Theoretical and methodological approaches to the investigation of the implementation of new food strategy in agri-food-related businesses

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Abstract

The strategy of the European Union, Farm to Fork, represents a significant advance in the making of European food policy. The Farm to Fork strategy focuses on creating a healthy, fair, and environmentally-friendly food system in the EU. The main objectives of the strategy are the improvement of sustainable food production and sustainable food consumption, sustainable food processing and distribution, and food loss and waste prevention. However, the success of the strategy will depend on the application of specific policy actions of the 27 EU member countries. To ensure food security, nutrition, and public health, several countries started to use front-of-pack labelling known as Nutri-Score. It provides information about the overall nutritional quality of the products when purchasing. This paper is focused on the implementation of the strategy in agri-food-related businesses. To obtain the primary data, a questionnaire survey was applied. In total, 329 agri-food-related businesses participated. We analyzed the application of the Farm to Fork strategy concerning health nutrition, ecology, sustainability and innovations in 3 selected sectors of agro-businesses. According to the findings, more than 93% of selected businesses perceive the issue of ecology and carry out various activities such as the protection of air, water, nature, and recycling. Moreover, we found out that 74% of participating companies use innovations in their businesses (innovative packaging technology, new forms of customer service, innovative technologies and recipes, offering innovative products, entertainment and educational activities). Finally, we were evaluating opinions about the Nutri-Score labelling. From the results, it is evident that in each industry, more than 50% of companies do not deal with this topic.

Keywords: Agriculture, Farm to Fork Strategy, Food Supply Chain, Green Deal, Sustainability

JEL Classification: Q00, Q01, Q10, Q18

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1. Introduction

Agriculture is a significant sector of the European economy. It is currently known that food is closely associated with agriculture, trade, health, development, and the environment. Consumers choose what food to eat, and it is a right of everyone to have access to healthy, safe and nutritious food, consistent with the right to adequate food (FAO, 2022). They are more interested in environmental, health, social and ethical topics, and they seek value in food more than ever before. Consumers are looking for fresh food, and less processed and should have the power to select sustainable foods (European Commission, 2020a). Additionally, improving the sustainability of food systems is one of the world’s most important concerns, along with connected problems such as biodiversity loss, climate change, food security, malnutrition, and soil degradation. According to Barling, Lang and Caraher (2002), Mason and Lang (2017), Willett, Rockström, Loken, Springmann, Lang, Vermeulen and Murray (2019), any comprehensive reform of the food system must necessarily address these problems. There have been requests for (better) integrated solutions to these problems during the past 20 years (Bazzan, Daugbjerg and Tosun, 2022). To give an example, The United Nations established the 2030 Agenda for Sustainable Development, which comprises 17 sustainable development goals (SDGs). The SDGs emphasize the desire to eradicate hunger and support sustainable agriculture, better nutrition, and food security (Nilsson, Allison, William, Dey, Halpern and McCauley, 2016, Nilsson and Persson, 2017). Similarly, the European Commission released the Farm to Fork (F2F) strategy which is instrumental in working toward the SDGs (Purnhagen, Clemens, Eriksson, Fresco, Tosun, Qaim and Zilberman, 2021, Arabska, 2021). The F2F strategy is the fundamental element of the European Green Deal, which sets out how to make Europe the first climate-neutral continent by 2050 (European Commission, 2019). According to European Commission (2020a), the F2F strategy supports the transition toward a sustainable food system by reducing reliance on pesticides and antimicrobials, reducing nutrient losses, promoting organic farming, improving animal welfare, reversing obesity trends, reducing food waste, and reversing biodiversity loss.

1.1 Theoretical approaches to the Farm to Fork Strategy

The European Union's F2F strategy, introduced in 2020, strives for a thorough sustainability transition of the European agrifood sector (Reinhardt, 2022). As argued by Hawkes (2017), an efficient sustainable food system requires policy coherence across several targets (including agriculture and health). According to Benton and Bailey (2019), a sustainable food system redefines efficiency to mean that food systems deliver profits, healthy diets, and a healthy world. Schebesta and Candel (2020) declare that the Strategies' proposal defines a major shift in the EU food and agriculture industry, and for that reason, it has been the topic of broad debate. König and Araújo-Soares (2021) point out that the F2F strategy acknowledges the need for extensive changes throughout the food chain, from the producer (farm) to the consumer (fork), to lessen the impact of the food system on the environment. As a result, the strategy focuses on a variety of stakeholders, such as farmers, as well as manufacturing companies, retailers, and individual users. It lists targets that must be met by 2030. In conclusion, it is necessary to add that for the strategy to be effective, the stakeholders' behaviour needs to change.

As reported by Mowlds (2020), the F2F strategy represents a chance to boost lifestyles, health, and the environment. The F2F strategy concentrates on the stewardship of the environment, and also the outcomes for food security and human health in the EU agricultural sector. The focus is on the four fields for improvement namely: sustainable food production, sustainable food consumption, sustainable food processing and distribution, and the last one is the prevention of food loss and waste (Beckman, Ivanic and Jelliffe, 2021). The F2F strategy is connected to The Biodiversity strategy. As argued by EUROPARC Federation (2022), these two strategies are interlinked and the complementarity
between biodiversity and agriculture is thus particularly significant. Moreover, European Commission (2022b) explains the connection between the F2F strategy and the Common Agricultural Policy (CAP) which enforces sustainability in agriculture and rural regions across the EU, with the target of making sure that forestry and agriculture in the EU are socially, economically, and environmentally sustainable. Moreover, the goals set out in the F2F will be accomplished mostly through reforms of existing policies, including the EU's CAP (Bazzan, Daugbjerg and Tosun, 2022). Mowlds (2020) points out that the interdependencies between sectors (such as health and agriculture) must be taken into account in policy and decision-making processes due to the complexity of the food system. More specifically, as reported by the European Commission (2022a), the main qualitative target of the F2F strategy is to speed up the transformation of the food system to one that is sustainable and should ensure:

- neutral or positive effect on the environment,
- help to mitigate climate change and adapt to its effects,
- preservation of biodiversity,
- ensure food security, nutrition and public health, and ensure that everyone has access to sufficient, safe, nutritious, sustainable food,
- preserve food affordable while generating fairer economic returns, support the competitiveness of the EU supply sector and support fair trade.

To fulfil the goal that deals with food security, nutrition and public health, the five-colour Nutri-Score labelling can help. The Nutri-Score label on the front of food packaging provides the consumer with readable and easy-to-understand information about the overall nutritional quality of the products when purchasing. The consumer can compare products and direct his choice to foods with favourable nutritional quality and thus contribute to a healthier lifestyle. The European Union plans to introduce a unified nutritional system of food labelling from 2023 (Pro Nutri-score Aliancia, 2021). The main objective of Nutri-Score is to influence consumer purchasing habits in order to encourage people to make easier, healthier decisions. Consumers can tell how healthy a product is by looking at a front-of-pack ranking score from A to E (Adifo, 2021).

The quantitative targets of the F2F strategy include, for example, the reduction of pollution by using 50% less chemical pesticides by 2030, a reduction of 20% in fertilizer usage, and a minimum 50% reduction in nutrient losses (Montanarella and Panagos, 2021, Wesseler, 2022). More objectives of the F2F strategy contain that by 2030, 25% of EU agricultural land must be used for organic farming and to bring back at least 10% of agricultural areas under high-diversity landscape features (EUROPARC Federation, 2022). According to Drapáková and Koreň (2021), for Slovakia to meet this target of the F2F strategy, it would have to increase the area of eco-farms by almost 300 thousand hectares. In 2021, organic farms in Slovakia covered 10.3% of agricultural land, while the European Union average is 8.5%. Compared to 2020, the area of organic farms increased by 20%. Up to two-thirds of ecological land consists of permanent grasslands. Major findings of Cortignani, Buttinelli and Dono (2022) indicated an improvement in the environmental sustainability of agricultural production in the context of lower usage of the chemical. Referring to the views of Purnhagen et al. (2022), innovative techniques, including biotechnology, may lead to an increase in sustainability and organic farming will be promoted.

Taking into consideration the agri-food supply chain, according to the European Commission (2021) the aim of the F2F strategy is to enhance the cooperation of primary producers, improve their position within the food supply chain and increase the transparency of the market. As reported by European Commission (2020b) and Arabska (2021), building a strong and adaptable food system that can function in any environment and ensure that citizens have access to a sufficient amount of affordable food is crucial and it’s getting the more important subject, especially when we faced the COVID-19
pandemic. Similarly, Dudek and Spiewak (2022), Galanakis, Rizou, Aldawoud, Ucak and Rowan (2021), Bochtis, Benos, Lampridi, Marinoudi, Pearson and Sørensen, (2020), Ellison and Kalaitzandonakes (2020) identify that the food supply chain and the food industry were disrupted by the COVID-19 pandemic all over the world. These claims are also supported by Giudice, Caffera and Morone (2020), Aday and Aday (2020), Mehra, Kumar, Kumar and Kumar (2021) who declare that the COVID-19 pandemic transformed the whole functioning of the food system from producers, processors, foodservice operators, logistics, and retailers to final consumers worldwide. It has also highlighted the interdependence of our global boundaries, supply chains, consumer behaviours, and ecosystems. European Commission (2020a) appeals that our food system is in peril and has to become more robust and sustainable. Research done by Ellison & Kalaitzandonakes (2020) was dealing with food waste on all levels of the food supply chain during the COVID-19 pandemic. Based on the results it can be concluded that in some cases, severe food shortages were obtained. In other cases, food could not reach final consumers and it was wasted. Moreover, the food waste grew for some supply chain actors, namely producers connected to the food service sector who were forced to abruptly close. On the other hand, processors and grocery retailers, have not experienced such a rise in overall food waste. Additionally, Riccaboni, Neri, Trovarelli, and Pulselli (2021) declare that research and innovation are crucial factors in expediting the shift to food systems that are sustainable, wholesome, and inclusive from primary production to consumption. All things considered, Moschitz, Muller, Kretzschmar, Haller, de Porras, Pfeifer and Stolz (2021) claim that for implementing the F2F strategy, the 27 specific policy actions integrating existing and new policy instruments ensuring the sustainable transition is deployed in all levels of the EU food system have to be applied.

2. Data and Methods

The main objective of this paper was to identify the implementation of the strategy Farm to Fork in agri-food-related companies. We focused on 3 sectors of agro-businesses and then compared the implementation of the Farm to Fork strategy. The research was based on primary data obtained from an online questionnaire survey in 2022. Overall, 329 agri-food-related businesses participated. We were finding out the field of business, the number of employees and the territorial operation of the participating companies. Questions regarding sustainability, ecology, innovation, and healthy nutrition were used to determine the level of involvement in the new strategy of agri-food-related businesses. Table 1 represents the identification characteristics of participating companies. To conclude, more than 29% of participating companies were catering facilities and restaurants. Moreover, approximately 20% was represented by retail and 17% of companies were dealing with agricultural primary production. More than 80% of participating businesses had between 1-49 employees and they mostly operate their business locally (59%).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Categories</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business field</td>
<td>food distribution</td>
<td>3.34%</td>
</tr>
<tr>
<td></td>
<td>primary agricultural production</td>
<td>17.32%</td>
</tr>
<tr>
<td></td>
<td>retail</td>
<td>20.36%</td>
</tr>
<tr>
<td></td>
<td>wholesale</td>
<td>4.86%</td>
</tr>
<tr>
<td></td>
<td>food storage</td>
<td>1.21%</td>
</tr>
</tbody>
</table>
processing of agricultural products and food production 6.07%
gastronomy 29.48%
food production 6.68%
combination of several activities 10.63%

<table>
<thead>
<tr>
<th>Number of employees</th>
<th>10-49</th>
<th>50-249</th>
<th>More than 250</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>30.09%</td>
<td>9.11%</td>
<td>4.25%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Territorial area of operation</th>
<th>Local</th>
<th>Regional</th>
<th>National</th>
<th>International</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>59.27%</td>
<td>20.36%</td>
<td>8.81%</td>
<td>11.55%</td>
</tr>
</tbody>
</table>

Source: author’s calculations

3. Results

Nowadays, the concept of sustainability, climate change and ecology is largely discussed issue. At the beginning of the questionnaire survey, companies were asked to answer the question dealing with the awareness of sustainability, environmental protection and topics related to climate protection. According to the results, it can be concluded that 23% of participating companies consider the awareness of sustainability and related topics insufficient. On the other hand, only 20% of answers were positive and companies consider the amount of information on sustainability, environment, and climate to be sufficient. More than 57% of the answers stated that whoever wants the information, will search (Figure 1).

**Figure 1: Awareness of the topic of sustainability in production and consumption, environmental protection and other topics related to climate protection**

- awareness is sufficient
- awareness is insufficient
- whoever wants the information, will search for it

Source: author’s calculations

The next question provides an interesting comparison. We were investigating the level of involvement in healthy nutrition of retail, catering facilities and restaurants and agricultural primary production companies. Results revealed that companies operating in retail (73.13%) and gastronomy (72.16%) consider healthy nutrition as a serious issue and develop different activities (for instance the
production and offer of healthy food products, for special nutrition e.g. for diabetics, gluten-free and lactose-free food, vegetarian or vegan products). On the other hand, businesses operating in agricultural primary production (70.17%) do not consider the topic of healthy nutrition to be important. When it comes to the issue of ecology, all of the investigating sectors expressed a positive opinion (usage of environmentally appropriate technologies in production and logistics (such as the protection of air, water, the surrounding nature, welfare and recycling waste).

Innovations could represent a crucial factor in expediting the shift to sustainable and healthy food systems. The next question was focused on using innovations in business, in several ways, such as innovations in the form of communication with customers, innovative packaging technology, new forms of customer service, innovative technologies and recipes, offering innovative products, entertainment and educational activities for, for example, children, families, and others (playgrounds, educational trail, wellness, outdoor fitness). Our results demonstrate that most of the participating companies use innovations. More than 80% of gastronomy facilities declare that they use innovations. Approximately 60% of participating companies in retail use innovations and 80% in agricultural primary production.

The final question was dealing with the Nutri-Score labelling on products. The main objective of this label is to determine a product’s healthfulness by looking at the front-of-pack ranking score, which ranges from A to E and informs the consumer. We were asking the participating companies their level of knowledge about the label. From the results, it is evident that in each business, more than 50% of companies do not deal with this topic. On the contrary, 38% of catering facilities and restaurants support or partially support this labelling according to how it affects health. In retail, more than 36% of participating companies support Nutri-Score labelling. Finally, 37% of companies in agricultural primary production support front-of-pack labelling. 2% of companies in the catering a restaurant sector thought that Nutri-Score labelling is discriminatory for some products.

### Table 2: Knowledge about the food traffic light, or the Nutri-Score initiative

<table>
<thead>
<tr>
<th></th>
<th>Partial support</th>
<th>Significantly Support</th>
<th>This labelling is discriminatory</th>
<th>We do not deal with this issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gastronomy</td>
<td>28.86%</td>
<td>10.30%</td>
<td>2.06%</td>
<td>58.76%</td>
</tr>
<tr>
<td>Retail</td>
<td>22.38%</td>
<td>14.92%</td>
<td>5.97%</td>
<td>56.71%</td>
</tr>
<tr>
<td>Primary agricultural production</td>
<td>21.05%</td>
<td>17.54%</td>
<td>7.01%</td>
<td>54.38%</td>
</tr>
</tbody>
</table>

Source: author’s calculations

### 4. Discussion

Based on the results of the questionnaire survey, it is evident that only 20% of responses were favorable, and businesses believe that the available data on sustainability, the environment, and climate are sufficient. A study by Favi et al. (2017) examined how 52 Italian enterprises view and are aware of environmental sustainability challenges. 52% of answers indicated that sustainability offers a chance for product and service innovation. Only 6% of the sample uses sustainability for marketing purposes, while 37% of respondents only use it to fulfill requirements and standards. The remaining 5% of respondents never think about sustainability in their everyday activities. Furthermore, participating businesses had to state which environmentally sustainable activities are carried out in
their businesses. Most businesses carry out activities that are connected with illumination and heating efficiency, plant efficiency, biomass exploitation, certification and development of environmentally friendly products (recyclable materials, efficient engines, etc.). Finally, Alves, Ferreira and Araújo (2018) investigated the perception and awareness of sustainability in businesses in Brazil. The findings demonstrate the disparity between large and small businesses. In the context of sustainability, the results show a lower level of awareness of the effects of activities in small businesses.

The next research question was dealing with the Nutri-Score label on the front-of-pack of food and beverages. The Nutri-Score system in Slovakia is voluntary. Based on our results, it can be concluded that the selected companies do not consider the food nutrition labelling system Nutri-Score as a serious issue. The Pro NutriScore Alliance was established only in 2021 in Slovakia. The main object of Alliance is to support the nutritional labelling of products by the Nutri-Score and inform consumers. The food producer registers and documents necessary documents and can use the Nutri-Score labelling system. Slovak consumers may already encounter the Nutri-Score label on food products of several companies (Pro Nutri-Score Aliancia, 2021). According to Mialon, Julia and Hercberg (2018), the front-of-pack nutrition labelling system, known as Nutri-Score, was acknowledged by the French government in 2017. More than 70 companies adopted the usage of labelling voluntarily in 2018. The available research done by Public Health France in 2020 shows that from 2017 the figure has risen to 500 companies that adopted the front-of-pack nutrition labelling. The survey also finds out that 93% of French participants considered the Nutri-Score labelling useful for knowing the nutritional quality of products. Over 57% of participants knew the Nutri-Score logo and had changed one or more purchasing habits (Southey, 2021). Furthermore, other countries like Germany, Spain, Portugal, Austria, Belgium, and the Netherlands have chosen the voluntary implementation of the Nutri-Score system (Adifo, 2021). In Germany, 116 German companies with 236 brands have already registered to use this nutrition label in 2021 (BMEL, 2022).

When taking into consideration the usage of innovations in selected businesses, the results showed that most of the companies use innovations in different forms. As stated by Knickel, Brunori, Rand and Proost (2009), Van der Ploeg, Bouma, Rip, Rijkenberg, Ventura, and Wiskerke (2004), innovations in the agro-food industry typically entail much more than just technology, it includes marketing, management, organization, and design. Innovations are the result of fresh approaches and various modes of thoughts. Research done by Riccaboni et al. (2021) describes the importance of innovations. Agribusinesses have a significant potential to invent within their capabilities for a practical transition to sustainability, which might eventually become a market-focused competitive force. Additionally, innovations in the agri-food industry that are focused on sustainability could address a wide range of topics, from technical ones that optimize breeding and agricultural practices to those that target consumers by promoting sustainable food paradigms and policymakers by supporting public-private initiatives. Research by Moravčíková, Tkač and Mušinská (2021) analyzes characteristics and factors that influence the innovative performance of Slovak in 99 agro-food firms. Moreover, the study is dealing with the types of innovations as well as issues that can affect how well they are implemented and evaluated. According to the results, up to 77% of respondents, considered innovation as a crucial factor in increasing a company’s competitiveness. Approximately about 75% of respondents claimed to have implemented innovations over the previous five years. More than 33% of respondents indicated technical innovation. Innovations in products and services, such as brand-new ones or upgrades to already-existing ones, were put into practice by 26% of respondents, while innovations in marketing strategies and organizational procedures were announced by 15% of respondents. According to the findings, 89% of respondents believe that the rise in product quality is the most crucial element for innovations. The need to reduce costs for the business and boost its competitiveness are additional significant factors for 86% of respondents. The expansion of products or services was viewed
as an important element by 75% of the businesses contacted. On the other hand, the overwhelming majority of respondents (91%) agreed that a lack of funds is the main obstacle to implementing innovation. Donaldson (2022) proves innovation in form of digital devices aimed at ensuring food integrity and the control of supply chains are shown to reconstitute infrastructures of qualification by which the qualities of foodstuffs are established as they move through the processes of the supply chain, from production to consumption. As stated by Freidberg (2013), innovations in form of digitalization represent a possibility to increase information in the food sector. Moreover, according to Carolan (2018), innovations can form consumer behaviour. Finally, research carried out by Van Rijswijk and Frewer (2011) was analysing the traceability of food systems as a new trend in innovations. Based on the findings, there is a need for a variety of information regarding food and the production processes involved. However, for traceability to have a real impact on consumers, the information that is supplied to consumers must be accurate, reliable, and clear.

5. Conclusion

The Farm to Fork strategy provides a bold plan for European agriculture and the food sector. The fundamental targets of the strategy are to improve sustainable food production and consumption, sustainable food distribution, and the prevention of food loss and waste. The aim of this paper was to identify the application of the Farm to Fork strategy in selected companies. We focused on health nutrition, ecology, sustainability and innovations in 3 selected sectors. Our results showed that more than 93% of selected businesses perceive the issue of ecology and carry out various activities such as the protection of air, water, nature, and recycling. Additionally, 74% of participating companies use innovations in their businesses (innovative packaging technology, new forms of customer service, innovative technologies and recipes, offering innovative products, entertainment, and educational activities). Lastly, we were evaluating opinions about the Nutri-Score labelling. Based on the results, it is evident that in each industry, more than 50% of companies do not deal with this topic.

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