

Sustainability and Online Grocery

Building a Sustainable Food System for Flink

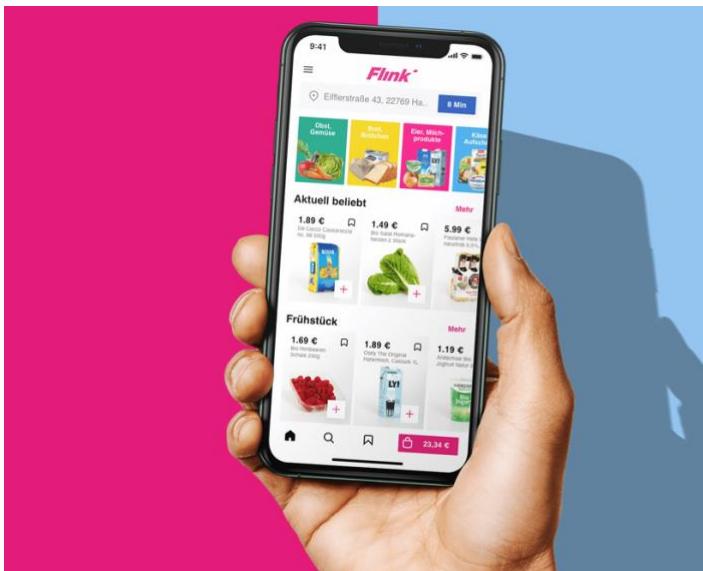


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Executive Summary

The online grocery industry gained momentum during the worldwide pandemic and still is one of the fastest-growing e-commerce segments. Regarding sustainability, digital grocery services can perform better in comparison to traditional supermarkets; however, they can still negatively impact the environment if sustainable standards are not established within the organization. Thus, the research investigates how Flink, a well-established online grocery company, can improve its food system's sustainability.

The theoretical model of Szűcs & Dudás portrays an ideal, sustainable food system, which served as a building block for the field research. To find a theoretical model that fits the identified issue and helps to answer the central research question, desk research was conducted, which consists of academic journals, institutional sources, and professional websites. Furthermore, an operationalization table was created to formulate questions for the research interviews conducted with individuals involved in the industry.

The results of the field research implicate that even though Flink has progressed in some areas, its operations need to be altered while new measures need to be adopted to meet the principles of a sustainable food system that promotes healthy and affordable food without harming the environment. The outcomes also suggest multiple feasible practices that Flink could implement to enhance the transition; some of these models are also illustrated in the appendices. The most restorative practices were: increasing the number of locally sourced products, improving logistics processes to reduce CO₂ emissions, switching from paper bags to alternative packaging, advancing technology to eliminate food waste, and educating partners and employees about the importance of these actions.

The analysis evaluated the reliability and the generalizability of the research opening the way for further research on the topic. The analysis showed that most results fit well with existing literature; however, there is some contradiction related to the feasibility of the proposed actions. A few recommendations for future research were: extending the methodological choices to increase the credibility of the data, reviewing the research once the EU poses mandatory requirements, and adding a sociocultural aspect to the research.

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List of Abbreviations

EU	European Union
EC	European Commission
F2F strategy	The Farm to Fork Strategy
V	Variable

1. Introduction

1.1. Setting the scene

In 2050, the world's population will reach 9 billion people, which means that food demand will increase by 60% (Food 2030, 2018). As World Wildlife Fund Officer Leap said, "if we continue to consume and use resources the same way as today, by 2050, we will need three planets to meet our needs". However, food production and consumption are the most significant contributors to global greenhouse gases. The reason is that the food chain produces greenhouse gas emissions at all stages in the life cycle, including farming, manufacturing, processing, distribution, food preparation in one's home, and waste management (Bradley, 2016). That is why a radical transformation of the food system is needed. To meet future demand increasing productivity is not enough. The transition has to happen in a sustainable way where society is shifting away from linear mass production of food to a circular model (European Commission, *Farm to Fork Strategy*, 2020).

The COVID-19 pandemic has accelerated the trend of online grocery shopping and reshaped the European grocery retail landscape. The online grocery channel experienced a growth of around 55 percent in 2020, contributing to 20 percent of total grocery revenue. The number of grocery delivery startups has proliferated in the past two years. Since the start of COVID-19, 18% of customers have tried the online grocery experience, and 82% intend to continue after COVID-19 (McKinsey & Euro Commerce, 2021). Consequently, online grocery companies are relevant and critical actors in shaping the future's food system.

1.2. European dimension

The European Union aims to address the subject of sustainable food systems in several ways, from legislative proposals, frameworks, and guidelines to the foundation of research and innovation projects. The primary pillars of EU initiatives are the Circular Economy Action Plan and the European Green Deal, including the Farm to Fork Strategy.

In 2020, The European Commission adopted a new circular economy action plan promoting circular economy processes and introduced new legislative and non-legislative measures. The essence of a circular economy is moving away from the traditional "take-make-use-dispose" model and creating long-lasting value for the products, materials, and resources while minimizing the amount of waste generated. By using and consuming more circularly, the negative environmental impact can be adverse and economic benefits can be projected (European Commission, *Circular Economy*, 2020)

In May 2020, the Farm to Fork Strategy was launched, aiming toward sustainable food systems by providing measures and targeting each food chain step. The strategy also emphasizes that all the food chain stakeholders must be involved in achieving sustainability (European Commission, *Farm to Fork Strategy*, 2020). Other significant steps towards future-proofing Europe's food system are the FOOD 2030 and FIT4FOOD2030 program, which intends to execute the transition through research and innovation (Food 2030).

1.3. The case

The research is written for a grocery e-commerce company, namely Flink. The chosen company will be analyzed, and recommendations will be provided on improving its sustainability practices regarding a sustainable food system.

As discussed previously, food production and consumption are unsustainable in their current form. Supply chains must be shortened, and the importance of locally sourced, fresh, and less processed food has gained momentum in recent years. Recent estimates suggest that around 931 million tonnes of food waste were generated in 2019, of which 13% came from retail (Eufic, 2021). As a food retailer, Flink creates a link between consumers and producers and has a powerful influence on consumption and production choices (Bradley, 2016). Hence, Flink is pivotal in enabling sustainable food consumption and provisions to become common choices. There are numerous current consumer trends described in the research conducted by McKinsey and Euro Commerce that proves that improving the sustainability of Flink's food system can be profitable. The conducted research and recommendations will be helpful for Flink for several reasons since companies are increasingly being held accountable for their environmental and social practices. Nearly 60 percent of survey respondents found value and healthy products as the driver for trying new platforms to shop regardless of one's economic group. In the consumer research, 60 percent of European respondents said they would pay more for sustainable products. In addition, 24 percent of the respondents plan to spend more on regional and local products. Meanwhile, 30% claimed they plan to focus more on healthy eating and nutrition in 2021 than the previous year. The number of eco-actives - consumers who are the most active in reducing their environmental footprint, has continued to grow. Millennials, one of the most eco-conscious demographic groups, will soon take over households (McKinsey & Euro Commerce, 2021). These trends acknowledge the demand for healthy and locally sourced products and can support Flink in following a more sustainable path.

On top of that, fixing the food system and implementing good practices will enable stakeholders' valuation and favor. It can create financial benefits since sustainable practices can reduce energy and transportation costs, lead to tax reduction, and be eligible for EU subsidies. Implementing innovative solutions will help to prepare for future challenges, increasing demand and gaining a competitive advantage (Steinberg, Rodysill, & Neuhold, 2021). The European Commission is already working on further directives and regulations, for example, concerning labeling or mandatory food waste targets (*European Commission, Farm to Fork Strategy*, 2020). Therefore, the recommendations will allow Flink to comply with existing and near-future regulations. Henceforth many reasons can be found that validate the idea of future-proofing food systems and that changing systems and behaviors is more urgent than ever.

1.4. Scope

That is why the central research question is: **How can Flink improve the sustainability of its food system?**

In order to answer the central research question, four sub-questions were formulated:

- What is Flink?
- What does a sustainable food system mean?
- What are the European Union's current ambitions for sustainable food systems?
- What are Flink's current practices to improve the sustainability of its food system?
- What additional practices can Flink implement to accelerate the transition toward a sustainable food system?

Answering these sub-questions will allow a deeper understanding of the concept of sustainable food systems and how it is addressed on a European level. Furthermore, they will offer insight into the company, its current practices, in which areas it performs poorly, and how it can improve.

Furthermore, it is essential to note that the scope of the research is limited since it only covers Flink's presence in the Dutch market; other delivery areas are not included in this research paper.

1.5. Structure

The report is divided into five main chapters. First, the theoretical framework of different approaches and models used to illustrate the concept of a sustainable food system is presented. Second, the methodology adopted for this research will be elaborated upon. After

that, the chosen theoretical model is presented in details and the results of the field research are outlined. Fourth, the analysis chapter interprets the meaning of the findings. Finally, the central question is answered in the conclusion chapter, whereas advice for Flink and suggestion for further research is presented in the recommendation section.

2.Theoretical Framework

This chapter will present a literature review and discuss the theoretical framework used to answer the sub-questions and the central research question.

2.1. The EU's ambitions for sustainable food systems

The European Commission adopted several policies to increase the sustainability of its food system. The EU food governance is characterized by a fragmented landscape of policies that affect the functioning of the EU food system. The main pillars of the EU's ambitions in this topic are promoting a circular economy, increasing resource efficiency, introducing sustainability 'from farm to fork,' and ecosystem preservation and restoration (Zaharia et al., 2021).

The circular economy action plan in 2015 paved the way for circular economy practices, while the European Commission introduced new legislative and non-legislative actions through the updated 2020 action plan (European Commission, *Circular Economy*, 2020). This is important since creating long-lasting value, valorizing waste, and implementing circularity in the supply chain are fundamental elements of a sustainable supply chain.

To increase resource efficiency, the Commission introduced the EU's 2030 Energy Strategy, which aims to increase the share of renewable energy to at least 32% compared to 1990, which would result in at least a 32.5% improvement in energy efficiency (European Commission, *Energy*, 2022). This is an important milestone since food industry enterprises account for a large volume of energy usage due to their production, conservation, or distribution activities.

EU policymakers have introduced the concept of food sustainability in the Farm to Fork Strategy and are in the process of developing a legislative framework by the end of 2023. The framework proposes binding food waste targets, revising EU law on date marking and

marketing standards, or sustainable food and nutrition labeling. The first adopted action by the EC is the *EU Code of Conduct for Responsible Business and Marketing Practice*, accompanied by a monitoring framework. Until this point, the Code of Conduct voluntarily sets tangible goals that actors in the food industry, for example, retailers, can accomplish to improve their sustainability performance (Schebesta & Bernaz & Macchi, 2020). Furthermore, Commissioner Reynders has hinted that an upcoming directive or regulation can also be expected, which will impose a duty on some European companies to address environmental risks (Schebesta & Bernaz & Macchi, 2020).

In order to preserve and restore the ecosystem, the long-dated Common Agriculture Policy (1962), Common Fisheries Policy (2014), and Environment Policy (1972) provide continuous measures and reforms, for instance, towards sustainable farming. These policies are essential since there is no fair, healthy, resilient, and sustainable food system without the ambition to preserve the environmental commons.

Nevertheless, research and innovation are crucial components in sustainable food system transformation. The EU provides funding for various research themes and activities via its framework programs. For example, the Horizon 2020 project received 80 billion euros in funding under which the FIT4FOOD2030 framework has been launched. The FIT4FOOD2030 project encompasses a range of multi-stakeholder activities, mainly aimed at developing suggestions for 'future-proofing European food systems (SAPEA, 2020).

To sum it up, there are somewhat fragmented EU policies related to food and sustainability. Current crises, such as rising energy prices and recovering economies from the pandemic, hinder the ability of the EU to focus on practical and integrated policy-making. Other difficulties lay in coordinating with member states and overcoming institutional challenges regarding whether the European Parliament and Council will support the Commission's high ambitions. Although the Farm to Fork strategy is ambiguous on specific topics, and its vital objectives lack legal actions, it is the first significant step toward a sustainable food system strategy (Schebesta & Candel, 2020).

2.2. Literature review on sustainable food systems

This section aims to review scholarly sources and gain more in-depth knowledge on the concept of a sustainable food system. This literature review can also help develop the theoretical framework of the thesis.

In the journal article – ***Modeling Sustainable Food Systems (2016) Allen & Prosperi*** claim that “building sustainable food systems” has become a motto in recent years to redirect current food systems and policies towards better-adjusted objectives and enhanced societal welfare. According to the writers, a sustainable food system can be defined as one that provides nutritious food to meet current food requirements while preserving healthy ecosystems that can also provide food for future generations with minimal environmental impact; supports infrastructures for local production and distribution; makes healthy food readily available, affordable, and accessible to all; is fair and human, safeguarding consumers, communities, farmers, and other workers.

These authors also communicate that a food system can be highly complex, and numerous economic, sociocultural, and environmental factors drive it. Multiple interactions between human and natural components are possible because of this complexity. Public policies can be improved with a better understanding of these drivers and how they interact to influence food system activities and outcomes. Systems approaches and integrated assessment tools are required to guide change due to the systemic nature of modern-day food systems.

Dr. Hanna Schebesta, in collaboration with other researchers, has written multiple articles about food-related policies in the European Union and, in her work, assessed the Farm to Fork strategy, which entails the concept of a sustainable food system and a systematic approach to it. In the publication - ***Game-changing potential of the EU's Farm to Fork Strategy (2020)***, **Schebesta & Candel** claims that to effectively address the ambiguity of what' food sustainability' or a 'sustainable food system' means has to be resolved. She argues that food sustainability has evolved into a concept encompassing many goals; therefore, decision-makers must first come to common ground. It is problematic since, due to different ideas, the food system's actors can have different visions of how to get there. Her other publication - ***The European Union Farm to Fork Strategy: Sustainability and Responsible Business in the Food Supply Chain (2020) by Schebesta & Bernaz & Macchi***, states the importance of addressing the responsibilities of all actors in the food system. However, whether all actors, such as businesses, are equal and have the same level of responsibility should also be examined. She also describes that the negotiation process toward achieving food sustainability should be stakeholder-intensive and open. In the case of the European Union, she urges the implementation of the legislative and monitoring framework for sustainable food systems and strengthening food governance.

The report called ***A sustainable food system for the European Union (2020)***, published by the Science Advice for Policy by European Academies (SAPEA), was also reviewed. The report shares the idea with Allen & Prosperi (2016) that the food system is complex and

adaptive. In food sustainability, mass consumption should be re-constructed, and circularity should serve as a critical idea. SAPEA also describes that food governance should be more coherent, inclusive, and better coordinated. Moreover, the fragmented policy landscape should become more integrated by mainstreaming sustainability in policy, which is a shared idea with Schebesta and her research partners (2020).

Cristophe Béné's research paper - ***When food systems meet sustainability*** (2019) focuses on the interpretation and use of the term sustainability in reference to food systems. Just as Schebesta et al. (2020) also urge to clarify how a sustainable food system is defined and what dimensions of sustainability (social, economic, environmental) should be embraced. He states that people's relation to food is cultural in the first place; therefore, a fourth cultural dimension should be added in the case of food systems. What differs from other research papers is that it questions what a healthy diet means, sustainable production, and consumption. For example, diets that include the daily consumption of beef or other meats are culturally acceptable in some regions like South America yet are unhealthy and unsustainable. He agrees that when establishing and implementing sustainable food system initiatives, multiple actors play a role in food systems and that governments, the private sector, and civil society should be included in making the food system more sustainable and equitable.

So far, primarily European literature was reviewed; however, American scholars' studies were also considered to gain different perspectives. For example, the study - ***Food Decision-Making Framework: Connecting Sustainable Food Systems to Health and Well-Being*** by **Gillespie & Smith** (2008) highlights a new approach: that family and community have a significant impact on sustainable food systems, health, and well-being. These authors agree with Béné (2019) that social and cultural norms must be observed to adopt food sustainability. According to these authors, an individual's consumer behavior and choice are highly influenced by the community they are surrounded with. The paper also emphasizes the importance of locally produced food in addition to some smartly selected imported food to meet nutrition and taste preferences. Local food here is defined by where the ingredients were grown, by whom and where it was processed, where and how it was retailed, and by whom and where it was consumed. A similar pattern can also be revealed here: the need for a systematic, multidimensional approach.

Moreover, the scientific journal article - ***Environmental impacts of food retail: a framework method and case application*** (2016) by **Peter Bradley** also emphasizes the responsibility and involvement of private sector actors such as retailers, just as Béné (2019) does.

In conclusion, in the reviewed literature, several similar patterns can be revealed; however, there are some different approaches as well. Scholars agree that the food system has a high level of complexity, multidimensional, and viewing the system as a whole is essential. Furthermore, a standard definition of a sustainable food system should be established so that each actor in the food system can fulfill the objectives. To address failures in the food system, an integrated, systematic approach is necessary that involves all the stakeholders. Nevertheless, a different perspective was also discovered, which considered culture another dimension when designing frameworks for sustainable food systems.

2.3. Definition of a Sustainable Food System

To understand and answer the thesis's central question, defining a sustainable food system is inevitable.

However, observing the core of the concept food system could be constructive. The term defined by the Scientific Group of the UN Food Systems Summit is: A food system constituted of many different actors and the value-adding activities they do together in the production, processing, distribution, consumption, and disposal of food products that come from agriculture, forestry, fisheries, the food industry, and the broader economic, social, and natural environments in which they are embedded. (von Braun, Afsana, Fresco, Hassan, & Torre, 2021).

Excessive and unsustainable consumption levels are one of the main characteristics of modern food systems. There will be an increase in food demand due to population growth, which will put pressure on the food system in three interconnected ways: uneven consumption patterns, waste management, and emissions of greenhouse gases (SAPEA, 2020).

There is no fixed, universally accepted term in the definition of a sustainable food system since different actors (producers, retailers, governments, consumers, and civil society) identify it differently depending on their own scales, narratives, and starting point. The evidence review report of SAPEA puts forward the one that will be applied in the research because it is a pragmatic approach, suitable for a European context, and became used in the European Institutions' publications. The report also mentions that food systems are complex adaptive systems (SAPEA, 2020).

Hence, a sustainable food system for the EU promotes and provides safe, nutritious, and healthy food with low environmental impact for all EU citizens now and in the future. It is robust,

resilient, economically dynamic, just, fair, socially acceptable, and inclusive. It also protects and restores the natural environment and its ecosystem services. It does so without affecting the natural environment of those outside the EU or compromising the availability of nutritious and healthy food (SAPEA, 2020, p.68).

Based on the definition, the main objective of a sustainable food system is to provide safe, nutritious, healthy food for all current and future citizens without harming the environment. A sustainable food system must be characterized by being resilient and robust in order to produce food. In addition, food systems must be socially and economically viable, withstand price shocks and other crises, and respond to social inequality and other forms of injustice. Henceforth, focusing on the main objective paves the way towards transitioning from a linear food model founded on the principles of ‘take, make, consume, waste’ to a circular model based on principles of waste reduction, bio-refining unpreventable losses, closing nutrient loops, improving efficiency, utilizing byproducts, creating higher-quality food, and favoring changes in unhealthy diets (SAPEA, 2020, p.71-72).

2.4. Sustainable Food System Models

This section will present four theoretical models of sustainable food systems to analyze Flink’s food system and provide a roadmap to improve its sustainability.

1. Farm-to-Fork Model

The F2F strategy, which has been in effect for two years, is a comprehensive plan focusing on food sustainability from production to consumption. It outlines non-regulatory initiatives as well as regulatory ones, such as a legislative framework for sustainable food systems, for which a proposal is expected before the end of 2023.

Follow-up steps are outlined in the accompanying action plan, which includes a list of various legislative commitments and their timing (Eufic, 2022).

The F2F strategy aims for six main objectives:

- Ensuring that food production is sustainable
- Ensuring the safety of food



- Encouraging environmentally friendly methods of food service, wholesale, retail, hospitality, and food processing

- Figure 1 F2F strategy
- Facilitating the transition to healthy, sustainable diets and promoting sustainable food consumption
- Lessening food loss and waste
- Tackling food fraud at every step of the food supply chain

To successfully implement the strategy, the involvement and commitment of all stakeholders, such as European food producers, processors, retailers, and consumers, are crucial (Eufic, 2022).

2. Vision 2030 Model of the Hungarian Policy Lab

The Hungarian Policy Lab set out to map the country's food supply system, identify action points, and make a proposal to support the transformation of the food system with the help of various stakeholders and taking into account the FOOD 2030 priorities (Szűcs & Dudás, 2020).

Key messages of the model:

- Circularity in the food system
- Transparency in the supply chain
- Interconnectedness within all the areas



Figure 2 Szűcs & Dudás's Vision 2030 model

The inner circle illustrates the seven key areas that a food system relies on production, logistics, processing, packaging & marketing, distribution, consumption, resources & waste recovery. These are the main starting points to consider when transitioning towards a sustainable food system. The project participants outlined several goals connecting to each key area, and completing those is essential for turning Vision 2030 into reality. For example, considering the area of packaging, the main objectives are minimizing waste generation, maximizing recycling, and using renewable packaging materials while adapting to consumer needs.

The outer circle of the model emphasizes the importance of cooperation and collaboration among all the stakeholders and urges for cross-sectorial thinking. Supply chain disruptions and other crises are expected in the future; hence, a food system's characteristics need adaptability, resilience, and the ability to respond quickly. One of the EU's priorities besides green and digital Europe is competitiveness; hence research and innovation must support these areas. Innovative solutions and digitalization are the cornerstones of competitiveness and powerful tool for designing future-proofing food systems. Overall, the model can measure a company's performance, identify gaps and work toward solutions.

3. Béné's Food System Failure Model

This model aims to convey the key message that “food systems are failing us” because it is not “delivering what is expected or needed to ensure its contribution to full societal wellbeing.” The food system tends to fail in four significant ways, according to the model: it cannot feed the world’s future population, it cannot provide a healthy diet, it cannot produce equal and equitable benefits, and the system cannot be sustained and has an effect on the environment (Béné et al., 2019). The “systemic failure” is claimed to be inherited in the current production, consumption, finance, and governance systems.

The state of play	What is the failure about?	What is threatened and needs to be fixed?	Where do the priorities for action stand?
	Inability of the system to feed the future world population	Food security	Closing the yield gap
“our food system is failing us”	Inability of the system to deliver a healthy diet	Nutrition security and health	Closing the nutrient gap and ensuring the quality of diet
	Inability of the system to produce equal and equitable benefits	Social justice, democratic process, small-scale actors	Decentralization, grassroots autonomy
	Unsustainability of the system and its impact on the environment	Natural resources, agrobiodiversity, energy-water-carbon efficiency	Reducing the food-print of the system on the environment

Figure 3 Food System Failure by Béné et al.

The case of Flink most likely falls under the fourth option, which focuses on how the modern food system affects the environment and natural resources detrimentally. To utilize this model, Flink has to determine what needs to be fixed, analyze the suggested actions, and conduct additional research. However, the fact that all stages—production, distribution, retail, consumption, and waste management—have adverse effects on the environment presents challenges in this regard. Thus, the desired outcome for Flink, according to Béné’s model, is shifting towards more sustainable practices (e.g., systematic consideration for food waste), creating neutral, where possible positive impacts.

4. Circular Food System Model of Jackson, P. et al.

The last model focuses on a transition pathway leading the food system from a linear model into a circular one. The two main aspects of it are reduction and waste valorization.

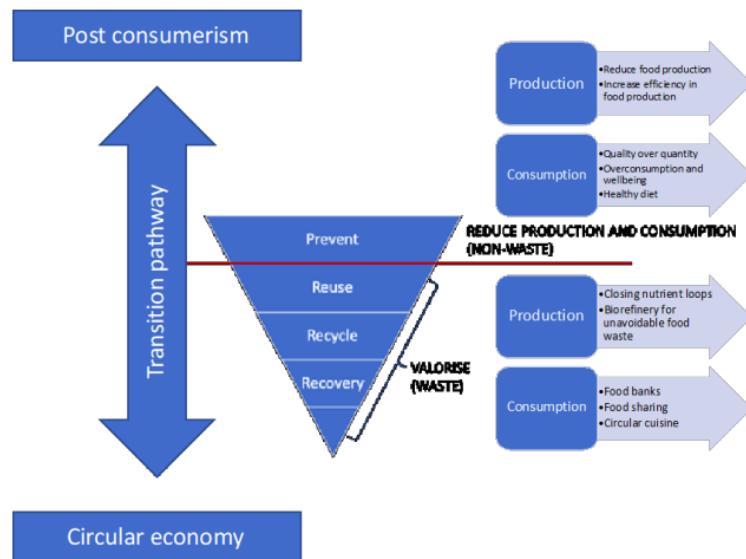


Figure 4 Circular Food System by Jackson et al.

Two types of waste, preventable and non-preventable, occur throughout the food supply chain. The first aspect entails that both ends of production and consumption must be reduced to move into a circular food system. For that, preventive measures are needed to be taken. The second aspect, valorization, would help redirect waste into the value chain. The method aims to reduce and avoid preventable waste through improved management practices, processing, changes in labeling, consumption behaviors, and education (Jackson, P. et al., 2020). The practices in the triangle: reuse, recycle, and recovery, should be implemented from the phase of production to processing, distribution, and consumption. Altogether, this model can provide a new perspective on how Flink should address the pressing issue of waste.

2.5. Comparison of the theoretical models

The four theories were analyzed to select the best model to apply to this research and answer the central research question. The analysis concluded that all four models could be used for this research to some extent. However, the best model that fits all four determined criteria (stakeholder involvement, adaptability to the case, clarity, and interconnectedness) is the Vision 2030 model of the Hungarian Policy Lab.

	Stakeholder involvement	Adaptability to the case	Clarity	Interconnectedness	

Farm to Fork	✓	✓	✗	✓	
Vision 2030	✓	✓	✓	✓	WINNER
Béné's model	✗	✗	✗	✓	
Jackson's model	✓	✗	✗	✗	

Table 1 Comparison of models

The Farm to Fork Strategy scored well in almost every criterion; however, the strategy is ambiguous regarding practical actions that a food retailer can take to help the sustainable food transition. The most problematic issue with Bené's model was the lack of adaptability to the case for Flink. From the four dimensions that the model describes, Flink only plays a role in one: its food system's unsustainability and environmental impact. In addition, the model does not provide sufficient information or clarity on how an SME can test and improve the sustainability of its food system. The model of SAPEA showed a great emphasis on stakeholder involvement, meaning that the whole supply chain, including customers, has a stake in creating sustainable food systems. One favorable aspect of the model was the emphasis on waste and avoiding preventable food waste since that is one of the biggest challenges for most food retailers. Regardless of presenting waste valorization, the theory lacks other elements that constitute the food system of Flink, such as distribution, packaging, or marketing activities. Above all, the Vision 2030 model can be best adapted to the case and be applied due to its clearness and conciseness.

The figure below illustrates a conceptual framework comprising the five variables selected from Szűcs & Dudás's model complemented by the suppliers' variable based on the Farm to Fork model. These six variables are relevant to the subquestions of the research and are scrutinized to formulate thoughtful questions for the field research.

Figure Five Conceptual Framework



Figure 5 Conceptual framework

The field research consists of two interviews to gather internal information about digital grocery companies' practices. The conceptual framework sets a direction and keeps the interview discussion open. The operationalization table portrays how the conceptual framework can be transformed into extensive research.

Variables	What does it mean for Flink?	Questions = *interview questions
Suppliers	<u>Supplying:</u> Providing the necessary goods to Flink often agreed upon a quantity.	<ul style="list-style-type: none"> ○ *Who are Flink's suppliers, and how does its upstream supply chain build up? ○ *How important is it for Flink to work with local suppliers? ○ *How many percentages of the product are locally sourced? ○ How could Flink partner with local suppliers?
Logistics/Processing	<u>Logistics:</u> The coordination and execution of goods transported and stored from one location to the desired location. <u>Processing:</u>	<ul style="list-style-type: none"> ○ *How does Flink currently optimize its logistics? ○ How could energy consumption be decreased? ○ *What innovative technology does Flink apply to be more efficient and predict customer demand?

	Organizing the resources and preparing them for end-use.	
Packaging/Marketing	<u>Packaging:</u> A coordinated method for preparing goods for transportation, storage, logistics, sale, and final use is known as packaging. It can also include design. <u>Marketing:</u> A company's activities to promote the purchase or sale of a product or service are referred to as marketing.	<ul style="list-style-type: none"> ○ *Does Flink consider using other materials for packaging, for example, reusable bags? ○ How could a reusable bag/packaging system be established? ○ *Does Flink encourage customers to choose healthy, nutritious food with its marketing activities? ○ What marketing tools can be utilized to influence consumers towards sustainable habits?
Distribution	The process of delivering the orders to end customers.	<ul style="list-style-type: none"> ○ How would specific operational changes affect distribution?
Consumption	The use, eating, and drinking of products in households.	<ul style="list-style-type: none"> ○ *What is the best-selling product category? ○ *How many seasonal and fresh products does Flink offer? ○ How could overconsumption be reduced? ○ How to inspire consumers to choose more near-sourced products?
Resource and Waste Recovery	The action of minimizing and avoiding waste. Managing waste collection, recycling, and disposal.	<ul style="list-style-type: none"> ○ *How much food waste Flink generates? ○ *What happens with soon-to-be-expired products? ○ *Does Flink engage in preventative measures such as donation, food sharing, and redistribution? ○ How could these measures be organized efficiently? ○ *How does unavoidable waste get disposed of?

Table 2 Operationalization chart

3. Methodology

This chapter elaborates on the methodology adopted in order to conduct this research. First, the research approach and structure will be described, and then the data collection process.

3.1. Research Approach

The research aims to fill a gap between the current state of Flink's food system and its desired state, which, in this case, is a more sustainable food system. The paper aims to provide a roadmap on what additional practices Flink can implement on top of existing ambitions. In line with this, the following research question was formulated:

How can Flink improve the sustainability of its food system?

Besides the central research question, several sub-questions were examined. Each sub-question is shown in table 3 to clarify the research methods and chapters.

- *What is Flink?*
- *What are the European Union's current ambitions for sustainable food systems?*
- *What does a sustainable food system mean?*
- *What are Flink's current practices to improve the sustainability of its food system?*
- *What additional practices can Flink implement to accelerate the transition toward a sustainable food system?*

	Method	Chapter & Section
SQ1	Desk research	4.1.
SQ2	Desk research	1.2. & 2.1.
SQ3	Literature review and desk research	2.2. & 2.3.
SQ4	Field research	4.3. & 4.4.
SQ5	Field and desk research	4.2. & 4.6.

Table 3 Chosen methodology for each sub-question & their positions

Answering sub-questions four and five, in combination with the chosen theoretical model, lead to the answer to the thesis's central question. Sub-questions one and three supported the understanding of the central question, while sub-question two placed the identified problem in a European context and framework. Sub-questions four was significant to gain an overview of Flink's internal operations and existing practices, while sub-question five was essential to find gaps and recommending feasible practices for the company to improve its food system sustainability.

3.2. Overview of the research process

Figure six explains the six main steps of the research process.

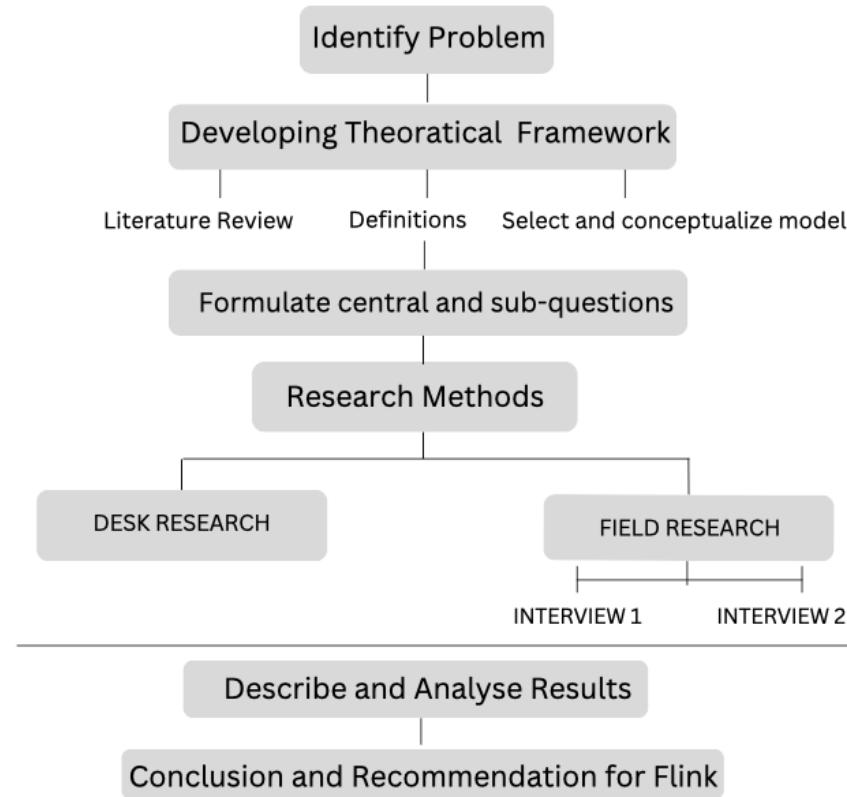


Figure 6 Research process overview

The development of a theoretical framework enabled to encounter models of the sustainable food system. The chosen model that could best provide answers to the central question was Szűcs & Dudás's model. First, the six key areas of a food system were observed, and how each area relates to Flink's activity. After that, several questions were formulated connected to these main areas to test where the digital grocery company stands with the sustainable food system concept. Most of these questions became essential to the first research interview and have been answered by Flink's employees. However, a second research interview had to be conducted to resolve the remaining ambiguity. These research methods' results were described, leading to an analysis and conclusion section. The conclusion paved the way for recommendations that Flink can implement to ameliorate.

3.3. Data Collection

The use of qualitative data was required to find solutions to the problem addressed by this research. The qualitative data were collected using a mix of secondary and primary data.

Secondary data

The secondary data for this research constitutes text-based documents such as peer-reviewed journals, the text of web pages, news articles, reports, and publications issued by institutions. The academic sources were retrieved by using the search engine Google Scholar, the library database of The Hague University of Applied Sciences, as well as the database of Science Direct. Secondary data is more economical and time-saving, allowing more time for the researcher to spend on the data analysis and interpretation. In addition, the quality of secondary data could be more highly rated than that of primary data collected by the researcher as it is more susceptible to public scrutiny (Saunders, Lewis, & Thornhill, 2016). Nonetheless, the disadvantage of secondary data could be the fact that it has been gathered for a specific purpose other than the thesis's research question(s) and objectives; furthermore, there is still a need for assessing the quality and reliability of these data (Saunders, Lewis, & Thornhill, 2016). That is why a mix of research methods was applied to meet the paper's objective.

The below table lists the sources that have had the most impact when writing this paper.

Source	Relevance & Reliability
Schebesta, H. & Candel, J. (2020). <i>Game-changing potential of the EU's Farm to Fork Strategy</i>	This journal article was an impactful source since it helped to understand the implications of food governance and creating a sustainable food system within the EU. The authors are credible since Dr. Schebesta and Dr. Candel are associate professors and researchers at Wageningen University. Their expertise is food law, food governance, national and EU food strategies, and EU law.
SAPEA (2020). <i>A sustainable food system for the European Union</i>	This evidence report is a reliable source since scientific advisors of the European Commission wrote it. The report helped gain an overview of the different approaches to sustainable food systems. It also allowed us to explore the different ambitions the EU and other actors undertook.
Szűcs, V. & Dudás, Gy. (2020). <i>The food supply system Part 2 – domestic challenges, possible solutions</i>	The EU's FIT4FOOD2030 project lab publishes this journal article. The article provided new insights into the characteristics of an ideal food system and a framework for measurable and feasible actions that an actor in the food industry can take. The authors are credible since Ms. Szűcs is the head expert in the Food Industry at the Hungarian Chamber

	of Agriculture, while Mr. Dudás is an analyst at the Research Institute of Agricultural Economics.
Bradley, P (2016). <i>Environmental impacts of food retail: a framework method and case application</i>	The article allowed us to investigate the research problem since it investigates the different impacts that food retailers have on the environment and the need for more substantial private-sector involvement. Peter Bradley is a trustworthy author since he has a Ph.D. in Bioscience.
Cristophe, B et al. (2019). <i>When food systems meet sustainability</i>	This journal was an insightful source since it presents different narratives of food systems and their issues and sustainability and provides a framework for transition. The authors of this paper are frequent publishers and have expertise in food-related topics.
Garrone, P (2016). <i>Reducing food waste in food manufacturing companies</i>	This source was practical and beneficial in summarizing all the possible actions that food processors can execute to minimize waste and how to proceed with the unpreventable waste. Besides, the writers have shown credibility based on their continuous work in the field.

Table 4 Relevant & reliable sources

Primary data

Primary data was gathered by doing field research in the form of research interviews. When conducting a research interview, it is crucial to ask well-thought-out questions and pay close attention to what the interviewee wishes to convey. The use of interviews can help gather valid and reliable data relevant to the researcher and fine-tune ideas in cases where research questions or goals have not yet been established. However, this method has some disadvantages, such as the lengthy process of preparing and executing the interview. Some components of adequate preparation are knowledge, developing interview themes and questions before the appointment, and choosing an appropriate location (Saunders, Lewis, & Thornhill, 2016).

Two semi-structured interviews were conducted, which means that key questions and themes were established before the interviews. Some precise or future-oriented questions had to be omitted since they would have required confidential data. The order of the prepared questions list also changed due to the flow of the conversation, and follow-up questions were also asked for clarification or additional details. According to Saunders et al., the best method of recording data is the combination of audio recording and note-taking (2016); hence this recommended approach has been followed on both occasions. Audio recording allowed to inscribe direct

quotes, while note-making enabled to maintain concentration, formulate follow-up questions, and record thoughts that could be explored later.

The first interview was conducted with Lucas J. C. Krings, an experienced warehouse associate at Flink working for the company for more than a year. Krings has hands-on experience in different proceedings due to his increasing responsibilities in different areas. He provided thorough descriptions of Flink's daily operations, such as logistics, storage, assembling and delivery of orders, and waste management. This information on Flink's internal processes was beneficial to answer sub-question four on Flink's sustainable practices. He could not answer questions related to corporate goals, exact numbers, or plans; however, that was not necessary to sufficiently and credibly answer the concerned sub-question.

The second interview was conducted with Dávid Nagy, PR Manager at Kifli.hu. Kifli is the Hungarian branch of Rohlik Group, one of Europe's leading grocery delivery services operating in the Czech Republic, Hungary, Austria, and Germany. Kifli was chosen because they deeply care about environmental issues and building a sustainable future that reflects their imposed actions. The management implemented four main pillars that help progress towards a sustainable food system. For example, their innovative, in-house development enabled sustainable packaging. Mr. Nagy could elaborate on these actions and provide valuable advice on facilitating the transition. Hence, the retrieved information could serve as a basis for answering sub-question five decently.

Name	Location	Date
Lucas J. C. Krings	The Hague, Netherlands	28/10/2022
Dávid Nagy	Budapest, Hungary	16/12/2022

Table 5 Overview of interviews

The figure below explains the process conducted for the field research.

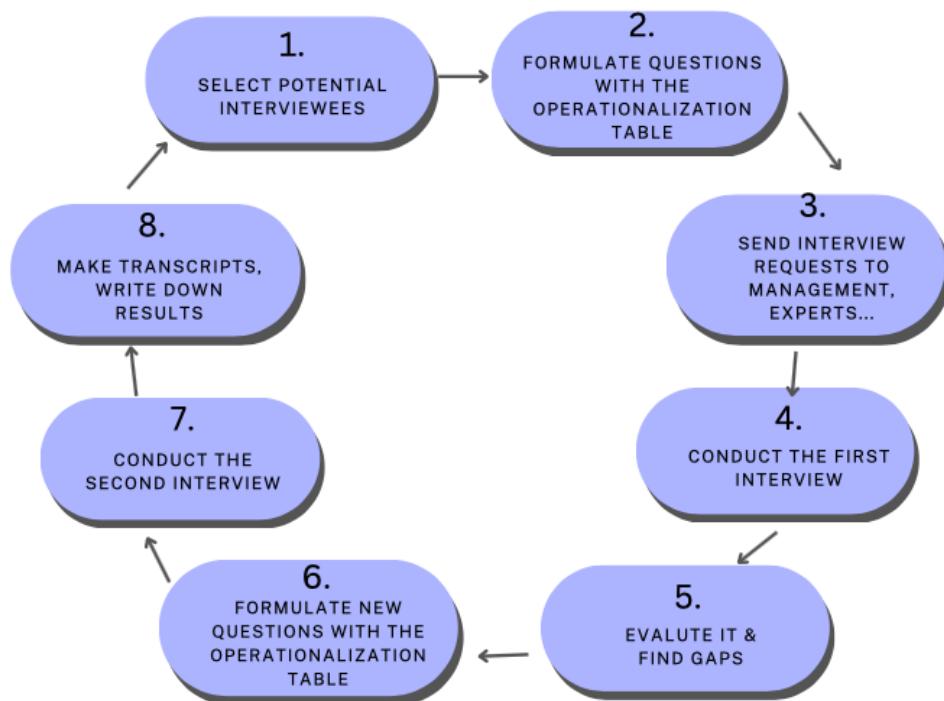


Figure 7 Process of field research

4. Results

This chapter describes the findings and answers sub-questions one, four, and five by presenting the outcomes of the different research methods.

4.1. What is Flink

Before analyzing Flink's food system and its current sustainable practices providing a company overview is inevitable. Thus, this section describes Flink's service, value proposition, product range, and challenges faced in the rapidly growing e-grocery industry. This sub-question is answered mainly through desk research; however, Flink's employees supplied some additional information.

Introduction

Flink is a Berlin-based online grocery delivery startup that aims to deliver in less than ten minutes. An experienced team founded the company in late 2020 by Oliver Merkel (CEO), Christoph Cordes, and Julian Dames. Currently, the service is offered in four European Union countries: Austria, Germany, France, and the Netherlands (Goel, 2022).

Mission & Value

According to Merkel (para. 1), their mission is “giving people back some of their valuable time and impressing them with our service each time they place an order” (RTIH, 2021). Warehouse associate Krings confirmed that statement by claiming that convenience and speed are the central values that Flink provides to its customers. Another aspect that differentiates Flink from competitors is having various warehouses around the locations in which it operates allows it to remain within the promised delivery time.

Delivery

First, users need to download the Flink app, which is available for Android and iOS smartphones. After providing one’s address and payment information navigating through the products will become possible. All that has left is to make an order and wait for it to be delivered to one’s home. Krings gave more insight into the exact process by explaining what happens at a hub the moment an order comes in: The pickers scan and retrieve the products from the hub’s shelves and give the customers’ names to the rider who are waiting at the warehouse ready to pick up and deliver the order. Afterward, the application allows tracking the state of the order and the riders. Payments can be made using a credit/debit card, Apple Pay or PayPal.

Product Description

Flink provides a wide range of products, such as fresh fruit, vegetables, pastry items, eggs and milk, snacks, drinks, and many more. The total number of items is around 2200, which are offered at supermarket prices. There is a vegetarian and vegan category, including meat and dairy substitutes; meanwhile, comfort food/prepared meals can also be found in the assortment for meat-eaters and people who follow a plant-based diet (GoFlink, 2022). According to Krings, the best-selling products are bread, meat, cheese, vegetables, and fruit. He also mentioned a definite tendency towards healthy and vegan products; for instance, many plant-based meat replacements, such as the Beyond Burger, are purchased.

Challenges

Flink has to face several challenges, such as supply chain disruption, rising demand of customers, and macro and micro trends, such as regulatory pressures, digitalization, and delivery acceleration.

Supply chain disruptions were caused to Flink during the Covid-19 pandemic, its lasting effect, and the escalation of Russia’s war in Ukraine. Additionally, occasional disruption can occur due to natural disasters such as droughts. Krings also noted that keeping the supply chain

resilient and shifting to near-sourcing could be a possibility to cope. Another aspect concerns rising consumer expectations like ultra-fast delivery, high product quality, and best customer service, with one word, a seamless experience (Ryder, 2021). For instance, Krings emphasized that Flink has to deliver ideally looking products (without any defects) to compete with supermarkets which hinders actions from fighting food waste. Furthermore, products that are plant-based, all-natural, high in protein, and free of genetically modified organisms continue to be demanded by customers Mckinsey & Euro Commerce, 2021. As a result, the difficulty lies in finding practices that help the acceleration towards sustainable food systems but do not result in financial loss and losing competitiveness in the fast-growing online retail industry.

4.2. Supplemented Vision 2030 model

This section describes the derived variables from the model of Szűcs & Dudás (2020), complemented with the main findings of desk research.

V1:Suppliers

Desk research suggests building the shortest supply chain possible; hence, food arrives on the consumers' plates without being transported from far. Companies should partner, collaborate and engage with like-minded suppliers who supply sustainable products and, if needed, support these suppliers (Starr, 2013).

V2: Logistics & Processing

The model recommends the digitalization of the logistics processes as well as aiming for net-zero emissions. During the processing stage, the most up-to-date technology should be adopted to meet consumers' needs and reduce energy consumption. As defined by desk research, one way to achieve that is by switching vehicles to electric feet or utilizing the dynamic routing of trucks – ensuring maximum efficiency and minimum energy use by determining the smartest route (Dashore & Sohani, 2013).

V3: Packaging & Marketing

Desk research says that actors in the food system should promote sustainable food consumption with their marketing activities. Furthermore, the advertisements and campaigns should be somewhat educational and engage consumers toward healthy, sustainable diets while the advertisement of certain products like meat should be minimized.

The model illustrates that the packaging process should adapt to customers' needs; materials should be reused and recycled and, when possible, use alternative renewable packaging. In addition, building total life cycle awareness into product design and packaging is also essential. Labels representing the products' origin, sustainability performance, and nutrition score should become mainstream to better inform customers about healthier, environmentally sound choices (European Commission, *Farm to Fork Strategy*, 2020).

V4: Distribution

Food distribution should adapt to increase concentration and the online consumer environment while reducing carbon emissions.

V5: Consumption

In terms of consumption, the following principles were discovered by desk research. Raising consumers' consciousness about food sustainability's social and environmental dimensions should be established. For instance, consumers should be aware of their responsibilities and reduce overconsumption. In addition, they have to be open to alternative products, packaging, and distribution (European Commission, *Farm to Fork Strategy*, 2020).

V6: Waste & Recovery

The European Union facilitates the safe redistribution of food for those in need and provides recommendations for retail food actors in the EU Food Donation Guideline (European Commission, *Food Safety*, 2022). The model displays three key elements to tackle food waste and loss: minimal waste generation, maximum waste recovery, and creating a system that adapts to regulations. According to Garrone et al., there are several actions to minimize and recover waste (2016).

To minimize waste:

- Price reduction on soon-to-be-expired products
- Remanufacturing/Repackaging of products in case of defaults in the packaging
- Internal food allocation to staff
- Food donations to non-governmental organizations or food banks
- Redistribute food that is still suitable for human consumption to secondary markets

To recover waste:

- Selling surplus food to companies that produce animal feed or fertilizers
- Giving food waste to a specialized company that disposes waste produced by food retailers
- Composting unavoidable organic waste (Garrone et al., 2016).

4.3. Result of the first interview

Lucas J. C. Krings has worked in the hub in the center of the Hague for more than a year and provided valuable information about how Flink operates its daily practices.

The questions posed to Krings were based on the questions included in the operationalization table (table 2). They all focused on the sustainable food system model by Dudás & Szűcs, and the simplified conceptual framework (figure 5) served as a structure and sequence of the research interview.

According to Krings, “sustainability does not lie at the heart of the company,” and „Flink is only open to adopting new practices if it is profitable and has the resources and capacity to do so.” However, there are several areas where Flink made progress towards a more sustainable food system: logistics, distribution, and packaging.

Summary of answers organized by variables

V1-Suppliers

Flink has two leading suppliers, Makro and Lekkerland, that deliver the products by truck to Flink’s warehouses or so-called hubs almost every day of the week. Makro is an international supplier, while Lekkerland supplies more locally sourced products. The associate said, "Since the two wholesaler's products arrive jointly, it is impossible to distinguish between the origins of each product anymore and for the same reason measuring the percentage of local food is difficult."

V2-Logistics & Processing

Logistics is better coordinated lately since the two suppliers share one truck delivering the products, maximizing capacity. Krings explained that “pooling resources could be seen as reducing greenhouse gas emissions, but they still create much pollution since the vehicles have to run at least five times in the city center before they can be parked and unloaded.”

An algorithm can be developed to predict customer demand accurately and only supply what is necessary. However, Flink is a relatively young company; therefore, more time and data are required from buyers to develop the algorithm. Thus, the system is not based on actual demand just replaces the current shortages.

Regarding renewable energy, the trucks are not electrical nor use a more environmentally-sound fuel. Although in the countryside, some solar panels are on top of the warehouses, Krings claimed that “placing solar panels are difficult since the hubs located in central areas have living space above and permissions need to be gained.”

Nevertheless, one significant improvement was the installation of sustainable air-conditioning that uses less energy. The associate argued that “it is also mandatory for the staff to turn off resources such as all the lights and ventilation during the night until seven in the morning.” Many fridges obviously cannot be turned off, and unfortunately, due to the lack of space, they warm up frequently since boxes are being put on top and are being opened frequently when preparing the orders.

V3- Packaging & Marketing

Regarding positive marketing practices, Flink offers many healthy and sustainable vegan products encouraging customers to choose from them. Paper bags are used to place each order that later can be recycled. However, as Flink’s member said, “during the weekends, we receive heavy orders that need to be placed in two or even three paper bags.”

V4-Distribution

The riders only use bikes or e-bikes to deliver the orders even if it is raining or bad weather conditions when many orders are expected. Krings said, “the recently updated system also intends to stack nearby orders together, saving time and resources.” Thus, distribution to the end customer is entirely carbon-neutral.

V5-Consumption

Flink does not interfere with what kind of food buyers should consume. It offers a wide range of products, from healthy ones to preserved food, “and it is up to the customer to decide,” said Krings.

V6-Waste & Recovery

Food waste is considered a severe issue by many at the company; however, reducing it is seen as time-consuming, challenging, and resource-consuming. “When there is a surplus of a product, and people do not buy it as predicted, Flink offers discounts up to 60-80%, but that is not based on the expiry date,” stated Krings. The possibility of food sharing among employees at the end of the day had to be opted out. Flink donates the soon-to-be expired/ damaged food to an organization helping Ukrainian refugees but not daily; hence there is a lot of food loss at the end of the day. The collected food waste after the practice called “fresh-check” ends up in Flink’s private containers outside of the warehouses.

To conclude his answers, Flink is not dedicated to food system sustainability and is profit and environment-oriented when making decisions. Although, the company can be driven “if it has the necessary resources and economic gains can be expected” from the sustainable provisions.

4.4. Flink’s current practices to improve the sustainability of its food system

This sub-question is answered based on the results of the first interview conducted by Flink’s warehouse associate.

Below, figure 8 illustrates Flink’s practices within its food system and shows that the SME has made progress in five of the six main areas with different levels of engagement. The areas where developments can be classified are logistics&processing, packaging&marketing, distribution, and consumption.

The actions contributing to a sustainable food system are marked with green on the figure. Regarding logistics, capacity is maximized, resulting in a lower carbon footprint and energy efficiency. The processing step involves digitalization and energy-saving requirements such as the eco-friendly cooling system. Regarding the packaging and distribution of products, paper bags are used, which is a better alternative than plastic, and the packages are delivered primarily with e-bikes. Furthermore, for responsible marketing and consumption, Flink’s inventory always includes fresh products and plant-based food, which are well-promoted through various channels.

However, in some dimensions, Flink has only made somewhat progressive actions marked with orange. Such practices are the lack of an algorithm to predict demand, lack of alternative packaging, inconsistent food donation, and discount mechanisms.

Meanwhile, the neglected areas with much space to improve are marked with red. The most critical dimension is waste recovery and management since preventive measures are absent to avoid food loss and reclaim waste. Moreover, counterproductive actions can be observed, such as excess packaging, coordination of logistics, and the lack of commitment towards near-sourcing.

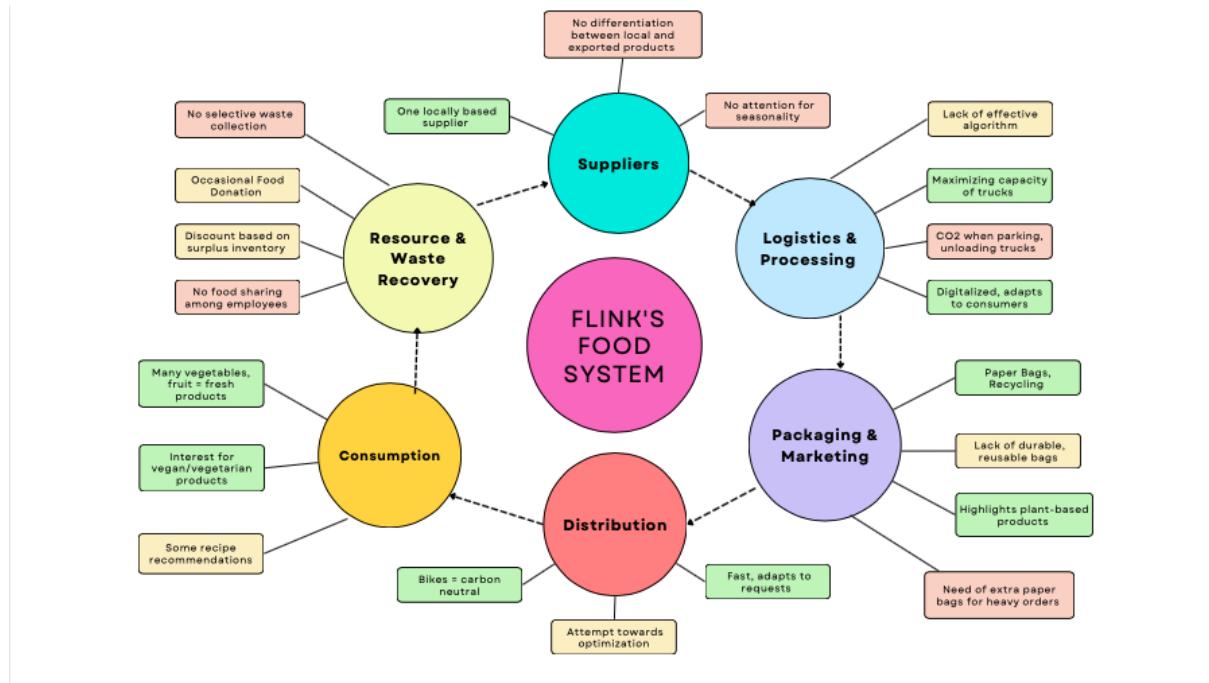


Figure 8 Flink's food system

One limitation of answering this sub-question is that although Flink has standard procedures mostly related to distribution, packaging, or waste management, a few aspects may differ between warehouses and other locations. Hence, the information provided is limited to South Holland and specifically to the Hague region.

4.5. Result of the second interview

The second interview was conducted with Dávid Nagy, head of PR at the online grocery company Kifli.hu. In contrast, the first interview aimed to get an overview of Flink operations along the different variables, this interview aimed to complement the theoretical framework by finding answers and practical advice on how a retailer can implement sustainable food practices. Valuable information was provided on the company's motivation behind food system sustainability, whether the concept can be profitable and what resources are required for the transition.

According to the manager, to develop and maintain sustainable practices, having advanced technology and using the latest innovations is inevitable or, as he put it, “We are an IT company that happens to sell food.” Besides technological resources, human resources also play a crucial role; therefore, at Kifli.hu, all employees are selected carefully and trained to have the necessary skills to meet company standards, including the sustainability pillars. However, “the biggest challenge is always to have enough manpower to make everything work.” When asked about the „secret recipe,” he emphasized that “it is daily, constant progress and problem-solving to make everything work.”

Since Kifli.hu has meaningful actions regarding food waste, innovative packaging, or local suppliers, most questions focused on these areas to gain in-depth knowledge.

Regarding the upstream side of the supply chain, Kifli.hu works with many small and medium-sized local suppliers, significantly lowering its carbon footprint and transit costs. With Kifli.hu, any producer can partner even if they lack experience with logistics and packaging or need financial or marketing support. As Mr. Nagy said, “we provide all the necessary means to our potential suppliers and make it possible to work together – this way, we can grow together and mutually benefit.” The key to successful cooperation is keeping a close relationship and constantly communicating about quality, standards, or challenges. Working with local suppliers has many advantages, including a unique portfolio, fresh, flavorful, high-quality products, and health and environmental benefits. As the PR Manager stated, “we believe in promoting the farm-to-fork strategy – providing the most nutritious food to customers in the shortest way possible.”

Regarding packaging, Kifli.hu developed eco-bags, recycled PET-based bags that can be washed, reused, and then made into a bag again. It has 80% less environmental impact and is much more durable than paper bags. According to Mr. Nagy, there was a “high demand from customers for such innovation, and it turned out to be a successful investment.” Besides eco-bags, Kifli.hu also implemented refillable packaging for certain products, and paper bags can be returned to the couriers for recycling.

The manager said that avoiding food waste and loss is a fundamental principle at Kifli.hu, therefore, all the processes are set up to minimize waste. The suggested actions are avoiding overstock and damaged products, optimizing inventory, reducing prices or donating soon-to-be-expired products, and training employees sufficiently. An insightful thought from Nagy about this topic was, “Kifli prefers to sell food with a 50 % discount (low-profit margin) or even up to 70-80% discount with zero profit instead of wasting it.

Kifli's manager also highlighted some practical actions that retailers can take which do not require significant investments or other resources. For example, locally sourced products could be marked on the website to increase the consumption of these foods. Recipe recommendations could also be provided to prevent overbuying and food waste.

To conclude, his main advice on how to implement new or additional practices that could contribute to a sustainable food system is: defining a clear mission, having a dedicated, flexible, and educated team, starting slowly and gradually progressing towards these goals while „constantly being in touch with customers and enquiring about their needs.”

Figure 9 illustrates Kifli. hu's practices contributing to a sustainable food system.

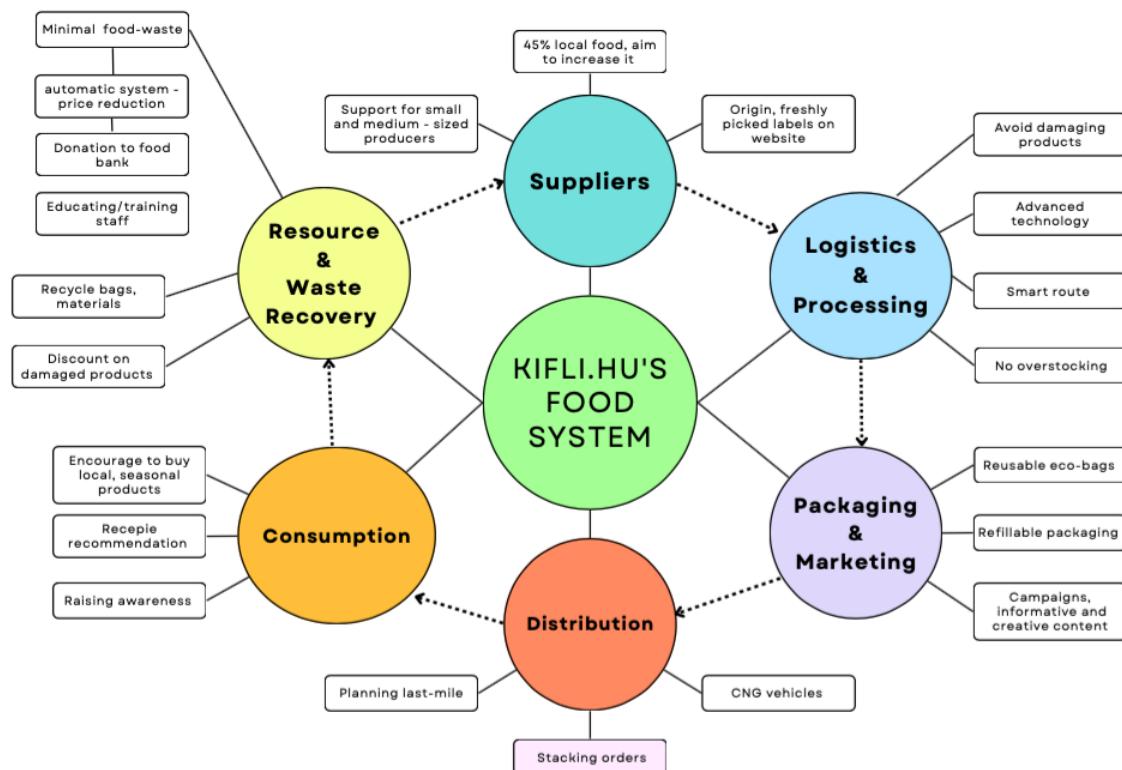


Figure 9 Kifli's food system

4.6. Additional practices that Flink can adapt

The answer to this sub-question is primarily based on the second interview conducted with Dávid Nagy and some extent of desk research.

Publications of the Farm to Fork strategy suggest creating shorter supply chains that allow consumers to access fresh, less processed, sustainably sourced food (European Commission,

Farm to Fork Strategy, 2020). For the retail industry, a shorter supply chain starts with engaging with like-minded suppliers. Therefore, Flink could establish a partner program similar to Kifli.hu's to recruit local producers, gradually increasing the number of locally-sourced products.

Flink works with two major suppliers that distribute the products to its warehouses. According to Dashore & Sohani, switching those vehicles to electric or CNG- powered trucks would minimize CO₂, noise, and air pollution (2013). Besides, Kifli's PR and marketing expert also recommends using dynamic routing to find the most optimal route, which can save energy and lower negative environmental impact.

Education can be a meaningful tool when implementing new practices, thus, training employees or external actors such as suppliers to develop the necessary skills. Kifli's manager also mentioned the importance of skilled labor when it comes to the operation of products. Thus, Flink could invest time and resources in education to minimize damaged products, which helps lower food waste and profit loss.

There are multiple practices that Flink could execute as a reference to packaging. The main philosophy that the e-grocery company should follow is 'reduce, reuse, recycle (Schlosser, Glasser, Carroll, & Campbeli, 2022). Flink uses paper bags to deliver the orders; however, there is no guarantee that the bags will be recycled. Hence, collecting bags after consumer use could ensure that the bags are recycled and that new materials could be produced. A second step could be designing reusable eco-bags and setting up a system that works for Flink and customers, for example, charging extra fees, providing them for free for premium members, or paying a one-time deposit, as it is the case at Kifli.hu. Another step to living by the above-stated philosophy is to avoid unnecessary packaging and implement a refillable packaging option to store dry products, milk, yogurt, etcetera.

Regarding promoting healthy diets and sustainable consumption, Flink could create engaging content on its social media platforms, host online events, participate in campaigns, and inform on the website about local products and how to process them.

The research of Garrone et al. offers several feasible actions regarding waste reduction (2016). The central IT department can develop an automatic and harmonized system to manage price reduction of flawed or soon-to-be-expired products. Implementing such a system is beneficial on multiple levels as it saves human resources, consumers can benefit from lower prices, and a 15 to 20% discount still generates profit. Another practice for the remaining food surplus is

allocating it to a food bank, as does Kifli.hu. In the Netherlands, 172 legally operating food banks also work with private entities. Furthermore, Flink already collaborates with a particular mobile application that aims to fight food waste; however, most consumers are unaware of the possibility; hence it should be promoted via its platforms more strongly.

In summary, new practices can be implemented by observing existing studies and considering the already applied and functioning actions of competitors or other actors in the grocery industry.

5. Analysis

This chapter aims to analyze the findings of the previous chapter and the formerly described sub-questions.

Regarding the research problem, the paper focused on finding feasible actions that Flink could implement to improve the sustainability of its food system. The research indicates that businesses like Flink will be highly influential in the future, which validates the relevancy of the researched issue. European Institutions have tried to define a sustainable food system; however, some ambiguity still makes it hard for enterprises to change their operation. The research implies that Flink's whole supply chain and other supporting activities, such as marketing, must be reviewed, and new practices must be developed. Based on the field research, Flink has several practices that fit well with Szűcs & Dudás's model, such as distribution; however, other areas need definite and urgent improvement. The most critical area was food waste; therefore, the interview with Kifli's manager aimed to find practical advice on how to solve the issue.

5.1. Analysis of sub-questions

The following section interprets the results and answers given to four sub-questions.

What does a sustainable food system mean?

The answer to this sub-question indicates how a sustainable food system would look for Flink and portrays its main goals and characteristics. The main goal is to promote safe, nutritious, and healthy food without harming the environment. The results show that Flink promotes healthy and nutritious food; however, due to transportation, storage, and energy use, it has a negative environmental effect; hence it does not yet comply with the definition of a sustainable food system. Furthermore, the answer to this sub-question also stresses the implementation

of a circular approach; however, from the results, it was evident that Flink operates along the traditional „take, make, consume, waste” approach and that its processes are not set up in a way that could prevent food waste and loss.

To illustrate the concept, Szűcs and Dudás's model was applied, demonstrating other indicators that facilitate the shift towards sustainable food systems. Such indicators were: skilled labor, digitalization & adaptability, cooperation & collaboration, and transparency. It was apparent from the results that Flink lacks skilled labor and a team dedicated to the subject; thus, the company should invest more in a trained team that acquires all the necessary skills. Regarding digitalization and adaptability, Flink is more advanced than traditional grocery stores; however, there is still room for innovations that could enhance customer experience and enable a near-zero-waste transition. The advanced technological developments would also allow better collaboration with stakeholders such as consumers, other actors in the industry, or non-profit organizations since the results show Flink does not engage strongly with stakeholders. Regarding transparency, Flink does not have an open, transparent sustainability plan where energy saving, emission lowering, or waste minimizing achievements could be followed. To increase transparency, joining the EU's Code of Conduct would result in more measurable and consequent goals. Overall, the result supported the hypothesis that Flink could accomplish several things to better the sustainability of its food system.

What are the European Union's current ambitions for sustainable food systems?

Since the EC did not pass a legislative framework yet to support the Farm to Fork Strategy, Flink does not face any mandatory requirements in building a more sustainable food system. This implies that motivation needs to be internally established, which could be supported by external reasons such as consumer demand and current trends. However, in the meantime, the EU has established different programmes, for example, the FOOD2030, that Flink could take advantage of and ask for help with the transition. Since the F2F strategy is a core ambition of the EU, and there is a tendency to support enterprises' green transition, financial support could perhaps be secured.

What are Flink's current practices to improve the sustainability of its food system & what additional practices can Flink implement to accelerate the transition toward a sustainable food system?

Analyzing the results of these two sub-questions reveals in which areas Flink needs improvement and what kind of practices it can adopt that fit the concept of food system

sustainability. To identify these gaps, figures 8 and 9 built on the two research interviews were compared to each other. The comparison leads to the conclusion that implementing some of Kifli.hu's practices, Flink could undoubtedly improve the sustainability of its food system. The interview with Kifli's PR Manager also indicated that these practices could benefit the company and that the investment could turn out positively, as this was seen as a barrier for Flink.

5.2. Implication of results

The result section fits well into the existing literature of Gillespie & Smith (2008) on the importance of local food. Nagy supported the theory by emphasizing that customers demand to eat locally sourced food as it is the healthiest, most transparent, and best quality food; hence, near-sourcing could also be profitable for Flink if it conveys the message accurately. However, the result contradicts Béné (2019) since none of the interviewees highlighted culture as a determining factor when establishing sustainable standards, nor did they mention that culture must be considered when switching to alternative practices, although this creates space for further research. Furthermore, the publications of Schebesta and others recommend high stakeholder intensity and a multi-dimensional approach. Field research proved that Flink works with only one segment of the stakeholders; however, involving others could lead to better results. In addition, it proved that Flink first and foremost considers the economic dimension when discussing decisions.

A new insight that this research provided is that what seems feasible in theory might be complicated in practice. Flink's associate described multiple factors that could hinder the ability of an easy transformation, such as the lack of space, location, adaptability of staff, etcetera. Another insight the reviewed scholars did not mention is the value of enough workforce to keep sustainable standards. Furthermore, the research has contributed to a practical interpretation of food system sustainability, the feasible actions that a stakeholder in the private sector could execute, and what resources are required to navigate the transition processes.

5.3. Evaluation of data

This section evaluates the quality of the research based on the concept of reliability, validity, and generalisability. The evaluation process is essential when the research findings are expected to be utilized.

Reliability

Reliability refers to how consistently the research method measures something, which means that if another person intends to repeat the same research by applying the same data collection methods, the result would be the same. If the results differ, personal and research method biases might have influenced the findings (Noble & Smith 2015).

Secondary research

The sources' quality has been assessed to ensure the secondary data's reliability. The gathered sources have been published by accredited institutions or peer-reviewed; therefore, it is the same to assume that the sources' content will not be modified in the future. Hence, if an individual aspires to execute the same research utilizing the described desk research process in the methodology, there is a high chance of receiving equivalent outcomes. Although, the credibility could be elevated if Flink provides internal data to the researcher or, with time, facts are published.

Primary research

One employee was interviewed to gain primary data about Flink's internal operation. The results could be biased since only one person's perspective is provided, and the quality of the answers, for instance, could depend on the interviewee's relationship with the company. Conducting interviews with other members of Flink could result in new insights and higher accuracy; however, due to the lack of agreement, that was not possible. Nevertheless, the second interview could hold less bias since the research was not focused on Kifli.hu. The results could not be influenced by wanting to meet expectations as the research did not aim to scrutinize and analyze this grocery delivery business.

The credibility of the data collection could be improved by conducting other semi-structured interviews with experts on food policy and strategies, which could translate the theoretical approach into a practical one that could be highly useful for improving Flink's sustainability. The request was sent to such policy experts; however, due to some reasons, the execution was not feasible.

Validity

Validity refers to how accurately a research method measures something and can be divided into internal and external validity. Internal validity explains how the findings correspond with reality, whereas external implies the extent to which the research findings can be applied to

other settings. Validity can be assessed by observing how results comply with existing theories and other measures of the same idea (Dudovskiy, 2022).

Generalisability

Generalisability indicates the transferability of the findings to other contexts, settings, or groups. Since a clear description of the methodological choices has been provided, there is an opportunity to continue the research, perhaps from a different perspective (Noble & Smith 2015). A different perspective could be analyzing another company in the same field or extending it to traditional grocery retailers or other actors like restaurants or food producers. Further research could be executed once the F2F Strategy's legislative framework got implemented, whether that impacts the industry differently.

6. Conclusion

The current aim of the research was to provide a guideline of feasible actions that the Germany-based grocery delivery company Flink can undertake to develop a sustainable food system.

The central question for this research was: How can Flink improve the sustainability of its food system?

Based on qualitative research on the concept of a sustainable food system and current ambitions, the analysis of Flink's existing practices, and the exploration of new methods, it can be concluded that processes along the whole supply chain from sourcing to waste must be revised and set up in a way that meets the criteria of a sustainable food system. The result indicates that Flink needs to work with local suppliers, utilize advanced technology, develop alternative packaging, and establish measures to minimize food-waste to achieve immediate improvement.

The assumption prior to the research was that Flink does not have a solid commitment to sustainability compared to some other actors in this fast-growing industry. The results of the field research have met the expectations since Flink primarily focuses on profitability; thus, each development must be validated from an economic perspective. Field research also highlighted waste as the most urgent area to be improved due to the lack of preventative measures. The interview with Dávid Nagy was instrumental since it proved that with the right tools, commitment to sustainable principles, and investment in trained employees, accomplishing near zero food waste is feasible for an online grocery enterprise valuing speedy service.

Some of the raised questions about the means and resources needed for creating sustainable standards got answered by the sources of Kifli.hu. However, some questions remained on the exact technology vital to the enhancement or the actual effect on the business model and revenues. Moreover, further research could be conducted on the impact of altering food systems on the social environment and the role of culture since the literature suggests that these two dimensions also need to be studied.

Overall, the research has contributed to the interpretation of possibilities that food retailers can execute to accelerate the transition toward a future-proofing, sustainable food system.

7. Recommendation

The current study can be interpreted as the first step toward offering feasible recommendations to an actor in the digital grocery industry; however, the results of this study should be treated with caution due to the lack of direct data provided by the top management of Flink.

Further research could be conducted in 2024, when the legislative framework of the European Union's Farm to Fork Strategy has already been adopted, to examine whether the outcomes would be different in the case of a more robust external force. Moreover, additional research could provide a social and cultural background to the study and a satisfactory explanation of how sustainable pillars could result in financial gains.

Regarding the methodological choices, considering another type of research method, such as focus group interviews, could provide a consumer's perspective on the topic, which could justify or modify the company's decisions. Furthermore, to elevate the reliability of the research, semi-structured interviewees with experts could be conducted to gain in-depth insight into the theoretical framework and the feasibility of the proposed recommendations.

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9.Appendices

Appendix A – Illustrations complementing recommendations

The images below illustrate some of the actions that Flink can introduce to improve the sustainability of its food system.

Image 1: Adding flags to mark the products' origin

To facilitate the Farm-to-Fork concept and encourage customers to consume more locally sourced food, products listed on the website/app are accompanied by a flag marking their origins. Besides, the bar on the right shows more inspiration on why and how to consume these near-sourced, seasonal products.

The screenshot shows the Flink website interface. On the left, there's a sidebar with the Flink logo, address (OPEN 8:00 - 23:59, Koningin Julianaplein 10, 2595 AA Den Haag), and a '20 min.' delivery time indicator. Below this are links for Home, Categories (Groente & Aardappelen, Verspakketten, Tomaat, Komkommer & Avocado, Paprika, Courgette & Aubergine, Snackgroenten, Seizoen), and a search bar at the top right. The main content area displays two sections: 'Tomaat' and 'Komkommer & Avocado'. Each section shows various product options with prices, descriptions, and small flags indicating origin. To the right, a pink sidebar titled 'More on sustainability' contains three sections: 'Learn about products' origin', 'Introducing our farmers', and 'Seasonal and healthy cooking recipes'.

Category	Product Type	Description	Price
Tomaat	Trostomaten	500g	€3,29 €0,66 / 150g
	Snack Tomaten	Rood 500g	€2,99 €5,98 / 1kg
	Cherry Tomaten	250g	€1,09 €4,36 / 1kg
	Snack Tomaten Mix	500g	€3,49 €6,98 / 1kg
Komkommer & Avocado	Snack Komkommers	300g	€3,19 €10,63 / 1kg
	Biologische Komkommer	1st	€1,59 €1,59 / 1st
	Komkommer	1st	€1,15 €1,15 / 1st
	Avocado Eetrijp	1st	€1,39 €1,39 / 1st

Image credit: Flink's website

Image 2: Implementing a “save the food” bar on the website/app.

The development of this tool helps to avoid food waste, which is beneficial for the company and customers alike due to the price reduction of the soon-to-be expired or damaged packaging products. The discount percentage aligns with the expiration date, which means there is a higher discount offered on the products expiring in the next 24-48 hours.

The screenshot shows a promotional section on Flink's website. On the left, a sidebar lists categories like Home, Fruit, Groente & Aardappelen, Maaltijden & Gemak, Brood & Banket, Ontbijt & Bakken, Lunch & Tussendoor, Beleg, Zuivel & Eieren, Sappen, Kaas, Borrel, and Vlees. A pink button at the bottom left says "Save the food/ Samen tegen verspilling". The main area displays four promotional boxes:

- 20%**: Best before 16/1. Shows a carton of Rioba Volla melk UHT 1L and a bottle of Zuivelmeester Halfvolle Melk 2L.
- 15%**: Damaged Packaging. Shows two boxes of Tony's Chocolonely Wit 180g and Melk 180g.
- 15%**: Zuiveldranken. Shows three containers of Chocomel: 0% 0,3L, Blik 25cl, and Donker 1L.
- 35%**: Best before 18/1. Shows three loaves of bread: De Stadsbakkerij Witte Bollen 6st 360g, De Stadsbakkerij Boerenwit Tijger H..., and Dunkin' Donuts Nutella Swirl.

Image credit: Flink's website

Image 3: Illustration of a possible in-house designed reusable bag.

The idea offers an alternative, more durable, and environmentally-sound packaging to replace paper bags. On the right, the text aims to educate customers about the benefits and explain how the reusable bag system works.

Packaging - Reusable bag



Image credit: ToteBagFactory

Why choose the reusable bag?

- Made from recycled materials
- You can use it 15 times more than paper bags
- It can hold up to 11kgs

How does it work?

- Only pay the one-time deposit, and after use, return it to the riders
- We wash the bags, and check the quality before reusing it

Image 4: Illustration of refillable products

The image shows another alternative way for packaging, which is the option to order the desired items in a refillable jar/glass/container. The implementation of this practice aims to reduce the used materials and accelerate zero-waste packaging.

Refillable Products

Our recommendations

Image credit: Kifli.hu