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Master's thesis

The effects of the EU's legislative framework on circular economy implementation in firms operating in different EU markets: The case of Germany and the Netherlands.

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ABSTRACT:

The consumerism has skyrocketed globally during the past century leading to the disastrous depletion of natural resources. The latter raised the understanding of and the need to shift toward a more sustainable and long-term oriented economy. As a response to these needs, the European Union implemented the new Circular Economy Action Plan in 2020, which includes many different legislative actions meant to enable a circular economic (CE) system, including more responsible production and consumption.

The aim of this thesis is to investigate how the EU legislative framework for circular economy is influencing firms and their intentions to adopt CE in different EU markets. The legislative measures address various industries. Because the food industry is considered among the most wasteful industries, the thesis analyzes the EU regulatory influences on companies operating in the food industry. The study is framed within the assumptions of the institutional theory and explores the EU regulatory influences on the implementation of CE through the institutional pressure concept.

The research adopts a qualitative research approach with a case study strategy. The data is collected through semi-structured interviews and supported by secondary data about six different companies operating in Germany and the Netherlands.

The results of this study suggest that the EU legislative framework on CE implementation influences firms in the food industry but with varying extent. The mandatory EU regulations are more influential than recommendations and are seen as important even without their direct adoption in the national regulatory framework. However, the study discovers that the influence of informal institutions, such as the food industry, consumer demands, and NGOs, are of equal if not higher importance in the eyes of the companies when considering company intentions to shift towards circularity. The latter finding suggests that national and supra-national regulatory institutions can have a direct influence on the companies, however, when assessing the impact of institutional isomorphism, the interactions of formal and informal institutions should be assessed simultaneously.

KEYWORDS: Circular economy, Food industry, European Union, Legislation, Sustainability, Institutional theory, Germany, Netherlands

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Abbreviations

3R	Reduce, reuse, recycling principle
CE	Circular Economy
CEIP	Circular Economy Implementation Programme
e.g.	For example
EC	European Commission
EGD	European Green Deal
EMA	Ellen McArthur Foundation
EU	European Union
GPI	GreenPro International B.V.
KrWG	Kreislaufwirtschaftsgesetz
SDGs	Sustainable Development Goals by the United Nations
UN	United Nations

1 Introduction

1.1 Problem identification

While natural resources are decreasing, the consumerism has been increasing worldwide during the past century. Thus, the need to transition towards a more long-term oriented and sustainable economy has become a pressing matter. The European Union has more than 2.5 billion tons of waste yearly (*Circular Economy: Definition, Importance and Benefits*, 2021). Out of those 2.5 billion tons, the EU generates 59 million tons of food waste annually, estimated at 132 billion euros (Eurostat, 2022). According to Eurostat (2020), around 10% of the food available to EU consumers is being wasted. These data, aligned with the fact that the waste in the European Union has increased by 5% (114 million tons) from 2010 to 2018, explain the urgent need for an economic change (*Waste Generation and Decoupling in Europe*, 2021).

By 2050, the European Union wants to be climate neutral and stop the loss of biodiversity (*Circular Economy Action Plan*, n.d.). A possible solution, to decrease the produced waste and the usage of natural resources, could be to introduce a circular economic system. In 2020, the EU introduced its new Circular Economy Action Plan in order to change its economic system and achieve its goals (*Circular Economy Action Plan*, n.d.). However, the European Union is a network of countries that have independent governmental structures. Due to that, implementing a new economic model is influenced by the cultural and economic differences between the countries, as well as different amounts and types of resources available in the countries. Nevertheless, the European Union aims to achieve a full circular economic system among all of its member countries, despite their differences (*Circular Economy Action Plan*, n.d.). Additionally, businesses within the European Union will face various opportunities and challenges caused by the implementation of the circular economy model by the EU and national legislation.

Moreover, the study addresses the current research gap concerning institutional theory. Thus far, the institutional theory has been based on institutions and their organizations within a certain market (DiMaggio & Powell, 1983). The theory concludes that institutional forces improve organizational structure homogeneity in an institutional environment as a whole (Suddaby, 2010). As a result of three different influences, businesses will adopt comparable structures (DiMaggio & Powell, 1983). However, the interactions of institutional influences, also known as institutional braiding (Dieleman et al., 2022) have been less explored. Hence, the overall influence that the EU has concerning legislative implementations, in particular the circular economy legislative framework in relation to other institutional influences, that are currently less explored.

1.2 Research question and objectives

Due to the increasing pressures of climate change, this research is motivated to explore the areas of EU legislation, circular economy implementation, and its effect on businesses (Raworth, 2017). Further, the study is motivated to discover the role and influence of the institutional theory in the mentioned scope.

Based on the motivation, the study will analyze how the legislative framework regarding the circular economy implementation by the European Union is affecting business in different European markets. Additionally, the study will focus on the effects on the firms' operations and strategies. The research is led by the preliminary research question:

> *How does the EU's legislative framework on circular economy implementation influence firms operating under varying institutional pressures in different EU markets?*

Moreover, four study objectives were established to specify the precise actions the research would follow to fully address the research topic. The research objectives are the following:

1. *To understand the legislative system of the European Union and their legislative approach to circular economy implementation.*
2. *To understand the approach to the circular economy implementation of selected European countries.*
3. *To empirically explore the effects of the European circular economy legislative framework on business strategies.*
4. *To empirically explore the simultaneous influences of other institutions on the firms in relation to the EU legislative framework aiming to implement circular economy.*

1.3 Delimitations of the study

This chapter defines the delimitations of the study. It will outline the scope and define its boundaries. Firstly, the study chooses to focus on the European Union. Even though many other countries have started implementing CE legislation, this study will solely focus on the European Union. Considering that the EU started its implementation process in 2015, nations and firms have had enough time to adapt to the EU legislation (McDowall et al., 2017). Therefore, the EU gives the ideal scope to analyze the current influences of multiple institutions. Only within the regulatory domain, firms are affected simultaneously by national (country) and supra-national (the EU) regulatory frameworks, informal institutions (e.g., consumer and industry trends, NGOs) also influence firms at both levels.

As this study aims to explore the effects of the EU legislative framework on circular economy implementation, only the EU and several selected countries within its regulatory frameworks will be considered. Although the EU has a vast number of industries, this study will only focus on the influences on the food industry, as food waste has been proven a significant waste contributor (Eurostat, 2022). According to EU statistics, 931 million tons of food waste were generated in 2019 in the EU, out of which almost half of it was related to the supply chain and distribution of the food industry (Eurostat, 2022).

Further, the data collection of the study will be limited to companies from the Netherlands and Germany as it approaches a qualitative research method. Due to their leading position in the food industry and their high ambitions for circular economy implementation, the study concentrates on those two nations (German Trade and Invest, 2023; Hope, 2022). Moreover, the study focuses on the macro (institutions) and meso (firm) level, without exploring individual level behavior or actions in the firms. Lastly, the study is solely focusing on the present-day effects of the EU legislative framework concerning the circular economy implementation. Due to the academic scope of the study, the long-term effects will not be covered in this research.

1.4 Structure of the study

The study begins with an introduction to the topic, as the context, motivation, and research gaps are explained. Further, the study's research questions and objectives are outlined. After that, the definitions and theoretical background are reviewed in order to create a basis for the research that follows. In chapter 2, the theorization about the circular economy, the food industry, the European Union and national legislation on circular economy is presented, and the institutional theory is discussed as a frame summarizing the connections of all the concepts involved. Also, the theoretical chapter introduces the butterfly model, the ReSOLVE model, and current food industry trends.

Followed by that the methodical choices of this research are explained in chapter 3. It includes the research philosophy, approach, and design. Moreover, chapter 3.4 lays out the research strategy, the data collection method, and the case selection. Qualitative data was collected in the form of semi-structured interviews from six different cases, which operated in the Netherlands and Germany. After that, the research's findings are presented in chapter 4. The chapter explains all the evidence that was found concerning the influence of formal and informal institutions on firms' circular economy implementation. Also, the evidence related to the institutional theory applicability is presented.

Lastly, the discussion in chapter 5 places the empirical results into the context of the previously presented theory. It describes the key findings and how the theory can be connected, extended, or questioned based on the research's findings. In addition to that, the contributions towards the theoretical gaps and managerial decisions are given in chapters 5.4. and 5.5. The last chapters 5.6. and 5.7. cover the limitations, suggestions, and the study's final conclusion.

2 Theoretical Background

The following chapter lays out the theoretical framework and models that build the foundation for the upcoming research. Firstly, the model and origins of the circular economy model will be explained, as well as the development of the food industry. After that, the institutional theory and its current framework are discussed. Lastly, the European Union, its legislative process, and its approach to circular economy implementation are addressed.

2.1 Circular Economy

2.1.1 The linear economic background

The economic model most used and known until the 20th century is called the linear economic model (Sariatli, 2017). Since the industrial revolution, the world economy has been characterized by a linear production and consumption model in which products are made from raw materials, sold, utilized, and then disposed as trash via landfilling or incineration (Wautelet, 2018). The model is based on the assumptions that resources are infinite and limitless regenerative capacity of the waste (Wautelet, 2018). The industrial revolution enhanced economic productivity and delivered unparalleled affluence to our civilization through breakthrough technical developments (Wautelet, 2018). To expand, such an economic structure, the economic system has created

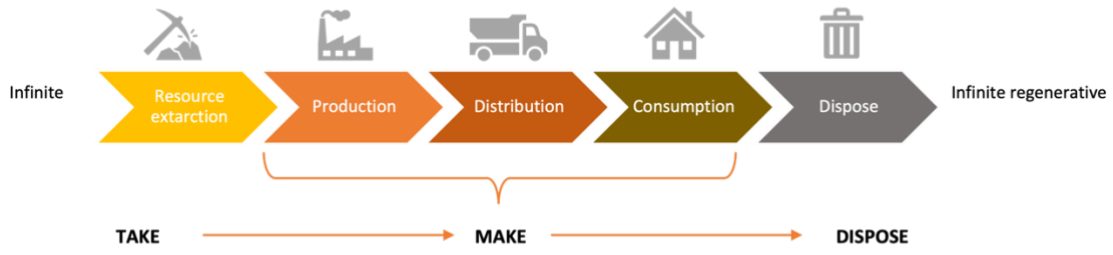


Figure 1. Linear economic model (based on Wautelet, 2018, p. 18).

incentives to boost sales and replicate economies of scale, resulting in an ever-increasing usage of products and services (Wautelet, 2018).

The linear economic model is based on the take–make–dispose scheme (Sariatli, 2017), which can be seen in figure 1 (Wautelet, 2018). A business takes the resources they require and produces items for sale and profit (Sariatli, 2017). Thenceforth, the product is distributed and used by the consumer (Wautelet, 2018). The last step is the disposal of everything that is not in use anymore, including a product coming towards the end of its product life cycle (Sariatli, 2017).

Waste is one of the main problems that the linear economy is causing. According to Sariatli (2017), in 2010, 65 billion tons of material were put into the European economy, of which 2.7 billion tons were immediately disposed of and only 40 percent were reused. Nevertheless, not only the waste of materials is increasing (Wautelet, 2018). The use and waste of energy, as well as the pollution caused by the whole product lifecycle, is a harmful side effect of the linear economy (Wautelet, 2018). Additionally, many products and habits within the linear economy are based on non-renewable natural materials (Steffen & Stafford Smith, 2013). Non-renewable natural resources, such as fossil fuels and minerals, are limited since their regeneration require millions of years (Steffen & Stafford Smith, 2013).

Climate change, the loss of biodiversity, and social injustice are additional problems caused by the consequences of a linear economy model (Raworth, 2017). Due to the continuous increase in consumption and the aim for “more”, our society, ecosystem, and climate have changed (Raworth, 2017). Examples are the destruction of natural habitats due to the need for the continuously growing population, livestock, and waste, increasing pollution on various levels, increased resource usage, and (social) exploitation (Steffen & Stafford Smith, 2013). All of these mentioned factors result in biodiversity loss, increasing global temperatures and (natural) disasters, and social inequality (Raworth, 2017). In their Living Planet Report, WWF (2022) has released multiple index studies that

lay out the negative developments over the past 50 years. The Freshwater Living Planet Index or the Rest List Index are examples of many indicators that are created by the study (WWF, 2022). The report states that only a profound, systematic change can prevent continuous negative development on a global level, which also refers to the economic system and its linear economic model (WWF, 2022).

2.1.2 The Circular Economy model

Long-term and sustainable-oriented economic models have become more prevalent in the past years as the urge and awareness for change increased (Sillanpää & Ncibi, 2019). Alongside the circular economy model, various authors built other theories to explain and solve the problem, such as the Bioeconomy, the Green Economy, Industrial Ecology, Industrial Symbiosis, Cradle-to-Cradle (C2C), and natural capitalism (Sillanpää & Ncibi, 2019). However, the circular economy model has evolved as one of the most promising alternatives to the linear economic model, as it is a comprehensive strategy for economic growth that benefits organizations, society, and the environment (Aparicio, 2019).

Circular economy, in essence, strives to ensure that products, materials, and components are reused and recycled within a cycle while producing as little to no waste in the end (*Kreislaufwirtschaft*, n.d.). This concept is in strong relation to the 3Rs model, which refers to the reduce, reuse, and recycle model (Neves & Marques, 2022). Firstly, consumption and production should be reduced to the furthest extent, after that, the materials should be reused as much as possible, and lastly, they should be recycled (Raworth, 2017). Over time, the principle of the 3Rs has expanded to 6Rs (reuse, reduce, recycle, redesign, refurbish, and repurpose) and 10 Rs (refuse, rethink, reduce, reuse, repair, refurbish, remanufacture, repurpose, recycle, and recovery), however, the main principles and goals remain the same (Neves & Marques, 2022). According to Neves and Marques (2022), reducing is the key to transitioning to a circular economy. Changing our consumer behavior by reducing consumption will further reduce raw material usage, decrease the impact on the ecosystem and generate less waste.

The glass bottle deposit return program is one of many possible illustrations of how the circular economy model is currently implemented in some countries (Agnusdei et al., 2022). The following explains the process of such a deposit system in detail. A customer purchases a bottle from the store, utilizes its contents, and returns it to the retailer afterward. Then, it is separated into recyclable and reusable items at the store (Agnusdei et al., 2022). The recyclable ones are utilized to create new bottles, while the reusable ones are simply refilled. Since the product may be reused several times and can be used to recreate the product itself after it is broken, very little waste is produced during the whole process (Agnusdei et al., 2022). As a result, the ecosystem is less harmed than previously due to reduced waste and cautious use of natural resources (Agnusdei et al., 2022).

The circular economy system diagram, also called the butterfly diagram, demonstrates the constant movement of materials in a circular economy (Ellen MacArthur Foundation, 2019a). The butterfly diagram (figure 2) has two main cycles – the biological cycle and the technical cycle, which display the flow of resources (Ellen MacArthur Foundation, 2019a). The biological cycle, which applies to substances that can biodegrade and be safely returned to the earth, is shown on the left side of the butterfly diagram (Ellen MacArthur Foundation, 2019a). This cycle primarily concerns consumable products, like food and natural materials. The biological cycle outlines the mechanisms that return nutrients to the soil and assist in nature's regeneration (Velenturf et al., 2019). The technical cycle on the right side of the diagram comprises finite materials, which ideally are shared, maintained, reused, remanufactured, and recycled in a closed-loop system (Velenturf et al., 2019). The model demonstrates how the more giant outer loops encircle the smaller inner loops. Thus, inner loops that involve sharing, sustaining, and reusing should be given priority over outer loops that involve breaking down and re-creating the product (Ellen MacArthur Foundation, 2019b). Recycling is ultimately the final stage in this cycle, as it involves stripping a product of its original value and returning it to its raw components (Ellen MacArthur Foundation, 2019b). Additionally, it is significant to mention that organizations in the diagram design numerous loops by using

recyclable materials to create a product that can be repaired (Ellen MacArthur Foundation, 2019b).

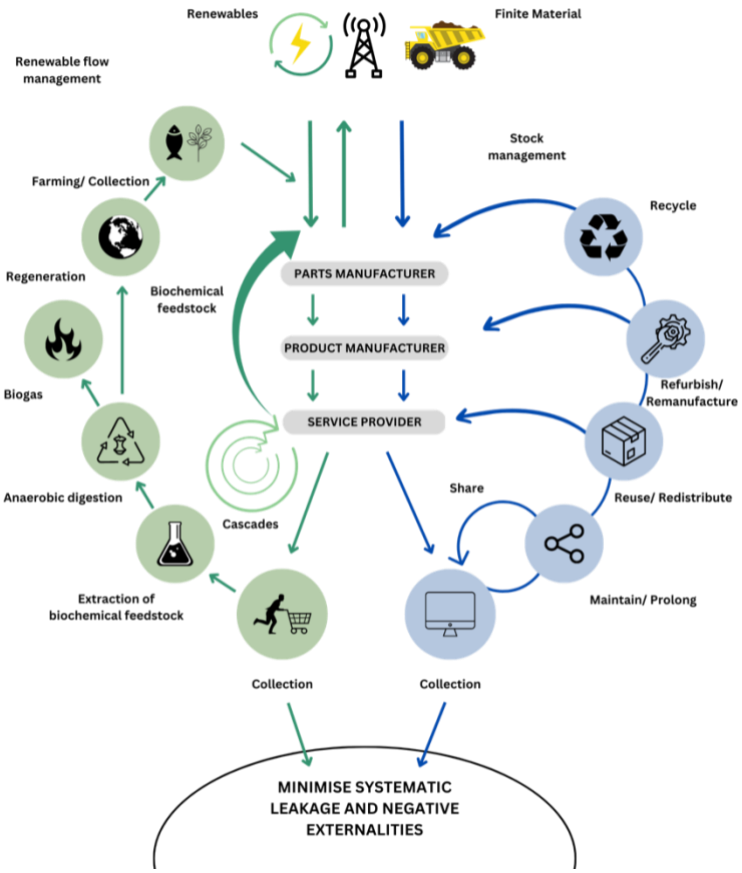


Figure 2. The butterfly diagram (based on Ellen MacArthur Foundation, 2019a).

Additionally, the circular economy model is considered to be the most promising model, as it addresses many of the Sustainable Development Goals (SDGs) defined by the United Nations (Neves & Marques, 2022). Moreover, the circular economy's benefits are not limited to the economy, as they also positively influence society and the environment (Neves & Marques, 2022).

Despite the advantages and potential for a positive development of our ecosystem and society, the concept has some barriers. The barriers can be divided into four different sections: technological barriers, market barriers, institutional barriers, and social

barriers (Grafström & Aasma, 2021). Despite the differences between the different sections, all sections and their barriers are interrelated (Grafström & Aasma, 2021).

Concerning technology, Grafström and Aasma's (2021) main barrier is the lack of sufficient innovation. The infrastructure for efficient waste management is needed, as the current sorting and recycling of goods lack quality, and product design is not matching the circular principles of the 3Rs (Grafström & Aasma, 2021). The barriers within the market are, on the one hand, related to prices and finances, as virgin materials are currently low-priced, and many companies face funding problems towards a circular economy business model (Grafström & Aasma, 2021). On the other hand, the unpredictable number of recycled materials available and the general change in the market within society will create another barrier, as they depend on previous consumption patterns (Grafström & Aasma, 2021).

Furthermore, institutional barriers are primarily caused by inconsistent policy messages, inadequate institutional infrastructure, and reliance on a linear economy, in addition to high costs for research, development, and administrative processes (Grafström & Aasma, 2021). Lastly, a lack of consumer knowledge, an uncooperative organizational culture, and poor supply-chain coordination cause barriers on a social level (Grafström & Aasma, 2021). Nevertheless, one must be aware that the mentioned barriers can also be applied to other alternative economic models and their implementation. Despite the referred difficulties, the circular economy concept will be used as a theoretical basis for this study, as it is linked to further concepts used in this study and presents high connectivity to the empirical research.

Presently, most of the food industry follows the linear economy model, as previously explained. The supply chain follows the same take–make–dispose scheme, as crops are harvested, processed, packaged, distributed, consumed, and lastly, disposed (Sariatli, 2017). According to Jurgilevich et al. (2016), the food industry is one of the most important sectors during the transition toward a circular economy, due to the growing

population, the increased demand for food, the inefficient usage of resources and distribution, and the high rates of food waste (Jurgilevich et al., 2016). Hence, the food industry and its circularity potential will be analyzed in the following chapter.

2.2 The food industry

With the food industry being a fundamental driver of natural cycle disruption, biodiversity loss, and climate change, the missing sustainability of our food systems is a worldwide concern (Hoehnel et al., 2022). Overall, it is important to mention that the food industry is driven by the consumer's demand, which results in dependency on various sociocultural and economic factors (Asioli et al., 2017; Hoehnel et al., 2022). However, there are some major consumer trends that have had an influence on the food industry in the past years (Hoehnel et al., 2022). Most of those industry trends focus on sustainability and healthy living while taking environmental and ethical problems into consideration (Statista Research Department, 2021).

According to Layman (2014), one consumer trend is the desire for more fresh food and less processing. Whole foods supermarkets, local markets, and local farmers increased in popularity as consumers aimed for a healthier lifestyle related to regional, fresh, and unprocessed products (Layman, 2014). This trend has also been observed by Asioli et al. (2017), as an increase in clean labeled products has been observed. Products with a "clean label" are considered less processed and more natural (Asioli et al., 2017). Another consumer trend is decreased meat consumption and increased alternative protein sources (Hoehnel et al., 2022). Moreover, plant-based diets have become more popular due to the large environmental impact of animal diets and the increased availability of meat alternatives (Hoehnel et al., 2022). The current trends have led to questioning the ways firms in the food industry conduct their operations and search for alternative, more sustainable solutions in the industry. One of the approaches advocated to address sustainability demands was the circular economy.

2.2.1 Circular economy in the food industry

Global studies show that, in 2019, the annual food waste per capita equaled 121 kg (UNEP, 2021) and that in 2020 the proportion of food lost between harvest and retail worldwide was around 13.3 percent (UNSD & UN, 2022). Figure 3 shows that the EU wasted around 127 kilograms (kg) of food per capita in 2020 (Eurostat, 2022). Households accounted for 55% of food waste, at 70 kilograms per person, and the remaining 45% came from trash created higher up in the food supply chain (Eurostat, 2022).

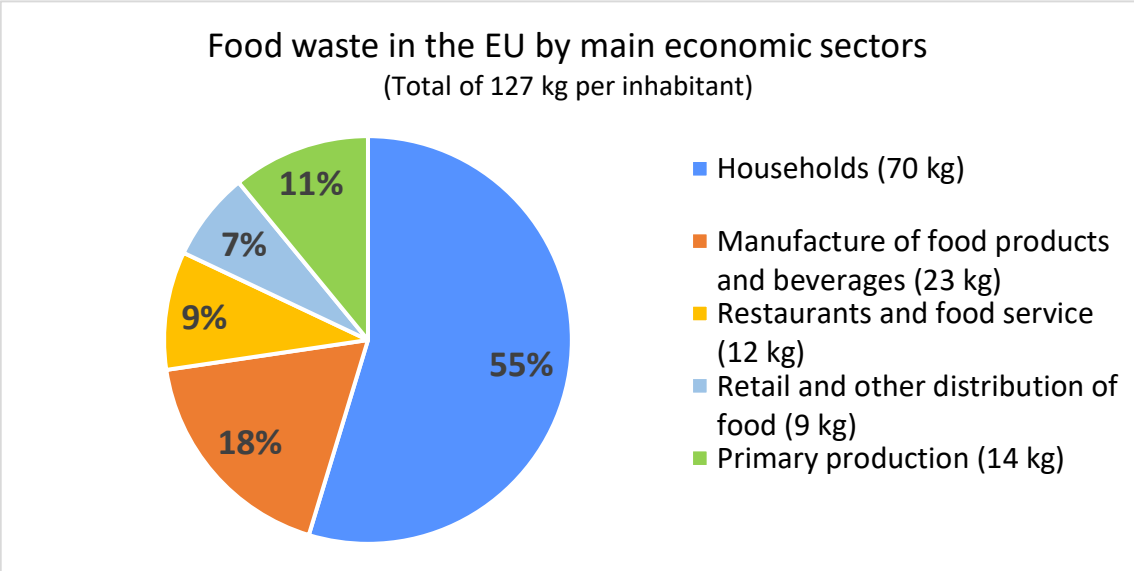


Figure 3. Food waste in the European Union by main economic sectors in 2020 (based on data from Eurostat, 2022).

Hence, the food industry's transition from a linear to a circular economic model is needed. Gonçalves and Maximo (2022) present one possible solution: modifying the ReSOLVE framework by the Ellen Macarthur Foundation based on the food production chain. The ReSOLVE framework by the Ellen Macarthur Foundation includes "rules" for achieving complete or partial circularity in the creation of products, comprising the implementation of up to six acts or modifications (Gonçalves & Maximo, 2022). ReSOLVE is an anagram made up of the words and concepts of regenerate, share, optimism, loop,

virtualize, and exchange (Gonçalves & Maximo, 2022). In the following, each of the concepts will be explained, as well as its connection to the food supply chain.

The concept of **regeneration** follows the goal of restoring the ecosystem and shifting towards renewable energy and materials. This can be achieved by following plant-based diets, which would decrease the impacts on land, water use, soil spoilage, and greenhouse emission, but also by using technologies for carbon capture and sequestration (Gonçalves & Maximo, 2022). In a circular economy, the concept of **sharing** is mainly associated with the shared use of transport, housing, or other goods. Focusing on the food supply chain, sharing can be achieved by local small-scale productions and food-sharing platforms (Gonçalves & Maximo, 2022). Communities could cut transportation and give away or sell potential surpluses that arise (Gonçalves & Maximo, 2022). To **optimize** the food production chain, Gonçalves and Maximo (2022) point out structural modifications to increase performance and efficiency, such as lowering capital and operational costs and decreasing energy needs while supporting the same or greater production values. In addition, machine learning algorithms and the Internet of Things can be used to close the gap between planned and actual production, manage the food chain, and improve food safety (Gonçalves & Maximo, 2022).

The concept of the **loop** is the easiest to understand after learning about the circular economy and refers to creating a loop from the outputs of food production. This can be done by creating new products with food residues, for example, renewable energy, high-valued bio-products from food waste, or using cooking oil for manufacturing non-food products like soap or biofuels (Gonçalves & Maximo, 2022). **Visualizing** is mainly the act of dematerialization by the usage of virtual platforms to reduce costs and lower the environmental impact of physical facilities and tasks. It can be implemented by using mobile apps in food e-commerce and artificial intelligence during the whole supply chain (Gonçalves & Maximo, 2022). For example, big data, sensors, and Geographic Information Systems technologies can help to reduce food waste, losses, and security, for example, by using images, thermal or moisture detectors, and geolocators (Gonçalves

& Maximo, 2022). **Exchange** is the last concept of the ReSOLVE model. The general idea of exchange is that renewable, innovative, and more efficient technologies and services replace non-renewable materials, technology, and services. In the food supply chain, this can include the replacement of non-renewable resources and energy with renewable ones, the conversion of organic waste into bioenergy, and the development of digesters tanks (Gonçalves & Maximo, 2022). Overall, one can see that the ReSOLVE model gives a guideline on how to transition the food supply chain from a linear to a circular model. The key drivers of the structural change will be the creation of new products with food residues and the digitalization of the industry.

As the food sector is complex, Jurgilevich et al. (2016) have developed another model of the circular economy within the food system, focusing mainly on the nutrient cycle, which can be seen in figure 4. The model has been divided into three different parts: food production, food consumption, and food surplus and waste management (Jurgilevich et al., 2016). Jurgilevich et al.'s (2016) model follows the idea that food production should be as nutritious as possible, achieved by some overlapping concepts such as the ReSOLVE model. From their point of view, "circular economy solutions

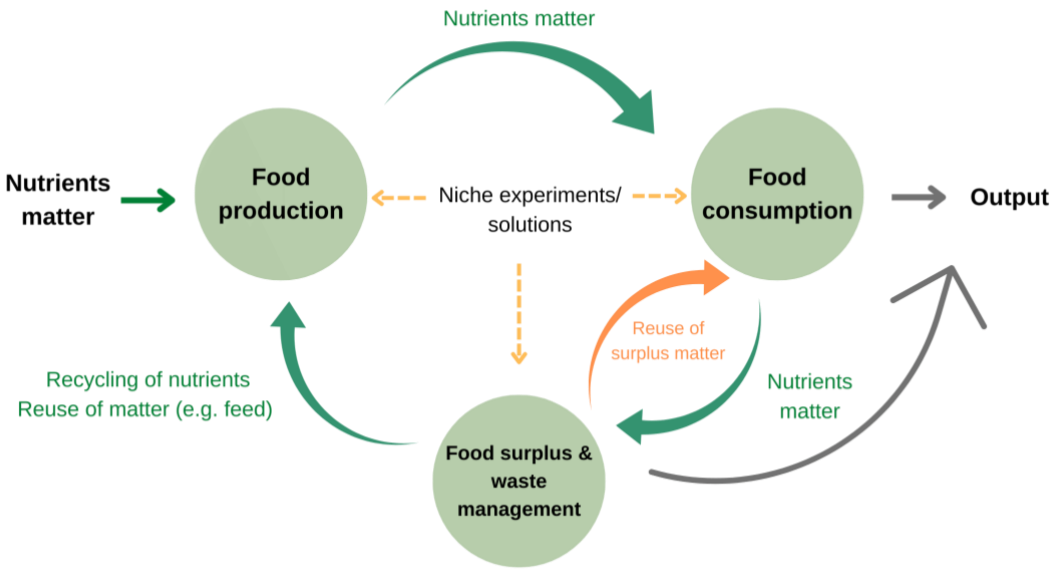


Figure 4. The three stages of the food system in a circular economy (based on Jurgilevich et al., 2016, p.3).

include, in addition to innovative technologies and food waste reduction, supporting local food supply chains with less waste, closing nutrient loops, pricing the real cost of resource consumption and losses in natural capital, and developing policy mechanisms to promote recovery and reduce loss of non-renewable raw materials" (Jurgilevich et al., 2016, pp.11-12).

Although both models present different approaches on how to implement circular economy, they both display the complexity of such implementation. Factors that affect the economy and society far beyond waste management need to be taken into consideration. As the models of circular economy are considered to be complex, the following chapter will elaborate on the implementation of CE among institutions.

2.3 The role of institutions when transitioning to the CE

In order to achieve economic changes and circular economy implementation, the role and influences of institutions are important (North, 2005). Due to the fact that institutions have influence through numerous social, economic, and environmental factors, it is important to understand their role (North, 2005). The most known theory that explains institutional influences on organizations is known as the institutional theory (DiMaggio & Powell, 1983; Suddaby, 2010). In the following sections, the institutional theory will be explained, its general impact on organizations will be reviewed and its implications for the adoption of the circular economy will be discussed.

2.3.1 The institutional theory as a framework to study the effects of institutions on the CE implementation

According to the institutional theory, an institutional environment has a great impact on the structures of organizations within the market (DiMaggio & Powell, 1983). The institutions make influence through "Institutional Isomorphism," which is based on three different mechanisms: coercive isomorphism, mimetic processes, and normative pressure (DiMaggio & Powell, 1983). Coercive isomorphism is the pressure that arises

from other organizations, which they are dependent on, as well as societal cultural expectations (Greenwood et al., 2017). Coercive pressure can also be created through laws and regulations (Greenwood et al., 2017). For example, companies that operate in the food industry could be pressured by the national government, but also through consumer demands and expectations.

The mimetic pressures are accepted due to uncertainty, as uncertainty encourages the imitation of other structures that are potentially more stable and accepted by society (DiMaggio & Powell, 1983). Due to this incertitude, organizations approach uncertainty by mimicking each other, as eventually, they all follow similar norms and beliefs of the institutional scope (DiMaggio & Powell, 1983). In relation to the study scope, it is to investigate if firms could be more likely to copy each other's path of CE implementation, due to their uncertainty. Lastly, normative pressures occur through professions, as they are related to the standardized educational system and, by that, brought into organizations (Greenwood et al., 2017). This research will explore whether the European Union has specific educational standards and policies, educational standardization that could have an effect on organizations within the EU (European Commission, n.d.-d.).

These three mechanisms' commonalities enable organizations to connect with one another more easily and to develop credibility across organizations (Greenwood et al., 2017). Moreover, DiMaggio and Powell (1983) have created eleven predictors for isomorphic change. Those predictors are divided into organizational level and field level predictors (DiMaggio & Powell, 1983). Organizational level predictors examine the degree and rate of change firms make in order to resemble other businesses in a particular field, for example, the more dependent an organization is on another, the more alike they will become (DiMaggio & Powell, 1983). Whereas field level predictors explain the anticipated impacts of various organizational field features on the degree of isomorphism in a specific field, for example, the degree of isomorphism increases in relation to the field's degree of structuration (DiMaggio & Powell, 1983).

Even though DiMaggio and Powell have shaped the theory of institutional theory, there are aspects that remain unexplored. According to Suddaby (2010), institutional research must change and expand its perspective. In order to improve the quality of research, institutional researchers should base their conclusions on including internal perspectives on the organization's understanding and approach (Suddaby, 2010). Qualitative data collection could be one approach to gaining in-depth data on the interior of an organization (Suddaby, 2010).

Further, the discussed institutional theory focuses on the influences of one institution on the organizations within its framework. This framework could be the same market, the same country, or the same legislative framework. However, the exploration of the influences of several institutions simultaneously, known as institutional braiding (Dieleman et al., 2022), is limited. Moreover, there has been limited investigation of interactions of national (e.g., country) on supra-national institutions, like the EU. According to Hargrave (2019), supra-national organizations are multinational unions or organizations where the participation of member nations surpasses national borders or interests in order to participate in decision-making and votes on matters affecting the larger grouping. So far, the institutional theory was only based on a single-level institutional investigation (Greenwood et al., 2017). Therefore, this study aims to explore the influences of institutions at several levels (country and supra-national institutions, like the EU).

Currently, China and Europe are territories in which the circular economy model is most researched, developed, and addressed (McDowall et al., 2017). Although their policy approaches share the same goals, the following study analyzes only the European Union's implementation approach (McDowall et al., 2017). Due to the fact that the European Union started the implementation process almost 14 years after China in 2015, the circumstance to analyze the effects of the circular economy implementation is favorable in the European Union (Ellen MacArthur Foundation, 2019). In addition to that, the European Union gives the research the opportunity to elaborate deeper on the

institutional theory, due to the fact that the EU is a supra-national organization (Greenwood et al., 2017). In this regard, the European Union offers a unique setting for many research opportunities. This gives the study the opportunity to collect potential insights that can contribute to the current institutional theory by extending the scope and including insights on institutional influences by several levels and kinds of institutions interacting simultaneously.

In order to understand the institutional environment in which this study will take place, the European Union and its CE approach will be presented in the following chapter, as well as the CE legislative implementation approaches of Germany and the Netherlands.

2.4 The CE in the European Union

In order to use the legislative framework of the European Union (EU) as a basis for this study, one needs to understand the institutions, the legislative process, and its current legislative approach to circular economy implementation. The European Union is an economic and political union of 27 countries that are in Europe (European Commission, 2021). It was founded to make trading in Europe more accessible and to secure safety and peace within Europe (European Commission, 2021). Since its founding in 1958, 27 countries have joined the trade union, and 19 of those countries have integrated the trade currency Euro into their country (European Commission, 2021). Currently, the EU is made up of seven European institutions, seven EU bodies, and over 30 decentralized agencies, which all collaborate to address the shared interests of the EU and European citizens (European Union, 2022). The following will explain the seven European institutions as they are the most influential in the decision-making process and the circular economy implementation within the EU.

The institution which is elected by the citizens of the EU and represents them is the **European Parliament** (Fontaine, 2018). It shares legislative and budgetary power in collaboration with the Council of the European Union (Fontaine, 2018). The **European Council** is made up of heads of state or governments of the EU countries to establish the

overall political orientation and priorities of the European Union (Fontaine, 2018). The European Council is governed by a president who is chosen for a two-and-a-half-year term which is renewable once (European Union, 2022). These two institutions represent how important the implementation of a circular economy is for the population, as well as the national governments.

Another institution is the **Council of the European Union**, where ministers from each nation meet to adopt and make laws and coordinate policy decisions (European Union, 2022; Fontaine, 2018). The common interest of the EU is represented by the **European Commission**, which is also the central executive body (Fontaine, 2018). It makes legislative proposals, oversees the EU budget, and assures that nations implement EU law correctly (European Union, 2022). Together they play an important role in the circular economy implementation process, as these two institutions are in charge of the specific law proposal and making. In general, the Commission proposes legislative changes, which are adopted by the European Union's Parliament and Council. The member nations then put them into effect, and the Commission assures that the laws are followed correctly. Together the four institutions of the European Parliament, the European Council, the Council of the European Union, and the European Commission establish the EU's agenda and propose and supervise EU law-making, including the ones of the circular economy (European Union, 2022).

In addition to the mentioned four institutions, there are three other ones, the Court of Justice of the EU, the European Central Bank, and the European Court of Auditors. The **Court of Justice of the EU** is made up of one judge from each EU country and ensures that the EU law is followed, and treaties are correctly applied and interpreted (European Union, 2022; Fontaine, 2018). Price stability within the Euro area and monetary policies are overseen by the **European Central Bank** (Fontaine, 2018). Lastly, the **European Court of Auditors** ensures that all funds have been collected, all expenses have been made in a legitimate and regular way, and that the overall EU budget has been adequately managed. Those three institutions are not major players within the circular economy

implementation process, however, when it comes to the financial support of sustainable developments or disregarding laws, they would intervene.

2.4.1 The EU legislation for the circular economy implementation

This section further elaborates on how legal frameworks created by various EU institutions influence and shape the adoption of the circular economy.

By joining the European Union, countries agree to the EU legislation, which is mentioned under Article 288 in the Treaty on the Functioning of the European Union (Storey et al., 2014). Generally, the EU law is divided into primary and secondary (Storey et al., 2014). The primary law is the origin of the EU law and consists of treaties and binding agreements between the EU member countries. At the same time, their body of law is based on the principles and objectives created by the secondary law (Storey et al., 2014).

For the following study, it is essential to fully understand the different legislation types of secondary sources, which include regulations, directives, decisions, recommendations, and opinions. **Regulations** are binding legislative laws that must be applied in all countries of the European Union (Storey et al., 2014). Compared to regulation, a **directive** is a legislative act that sets a goal that must be achieved by all members in a certain period. However, the approach on how to achieve this goal can be decided by each country individually (Storey et al., 2014). According to Storey et al. (2014), **decisions** do not apply to all members of the European Union but are only directly applicable and binding to a specific party (e.g., an EU country or an individual company). Lastly, **recommendations** and **opinions** are legislative tools that are not binding and have no legal force (Storey et al., 2014). Hence, they are meant to give ideas to the national legislation while a law is formed (Storey et al., 2014).

When inspecting the implementation process itself, the European Commission plays a key role, as it has to ensure that all EU laws are applied properly (European Commission, n.d.-a). The Commission contributes to this by sharing information online, hosting expert

group meetings, and developing implementation plans and guide manuals (European Commission, n.d.-a). Commission-issued recommendations aid Member States through the implementation of directives and regulations, which often begins immediately after the passage of an act (European Commission, n.d.-a). If national authorities fail to implement EU regulations adequately, the Commission may initiate a formal infringement case against that country (European Commission, n.d.-a). If the problem is not resolved, the Commission may finally send the case to the European Union's Court of Justice (European Commission, n.d.-a).

There are various regulations issued that concern the adoption of the CE in the EU region. In December 2019, the EU formulated the “European Green Deal” (EGD), which had the purpose of making Europe climate-neutral by 2050, protecting natural habitats, and improving the well-being of the people (European Commission, 2019). On the 11th of March 2020, the European Commission (EC) adopted and released its “New Circular Economy Action Plan”, a framework of legislative and non-legislative actions that include overall goals, implementation aims, general recommendations for circularity improvements, and current related directives (European Commission, 2020c). By implementing the model of circular economy, the European Commission (2020c) aims for a greener economy while simultaneously strengthening its competitive position in the global market. The EC has set tangible goals in their actions plan, e.g., the expansion of product life, expanding the circular potential of batteries, new packaging requirements, reducing (micro-)plastic, renewing and boosting the EU textile market, supporting sustainable construction, and reducing food waste (European Commission, 2020c). However, the EU has not released regulations for all mentioned subject areas; some are only directives or recommendations (European Commission, 2020c).

As an extension to the new Circular Economy Action Plan, the EC has created the “farm to fork” strategy, which focuses on shifting the EU food system by 2050 (European Commission,2020b). The main goals of the initiative are to ensure food safety, support sustainable food production, promote sustainable food consumption and healthy diets,

and ensure sufficient, affordable, and nutritious food within planetary limits (European Commission,2020b). Additionally, the EU wants the food system not to be affected by unsustainable crises, for example, the COVID-19 pandemic (European Commission, n.d.-b). In the draft action plan for the Farm to Fork Strategy of the European Commission, they propose actions and recommended times (European Commission,2020a). The following are examples from this draft:

1. "*Proposal for a legislative framework for sustainable food systems in 2023*
2. *Develop an EU code and monitoring framework for responsible business and marketing conduct in the food supply chain in Q2 of 2021*
3. *Set nutrient profiles to restrict promotion of food high in salt, sugars and/or fat in Q4 of 2022*
4. *Proposal for a revision of EU rules on date marking ('use by' and 'best before' dates) in Q4 of 2022*
5. *Proposal for EU-level targets for food waste reduction in 2023*" (European Commission,2020a, Annex).

Furthermore, the EC announced that the presented Farm to Fork Strategy would be reviewed by mid-2023 to determine if the action conducted is adequate to meet the objectives or whether additional actions are required (European Commission,2020a).

Although the Farm and Fork Strategy and its actions are still under revision, the EC has already taken some actions toward a more circular food supply chain in the past years. In the following, some of the EU legislations concerning circularity within the food supply chain will be presented in order to understand the current actions taken by the EU.

Firstly, the EU released Regulation (EU) No 1169/2011, which concerns the laws on food information to consumers (The European Parliament and Council, 2021). This regulation obliges businesses to provide a transparent and standardized list of mandatory particulars, such as ingredients, allergies, date of minimum durability, language, and the

origin of specific goods like meat, milk, and unprocessed goods (The European Parliament and Council, 2021). Moreover, in December 2021, an agreement on the reform of the Common Agriculture Policy (CAP) was adopted, which covers the three different regulations of horizontal regulation (Regulation (EU) 2021/2116), strategic plan regulation (Regulation (EU) 2021/2115), and common market organization regulation (Regulation (EU) 2021/2117) (European Commission, n.d.-c). These regulations influence the overall management of the CAP, the national creation of strategic plans under CAP policy, and the creation of a common organization of agricultural and fishery markets within the EU (European Commission, n.d.-c).

As mentioned, countries have different approaches to the implementation, and the results of these regulations, directives, and recommendations can vary. As a result of the nutrition and health claims regulation on food products, many EU member states have implemented a Nutri-Score (The European Parliament and Council, 2021). The Nutriscore, which is also known as 5-CNL, is a five-color nutrition label that assigns products a score from A (best) to E (worst), in combination with a color code system from green to red. The French government first implemented the system in 2017 (Santé Publique France, 2022).

Further regulations, directives, and recommendations could be presented; however, for the following study, the individual analysis of interpretation and implementations of those legislative instruments on a national level of the target countries are considered more impactful. In addition, possible misunderstandings can be avoided by a more targeted analysis of the legislation situation.

In the following sections, the circular economy implementation approaches by Germany and the Netherlands will be discussed. The study focuses on these two countries due to their leading position in the food industry and their high ambitions for circular economy implementation (German Trade and Invest, 2023; Hope, 2022). Additionally, the two countries have different political structures, a democratic federal parliamentary republic

and a parliamentary constitutional monarchy, which allow the study to elaborate on how the national-level institutions interact with the supra-national EU institutional field and how the national institutions affect this supra-national influence on firms.

2.4.2 Legislative implementation of CE in Germany

This chapter discusses the German government's legislative actions on circular economy implementation. Germany has a federal parliamentary republic form of government. The democratic republic government is made up of a federation of 16 states, which divides its power on a national and sub-national level (Deutscher Bundestag, n.d.). Laws have to be approved by four different institutions: Bundesrat, Bundestag, Bundesregierung, and the Bundespräsident (Klaus Schubert & Klein, 2007).

On June 1st, 2012, the German government implemented its first law on circular economy and safeguarding the environment, called “Kreislaufwirtschaftsgesetz” (KrWG). In addition to the required directives by the EU that have been incorporated into German law, further measures have been included in German law to achieve the objectives of the new Circular Action Plan. “The purpose of the legislation is to promote the circular economy to conserve natural resources and to ensure the protection of people and the environment in the generation and management of waste” (Author’s translation, §1 KrWG, 2021). The legislation mainly addresses environmental issues relating to waste management, such as additional recycling regulations and fair competition between private and municipal waste management. Additionally, the law defines general definitions for the terms used within the circular economy (§3 KrWG, 2021). According to the KrWG, the definition of circular economy is reducing and recycling waste (§3 (19) KrWG, 2021). The terms reuse, recovery, recycling, and waste management are further terms that are defined by the KrWG (§3 KrWG, 2021).

One of the most important laws in the KrWG within the transition to circular is §33, as it defines and explains the key objectives of the waste prevention program (§33 KrWG, 2021). The goals of this program are oriented toward the primary purpose of decoupling

economic growth and the human and environmental impacts associated with waste generation (§33 (3) Nr. 1 KrWG, 2021). The program includes many waste prevention actions, such as supporting sustainable production – and consumption models, reduction of (food) waste, supporting donation of various products, resource-efficient production, reduction of hazardous material, and increase of repairability of goods (§33 (3) Nr. 2 KrWG, 2021). In order to ensure a smooth transition, consumers and companies have time to adapt their actions to the new waste prevention program until December 12th, 2025 (§33 (9) KrWG, 2021).

In extension to the mentioned laws, there are some more specific laws in the KrWG that concern not only the waste management plants but businesses and consumers as well. Paragraph 9 in the KrWG rules the trash sorting obligation, and in §20, the law specifies sorting trash into eight categories: biowaste, plastic waste, metal waste, paper waste, used glass, textile waste, bulky waste, hazardous waste (§9 (1) KrWG; §20 (2) KrWG, 2021). Further, in §14 of the KrWG, the German government has set a specific goal for the percentage of recycling of household waste (Jahn et al., 2014). The first milestone was on the 1st of January 2020, when at least 50 percent of the household waste should be recycled (KrWG § 14 (1) Nr.1, 2021). The last milestone is a recycling rate of at least 65 percent by the 1st of January 2035 (§ 14 (1) Nr.4 KrWG, 2021). This means that the German government plans to increase its recycling rate of household waste by 15 percent within 15 years.

In addition, the KrWG is supplemented by a whole series of legal ordinances on different subjects that influence the food supply chain and implementation of CE. One example is the German Food and Feed Code, called “Lebensmittel- und Futtermittelgesetzbuch” (LFGB), which regulates how selected products must be packaged (§ 35 Nr.2 LFGB), or the ban on goods that influence the health of human, nature, or animals negatively (§ 5 LFGB). Another set of legislation that influences the food supply chain is the German Food Code, called “Leitsätze des Deutschen Lebensmittelbuches,” in which the production, quality, and characteristics of food are described. The Food Code is not a

legal standard or regulation but a guide for the trade and labeling of food. It only supplements the legal standards. It emphasizes the importance of sustainable local food production, an increase in organic farming, species-appropriate husbandry, biodiversity, bee monitoring, national health, and long-term oriented nutrition strategy, and the reduction in CO2 emission (Bundesministerium für Ernährung und Landwirtschaft, n.d.). Moreover, it gives suggestions for legislative changes, for example, the implementation of animal husbandry labeling, which could be like the Nutriscore (Bundesministerium für Ernährung und Landwirtschaft, n.d.).

Lastly, the German Federal government released the German Sustainable Development Strategy on March 10th, 2021, which is oriented on the 17 Sustainable Development Goals of the United Nations (The Federal German Government, 2021). This report clarifies current strategies and actions that influence the Food Supply Chain in detail. It includes the mentioned KrWG legislation, the federal climate change act, the national program for sustainable consumption, the national strategy for food waste reduction under the slogan “Too Good for the Bin!”, the suggested implementation of the Nutri-Score, and the 2035 Arable Farming Strategy to mention some of the actions taken or programs implemented (The Federal German Government, 2021).

Furthermore, on the 1st of January 2019, the German government enacted the Packing Act (“Verpackungsgesetz”) to increase recycling rates for waste packaging materials significantly. In 2021 the regulations were renewed (Bundesregierung von Deutschland, 2021). It covers binding recycling rates, like 90% of glass, aluminum, and metal, 80% of drink packages, and 90% of paper and cartons (Bundesregierung von Deutschland, 2021). Additionally, it binds the business in the food industry to pay for the recycling of the package, even if the recycling is done by an independent or state party or to take back the packaging waste (Bundesregierung von Deutschland, 2021). All manufacturers/retailers who place packaging filled with goods on the market must register in the LUCID packaging register with details of the individual types of packaging and the respective brand names (Bundesregierung von Deutschland, 2021). However,

the use of single-use plastics, such as plastic cutlery, Styrofoam cups, fast-food containers, straws, and cotton swabs, has been entirely forbidden since July 3rd, 2021, and are not allowed to be produced and imported (Bundesregierung von Deutschland, 2021).

Reviewing the German law on circular economy implementation, there are few binding regulations for businesses at this moment, as the government is approaching a slow transition. Despite that, the German government gives recommendations to help businesses during the transition process. Like the European Union, many actions are currently voluntary as they are supposed to give a guideline to companies on how the final legislative changes are supposed to look at the end of the transition period.

2.4.3 Legislative implementation of CE in the Netherlands

This chapter presents the current legislative actions taken on the circular economy implementation by the Dutch government. The Netherlands has a parliamentary constitutional monarchy as a governmental system and is part of the Kingdom of the Netherlands (Koninkrijksrelaties, 2014). A bill must be approved by Parliament, countersigned by the minister or state secretary in charge, and finally, be signed by the king before becoming law (Ministry of General Affairs, 2014).

In 2016, the Dutch government introduced its first government-wide program to achieve a circular economy by 2050 (Waterstaat, 2019). This program contained mainly an outline of actions that are needed in order to transform the economy. Until the first draft of the Dutch Circular Economy Implementation (CEIP) program in 2019, the Dutch government and industry signed the Raw Material Agreement in 2017 to ensure the Dutch economy could be powered by renewable resources (Waterstaat, 2019). In connection with that, all parties have created an agenda on which actions are needed for the industrial sector to be circular by 2050 (Waterstaat, 2019). This agenda focuses on plastics, consumer goods, manufacturing, construction and biomass, and food in particular (Waterstaat, 2019). Followed by that was the first publication of the Circular Economy Implementation Programme (CEIP) in 2019. It converts the five transformation

objectives into concrete actions and initiatives to be implemented between 2019 and 2023 (Waterstaat, 2019). The first CEIP version was thoroughly revised in 2021. Since then, the CEIP has been updated and revised annually. The current long-term goal of the Dutch government is a 50% reduction in raw material consumption by 2030, which covers the primary resources of minerals, metals, and fossil fuels (Waterstaat, 2019). In addition, by 2050, a fully circular and waste-free economy that primarily runs on sustainable and renewable raw materials is aimed for (Waterstaat, 2019).

Analyzing the updated version of the CEIP, the Dutch government first presents its achievements in the past five years. The denim industry has achieved to produce three million pairs of denim jeans with at least 20% post-consumer recycled cotton fiber as part of the introduced “Denim Deal” (The Ministry of Infrastructure and Water Management, 2021). Additionally, a map of circular economy plans by provinces has been established, in which the regions present their goals for achieving a circular economy, and the CIRCO program was introduced, which helps companies in the circular business model design process (The Ministry of Infrastructure and Water Management, 2021). By mid-2021, more than 2021 companies had already participated in the program (The Ministry of Infrastructure and Water Management, 2021).

Besides, the Dutch government has implemented an Integrated Circular Economy Report (ICER) outlining the progress of the transition to a circular economy. It also includes which future policy changes are needed to ensure the full implementation. With that, the “Red Threats” has been established, which list the five most recognized obstacles for companies that do circular business (The Ministry of Infrastructure and Water Management, 2021). Further concrete results are the implementation of a deposit system for small plastic bottles and cans, agreement on a development plan for biobased plastics, legislation on compostable coffee pads and tea bags, and becoming part of the Circular and Fair ICT Pact (CIFT) with Belgium, Germany, Norway, the United Kingdom, Austria, and Switzerland, to mention a few of them (The Ministry of Infrastructure and Water Management, 2021). Future actions include a national formation for solar parks,

a circular product passport, elimination of (micro-)plastic, improved waste sorting, circular textile icon, and deepening extended producer responsibility for consumer goods (The Ministry of Infrastructure and Water Management, 2021).

Taking a closer look at the food industry, the Netherlands mainly follows the food regulations and advice from the European Union, like the labeling regulations, Business-to-business (B2B) packaging regulations, label regulations for organic and best before/ use before dates (Netherlands Enterprise Agency, n.d.-a). Since 2023 it also gives businesses the option to voluntarily use the Nuri-score (Netherlands Enterprise Agency, n.d.-b). Taking a closer look at the packaging regulations, the Dutch government rules that each business is responsible for the waste they produce, including the collection and recycling (Netherlands Enterprise Agency, 2021). Additionally, the percentage of materials used for packaging and recycled must increase each calendar year (Netherlands Enterprise Agency, 2021). Moreover, businesses are obliged to minimalize packaging material, offer collection points, and maximize the amount of recycled material used (Netherlands Enterprise Agency, 2021). Companies that contribute more than 50.000kg have unique regulations, such as paying into the Packaging Waste Fund and delivering an annual packaging report (Netherlands Enterprise Agency, 2021). Further regulations in the food packaging sector include the ban on single-use plastic food and drink containers and food storage trays (Netherlands Enterprise Agency, 2021). Despite the mentioned regulations, the use of free plastic bags to protect food and prevent food waste is still allowed, and the extended producer responsibility is only planned to be introduced in the coming years (Netherlands Enterprise Agency, 2021).

In conclusion, the approach of the Dutch government is considered to be very well structured. The aims and goals are clear and regularly revised, while all regulations information is available. Concerning the food industry, the regulations are mostly aligned with the EU regulations and recommendations. At the same time, the transition process is supported by multiple programs to ensure smooth and rapid integration into the system.

2.5 Conclusion on the theoretical framework for the study

The presented theories displayed the importance of changing from a linear economic model to a circular one in order to secure a future-oriented ecosystem (Sillanpää & Ncibi, 2019). Ideally, a circular economy is not driven by consumption, as consumption is reduced to the minimum (Neves & Marques, 2022). Further, it focuses on reusing and recycling as much of the used materials as possible, in order to minimize resource usage and waste to the greatest extent (Neves & Marques, 2022). Research on the food industry showed, that food waste is a major problem in the EU, and that most of the food waste is created by households (Eurostat, 2022). Nevertheless, data on the current consumer trends show an increase in sustainable and health-oriented diets (Hoehnel et al., 2022; Layman, 2014). Moreover, the EU, its legislative framework, as well as their CE implementation approach, the new Circular Economy Action Plan, are forming the basis for the following empirical research (European Commission, 2020c). Also, the national implementation approaches of Germany and the Netherlands will provide a research basis for this study. Lastly, this research aims to deepen insights of the institutional theory (DiMaggio & Powell, 1983; Greenwood et al., 2017) by exploring how influence of firms is visible under the institutional interactions at several levels and interactions of several kinds of institutions.

Figure 5 was developed to illustrate the framework of the study. Based on the theoretical review, it is known that the EU has an influence on firms through mandatory regulations. However, the influence on directives and recommendations remain unexplored. The same applies to national legislations, as only the influences of mandatory regulations are known to have an impact on the firms so far. Additionally, informal institutions influence firm's behavior. The thesis reviewed revealed the potential importance of consumer trends on the food industry firms. Through empirical research, the study aims to gain in-depth insight into how exactly firms and their CE implementation are influenced, especially by the EU regulatory framework which interacts with so many other

institutional pressures. Figure 5 summarizes the observed influences for CE implementation of the institutions on firms.

After establishing the study's theoretical framework, the following chapter presents the research's methodology, including its philosophy, research approach and strategies, and detailed information on the chosen data collection methods.

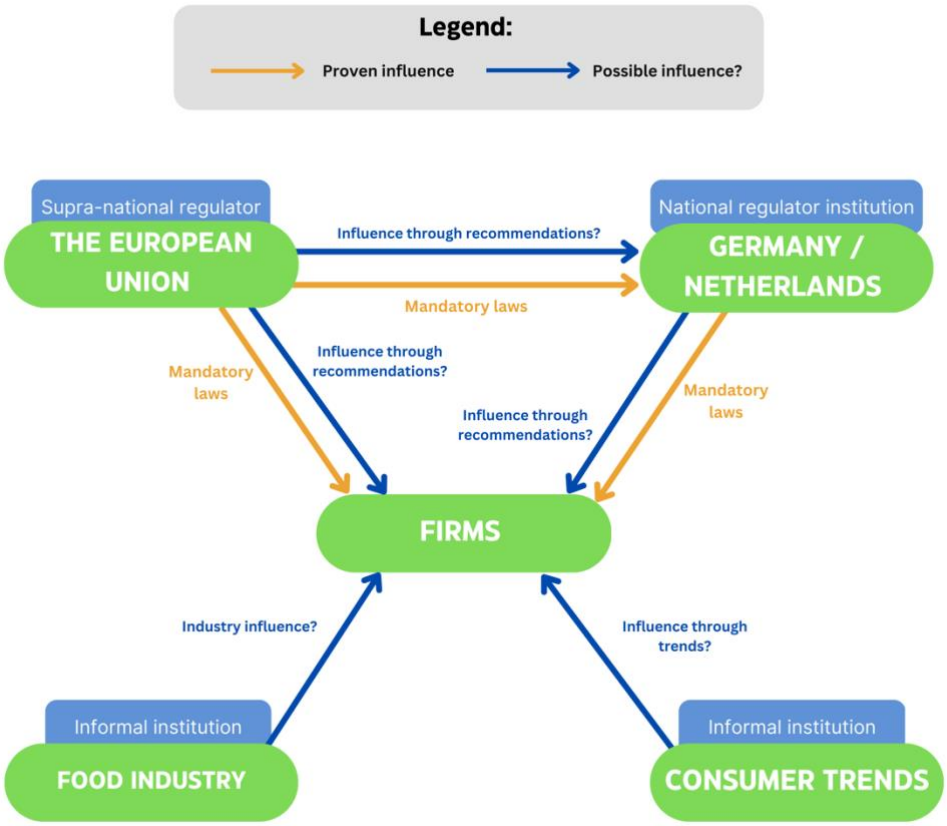


Figure 5. The research framework.

3 Methodology

After understanding the research questions, the research objectives, and the theoretical background, it is crucial to determine the methodological decisions of the study. This chapter presents the methodological decisions utilized in this research. The structure and choices are based on the model of the research onion by Saunders et al. (2019), which can be seen in figure 6.

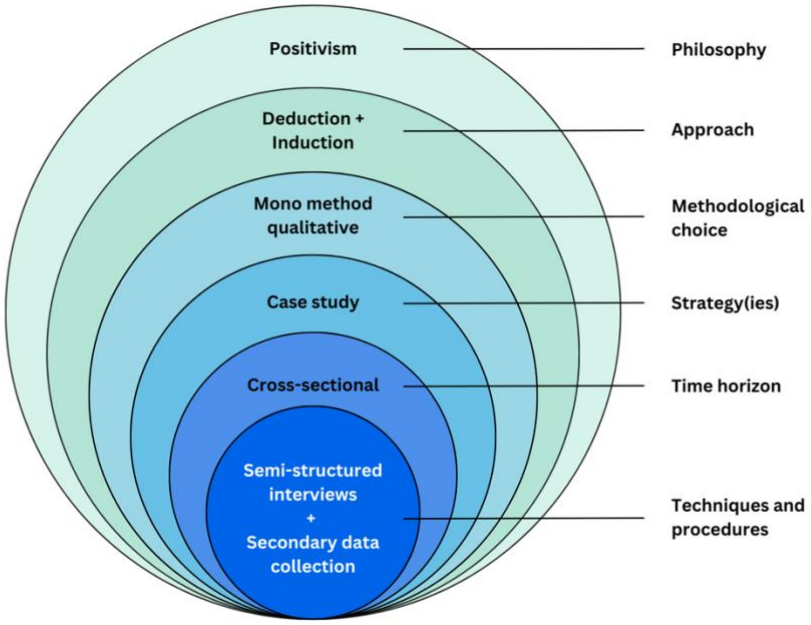


Figure 6. The research onion (based on Saunders et al.,2019).

Firstly, the research philosophy of the study is explained in order to understand the assumptions and their influence on the methodological choices later. After that, the research approach is described, which defines whether the research is creating a new theorization, enhancing or testing an existing theory. Followed by that, the research strategy is presented, giving a general idea of how the research will be carried out. Further, the research choices and time horizons are defined. Lastly, the chosen method for data collection is covered in the last layer of the research onion. The reliability and validity of the study are then discussed.

3.1 Research philosophy

As the research philosophy is the first layer of the research onion, it sets the tone for all the decisions followed (Byrne, 2017). It addresses a certain method of knowledge development that can be found in the study (Byrne, 2017). The research philosophy is important, hence different researchers may hold different beliefs about the nature of knowledge and truth, and philosophy enables us to comprehend these beliefs (Byrne, 2017). As this study contains various assumptions and decisions at every stage in the research, it is enviable to understand its philosophy in order to comprehend and interpret the results (Saunders et al., 2019).

Foremost when considering the philosophy of research, it is important to consider that there are various types of assumptions that can influence the overall research. Those assumptions are called ontology, epistemology, and axiology (Byrne, 2017; Saunders et al., 2019). Ontological presumptions relate to what reality is like (Byrne, 2017). Epistemological presumptions concern what is knowable (Byrne, 2017). Axiological assumptions are made on the significance and value of research (Saunders et al., 2019).

According to Saunders et al. (2019), there are five different philosophical paradigms that represent ontological assumptions: positivism, critical realism, interpretivism, postmodernism, and pragmatism. This study is considered to be led by **positivism**, as the study focuses on identifying visible, measurable facts and regularities to obtain reliable and significant data (Saunders et al., 2019). To explain and predict behavior and events in organizations and institutions, the study looks for causal relationships in its data to create law-like generalizations (Saunders et al., 2019). This means that data is collected in order to make a conclusion based on evidence and repeatedly observed patterns. Moreover, the positivist approach aims to stay neutral and detached to prevent their results from being influenced (Saunders et al., 2019). It can be considered an objective research philosophy.

The epistemological assumptions can be based on objectivism or subjectivism. Objectivist assumptions are mainly based on natural sciences and have a detached axiology that focuses on the finding of truth through visible, quantifiable facts (Sheppard, 2020). Subjectivism has its main assumptions based on the arts, humanities, and social systems (Sheppard, 2020). This research, which is grounded in positivist ontology, has an **objective** assumption approach, as it makes assumptions based on feasible facts and scientific data, that can provide proof and evidence.

For example, in order to answer the research question of how the EU legislative framework is affecting firms in the food industry, the research aims to find proof to make a conclusion based on repeated observations in the collected data. This approach is considered a positive approach with objectivist ontology, as it aims to base its argumentation on facts instead of subjective interpretations. Positivism can be observed in many aspects of the thesis, not only in the research question and objectives but also in the following research choices.

3.2 Research approach

After understanding the research philosophy, the second layer of the research onion determines the research approach. There are three main research approaches: deduction, abduction, and induction (Saunders et al., 2019). Hence this study follows the research philosophy of a positivist, the intent of the research approach is to collect data and base its conclusion on those findings (Saunders et al., 2019). In order to achieve that, the study has a **combination** of a **deductive** and an **inductive** research approach.

This study has reviewed prior research and theories to receive guidance for investigation, which is a feature of **deductive research**. In addition, the research assumptions, as well as the data collection methods, are partly guided by the prior research results, which is a common element of deduction (Saunders et al., 2019). Nevertheless, current studies and theories are not sufficient enough to study the objective of this study. This is because the effects of the EU circular economy legislative framework or the multi-layer effects of

institutions on firms have been scarcely explored. This is why the study also has some inductive research elements.

Compared to the other approaches, the inductive approach aims to find information and proof for problems that cannot be answered by the current (scientific) evidence (Kenaphoom, 2021). Further, it is based on specific overserved information that leads to general reasoning, which is why the approach is also known as bottom-up reasoning. As a comparison, a top-down approach would base its research on a general idea or theoretical hypothesis and then test those ideas or hypotheses.

According to Kenaphoom (2021), an inductive research approach can be divided into three key steps: firstly, the researcher should observe. In the case of the study, the different firms in the food industry were overserved within the presented theoretical framework. Secondly, patterns should be traced during the observation. In this research, those patterns were observed by analyzing cases. Lastly, a conclusion should be developed. This conclusion was based on patterns and observed evidence, as well as the theoretical basis, in order to answer the research question (Saunders et al., 2019).
Thus, the approach of this thesis is a combination of inductive and deductive study (Saunders et al., 2019).

3.3 Research design

The following chapters cover the research design and determine the next three layers of the research onion: methodological choices, the research strategy, and the time horizon. The research design describes how the research question is transformed into a research project in order to answer the question. The basis of the research design is determined by the research strategy and followed by the study's time horizon. Due to the fact that the previous layers of the research onion influence the research design, hence, connections to the research philosophy and research approach can be observed in the following chapters.

3.3.1 Methodological choices

The third layer of the research onion lays out the methodological choices. Firstly, one has to determine whether the methodology of the study is exploratory, descriptive, explanatory, or evaluative (Saunders et al., 2019). This research can be considered **exploratory**. Hence the theory of circular economy is fairly new, and there is no research in relation to the institutional theory yet, the topic is not evaluated, described, explained, or explored. Exploratory research has the goal of exploring a certain subject beyond the current research. Through further exploration, patterns can be identified, and conclusions can be made. The research question of this study is concerned with the question of how the EU's legislative framework on circular economy implementation influences firms in different EU markets and therefore calls for exploration of the topic.

Another important methodological choice is the data collection method. Data can be collected by the use of quantitative or qualitative methods. Most positivists usually follow a quantitative research design in order to gain more evidence and detect clearer patterns for their conclusions (Saunders et al., 2019). However, this study uses a **qualitative research design**. According to Su (2019), the positivist paradigm and qualitative research methods may seem to contradict, however, they can coexist. Qualitative research offers the ability to expand the scope and explore emerging phenomena and the ability to identify new theories due to the in-depth research design (Su, 2019). Additionally, in-depth qualitative research allows positivists to base their conclusions rather on detailed data than on quantity (Su, 2019). Due to the fact that the aim of the study is to gain an in-depth understanding of the supra-national institution's effects on the circular economy implementation in the firms residing within the country-level institutions – the theory element, which was scarcely explored - a qualitative research design is chosen (Adams et al., 2014).

A qualitative method has the advantage of gaining detailed data on the research problem from each participant. Further, the qualitative research method gives more flexibility to gain in-depth information or clarify certain aspects to the participants in order to make

the answers more comparable. This will result in minimizing the risk of misunderstandings and invalid data. Qualitative research also supports the exploratory nature of this study. Since the study is only using the qualitative data collection method, it is considered **mono-method** qualitative research (Saunders et al., 2019). The study intends to base its conclusions on observed patterns and evidence, it is important to have comparable data. To ensure rigor and comparability while fulfilling the need to explore the topic, the case study method is selected as a research strategy.

3.3.2 Case study

The next layer of the research onion determines the research strategy of the study. A research strategy lays out in which format and under which strategy the research data is collected. There are many different research strategies, for example, an experiment, a survey, a case study, archival research, or a grounded theory (Saunders et al., 2019).

It is possible to use more than one research strategy, however, this study will only use a **case study** as a research strategy. According to Yin (2018), a case study aims to understand a real-world case based on a theoretical basis, data collection, and evidence. A case study technique can provide insights through a rigorous and in-depth investigation into the study of a phenomenon in its real-world setting, resulting in rich, empirical explanations and the building of theory (Yin, 2018). In this research, the data and evidence collected in the real-life setting will help to draw conclusions on the EU legislative framework in the food industry, as well as the institutional theory.

Further, a case study strategy fits well, as it is usually used for “how” or “why” research questions (Yin, 2018). Hence the research question “How are firms operating under varying institutional pressures in different EU markets in the food industry affected by the EU legislative framework on circular economy?” is suitable for this study. Moreover, some case studies can have propositions, but since the study has an exploratory approach, this study does not contain any key propositions (Yin, 2018).

Additionally, the research strategy determines which kind of data is used in the case study. This research contains both: primary data and secondary data. Since this study aims to collect qualitative data in order to make an evidence-based conclusion, it is inevitable to use both data collection methods. Primary data collection implies that the data is collected first-hand by the researcher of the study. In contrast to that, secondary data is data collected and analyzed by other researchers (Adams et al., 2014).

In this study, one-to-one interviews are used as a source of primary data with companies in the food industry from Germany and the Netherlands. Primary data has the advantage that the data fully fits the scope of the research problem, as it is collected by the researcher of the study (Adams et al., 2014). Thus, the data is up-to-date and potential misinterpretation of the data can be avoided (Adams et al., 2014). Secondary data is gathered through the material provided by the companies, journal articles, and reviews. This data will help to find further evidence on the research problem and justify the data collected in the interviews. Secondary data can enable the collection of information beyond the research area in order to understand the pattern and contextual findings better (Saunders et al., 2019).

3.3.3 Cross-sectional time horizon

As we go deeper into the research onion, this chapter discusses the time horizon of the study. The time horizon determines whether the data displays only a certain point in time or if it is based on a long-term collection. The cross-sectional time horizon represents data collected at a certain point in time (Sheppard, 2020). Contrary to that is the longitudinal time horizon, in which data was collected over a longer period of time (Sheppard, 2020).

The data for this study will be conducted at a specific point in time and will therefore evaluate the research problem at this time. Because of that, the research approach is considered **cross-sectional** (Saunders et al., 2019). The EU started its circular economy implementation process in 2015, which is eight years after the data collection of this

study (European Commission,2020b). Since the organizations in the EU have had enough time to learn, experience, and reflect on their approaches, a cross-sectional approach is suitable. The study aims to evaluate the influences, adaptations, and approaches of the past eight implementation years. If the aim is to analyze the whole implementation process, a longitudinal approach would be needed (Saunders et al., 2019).

3.4 Data collection

The data collection can be considered the core of the study. The chapter starts by outlining the criteria for choosing the cases for the study. After outlining the cases, the chapter describes the data collection technique and process, followed by the data analysis and, lastly, the comment on the reliability and validity of the study.

3.4.1 Case selection

As previously mentioned, the case study will collect primary and secondary data for its research. The following chapter will briefly describe the case study methods, followed by presenting the interviewees. The data for this research is collected as a multiple case study in order to gain a wide range of evidence and detect potential patterns (Yin, 2018). The research included six different cases.

As the study is led by positivism, the research aims to conduct data that explain those theories, their effects, and possible (inter-) relations in practice. In order to identify patterns in data, six different businesses within the food industry were chosen to collect data on. The cases were selected according to the logic of literal and theoretical replication (Yin, 2018). Examining cases where the theory would expect similar outcomes is referred to as literal replication (Ebneyamini & Sadeghi Moghadam, 2018).

Literally, the cases of this study were replicated on various factors. Firstly, all cases are firms that are operating within the European Union and are therefore affected by the same EU legislative framework. It is to be expected that all cases have similar results as

there are all impacted by the EU actions. Europe was chosen due to its supra-national organizational structure, as well as its detailed implementation strategy of a circular economy since 2015 (Ellen MacArthur Foundation, 2019).

Secondly, the cases are firms that are operating within the scope of the food industry, which results in similar opportunities and threats to the industry. Consequently, similar results are to be expected for all cases within that industry. Lastly, the cases were replicated literally by their business operations. There is always one wholesaler, one supplier, and one producer from both target countries. Based on the theory, it is expected to have similar outcomes for businesses with the same business operations.

The theoretical replication is also present in this research to test potential variations. The examination of cases where the theory implies expected but different outcomes are referred to as theoretical replication (Ebneyamini & Sadeghi Moghadam, 2018). The chosen cases are businesses from two different countries: the Netherlands and Germany. Due to the fact that their national legislative for the circular economy, as well as the overall national institutional structure, differ from each other, it is to be expected to receive different data for the two countries.

Germany and the Netherlands were chosen based on various factors. According to the German Trade and Invest (2023), Germany is one of the leading food producers in Europe, while the food and beverage industry is the fourth largest industry sector. The Netherlands were chosen because they are considered the most ambitious EU country for implementing a circular economy (Hope, 2022). Further, the Netherlands is the country with the highest investment in circular economy sectors (Hervey, 2018).

Moreover, as mentioned before, the cases are conducted by businesses with different operations. Each business operation is represented by one case in the Netherlands and one case in Germany. The results of the study can vary between cases in the same country, due to the fact that their operations differ. Different kinds of businesses were

chosen in order to receive a bigger picture of the food industry, which is more representative of the food industry in the EU.

The study is based on six different cases. Three cases are conducted from businesses in Germany, and three cases are conducted from businesses in the Netherlands. As mentioned above, one type of business operation is represented by both countries. This study includes data from wholesalers, suppliers, and producers.

In Germany, the three cases include the following companies: Hochland SE, Tegut … Gute Lebensmittel GmbH & Co. KG (in the following referred to as "Tegut"), and Convega GmbH (in the following referred to as "Convega"). In the Netherlands, the following businesses were selected as cases: GreenPro International B.V. (in the following referred to as "GPI"), Udea B.V., and Royal FrieslandCampina N.V. (in the following referred to as "FrieslandCampina"). The wholesalers are represented by the cases of Tegut and Udea B.V. The data on suppliers were conducted on GPI and Convega. Lastly, Hochland SE and FrieslandCampina are chosen to represent the producers in the food industry. Brief information about each case can be taken from table 1. Besides a short description of the case, it displays the invested country, the interview length, and the language in which the interview was conducted.

Table 1. Overview of the interviews.

Interviewee	Name	Case company description	Country	Interview length	Language
1	GreenPro International B.V.	A Dutch distributor company of vegan retail and foodservice products, operations mainly in the Netherlands, but also operating all over Europe	Netherlands	31min.	English
2	Udea B.V.	A Dutch wholesaler and retailer, who is the owner of supermarket chains in the Netherlands and	Netherlands	56min.	English

		Belgium, about 99% organic products			
3	Royal FrieslandCampina N.V.	A Dutch producer of dairy products, operating EU wide	Netherlands	44min.	English
4	Hochland SE	A German producer of dairy products, operating EU wide	Germany	54min.	German
5	Tegut... gute Lebensmittel GmbH & Co. KG	A German retailer, which is operating in Germany, almost 30 % organic products	Germany	52min.	German
6	Convega GmbH	A German distributor company of vegan retail and foodservice products in Germany	Germany	28min.	German

3.4.2 Data collection

As discussed in the research design, the data for this study were collected from primary and secondary data on six different cases. Referring to Yin (2018), case study data collection's advantage is the usage of many different sources of evidence.

3.4.2.1 Primary data collection

Firstly, the primary data was collected in the form of interviews. The interviews were carried out in the form of one-to-one interviews online via the online tool Zoom. In addition to that, the interviews were semi-structured in order to gather as much information as possible. By using a semi-structured approach, essential questions can be asked that help to compare the answers between the companies and countries. Nevertheless, it left room for further questions that might be needed in some cases of the interviews. The essential questions will be formulated in advance of the interviews regarding the theoretical background, the research question, and the research

objectives. This is important, hence the study aims to collect comparable evidence in the form of patterns from the case study.

The interview guide contained a mix of open, probing, and specific or closed questions (Saunders et al., 2019). The open questions are used to define their own situation and interpretation of their business within the framework of circular economy and possible effects of the EU legislative framework. Probing questions are then used to explore possible connections or relations within the framework. In order to get to know the interviewee, the company, but also examples of possible sustainability actions, specific and closed questions are used in the interview.

Furthermore, the interviews with German companies were conducted in German, and the ones with the Dutch companies in English. According to Marschan-Piekkari and Welch (2004), language and translation issues are common challenges in cross-cultural interviews. Difficulties concerning language can be created due to a lack of language knowledge, different use of language, personal background, and company-specific influences (Marschan-Piekkari & Welch, 2004). Moreover, factors like age, gender, education, and nationality can influence the language in cross-cultural interviews (Marschan-Piekkari & Welch, 2004).

Due to the fact that the interviewer is a native German speaker, the interviews with the German companies were conducted in German in order to eradicate most of the mentioned potential barriers. The interviews with the Dutch companies were conducted in English. Although English is not the native language of the interviewer and the interviewees, research shows that non-native speakers prefer to speak to other non-native speakers, as a simple language is used and a more direct communication method (Marschan-Piekkari & Welch, 2004). After the interviews, quotes, as well as possible translations from the transcripts, have to be perceived with caution, as some phrases cannot be translated literally, or expressions were influenced by personal jargon (Marschan-Piekkari & Welch, 2004).

In order to avoid many of the mentioned potential barriers, the understandability of the questionnaire, its translation, and the general interview process were tested in advance in both languages. The test has shown that due to the complexity and length of some of the questions, the interviewee would have preferred having the option to re-read the question during the interview. Due to that, each question was presented separately on the screen for the interviewee. By that, possible misunderstanding, language barriers, and forgetfulness can be avoided. It also gave the interviewee the option to ask about certain vocabulary in case it was unknown. In order to gain a better understanding, the full interview guide can be found in appendix 1 of this study.

Moreover, the study uses another source of evidence for its primary data collection. In addition to the interview, data will be collected from observations during the interview. Due to the fact that the interviews are recorded, the study has the opportunity to collect observational data on the participants. Observational data is used in order to avoid inaccuracies due to poor recall and to collect data on the interviewee's approach to answering the questions (Yin, 2018). This can be helpful, as some of the data can be lost or wrongfully remembered if there is no recording or transcript of the interview. Further, observations give the opportunity to maintain a neutral perspective on the interview, as specific data and pieces of evidence can be revisited (Saunders et al., 2019).

The recordings, as well as the transcripts, are stored in a database on the Zoom server of the University of Vaasa. By that, the General Data Protection law of the European Union is ensured to all participants of this study.

3.4.2.2 Secondary data collection

As mentioned previously, secondary data is used in order to gain further knowledge on the cases. This data was used as additional evidence on the cases and to fill potential gaps in the primary data. This data was collected based on information provided by the businesses themselves, but also their websites and news reports. The secondary data

was collected in a file together with the data analysis of the interview and secured on the server of the University of Vaasa.

3.4.3 Data analysis

Data analysis consists of two steps: preparation for data analysis and the analysis itself. For that, the interviews were transcribed based on the recordings of each case. After that, the transcripts were annotated to organize the data. At this point, potential gaps were identified for the first time and filled with secondary research data. As a result, the collected data of all cases had a comparable format in order to proceed with the analysis.

There are five different analytic techniques to analyze data: pattern matching, explanation building, time-series analysis, logic models, and cross-case synthesis (Yin, 2018). The following data analysis used the pattern matching and cross-case synthesis approach. Additionally, a matrix was created for the data analysis process with Microsoft Excel. The matrix was divided by theory-based variables (x-axes) and by cases (y-axes). A simplified version of the matrix can be found in figure 7, in order to help understand the process described.

Firstly, the **pattern-matching** method was used. According to Mills et al. (2010), pattern matching is the comparison of two patterns to see if they match or not. In this study, pattern matching was done by connecting the collected data to the previously presented theoretical background (Mills et al., 2010; Yin, 2018). This means that every case was analyzed separately, and connections and relations to the theoretical framework were made. If a part of an interview matched a theory, this exact part of the interview transcript was copied into the matrix under the right variable and case. The variables were defined by subjects of each of the main theories discussed. In case data was lacking on a certain theory, the gaps were filled with the help of secondary research data or left blank. Once the primary and secondary data were matched with the theories, small summaries were created for each pattern matched. Through that, an overview was created that helped to quickly identify how certain interview parts of each case were

related to certain theories and variables. This procedure allowed shifting from first order to second order codes.

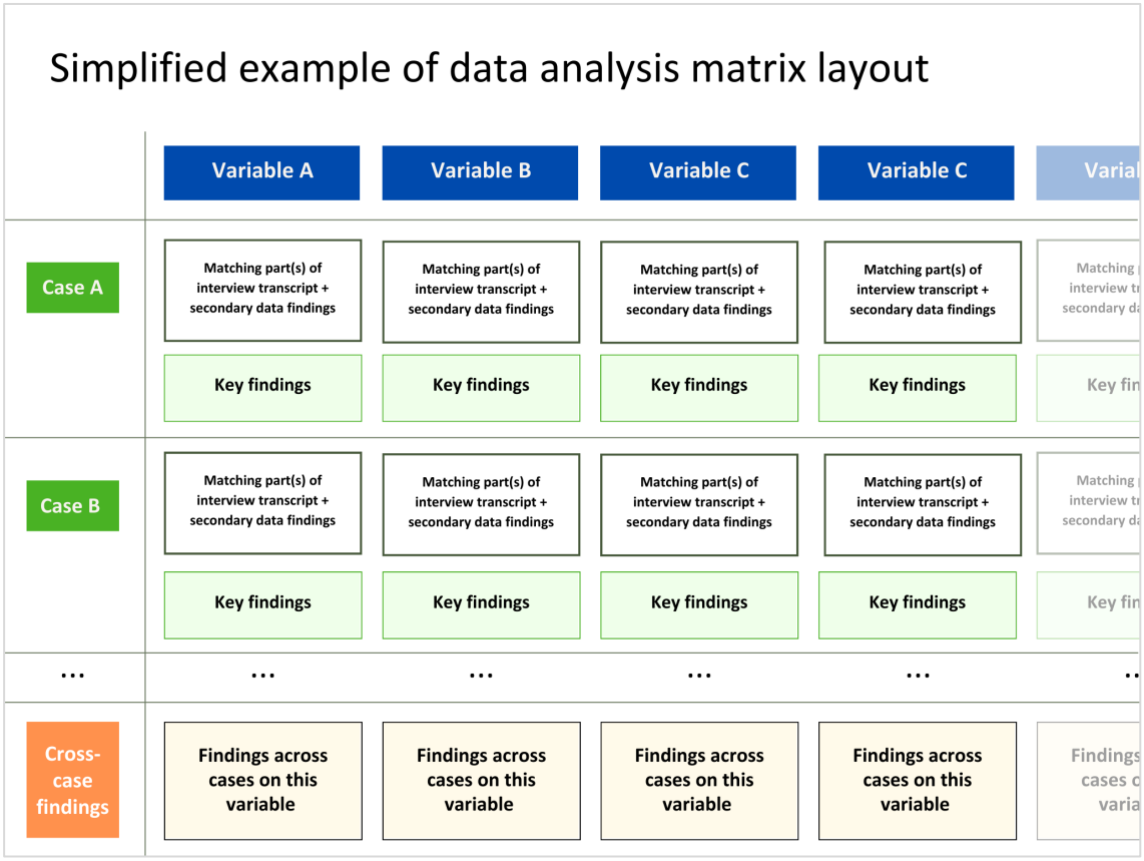


Figure 7. A simplified example of data analysis matrix layout.

Then, followed the cross-case synthesis. According to Yin (2018), cross-case synthesis aims to identify similarities and differences across cases and variables. This is done by two strategies: variable-oriented and case-oriented analysis (Donaldson, 2000). The case-oriented analysis identifies similarities and differences across the cases (Yin,2018). The variable-oriented analysis identifies similarities and differences across the defined variables (Yin, 2018). Due to the fact that the pattern matching matrix divided the case study data by cases on the y-axes and by variables on the x-aches, the matrix was suitable to be used for the cross-case synthesis as well. In the following step, a cross-case synthesis was completed across the matrix by identifying similarities and differences across the cases and across the variables.

The result of the data analysis gave multiple insights for the evaluation. Firstly, it provided evidence of how the cases were related to the theoretical background due to the pattern-matching technique. Moreover, it gave insights into the similarities and differences between the cases as well as the theoretical variable based on the cross-case synthesis. In coherence with the positivist philosophy, the final conclusions can be drawn from the identified pattern and evidence that were detected.

3.5 Validity

According to Mills et al. (2010), the amount to which a concept is genuinely reflected by its indications is referred to as its **validity**. There are three different types of validity that are commonly used in order to examine the accuracy of the measures (Yin, 2018). The three types are internal validity, external validity, and construct validity (Yin, 2018).

Internal validity aims to determine whether there is a causal relationship between the observed results and the target group, which is not influenced by methodological errors (Adams et al., 2014). A study is considered to have high internal validity if changes in the dependent variables of the study are caused by the change in the independent variables (Adams et al., 2014). On the contrary, a low internal validity would reflect that there is an alternative explanation for the result of the study (Adams et al., 2014).

Due to the fact that this study has an exploratory research approach, the internal validity can only be proven to a certain point because the aim of the study is to explore rather than to identify explanations or reasons (Yin, 2018). However, the study still has some elements to ensure internal validity. One of them is the use of the pattern-matching data analysis technique (Yin, 2018). By that, the causal relationship between the theoretical background and the cases is proven through the partial guidance of already existing and accepted theorization. Further internal validity is ensured due to the random selection of cases within the food industry. This guaranteed that the companies did not have any interaction with each other and were comparable to each other from the beginning.

In contrast to internal validity, **external validity** discusses to what extent the results of the study can be generalized (Yin, 2018). By ensuring external validity, the research results have the ability to be applied to other cases, locations, or the real world (Adams et al., 2014). In order to ensure the external validity of this study, a multi-case research design was chosen. Due to that, the results are based on more than one case and are, therefore, more generalizable (Yin, 2018). Additionally, the case companies operated in two different countries and three different sectors of the food industry. By that, the opportunity to generalize the results within the context of the food industry within the EU is given. Nevertheless, it is important to mention that the overall external validity in this study primarily concerns analytical generalization, that is, the generalization to a theory and not to the population. Generalization of the population should be further developed by testing the results obtained in this study quantitatively.

Finally, **construct validity** aims to determine if the proper operational measurements have been used for the concepts being examined (Yin, 2018). The most common reason for invalidity in this category is the wrong data collection method (Yin,2018). In order to ensure construct validity, research has to ensure two measures. Firstly, the concept and its specific terminology need to be defined and related to the objectives of the study (Yin, 2018). Secondly, finding operational measurements that go with the concepts is necessary (Yin 2018). Ideally, mentioning existing research that finds the same matches (Yin 2018).

Due to the fact that the study has an extensive theoretical background and detailed explanations throughout the research, poor operationalization is avoided, and construct validity is ensured. Moreover, the interview guidelines were based on the themes observed in the literature review. Despite that, the construct validity can be threatened by potential bias. Since the full research was done by only one researcher, it could have been influenced by personal expectations, assumptions, and beliefs. In order to avoid bias fully, the data collection and the analysis could have been done by independent

researchers in order to avoid personal influence. However, the study was conducted under the constant consultancy of the thesis supervisor. By that, the potential bias was limited, and the quality of the thesis was ensured.

3.6 Reliability

In order to fully judge the quality of the research design, one must test not only the validity of a study but also its reliability (Yin, 2018). When testing the reliability of a study, the research operations, such as data collection methods, should have the same results if they are repeated (Yin, 2018). It, therefore, measures the consistency of a study under the same instruments, conditions, and subjects (Adams et al., 2014). A research instrument is considered reliable if the results are reproducible (Adams et al., 2014).

According to Yin (2018), in a case study, a case, ideally, needs to be studied more than once in order to ensure its reliability and minimize errors and biases. Since this is rarely the case, researchers have other options to ensure reliability. To repeat the study, the documentation and explanations of the research decisions and actions need to be explained in detail (Yin, 2018). A study can be considered suspicious of reliability if the proper documentation is missing (Yin, 2018). To ensure reliability in that aspect, this study contains detailed explanations and documentation of the research process in the methodology section. Additionally, the study points out the needed changes and challenges that arose during the study, like language barriers and the structure of the interview guide. These explanations will be additional help for future researchers to understand the research decisions better and simplify the replication of the research.

In order to avoid participant error (Adams et al., 2014), the interviews were conducted at a convenient time for the interviewees and in a conversational online meeting setting, as web cameras were used in all cases. In addition to that, the conversation-like interview atmosphere was created by the interview guide structure. Since the interview started with more general questions that led to more research-driven ones, the

interview was more conversation-like. This approach helped reduce reliability issues concerning observer errors and bias (Adams et al., 2014).

Based on mentioned analysis of validity and reliability, the quality of the research design can be judged. This is important, as they are influencing the study results, which are presented in the following chapter.

4 Findings

The following chapter reports the findings and observations of the case study. The purpose of the chapter is to lay out and explain the evidence that was found in order to answer the research question of the study. Based on the case study, the chapter is divided by the different institutions as the study aims to evaluate the effects of the different institutions on the firms in the context of the circular economy.

4.1 The firms' understanding of CE and its influence by the EU and national legislative framework

This section presents the way companies think about, act in line, and understand the concept of circular economy.

Even though all companies have heard about the circular economy, their understanding and interpretation of the economic model have varied from each other. The knowledge of circular economy was measured based on the knowledge of the core idea of circular economy, the 3Rs model, the ReSOLVE model, and the butterfly model since those models are all in relation to the circular economy concept. The interview data has shown that only three companies have a good understanding of the model, one company had a basic understanding, and two had a very narrow understanding of the concept (see table 2).

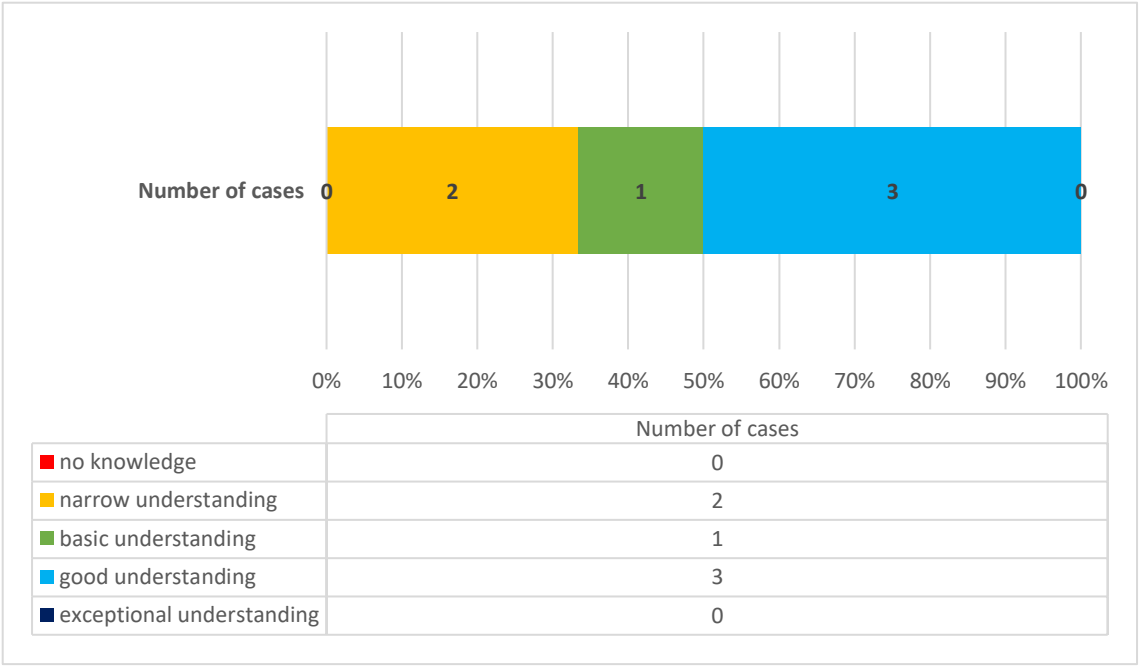
The data provided an interesting insight into the knowledge, as almost all companies mentioned waste reduction, a production without an end, recycling, and reusing waste within the production cycle in their definition.

(1) *"I think the concept of circular economy is like not having a beginning or an end, but it is a continuous system, in which the end station can be again the raw material from the beginning and becomes a new chain in which you have no further waste or pollution or whatever you may call it, depending on the, on*

the topic. So basically, as it says, it's a circle rather than a chain." (Udea B.V., Netherlands, Wholesaler and Retailer)

(2) *"It only works if we focus more on cycles [...] So away from growth and decoupling from resource consumption. [...] to conserve resources as much as possible, to avoid or reduce consumption as far as possible, or at least to use the resources as long as possible, so we can use them efficiently. [...] In my opinion, the products have to be designed in such a way that they can be circular. That starts with the selection and production of our goods and raw materials [...] towards extensive or even regenerative agriculture [...] by not always using the same raw materials, but rather taking care of (bio-)diversity [...] In other words, circularity is far beyond waste avoidance." (Hochland, Germany, Producer)*

Table 2. The interviewees' understanding of circular economy concept.



	Number of cases
no knowledge	0
narrow understanding	2
basic understanding	1
good understanding	3
exceptional understanding	0

Even though all interviewees understood the main idea of what the word "circular" means, none of the interviewees mentioned aspects concerning the exchange of

knowledge and resources, product exchange systems within the industry or society, or dematerialization in their explanation. This is an interesting observation because even though none of the firms have mentioned those aspects in their definition of circular economy, the firms referred to those activities as additional voluntary actions.

When comparing this data to the secondary data research, press releases by newspapers like the Frankfurter Allgemeine Zeitung (Pankoke, 2023) and Statistics Netherlands (2023) in Germany and the Netherlands did not cover an extensive explanation of circular economy. Hence, the secondary data supported the evidence found in the interviews.

When analyzing the internal mission and principles among the companies in the food industry in the Netherlands and Germany, the majority of companies included general sustainable and environmentally friendly practices. Most interviewees stated that sustainable practices were part of their company mission and/or that they had a specific department that was in charge of sustainable business development. On their websites, four out of the six cases had a dedicated section for sustainability, in which they explained their ambitions, goals, and actions.

However, two cases have reported that sustainability was not included in their core mission or operational principles. From their point of view, core business operations were more important than sustainability. Further, they argued that due to the fact that they both only focused on vegan products, they already had an environmental impact. Moreover, on the websites of those two companies, a dedicated section or specific information related to sustainability cannot be found.

The circular economy legislation by the European Union was known in four out of six cases, as they have heard about the different action plans and recommendations. In comparison to the national law, only half of the interviewees considered themselves to have a good understanding of the circular economy legislation (quote 3). The other interviewees have only heard about national legislation briefly or not at all (quote 4).

(3) *"So, if I didn't hear about it, I'd be missing my job. So, I guess I have a good overview." (Tegut, Germany, Retailer, translated from German)*

(4) *"I never heard of them." (GPI, Netherlands, Distributor)*

While examining the way of implementation of EU and national legislations, the results showed that all companies follow the mandatory regulation. However, only about half of the cases followed the recommendations in addition to the mandatory regulations. Hence, the interview data indicates that mandatory legislative actions on the EU and national levels are the most influential to firms.

Moreover, the interview data showed that, based on the frequency of mentions, the most common drivers for circular actions were consumer demands and competitiveness in the market. In most cases, these two drivers were mentioned in relation to each other, as market competitiveness is secured by fulfilling the demands of the customers. Other drivers for circular economy actions were sales increase, the company's sustainability mission, and national legislation. The data implies that companies' circular actions are mainly economically driven (quotes 5 and 6).

(5) *"Well, I think economic is only a factor insofar as it's related to social pressure, that is, when customers say, 'Hey, I don't want to work with someone who pollutes the environment or who's somehow using up so many resources ." (Convega, Germany, Distributor, translated from German)*

(6) *"So, we want to show that it can be done in a different way, and that is our role. We want to be basically chosen by the audience so the consumer to say "Okay, we work in a different way, we think differently." We want to show that the food chain can also be built up in another way. And if you like that as a consumer, please come to us. […] Again, we hope that also we can bring more*

consumers to us because in the end we are also a company that needs to also be economically healthy." (Udea B.V., Netherlands, Wholesaler and Retailer)

Similarly, this trend can also be seen concerning voluntary circular actions. The data illustrates that all companies believed that voluntary actions are important, however, half of the interviewees mentioned that those actions also needed to be profitable for the firms. Additionally, this trend is observed in the data when analyzing the different voluntary practices. The most common voluntary actions, based on the frequency of mentions, were donations, improved forecasting, and being a member of sustainability alliances or organizations. It was stated that improved forecasting and being a member of alliances helped to improve and predict customer demands, which generally led to less waste and more revenue (see quotes 7 and 8).

(7) *"It depends very much on the cost of the (voluntary) action and then on the benefit of doing a business out of it. So, what do you get back from it?" (FrieslandCampina, Netherlands, Producer)*

(8) *"I think all of this is extremely important because somehow it still helps make the whole operation more efficient." (Convega, Germany, Distributor, translated from German)*

Generally, the data implied that consumer trends are a driver for circular actions. The data illustrated that all companies were willing to follow sustainable and circular trends if they were increasing sales and competitiveness. Additionally, half of the interviewees add that offering a bigger product portfolio to the consumer and increasing consumer satisfaction is an additional driver to following consumer trends.

In conclusion, it was surprising to see that even though sustainability was integrated into almost all company operations and missions, the main driver for change and reason for voluntary action is economics rather than regulations. However, the web pages of most companies have shown the sustainability drivers and actions clearly but not their

economic drivers. This data indicated that the companies try to balance sustainable and economic actions in order to secure a long-time market position. However, in most cases, only sustainable actions were communicated.

4.2 Regulatory institutions' influence on CE-oriented actions by firms

After understanding the evidence found on the companies and their operations, the following chapters will lay out the different indicators concerning the national and EU legislative framework. These chapters will give additional evidence on the impacts of regulators as well as the institutional theory.

4.2.1 The influence of the EU legislative framework

This chapter identifies data patterns and evidence concerning the possible influences of the EU as a supra-national regulator institution on companies within the food industry.

Similar to the legislation on the national level, the data on the EU level showed evidence that indicated that mandatory regulations from the EU were more impactful than recommendations. In the interviews, all companies confirmed that they followed the mandatory regulation on the circular economy, however, only 66% of the cases confirmed that they followed additional recommendations by the EU on circular practices.

Evidence showed that the main reason why firms didn't follow EU recommendations was that the firms rather focused on the national recommendations (see quotes 9 and 10). From their point of view, they were considered more feasible and applicable as they were put into the local context. Moreover, the interviewees stated that another reason was the difficulty of staying up-to-date and understanding the many EU recommendations (see quote 11).

(9) “But all EU legislation always first goes to the national level before it ends up in our company. It does not directly come from EU, it comes from national bodies." (FrieslandCampina, Netherlands, Producer)

(10) "Clearly, a very important point, the EU directives must first be transposed into German law, so that's what we'll do then." (Tegut, Germany, Retailer, translated from German)

(11) "I can really say very little about that. I only know that. They are basically very ambitious overall, but I don't know them all in such detail, that I just don't know the differences." (Hochland, Germany, Producer, translated from German)

When researching the different legislative incentives by the EU concerning circular economy, we can see a pattern in the data. The data showed that many of the companies’ operations and voluntary actions were meeting certain incentives like the Farm-to-Fork strategy or the circular economy action plan. However, most companies were not aware that they were following them. When asking them about EU legislative instruments, they claimed that they had no knowledge about them. Meanwhile, their actions present that they indeed follow aspects of those incentives. The quotes below (12 and 13) illustrate this, as the interviewee first mentioned having no specific knowledge about each of the EU legislative actions (quote 12). However, in quote 13, the interviewee referred to practices that are part of the European farm-to-fork strategy and the sustainability recommendations.

(12) "Ah, I can really say very little about that. I only know that. They are basically very ambitious overall, but I don't know them all in such detail, that I just don't know the differences." (Hochland, Germany, Producer, translated from German)

(13) “You have to say, in the company, it is the case that our business model alone creates a cycle through our manufacture of products such as natural cheese

and processed cheese. Our waste isn't waste since the sections that accrue or something[...] from production are then reused as raw material in processed cheese production. [...] Of course, if that doesn't work, by-products and by-products of the goods come to our biogas plant. [...] We have a lot of whey [...] it's either sold as whey powder and a by-product or the whey is then resold in a certain concentrated form. [...] So we always try to resell our side streams [...], whatever is possible there. [...] These are valuable raw materials that are not simply thrown away. And even if products cannot be sold accordingly, there is another way. We cooperate with food banks, shops, and such, so that the products can be used elsewhere if they are still consumable." (Hochland, Germany, Producer, translated from German)

An interesting comment was made by Tegut, as they experienced the EU regulations as a positive advantage on their market position. Since they had already followed and exceeded many of the EU recommendations, they observed that once those recommendations became mandatory, they received a competitive advantage due to being a pioneer (quote 14). However, the data also showed that they are aware that it is just a short-term advantage until the other businesses follow (quote 14).

(14) "We're working on it and we're seeing that all these regulations bring about a lot of what we've already done voluntarily, which is great for us. We now have a living playing field as a result, but it is also challenging because our unique selling proposition is then naturally also lost a bit" (Tegut, Germany, Retailer, translated from German)

According to press releases by the Handelsblatt (Gauto, 2021) and the Bund (Langsdorf & Duin, 2021), the Netherlands is considered to follow more recommendations than Germany. However, this trend contradicts the data observed in this study. All interviewees have confirmed following mandatory EU regulations, and even though the recommended actions slightly differed between the cases in Germany and the

Netherlands, neither of the countries was significantly showing more than the other. In the following chapter, the data on the circular economy influence of the national legislative framework will be presented in more detail.

4.2.2 The Influence of the national legislative framework

During the analysis of the data concerning the national legislative frameworks on the circular economy, many patterns and trends can be observed. Overall, the data indicated that both, the Dutch and the German circular economy legislation, have an effect on the company's operations. Observations showed that especially mandatory regulations are mentioned as the most influential governmental instrument (see quotes 15 and 16).

> *(15) "We are directly affected by German measures, if you write the German legislation in the law, then that affects us quite directly at first" (Tegut, Germany, Retailer, translated from German)*

> *(16) "As soon as it's becoming mandatory, then of course, we look into it. Like, for example, now the whole registration of your packaging material" (GPI, Netherlands, Distributor)*

Further, data on the recommended circular actions indicated that companies in both countries exceeded the recommendations provided by the national government. As mentioned in the previous chapter, data showed that the national regulations and recommendations are more specific, local, and therefore feasible for most companies. Only 33,33% of the firms were solely following the mandatory regulations, as they solely focused on their operations and not on sustainability.

Additionally, when examining the different governmental instruments, all cases implied that not all actions and legislations were communicated the same. Some of the interviewees mentioned that they had never heard of some of the national actions. This indicated that information or actions concerning specific legislations were not

communicated well or that those were less impactful. Quote 22 shows an example, in which the interviewee did not know about the recommendations concerning the German Sustainable Development Strategy.

> *(17) "Yes, I've heard that before. But I'm not a proven expert." (Convega, Germany, Distributor, translated from German)*

When comparing the data on the Dutch and the German national legislation on the circular economy, the differences in legislative tools did not show any difference in the impact that they have on the firms. In both contexts, the data indicated that mandatory regulations are the most influential. Voluntarily following the recommended national actions was explained by two factors. Firstly, the interviewees explained that they believed that many recommendations are likely to become mandatory in the future. Hence, they followed the recommendations to stay ahead of their competitors (see quote 23). Secondly, they believed that following voluntary actions in relation to the circular economy improves their company's reputation and competitiveness (see quote 24).

> *(18) "Like, for example, now the whole registration of your packaging material, that was already going on in Germany and it's now also mandatory in Holland but on the other extent, we are also a bit ahead of the market" (GPI, Netherlands, Distributor)*

> *(19) "We're working on it and we're seeing that all these regulations bring about a lot of what we've already done voluntarily, which is great for us. We now have a living playing field as a result" (Tegut, Germany, Retailer, translated from German)*

Lastly, there is evidence that shows that most companies believed that the national legislation was highly influenced by the European one. In half of the cases, the firms

mentioned that from their point of view, the EU is giving a brief direction of circular economy, and the national government is taking concrete actions and creating legislative instruments based on that (see quotes 25 to 27).

(20) "Yeah, but that's also because the Dutch government is always following exactly the EU guidelines or better." (GPI, Netherlands, Distributor)

(21) "And usually, an EU directive or something like that is then transferred to national law. So, you will say that the relevant national legislation is always decisive." (Hochland, Germany, Producer, translated from German)

(22) "Clearly, a very important point, the EU directives must first be transposed into German law, so that's what we'll do then." (Tegut, Germany, Retailer, translated from German)

In conclusion, the data indicates that the EU legislation on circular economy has an impact on businesses. This impact can be divided into direct and indirect impacts on firms' operations. The mandatory regulations through the EU and national legislation have a direct impact on the companies, as the data has shown that all companies follow those mandatory ones. Based on the data, recommendations from both institutions can be considered as an indirect impact, as they can enhance circular activities in firms. However, the data has shown that those recommendations need to be economically profitable and feasible. Figure 8 shows that all cases have followed the mandatory regulations by the EU and the national, hence, those regulations can be considered as a strong influence on firms. Recommendations can be considered as a weaker influence. Nevertheless, national recommendations are a bit stronger, whereas EU recommendations can be considered weak.

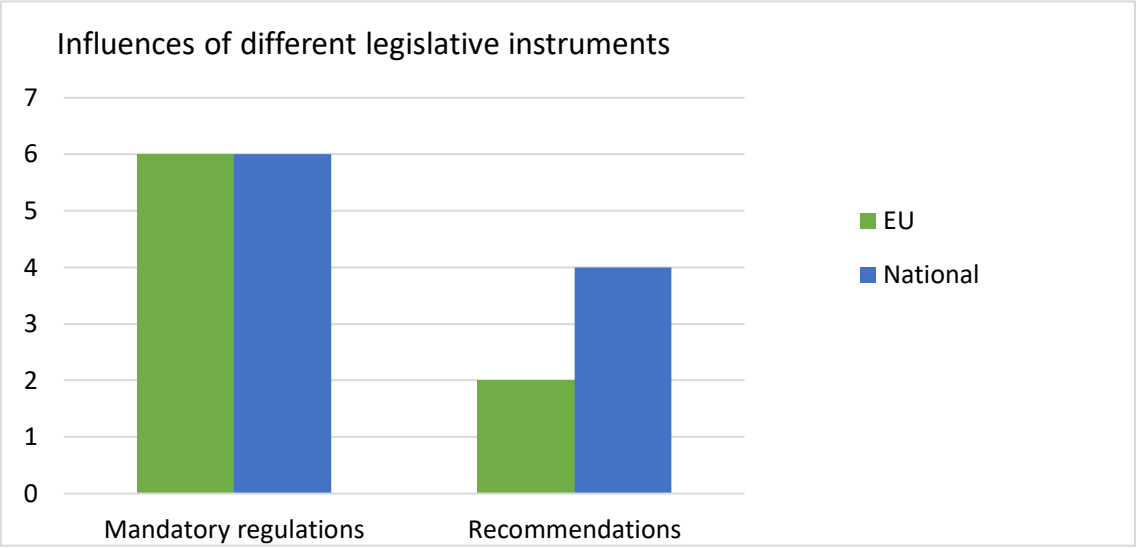


Figure 8. Influences of different legislative instruments.

4.3 The influence of informal institutions on CE practices in firms

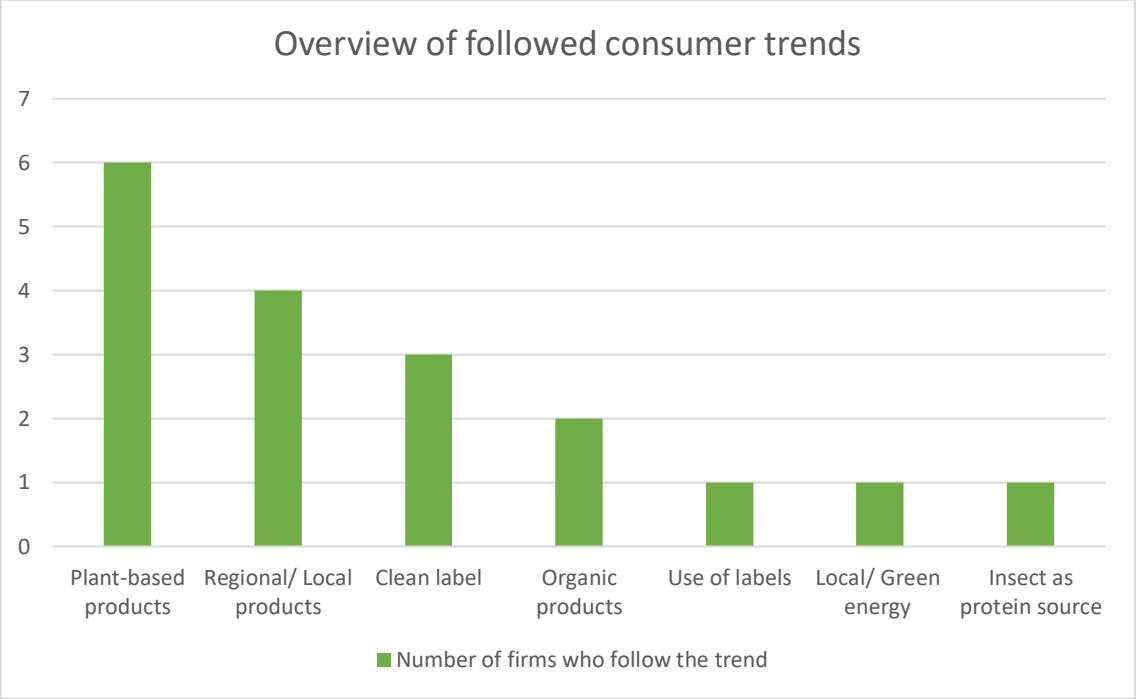
The last chapters present the data and patterns observed in relation to the impact on companies' operations by informal institutions, like consumer trends, the food industry, and non-governmental organizations (NGOs).

4.3.1 The influences of consumer trends on firms' operations

Overall, the data indicated that consumer trends have a direct and strong impact on the companies' operations and circular economy practices. Most companies have identified and followed at least four consumer trends that are aligned with the model of the circular economy. Table 3 shows which consumer trends were followed the most to the least by the firms. The most common trend observed was the trend of plant-based products. In all of the cases, data pointed out that the firms have a fully plant-based assortment or have started to offer a plant-based alternative. Additionally, the trends of less processed food (also known as "clean label"), regional products, and organic products have been observed in several cases. Less observed trends were the use of labels, insects as a protein source, sourcing of local green energy, and carbon neutrality.

Almost all of the trends were also found on each company's webpage, which is another indicator of the importance of trends within the industry.

Table 3. The distribution of consumer trends across cases.



As explained previously, all interviewees had the opinion that consumer trends have affected their business significantly (see quotes 23 to 26). According to the interviewees, if a company did not follow consumer trends, its competitiveness might be endangered. Further, the data indicated that most companies did not see the adaptations to consumer trends as something negative since they have not mentioned any concerns or antipathy towards the mentioned adaptations (see quotes 23 to 26)

(23) *"And you try to be very adaptive when you're a small company." (GPI, Netherlands, Distributor)*

(24) *"But everybody is quite positive because it's a market trend and you have to move along with that. So, we're also doing that." (FrieslandCampina, Netherlands, Producer)*

(25) "As a food retailer, you are basically in a very dynamic environment." (Tegut, Germany, Retailer, translated from German)

(26) "We're seeing that consumer trends are changing, and that's not something we're closing ourselves off to." (Hochland, Germany, Producer, translated from German)

Comparing the primary data to the supporting secondary data, the influence of consumer trends can be confirmed. The companies' websites show dedicated sections like "plant-based products" or "organic" products. Contrary to the trends observed in the interviews, the websites displayed a lot of different labels to indicate specific consumer trends or production methods. This could indicate that the importance of labels is more relevant on a digital platform than in other business operations.

4.3.2 The impact of the food industry on firms' operations

The interview data that was found on the food industry showed two major results. Firstly, the data indicated that the indirect industry has an impact on the companies. The interviewees mentioned that the food industry had influenced them positively by helping to create alliances with other businesses and offering a platform of knowledge exchange (see quotes 27 and 28).

(27) "And therefore, we are a member of two organizations who are really lobbying that on a more political level. One is ProVeg, also a German organization and the Green Pro Alliance. And by contributing to those two organizations, more stakeholders, are trying to push on that main goal of changing the food pattern." (GPI, Netherlands, Distributor)

(28) "We're participating of course in all of the sustainability branch initiatives. For example, in the International Dairy Federation, the Global Dairy Platform, and

there's the European Dairy Association. So, there are lots of places where the dairy industry meets. We also have some projects with more B2B communities, like Nestlé, Danone and so on. So, I think there you're sharing knowledge and often commit to the same initiatives like science-based targets as anyone else, where in a way you're also sharing." (FrieslandCampina, Netherlands, Producer)

Further, the quotes (27 and 28) indicated that the food industry has a strong indirect impact on the firms, as some of the interviewees mentioned a collaborative approach on the circular economy implementation. This indicated a possible trend that circularity should rather be promoted and supported by the industry or collaborations instead of just single firms. In addition to that, the data indicated that the companies that are already following many of the EU and national recommendations confirm the positive contribution of alliances and exchange within the industry.

From the firms' perspective, data also indicated that the influence between the industry and the firms is two-sided. Most companies have reported that if they were a pioneer in a certain practice in the industry, they were considered a role model, and the industry adapted according to their new approach or method (quotes 29 and 30).

(29) "With Nestlé, Danone, and so on, I think there you're sharing knowledge and often commit to the same initiatives as science-based targets as anyone else, where in a way you're also sharing" (FrieslandCampina, Netherlands, Producer)

(30) "We're working on it and we're seeing that all these regulations bring about a lot of what we've already done voluntarily, which is great for us. We now have a living playing field as a result" (Tegut, Germany, Retailer, translated from German)

Contrary to the research results, the secondary research of the firms' websites has not indicated any influence of the industry. All websites just presented the firms themselves

and did not go into detail about their role in the industry or possible relations. Alliances formed throughout the industry were rarely mentioned.

4.3.3 NGO frameworks and their influence on firms

Lastly, the data gave insight into the indirect influences of NGOs on firms' operations, especially the Ellen McArthur Foundation (EMA). Data indicated that even though most of the companies claimed not to have any knowledge about EMA or other sustainable NGOs and their influence, many elements can be found in their operations and voluntary actions. The data illustrated many elements of the ReSOLVE and butterfly model by the EMA.

When taking a closer look at the data and the butterfly model by the Ellen McArthur Foundation, only 50% of the companies have mentioned relatable practices. The other companies have only shown little to no elements at all. On the contrary, almost 85% of the cases had elements of the ReSOLVE model included in their business model. The three most common elements that were shared among the companies were sharing, optimization, and exchange.

Moreover, secondary research has shown that cooperation with NGOs is not very common. None of the case companies' websites show cooperation with NGOs, and further research on additional companies within the food industry did not show any evidence of that either. This could be an indicator that the author or creator of models does not necessarily need to be part of the model. The results indicate that even though many circular economy models were developed by NGOs, the companies do not pursue cooperation or consultancies by NGOs. Nevertheless, FrieslandCampina was standing out from the other firms, as they were the only firm that mentioned including NGOs as a stakeholder within their company (see quote 31). They have mentioned their collaboration with the Ellen McArthur Foundation as an independent environmental consultant and auditor.

(31) "We have biodiversity monitor developed in the Netherlands and think it might have been to we developed together with Rabobank, but there was some connection to this, maybe to something else, because I've have read it in one of our press releases. Yeah, together with the MacArthur Foundation, but I don't remember what it was[…] And I think we do if they like the NGO, the type of NGOs that asks for commitment and collaboration on monitoring, we always think work with them." (FrieslandCampina, Netherlands, Producer)

The previously presented findings and evidence are to be used as a basis for the following chapter. The next chapter analyzes the results and puts them into context.

5 Discussion and conclusion

This study was driven by the motivation to understand how firms in the EU are influenced by the EU legislative framework concerning circular economy. Further, the empirical research was exploring, how various institutions (formal and informal) interact at the country and the EU and how these simultaneous pressures matter to firms when considering circularity. The findings of this research can aid policymakers and managers in making informed decisions that promote sustainable and circular economic practices.

The aim of this study was to answer the research question of "*How does the EU's legislative framework on circular economy implementation influence firms operating under varying institutional pressures in different EU markets?*". Led by that research question, four research objectives were defined, which included understanding the EU and national legislative systems and their CE implementation approach. Thus, the study aimed to explore the effects of the European circular economy legislative framework on business strategies. Lastly, the research empirically explored the simultaneous influences of other institutions on the firms in relation to the EU legislative framework aiming to implement circular economy. To enhance the understanding of the key findings, figure 9 was developed.

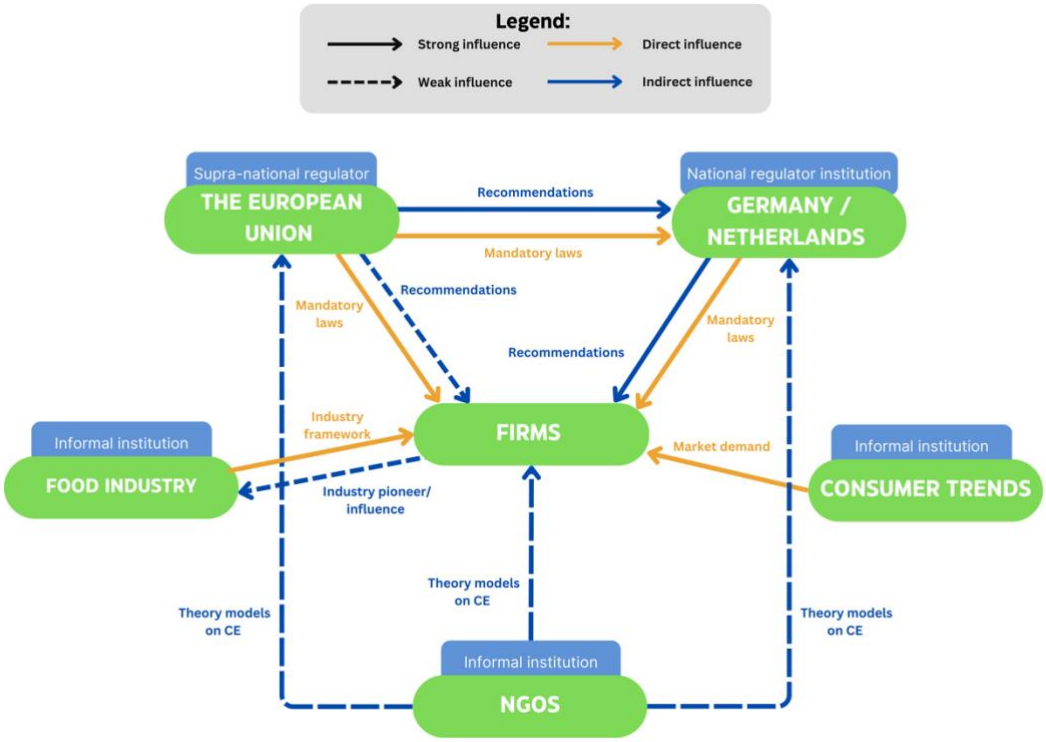


Figure 9. The different influences on firms concerning circular economy implementation.

In the following chapter, the research's empirical findings are summarized and reflected based on the theoretical framework in response to the research question and objectives, which explains relationships illustrated in figure 9 concerning the key findings on the different types of influences on firms implementing CE. Detailed explanations for the figure are provided in the following chapters.

5.1 Regulatory institutions' influence on CE implementation

The influence of regulatory institutions like the EU or national governments has different influences on CE implementation in firms.

5.1.1 The influences of the EU on CE implementation

Even though the current food industry is led by the take-make-dispose scheme in the EU (Sariatli, 2017), the EU aimed to implement a circular system through its new Circular Economy Action Plan and the farm-to-fork strategy (European Commission,2020b). Based on those, the EU released certain regulations like the Common Agriculture Policy (European Commission, n.d.-c). However, most of the actions by the EU were released in the form of recommendations.

As we could see in the data, in most cases, the companies were aware of the overall EU goals and some of the recommendations. This displays that the EU's communication is effective and has a far reach. However, the study shows that recommendations like the expansion of product life or the reduction of food waste are significantly less effective than directives or regulations by the EU (European Commission, 2020c). Additionally, it is important to point out that companies that only operate in their own country do not focus or only focus very little on the EU legislation, as they are mainly affected by the national legislation. This is another factor that influences the EU's impact on CE implementation.

Based on the research results, it is advised for the EU to make more directives and regulations concerning the circular economy if the EU aims to achieve its goal of the new Circular Economy Action Plan and the farm-to-fork strategy by 2050 (European Commission,2020b). Another possibility is to increase the encouragement of the EU recommendations at the national level.

5.1.2 The influences of national legislation on CE implementation

Reviewing the various national legislations on CE implementation in Germany and the Netherlands, the study results showed some similarities and some differences compared to the EU legislation. Based on the research, the overall willingness to stay informed about the plans and legislation of national governments was higher compared to the EU.

In Germany, most of the companies were informed about KrWG (KrWG, 2021), the Food and Feed Code (LFGB), and the Packing Act (Bundesregierung von Deutschland, 2021). Further, the research showed results concerning the willingness to follow the mandatory regulations, in which all companies are complying with the mandatory regulations by the government. Moreover, we can see that most companies follow the recommendations concerning waste reduction that align with the Packing Act (Bundesregierung von Deutschland, 2021) and the recommendations by the Food and Feed Code (LFGB), like the integration of the Nutri-Score (Bundesministerium für Ernährung und Landwirtschaft, n.d.). Nevertheless, the core recommendations towards a circular economy within the KrWG (KrWG, 2021) are only followed partly or not at all.

Comparing these results to the data collected on firms in the Netherlands, we were able to see a similar trend. The research has proven that the information on mandatory and voluntary CE actions was very clear and accessible since most companies were very well informed. The study results show that all companies follow the mandatory regulations of the Dutch Food industry (Netherlands Enterprise Agency, 2021) as well as the Circular Economy Implementation Programme (Waterstaat, 2019). This shows the effectiveness of mandatory national regulations. Nevertheless, the recommendations are less followed in comparison to the mandatory ones. Even though many firms do follow recommendations that are more easily implied, like the Nutri-Score, more complex recommendations, like waste-free solutions and actions regarding extended producer responsibility, fall short (The Ministry of Infrastructure and Water Management, 2021).

The suggestions for policymakers and firms are quite similar to those on the EU level. In order to increase the influence of policymakers on CE implementation, increased mandatory actions are suggested. As the results of the study show a slightly higher willingness to follow national recommendations than EU ones, another way to promote CE implementation could be achieved by increased marketing of those recommendations and governmental incentives.

In addition, the results of this research display that if firms wish to increase their CE performance, they should follow as many recommendations as possible. The research has shown that this might not only increase their competitive advantage in the short-term, but also eventually secure their long-term business operations.

Overall, the research also gives insight into the interactions between national institutions and the EU as a supra-national institution. Although the data identifies that mandatory regulations issued by both institutions are followed by firms, the firms follow more the recommendations issues by the national government rather than by the EU. This is an indicator of a stronger interaction between firms and their national government, as firms in the EU are more likely to follow national legislation than the EU legislation. Based on the research, national legislations tend to be perceived as more understandable and applicable to the firms.

Further, the data has shown that the interaction between the EU and its member nations concerning CE implementation mostly relies on recommendations and directives, which do not have a binding legal force (Storey et al., 2014). However, the data confirms the theory that recommendations are meant to give ideas and inspiration to national legislation (Storey et al., 2014). Even though the firms were not directly influenced by the EU recommendations on CE implementation, the firms recognized that the national law on was inspired by those EU recommendations. The analysis supports the theory that, due to the economic and social diversity in the EU, recommendations are preferred by the EU in order to provide the possibility of suitable national-specific approaches. In conclusion, the results show that the EU has a strong effect on the development of national legislation and through that, an indirect effect on the firms operating within the country markets.

5.2 Informal institutions' influence on CE implementation in firms

Contrary to the hypothesized association that only regulatory institution influences the CE implementation, the study results have shown the importance of informal institutions

on CE implementation. The study has detected three major informal institutions in the EU that have an influence on the firms' considerations to implement CE.

Overall, the study results align with Hoehnel et al.'s (2022) study, that the food industry has an impact on the firms within it and their circularity practices. In addition to the theory, the research has shown, that the food industry has the ability to support firms with the same interests and ambitions towards circularity to exchange knowledge and experiences. The case study has shown the significant positive impact of such alliances. Moreover, the analysis supports the theory, that the food industry has an impact on the firms, but that the firms also have an impact on the food industry. Companies have the ability to act as a pioneer in a field like circular practices and incentivize the food industry to promote similar actions.

Further, the empirical research showed the importance of consumer trends. The case study confirmed that consumer trends related to the consumer's health and sustainability became more meaningful in the food industry. The major consumer trends identified by Layman (2014) concerning unprocessed, local, and plant-based food can be confirmed by the research results. Besides, the research detected additional consumer trends like organic products, the usage of sustainable labels, healthy lifestyle products, and insects as an alternative protein source. Thus, the research confirms Asioli et al.'s (2017) and Hoehnel et al.'s (2022) theory that consumer trends and related consumer demand are key drivers for a firm's operations and developments.

Lastly, the results show the influence of informal institutions like NGOs on the CE implementation. The theory shows that NGOs, like the Ellen McArthur Foundation, are creators and leaders concerning circular economy models (Ellen MacArthur Foundation, 2019a; Velenturf et al., 2019). The results of this study give a clearer understanding that models like the butterfly model or the ReSOLVE model have an indirect impact on the companies' circular actions (Ellen MacArthur Foundation, 2019a; Gonçalves & Maximo, 2022). Even though the research data shows that the knowledge level about those

models is limited, many elements of those models can be found in the companies' circularity practices. This result indicates that there is an indirect influence from NGOs on the firms.

From a policymaker's perspective, those results show that the influence on a firm's CE implementation goes beyond the regulatory institutions. In order to create stronger drivers for change, regulatory and informal institutions could consider cross-sectoral collaboration. Thus, the importance of exploring institutional braiding (Dieleman et al., 2022) in the context of the CE implementation through institutional influences is significant. Although the currently the EU's CE implementation framework does not consider informal institutions, the research results clearly reveal their importance (European Commission,2020b). Since all institutions would work together, there is the possibility to strengthen the CE implementation and potentially speed up the transition to a CE system. Moreover, firms should aim to be informed about the developments and aims of informal institutions, as their influence is proven as important by the study. It is recommended to follow consumer trends, participate in industry networks, and collaborate with NGOs in order to achieve full circular business operations and secure a long-term market position.

5.3 The institutional theory and CE implementation in the firms within the EU

The institutional theory by DiMaggio and Powell (1983) explains how homogeneity is created among organizational structures in an environment of institutions due to institutional pressure. It leads to a setting known as "institutional isomorphism," in which organizations adopt similar structures as a result of the three pressures: coercive isomorphism, mimetic processes, and normative pressure (Greenwood et al., 2017). This theory of institutional theory indicated that it had the potential to be applied to a supra-natural organization like the EU.

As the findings of the research showed evidence of the three pressures: coercive isomorphism, mimetic processes, and normative pressure, institutional isomorphism can be confirmed for the EU and its member nations (Greenwood et al., 2017). Coercive isomorphism is created through the legislative framework of the EU, which makes nations work under the same conditions and regulations. The data has shown that even though many of the CE implementation actions by the EU are only recommendations, the EU members aimed to achieve the same goal by national-specific measures. Further, mimetic processes are observed in the findings because firms in both countries followed similar voluntary actions. This indicates that even though the EU legislation is uncertain, the companies and firms within mimic each other. Lastly, the EU member countries agreed to work and secure certain norms that the EU sets. Those norms are mostly secured by regulations and are represented in the research data through similar norms concerning circular economy implementation. This represents the normative isomorphism in the EU.

The research data showed that the EU creates homogeneity among its member countries through institutional pressure. Considering the data on CE implementation, the EU did not integrate many mandatory regulations, which resulted in the member states interacting with each other within the given EU framework. All in all, the EU legislation did not show a direct effect on the firms' CE implementation, however, the influence of the EU can be considered indirect, explained through the institutional isomorphism of the member states. The study has shown that the member countries have similar approaches to integrating CE into their economies. It can be advised for national policymakers to create alliances for research and development in geographical, economic, and socially similar countries in order to improve CE implementation.

5.4 Theoretical contribution

Before this research, the effects of the EU legislative framework on CE implementation were underexplored, particularly when considering its interactions with various other institutional pressures. Although the theory of circular economy is widely researched

(Ellen MacArthur Foundation, 2019a; Neves & Marques, 2022; Sillanpää & Ncibi, 2019; Velenturf et al., 2019), its implementation and the influence of the EU remain unresearched so far. Further, the current research lacks frameworks on how to implement a circular economy system in businesses, organizations, and legislations. The influences of the EU are crucial for CE implementation, due to growing environmental, social, and economic pressures (Raworth, 2017; Sillanpää & Ncibi, 2019). The results of this study contribute to the research on circular economy as well as the institutional theory by providing pioneering insights into the influence of EU legislation on firms concerning CE implementation.

Additionally, the research contributes to the current research on institutional theory. Thus far, the literature on institutional theory has focused on exploring the effects of institutional pressures in silos, without looking at multiple interactions at several different levels, such as country and supra-national institutions (Dieleman et al., 2022). Due to that, the results of this research contribute to the theory by elaborating on the institutional braiding and therefore interactions among institutions on a national and supra-national level. As a supra-national institution, the EU has 27 member countries and influences around 447 million people with its legislative framework (European Commission, 2021). The theoretical knowledge of how the institutions in the EU context interact is crucial as its scope of influence is immense.

5.5 Managerial contribution

The research gives multiple insights into managerial implications. Although the Ellen McArthur Foundation has developed models like the butterfly and the ReSOLVE model (Gonçalves & Maximo, 2022), many managers in the food industry still lack understanding and therefore struggle with how to implement a circular economy business model.

Due to the fact that the managerial implication of CE implementation is highly dependent on governmental regulations, they can be more complex. The data confirms

that it is recommended that managers should align their operations with governmental regulations, recommendations, and internal drivers. However, this process is influenced by two factors. On the one hand, the study results show that following the regulations and most of the governmental recommendations concerning CE can secure the long-term market position of a company. On the other hand, the results also display the importance of internal factors like profitability and feasibility that need to be secured during the implementation process of CE.

Consequently, the study results indicate that managers need to find a balance between CE actions and economic stability in order to secure long-term stability and growth. Moreover, it is recommended that managers stay up to date with national legislation and recommendations concerning CE. Based on the research results, both national legislation and recommendations are considered more influential, feasible, and locally applicable to companies in the EU food industry.

5.6 Limitations and suggestions for future research

A crucial component of scientific research's ethical framework is addressing its limitations. This ensures methodological transferability and repeatability as well as the transparency of the study and the researcher (Adams et al., 2014). Limitations are addressed to ensure that readers may assess the validity of the results and generalize them appropriately (Adams et al., 2014). Therefore, this study's limitations are explored in this chapter, along with suggestions for further research.

Firstly, it is to be noted that this study is composed in English, as well as most of the research. Although the researcher has a very high level of English skills, it is not her native language. Nevertheless, the effects of the language barrier are limited, as reliability is ensured through double-checking translations and proofreading of independent third parties. In future research, it would have been interesting to explore if the results would remain the same if all research were carried out by an English native language speaker.

However, the use of English was crucial to this study, as it gave the study the opportunity to collect data from more than one EU country, which increased its generalizability.

Further, the relation to certain interviewees might have compromised the reliability of the study. Two of the interviewees have a professional relationship with the researcher. Nevertheless, the researcher approached this matter with caution in order to avoid possible bias. All interviewees were presented with the same information and interview processes. Additionally, all interviews were recorded and transcribed in order to avoid personal influences during the data analysis and discussion. Future research could be carried out with different interviewees or companies.

Moreover, the methodological choices give an additional opportunity for future research. By using a qualitative research approach, the results of the study gave in-depth information on the EU's influences on CE implementation. Future research could be collected in the form of quantitative research. Although the information might be less detailed, it gives the opportunity to receive overall insight into the different EU markets or different industries. In addition, the results of the study present the influence of the EU legislation concerning CE implementation on firms at a certain point in time. The cross-sectional research approach gives insight into the current influences on firms since the EU's implementation of the circular economy plan in 2015 (European Commission,2020b). Nevertheless, possible future research could analyze the possible long-term influences of EU legislation on CE implementation by choosing a longitudinal research approach.

Lastly, the results of the study focus on the food industry and how it is influenced by EU legislation. It provides evidence of how firms in the food industry are influenced beyond formal institutions. Further research could explore how other industries are influenced by the legislation.

5.7 Conclusions

This research aimed to identify how firms in the EU food industry are influenced by the EU legislative framework on circular economy implementation. By gaining knowledge about the circular economy model, the EU and national legislative frameworks, and through qualitative research, the legislative influences on CE implementation by the EU were meant to be explored. Additionally, the empirical study was motivated to explore if the institutional braiding, recognizing that the EU legislations affect firms simultaneously with multiple other pressures from formal (e.g. country legislations) and informal (e.g., consumer trends) institutions.

Furthermore, this research offers analytical generalization, which offers generalization to a theory that can be tested in various multiple populations. The study results provide new in-depth insights into the food industry of the EU and their implementation of CE. The results clearly illustrate how companies are influenced by formal and informal institutions concerning CE implementation. It adds to the theory of CE implementation, which so far has only discussed the role of formal institutions.

The in-depth conclusions of this qualitative study could be explored further by the use of different methodological approaches. Future research has the opportunity to explore the problem from a quantitative research approach. Although this compromises the depth of data, it can increase the scope and generalizability. In addition to that, the research question gives the opportunity to approach the problem from a long-term perfective. Instead of exploring current influences, research can be conducted on possible long-term effects.

Nevertheless, the research results show the clear influence that the EU legislation on CE has on firms. Based on qualitative research, it can be concluded that firms are strongly and directly influenced by EU national mandatory laws. Recommendations from the EU showed to only have weak and indirect influence on firms. On the contrary, national recommendations show a stronger and more direct influence on firms than EU

recommendations. Moreover, the study discovered that informal institutions like the food industry, consumer trends, and NGOs have a strong and direct influence on the firms' CE actions as well. In conclusion, the study results provide evidence that firms in the EU food industry are influenced beyond the EU legislative framework, as national legislation and informal institutions have an influence on CE implementation as well encouraging further explorations on institutional braiding.

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Appendix 1. Interview guide

PART 1: INTRODUCTION

1. Hello, my name is Ronja. Thank you for your time and offer to help me today! I am conducting this interview on behalf of my master's thesis research. The topic of the research is: *"The effects of the EU's legislative framework on adopting circular economy in firms in different EU markets: The case of Germany and the Netherlands."* Before we start the interview, I would like to ask your permission to record this interview and use it for my master's thesis. Is that okay with you?

2. Furthermore, all interviews for this study are generally anonymized. Nevertheless, I wanted to ask you if it is okay with you if I mention your name and company. How do you feel about this?

3. Do you have any questions about the general procedures?

4. I would start the interview with a few introductory questions about yourself and the company and then go deeper into the topic of the food industry and circular economy. The interview is not intended to test your level of knowledge but rather to get a realistic insight into the business and the food industry.

5. Could you please start by introducing yourself in a few sentences? Including name, age, professional background, etc.

6. Now I would kindly ask you to describe *COMPANY XY*, its key operations, and your position in it.
   (Possible extra questions on company, business model, or position for clarification)

PART 2: CIRCULAR ECONOMY AND FOOD INDUSTRY

7. In your own words, are there any key principles or guidelines that your business and management have in regard to the natural environment? If yes, could you please describe them?

8. Has your company responded or is currently responding to specific consumer trends in the food industry? If yes, in what ways have you responded to these trends, or what actions have you taken?

9. Have you heard of the concept of circular economy? If yes, what is your understanding of the concept?

10. Please describe to what extent sustainability factors such as CO2 emissions, an environmentally friendly supply chain, or waste management play or do not play a role in your company.

11. There have been different discussions and legislative actions by the European Union on sustainability issues such as CO2 emissions, resource consumption, and nutrition, which have also affected the food industry. Have you heard about any of these? If yes, have these EU discussions and actions affected your company or not? Why do you think so?

12. In addition, there have been various discussions and legislative actions by the German / Dutch government on sustainability issues such as CO2 emissions, resource consumption, and nutrition, which have also affected the food industry. Have you heard about any of these? If yes, have these national discussions and legal actions affected your company or not? Why do you think so?

13. What do you think about voluntary actions in companies like regenerative actions,

sharing of knowledge and resources, reduction of waste, re-usage of materials, digitalization, and closed production cycles? Are they important to your company or not?

14. In your opinion, what are the key drivers that would make your firm think and take action about reducing resource usage and waste, closed production cycles, and sharing of knowledge and resource?

15. Is your company currently taking voluntary actions like reducing resource usage and waste, closed production cycles, and sharing knowledge and resource? Why or why not? If yes: What are these actions, and what was the reason for taking them?

16. To what extent and in what ways might, or will, your company's long-term business operations and customer demand change? Especially considering the current environmental discussions. Why do you think so?

17. To what extent and in what ways do your firm's actions, such as reducing resource usage and waste, closed production cycles, and sharing of knowledge and resource, correspond to the national legislation or suggestions? Why do you think so?

18. To what extent and in what ways do your firm's actions, such as reducing resource usage and waste, closed production cycles, and sharing of knowledge and resources, correspond to the EU legislation or suggestions? Why do you think so?

19. There have been various information, models, and proposals from international NGOs on sustainability issues, which have also affected the food industry. For example, the Ellen McArthur Foundation. Have you heard about any?
20. To what extent and how have those information, models, and proposals of NGOs

impacted your business or not? Why do you think so?

21. Room for possible additional questions.

PART 3: CLOSING

22. Is there anything else you would like to share about the national and EU Frameworks concerning regenerative behaviors, sharing (knowledge and resources), production optimizations, closed production cycles, dematerialization, environmental actions, and your company?

23. Do you have any questions for me?

24. Thank you. The final study and its results will be provided to you at the end. If you would like a preliminary draft, I can send you a copy before the official submission. This way, you can give me feedback or make final comments, which I will be happy to address. However, these comments must be received within one week so that the processing of the master's thesis is not delayed. If I do not receive feedback, I will consider this as a silent acceptance of the draft. Would you like to receive a preliminary draft before the official submission?

25. If there are no more questions or comments, that would be the end of the interview now. Thank you very much for your time and answers! I will end the recording now.