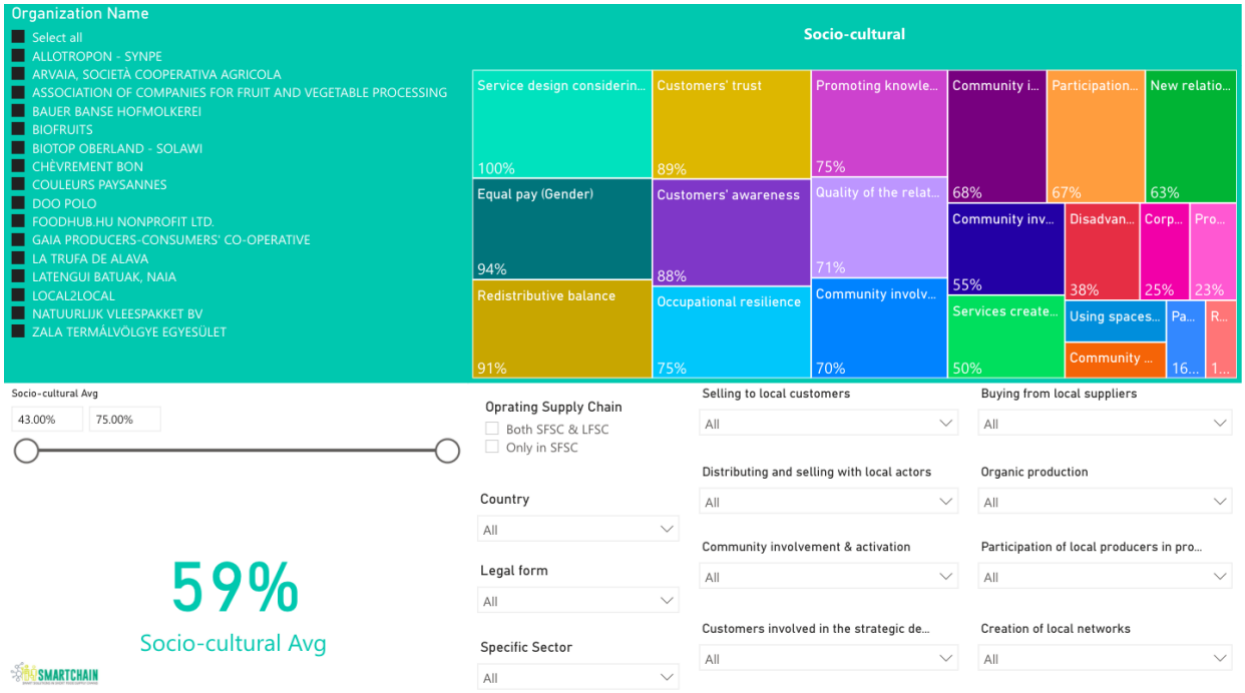

Fig. 11: SIAT comparative analysis – Socio-cultural dimension

This dimension might be analysed through three drivers chosen among the 8 filters within the framework of social innovation:

- Participation of local producers in production and processing
- New relationships with local actors or directly involved in production or distribution
- Community involvement and activation

Both the first two items show better results within actors that operates in both chains (7 of the organizations that shows high values – 75 or 100 - are operating in both chains), while the item related to community involvement has an opposite result.

However, overall, this dimension does not vary in averages and items if we consider only the type of operating chain.

The items that have lower average are related to the sharing of venues, or collective regeneration of venues/asset or the usage of venues/spaces of third organizations. As confirmed by the economic and environmental dimension, shared initiatives that structurally involved collaboration and trust among the actors of the chain are not yet a habit.

4.4 Governance dimension

The average range of this dimension is 41% (fig.12) and the items within the dimension with a higher % are:

- Involvement of customers (people) in the decision- making processes (70%)
- Involvement of other producers in the decision-making processes (55%)
- Involvement of customers (companies) in the decision- making processes (47%)

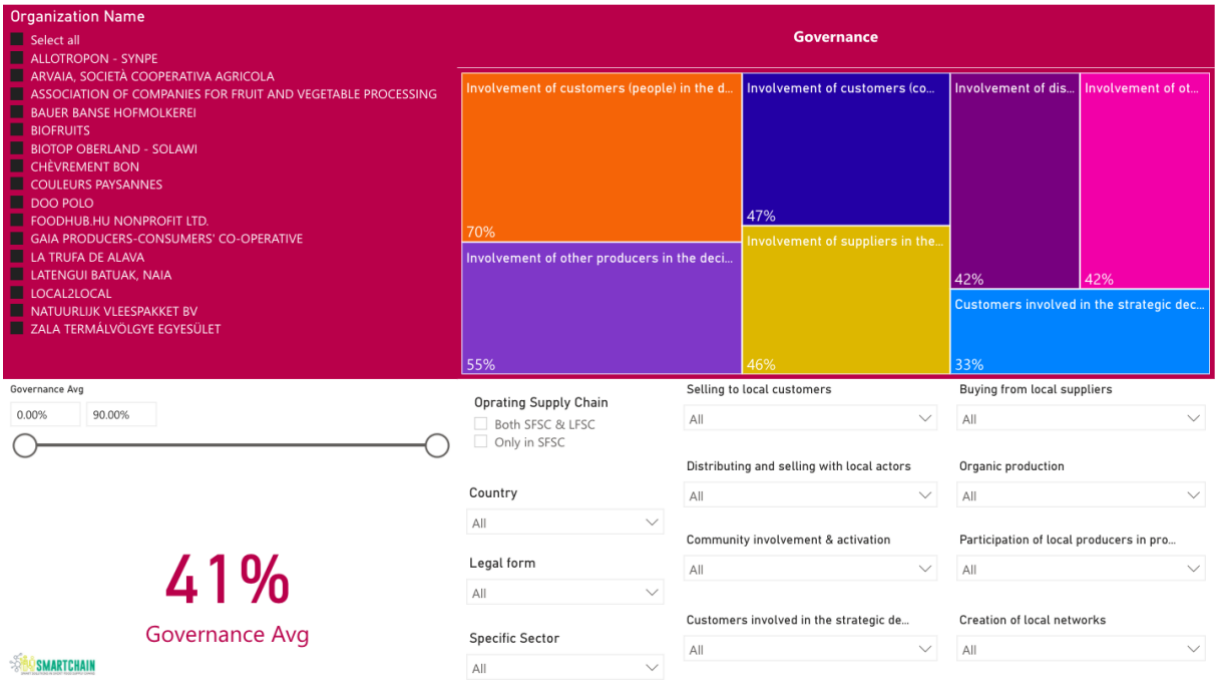

Fig. 12: SIAT comparative analysis – Governance dimension

Here the key driver among the 8 filters might be considered "customers involved in strategic decisions". Organizations working in SFSC have a high range of this item (100%).

As already mentioned above, this dimension shows significant differences in values correlated to the operating supply chain: 34% for those operating both in SFSC and LSFSC and 50% for those operating only in SFSC.

4.5 Influence dimension

The average range of this dimension is 56% (fig.13).and the items within the dimension with a higher % are:

- Creation of local networks (69%)
- Positive influence on citizens (58%)
- Positive influence on public policies (55%).

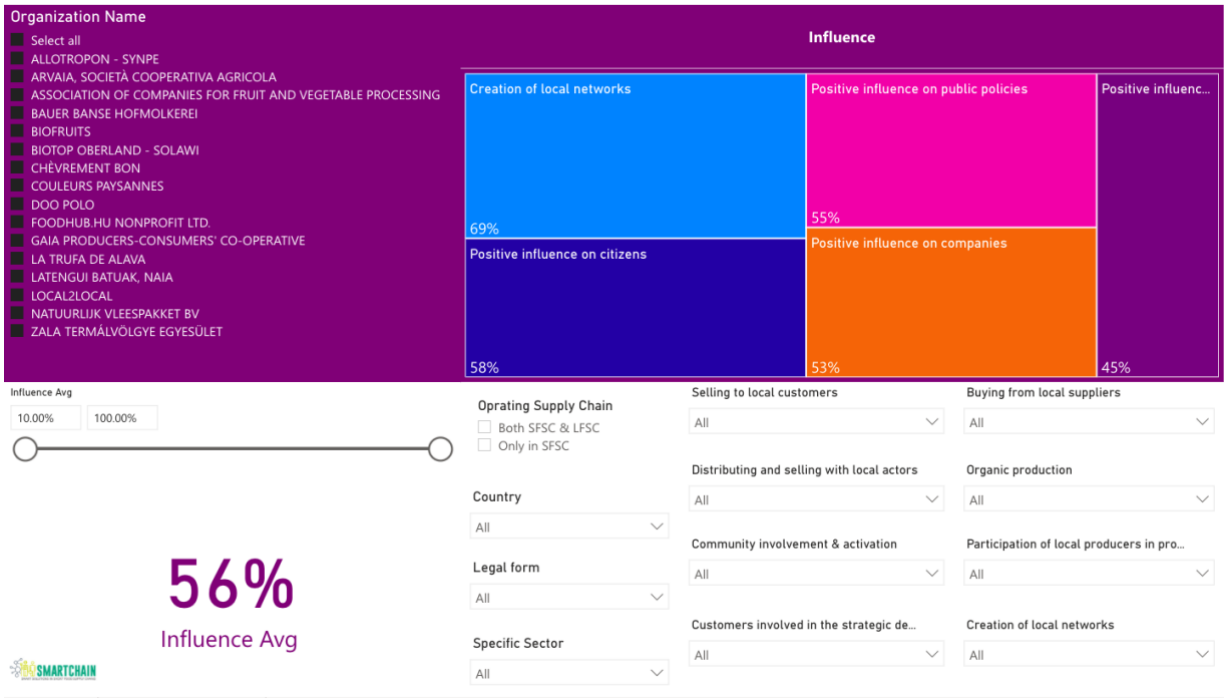

Fig. 13: SIAT comparative analysis – Influence dimension

The key driver of this dimension is the "ability to create local networks". This item presents high value in correspondence of meat and fruit and vegetable sectors. Operating in SFSC or both does not have specific effect on this filter.

Sectors – such as fish, bakery and cereals – have high values in creating positive influence on citizens.

5. Conclusions

The SIAT tool has a great potential for comparative studies since it allows to take into consideration a variety of aspects that determine the social innovativeness of the chain.

For each single organization SIAT represent a strategic and managerial tool that helps the organization to pinpoint its level of social innovativeness and to identify where there is room for improvement and possible change of strategies.
SIAT is a self-assessment tool, so something that any organization can use in an objective manner in order to evaluate its level of social innovativeness, and understand the social value generated by its activity. The results of SIAT application give an immediate and measurable picture of how the dimensions of the social innovation are perceived by the organization and how they are transformed in real actions during the production/market phases. Each of the results will give the organization the possibility to reflect on its behaviour, its objectives and its vision and to take some corrective actions in order to make a transition to a more socially innovative SFSC, if this is its desire.
Furthermore, an organization has the possibility to see clearly which is its openness to its context in terms of involvement of customers, of other stakeholders of the chain, of the institutions. If it believes that this dimension is important, maybe it has to review some of its managerial behaviours or some aspects of its internal organization.

In general terms, it is clear that the size of this sample and the heterogeneity does not permit to run a full statistical comparative analysis. Anyhow, the tools of analysis - both the powerBI and the excel file - have been designed to compare a much higher number of SIATs.
The potential, if applied to a significant number, is represented by the fact that it might help to reshape local policies taking into account the evidence of each dimension (either positive or "negative" results represent a precious information for the policy makers).
It could be also used as an accountability tool for a certain geographical area or sector (for instance meat or fish) directed to customers enhancing the relationship of trust.

Furthermore, this kind of self-assessment tool should be applied in a longitudinal way, each year for instance, both for the single application and the comparative analysis. A picture of one year might be interesting but the same information collected in a longitudinal way is much richer in terms of potential that might activate.