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FOOD SUSTAINABILITY PRACTICES IN INDUSTRY

An analysis of in-depth case studies

University of Cyprus

KAUNO MAISTO PRAMONĖS IR PREKYBOS MOKYMO CENTRAS

ATU
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Atlantic Technological University

The Polish Farm Advisory and Training Centre

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Authors:
Sarah O'Donovan, Aisling Moran, Dr Lisa Ryan, Maria McDonagh,
Atlantic Technological University, Galway, Ireland

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Lina Baltrūnė, Raimonda Makaveckė, Aurelija Paltanavičienė
Kaunas Food Industry and Trade Training Centre, Lithuania

Natalia Truszkowska, Daria Zebrowska
The Polish Farm Advisory and Training Centre not-for-profit Sp. z o. o., Poland

Dr George A. Papadopoulos, Thomas Fotiadis
University of Cyprus, Cyprus

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Introduction

The global food industry stands at a pivotal juncture where the imperative for sustainability intersects with the ever-growing demand for nourishment. In this case study, we embark on a comprehensive exploration into the intricate processes by which food industry stakeholders develop, implement, and evaluate sustainability practices. The journey takes us beyond the immediate concerns of production efficiency and profit margins to illuminate the strategies employed by these entities to harmonize their operations with ecological, social, and economic sustainability imperatives.

As we delve into the nuances of sustainability initiatives within the food industry, the focus expands beyond mere compliance with regulations. Our investigation encompasses the dynamic landscape of sustainable practices, scrutinizing the development of strategies that resonate with the broader goals of environmental stewardship, ethical sourcing, and societal well-being.

Furthermore, this case study seeks to unravel the intricate web of implementation challenges faced by the food industry. From supply chain complexities to consumer behavior dynamics, we delve into the operational intricacies that shape the adoption and execution of sustainability practices. Additionally, we explore the methodologies and metrics employed by industry players to evaluate the impact of these initiatives, recognizing that effective evaluation is integral to the continual refinement and improvement of sustainability practices.

Looking toward the future, the case study aims to project the sustainability priorities and goals that the food industry envisions on the horizon. Through insightful interviews we strive to identify emerging sustainability trends and potential trajectories that will shape the industry's commitment to responsible and resilient practices.

In essence, this case study aims to act as a compass for navigating the evolving landscape of food industry sustainability. By scrutinizing the development, implementation, and evaluation of sustainability practices, we aim to distill lessons, best practices, and forward-looking insights that can inform not only industry stakeholders but also policymakers, researchers, and consumers invested in shaping a more sustainable and equitable food future.

Methodology

Study Design

This was a joint European project with partners from Ireland, Cyprus, Poland, and Lithuania. In-depth, semi-structured, recorded interviews were conducted with food industry employees to gather sufficient data on employers' digital capability needs and food sustainability priorities across the food industry sector in Europe.

Participants

The concept of information power underpinned the maximum variation sampling technique and given the broad aim of the study and sample specificity a moderate sample size was deemed adequate. Researchers aimed to recruit 20 participants across the four countries (Ireland, Cyprus, Poland and Lithuania) from diverse food companies across the food industry sector, who had experience and/or were knowledgeable in the food sustainability practices implemented in their company. Participants

were identified through direct contact on LinkedIn and snowball sampling. Those interested were prompted to complete a consent form before attending an interview.

The interviews were conducted with 21 food industry representatives/employees working in the Agri- and food industry sectors in the partner countries – Poland (n = 5), Ireland (n = 6), Cyprus (n=5), and Lithuania (n = 5). All participants were adults over 18 years of age and included both men (n = 9) and women (n =12) from various positions in their companies. The companies and job titles of the participants can be seen below in Table 1. In-depth, semi-structured, audio-recorded focus groups were conducted online by the lead researcher in Poland, Lithuania, Cyprus, and Ireland using Microsoft Teams and lasted 20-48 minutes (M = 35.5 min, SD = 10 min). Each interview was then transcribed and forwarded to the lead research team at Atlantic Technological University for analysis.

Table 1 - Demographic description of participants' job titles, company and location

Company Name	Job Role/Title	Location (city, country)
Kerry Group	Sustainability Lead for Applied Health and Nutrition Function	Kerry, Ireland
Nutritics	Sustainability Lead	Dublin, Ireland
Ornua	Project Management and Sustainability	Cork, Ireland
Airfield Estate	Director of Education and Research	Dublin, Ireland
Kerry Group	Sustainable Nutrition Manager	Kerry, Ireland
Kerry Group	Responsible Sourcing Manager	Kerry, Ireland
Grupa Agrocentrum	Procurator	Łomża, Poland
Veterinary and Comprehensive School Complex	Food Technology Teacher	Łomża, Poland
GreenVit	Procurator	Łomża, Poland
Ziołowy Zakątek	Owner	Koryciny, Poland
Ideal Bistro	Owner	Łomża, Poland
Fork Food Market	Organiser	Nicosia, Cyprus
Savva Matsi Bakeries LTD	Director	Palaichori, Nicosia, Cyprus
H.S. FOODTECH Laboratories Ltd	Owner	Nicosia, Cyprus
C. A. Papaellinas Group	Sustainability Manager	Nicosia, Cyprus
A. Zorbas and Sons Ltd	Quality Manager	All over Cyprus
AB Nordic Sugar Kėdainiai	Process Operator	Kėdainiai, Lithuania
Biržų Duona	Marketing Lead	Vilnius, Lithuania
Kietavišhių Gausa	Sustainability Manager	Kietaviškės Village, Lithuania
Mantinga	Sustainability Project Manager	Marijampole, Lithuania
Vilvi Group	Production Manager	Vilkyškiai, Pagegiai municipality, Lithuania

Procedure

A semi-structured interview schedule was designed for the interviews based on discussion of researchers' experiences using a mix of open-ended questions, prompts and follow-up questions to encourage interviewees to reflect on and describe their experiences with developing, implementing and monitoring current food sustainability practices within their company in as much detail as possible. The interview schedule as outlined in Table 2 covered questions on food sustainability priorities and practice, how the initiatives were developed and implemented, how the sustainability practice was monitored and evaluated, and future sustainability goals and possible approaches under consideration to achieve those. Data from these questions were separated and analysed for this study.

This study was grounded in interpretivism whereby we sought to explore the realities and challenges food industry employees face when integrating food sustainability practice into their work and the wider company. Our project team consisted of one lead researcher from each of the four partner countries. Ethical approval for the research was granted by the ATU Galway-Mayo Research Ethics Committee after a full board review of the study proposal (RSC_AC_27052023).

Table 2 - Semi-structured interview schedule and importance of questions.

Question	**Importance**
Does your industry/company have a sustainability policy for practice?	Identify whether the company has a sustainability policy for practice
What are your company's sustainable priorities?	Gather information on the sustainable priorities of the company
How does your company strive to achieve those sustainable food practice goals?	Explore how the company is trying to meet their sustainability goals/targets
Can you talk me through how that initiative was developed?	Gather information on how sustainability initiatives are developed and implemented
How is the initiative monitored and evaluated?	Gather information on how the initiatives are monitored and evaluated for effectiveness
What future sustainability goals does your company have?	Explore future goals and targets
How will your company aim to achieve those?	Explore possible solutions and initiatives to meet future goals

Data Analysis

The data was analysed using a qualitative direct content analysis approach, whereby the data was coded and categorised. Following the interview transcription and cleaning, the data were assembled and subjected to a deductive content analysis. The first step of this analysis involved transcription and anonymisation. The recorded interviews were transcribed verbatim, ensuring that every detail of the discussions was captured accurately. To maintain participant confidentiality, names were replaced with unique participant identification codes. Next, the researchers engaged in familiarisation by thoroughly reading through the transcripts, ensuring a deep acquaintance with the content and the context surrounding the discussions. The analysis progressed to the coding phase, where initial codes were created based on the data. Recurring themes, topics, and concepts were identified. Following the coding, the team focused on identifying themes and patterns. The coded data were organised into

broader themes and categories, facilitating an exploration of the connections between different themes. During this stage, thematic mind-maps were created, which proved useful in visualising the relationships between the various themes and sub-themes, thus aiding in understanding the overarching narrative emerging from the data. The researchers then related the identified themes back to the research questions, assessing their significance and identifying key insights from the analysis.

Results

Sustainable Priorities

All participating companies represented in this study confirmed that the company had a sustainability policy for practice, except for one. This company however, in the absence of an official policy, were taking steps towards sustainability and were aiming to achieve certain sustainability goals.

Across all four countries, the main sustainable priorities discussed by participants which drive their sustainability policy for practice included complying to the Science-Based Targets initiative (SBTi) and setting emissions targets such as being net zero by 2050, minimising waste generation, optimization of resources and raw materials, switching to recyclable packaging, sustainable procurement and production.

Current Initiatives

A common theme across all initiatives described by participants in the design, development and implementation of their sustainable food practices was the involvement of collaboration among stakeholders, with top management forming a dedicated team, conducting research, partnering with experts, and incorporating input from employees, customers, and partners.

The approach for the introduction of a sustainability initiative and the acceptance by employees and stakeholders within the company as a whole was a recurring point of consideration for the larger companies represented in the interviews. Sustainability initiatives developed by management are an integral part of corporate culture, aiming to promote responsible business practices and environmental awareness. Education, both internally and externally with consumers or end-users, was stressed as an important aspect of developing and implementing sustainable practices and must be integrated into the design plan from the beginning. Education on the initiative was mentioned as important for communicating the reasons behind sustainability efforts and ensuring compliance and acceptance of the practice by all involved.

Future Initiatives

Future sustainability goals and targets mentioned by participants expanded on original priorities and included aiming for further reductions in emissions and implementation of sustainable procurement and production practices.

Packaging was an element of the food production process which was mentioned by many of participants as an expanding research area to explore environmentally friendly food-safe packaging. By 2030, one company is aiming to eliminate plastic in packaging by 90% due to its lack of development. This company is exploring alternatives like corn films, which are self-degrading but expensive. However, they noted a future challenge with this approach is the added cost this will place on the consumer. The representative stated that “people are not yet willing to pay for them, so progress is slow”.

A future goal mentioned by half of participants is a plan to switch to renewable energy sources like solar panels and switching to electrical kitchen equipment to avoid using gas and reduce fuel consumption.

In Ireland the dairy industry is working towards aligning its science-based targets with the Paris Agreement's 1.5 degrees warming goal. Scopes one and two aim to reduce emissions by 42% by 2020, while scope three aims for a 30/33% reduction. The industry is also focusing on carbon sequestration on land and farms. The plan includes 100% recycled materials on sites, with a focus on the food business. The industry has not set net zero targets but aims to drive towards climate neutrality by producing nutritious food while sequestering carbon. The goal for the larger factory-based companies is to have all factories either carbon neutral or on renewable energy/fossil fuels by 2030.

Future areas for research and improvement included the proliferation of environmental labels, such as eco scores, as they are not as advanced or easy to assess as nutrition labels. They require data on various metrics, such as carbon intensity, water use, and land use. However, these labels are often difficult to be accurate due to the lack of primary data. One participant believed that over the next decade, eco labels will become more accurate, allowing food industry professionals to compare ingredients and customers' food to make informed choices, meaning consumers' choices based on eco labels are subjective and data isn't strong enough. However, they foresee over the next 5-10 years, companies will collaborate in the supply chain, providing carbon numbers to customers and suppliers, and identifying gaps within the label.

Discussion

This study focused on exploring the current sustainability priorities across the food industry in Europe and how initiatives are developed, implemented and evaluated to achieve food sustainability targets. The sustainability priorities identified within the companies in Poland, Ireland, Lithuania and Cyprus included compliance with the Science-Based Targets initiative (SBTi), setting emissions targets, minimizing waste generation, optimizing resources and raw materials, switching to recyclable packaging, and sustainable procurement and production.

For effective development and implementation of initiatives, collaboration among stakeholders was mentioned as highly important. Collaboration among stakeholders is crucial for advancing sustainable food practices, as it involves the coordination of efforts and resources across various sectors to address complex challenges in the food system. A study by Ingram et al. (2018) emphasizes the importance of multi-stakeholder partnerships in achieving sustainable agriculture and food security goals. These collaborations bring together actors from government, industry, academia, and civil society to collectively develop and implement strategies that promote environmentally friendly farming practices, reduce food waste, and enhance the resilience of food supply chains (Klerkx et al., 2012; McLachlan et al., 2018). Moreover, a report by the Food and Agriculture Organization (FAO) highlights the need for inclusive and participatory approaches involving diverse stakeholders to ensure the success of sustainable food systems (FAO, 2019). By fostering collaboration, stakeholders can pool their expertise and resources, leading to more effective and holistic solutions for the challenges posed by food production and consumption.

The introduction of sustainability initiatives and their acceptance by employees and stakeholders are crucial for larger companies. Education is essential for communicating the reasons behind sustainability efforts and ensuring compliance and acceptance. The successful integration of sustainability initiatives within large companies hinges on effective communication and education to

garner acceptance from employees and stakeholders alike. Research by Kollmuss and Agyeman (2002) underscores the significance of education in fostering awareness and understanding of sustainability concepts, asserting that informed individuals are more likely to support and participate in environmental initiatives. Furthermore, studies such as those conducted by Delmas and Burbano (2011) emphasize that companies engaging in transparent communication about the motives behind sustainability efforts are more likely to gain stakeholder trust and commitment. This aligns with the idea that comprehensive education not only imparts knowledge but also instills a sense of purpose, making employees and stakeholders more receptive to the long-term goals of sustainability (Bansal and DesJardine, 2014). Therefore, companies aiming to implement and sustain meaningful sustainability practices should prioritize educational strategies to ensure alignment, compliance, and enthusiastic support from their workforce and broader stakeholder community.

Future sustainability goals include further reductions in emissions and sustainable procurement and production practices. Packaging is an expanding research area, with many companies aiming to eliminate plastic in packaging by 2030. Another goal is to switch to renewable energy sources like solar panels and electrical kitchen equipment to reduce fuel consumption. In Ireland, the dairy industry is aligning its science-based targets with the Paris Agreement's 1.5 degrees warming goal, aiming to reduce emissions by 42% by 2020 and 30/33% reduction. The industry also focuses on carbon sequestration on land and farms, with a focus on producing nutritious food while sequestering carbon.

Future areas for research include the proliferation of environmental labels, such as eco scores, which require data on various metrics but are often difficult to assess due to lack of primary data. Over the next 5-10 years, companies will collaborate in the supply chain, providing carbon numbers to customers and suppliers and identifying gaps within the label.

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