



# UNIVERSITY OF GOTHENBURG

## SCHOOL OF BUSINESS, ECONOMICS AND LAW

GM0161 Master Degree Project in International Business and Trade

### The Effect of Circular Economy on Global Value Chains

– *Evidence from Changing Business Models in the Food Industry*

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# Abstract

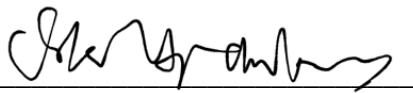
The aim of this thesis was to contribute to the scientific literature on circular business models and global value chains. Specifically, this thesis has investigated the effects that changing towards circular business models has on global value chains for established firms in the food industry, as there is a gap in current literature regarding this understanding. The authors conducted a qualitative case study interviewing eight respondents from senior positions in international firms with offices in the Nordic. These interviews provided the authors with four sets of empirical findings; (1) different factors, pressures, and possibilities relating to a circular economy in the food industry; (2) how the implementation of circular economy in business models may be made; (3) changes in the structure of global value chains as an effect of implementing circular business models; (4) changes in control and coordination of global value chains as an effect of implementing circular business models. The authors drew the conclusion that the major findings of this thesis relate to the extension of global value chains into ecosystems consisting of intermingling value chains spanning across industries and countries. The authors also concluded that for circular business models, partnerships play the most significant role as it allows for circular implementation of other business model aspects such as activities and resources. Furthermore, partnerships are concluded to enable the ecosystem structure of global value chains and also change how global value chains are controlled and coordinated as an effect of a change towards circular business models.

**Keywords:** Sustainability, Circular Economy, Circular Business Model, Global Value Chain, Partnership, Collaboration, Ecosystem, Food Industry.

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Sincerely,



Oskar Filip Hjelmberg



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## List of Abbreviations

EMAF	Ellen MacArthur Foundation
EU	European Union
GPN	Global production network
GVC	Global value chain
KPI	Key performance indicator
RISE	Research Institutes of Sweden
SRS	Svenska Retursystem AB

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# 1. Introduction

*This chapter presents the background to this thesis, with consideration for sustainability and value, business models, and the characteristics of the food industry connected to these, as well as a problem discussion on circular economy and the incorporation of circular economy in business. Furthermore, the aim of this thesis is presented as well as the research question, followed by the delimitations. The chapter ends with an outline of the following chapters of the thesis.*

## 1.1. Background

*This section discusses sustainability and value creation as well as global value chains (GVCs). Moreover, the role of business models for companies is introduced. Lastly, the characteristics of the food industry will be presented.*

### 1.1.1. Sustainability and Value in Business

Sustainability is a broad and increasingly relevant topic and Martin and Schouten (2012) explain that sustainability does not come naturally for humans and therefore has to be actively emphasized and integrated. The gap between present practices and fully sustainable ones is large and there are several steps that have to be taken to transform to fully sustainable practices (Martin and Schouten, 2012). Sustainability can be categorized into three interlinked aspects that each have separate issues and implications. The three aspects are economic, social, and environmental sustainability (Martin and Schouten, 2012) and within the business context economic sustainability has historically been the main focus and most integrated aspect. Later, environmental sustainability got more attention and gained recognition in the business context followed by social sustainability (Elkington, 1997).

There are many different definitions as well as approaches to sustainability and the most common definition might be the one by Brundtland (1987, p.54) that states:

“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”



The International Institute for Sustainable Development (2001, p.1) made a modification of the Brundtland definition that was aimed to be suitable for the corporate context and that definition follows:

“For the business enterprise, sustainable development means adopting business strategies and activities that meet the needs of the enterprise and its stakeholders today while protecting, sustaining and enhancing the human and natural resources that will be needed in the future.”

Within these definitions, there is room for different interpretations and also different modes of implementation. By incorporating sustainable development into core aspects of business organizations, Lovins et al. (2007) propose that firms can create value. A perceptual change in how organizations operate in value creation is much needed according to Porter and Kramer (2019). Porter and Kramer (2019) argue for the increased scrutiny of businesses as a result of the belief that firms are chasing profits at the expense of the broader community, which comes from firms treating value creation as short-term activities to satisfy shareholders' perceived interests. However, Porter and Kramer (2019) argue that businesses are in fact the best actors to solve the social issues we are faced with in modern days as firms have higher influence over customer needs, needs creation, and satisfaction of needs than governments. The solution that businesses can adopt is according to Porter and Kramer (2019) shared value, which is actions that generate both economic and social value.

Value creation and capture can happen in different ways and forms and value may be defined in different ways. Although discussing global production networks (GPNs), Dicken (2015) breaks down value creation and value capture of enterprises in the global economy as activities in networks. Each link in a network creates value through labor skills, process, technological application, and organizational expertise (Dicken, 2015). Value is then defined as the surplus that is created and goes above the cost of transformation and transaction at a particular link. GVCs are such networks and are according to Gereffi et al. (2001) the most all-encompassing concept of the different definitions of global networks. GVCs showcase the relative value of the activities required to bring a service or commodity from start to finish, and other connected actions such as delivery and disposal (Gereffi et al., 2001). Furthermore, actors within this value-added process can either be one link in the process, or it can be a vertically integrated function (Gereffi et al., 2005) and these value-adding activities may be spread across organizations and country borders. The global chain of value creation has, according to Gereffi

(1994) developed through global industrialization as a result of interspersed production capacity showcased after the Second World War in combination with technological developments in the transportation and communication field.

### 1.1.2. The Role of Business Models

Business models cover the strategy and activities of firms and act as a guiding mechanism in these (Teece, 2010). A good business model should describe the mechanisms of how a business enterprise creates value for the customer, deliver this value, and capture the value. A good business model could also be a source of competitive advantage when designed and implemented properly. Since business models spread over an organization's activities, there is interplay between business models and the strategy and capabilities in an organization (Teece, 2018). The firm's capabilities affect the business model in both what activities can be done, as well as the firm's opportunity to recognize external environmental changes it can draw opportunities from. The business model affects what kind of strategy the firm can utilize. According to Teece (2018), the business model dictates, amongst others, how value-adding activities are conducted and which external actors to utilize.

All firms when founded employ a business model with the core goal of describing how the firm should capture and draw benefits from value created for the customer (Teece, 2010). Furthermore, firm environmental changes might create a necessity of innovating the business model as time goes. With new products and innovations, the plan for capturing the value created needs to be altered, to account for the new opportunities (Teece, 2010). One such external change is the increased focus on sustainability and sustainable products and processes, which has led to the emergence of sustainable business models (Geissdoerfer et al., 2018).

### 1.1.3. The Food Industry

Since food is an important industry worldwide, changes here have the potential to make or break the race for sustainable development. As Rockström (Stockholm Resilience Centre, 2016, section Sustainable Agriculture: Too Intense?) mentions:

“Agriculture is the world’s single largest driver of global environmental change and, at the same time, is most affected by these changes.”

Thus, the food industry is an important unit for global environmental change, and according to Rockström et al. (2017) sustainable and healthy food is a concern that spans across all United

Nations Global Goals. One aspect lifted here as a solution to the effects of the food industry and a growing global population is circular actions in managing resources. The concept of the food industry follows that of Dicken (2015) who calls it the agro-food industry which contains transnational agro-food production networks with all actors participating in the production and processing, as well as distribution. Potter and Hotchkiss (1995) define the food industry as the agricultural sector together with the processing, marketing, as well as supporting activities to it.

Even though GVC is a construction of interlinked actors there is most often a lead firm. It is not uncommon that the lead firms dissociate themselves from negative aspects via branding and other deliberate strategies to protect their value creation capabilities (Ibert et al., 2019). The food industry is no exception to having large lead firms. As Dicken (2015) states, global food production is highly capital intensive which gives high power to large food producers and retailers. Therefore, when investigating such firms it is important to have a holistic perspective to be able to determine the economic and societal impact of the lead firm. In the food industry and other industries based on extracting natural materials, there is one major difference from other industries, as it is literally grounded and bound geographically (Dicken, 2015). While at the same time being very local in the initial steps in a value chain, there has been increased globalization of some food kinds. This is expected to put extra pressure on local food extracting firms, as these are locally bound, while retailers and value chain leaders can source globally for any supplier.

## 1.2. Problem Discussion

*This section introduces the concept of circular economy, as well as provides a discussion of how companies may change or develop their business models to incorporate circularity and in what part of the business models such change(s) may be made. Furthermore, what implications sustainability) in business models have on GVCs will be discussed.*

### 1.2.1. Circular Economy

Global economy volatility and resource exhaustion show the need for a new economic model to be adapted (Ellen MacArthur Foundation (EMAF), 2013a). Increased resource performance initiatives, such as machines that are easy to disassemble and pay-per-use services, are seen across the global business sector where products, and components and materials thereof, are

being reused and the value of input resources are prolonged (EMAF, 2013a). The financing activities of circular economy initiatives are steadily and significantly increasing (EMAF, 2020). A tenfold increase was observed in the number of circular-economy-focused private market funds from 2006 to mid-2020 as well as a sixfold increase in circular-economy-focused assets managed by public equity funds (EMAF, 2020). Insurance companies are also developing their offering to fit different circular ways of using and owning (EMAF, 2020). A transition to a circular economy offers growth and other financial benefits as well as environmental savings and decreased externalities and it may be the mode to address social and environmental challenges. The concept of a circular economy is to move away from the traditional linear economic model where resources are exploited with the purpose of producing consumer goods that later will be turned to waste. In a circular economy, the aim is to eliminate waste by designing products for sustained value where products may be reused or repaired, or its components may be used as input in another product cycle. That way value is sustained as compared to the linear model where the value is prominent only for a short period of time (EMAF, 2013a; 2020).

Within a circular economy, a distinction between types of products and components has to be made. There are components and products that are consumed, such as biological materials, and there are components and products that are durable over a longer period of time such as plastics or electronics which can be reused. The consumable products within a circular economy can easily and safely be returned to the biosphere while the durable products within a circular economy are not safe to return to the biosphere and therefore should be designed for reuse and continued sustained value (EMAF, 2013a). Moreover, a circular economy requires that the energy that is needed to sustain the circular flow has to be renewable by nature to be considered fully circular as well as decreasing the dependence on finite resources (EMAF, 2013a). Lazarevic and Valve (2017) however state that fully closed loops are problematic in practice as there is a need for additional resources, such as energy in the process of prolonging the cycle with for example repair, hence not fully circular although it comes from renewable sources.

In the food and agriculture sector, price volatility and uncertainty have increased over time, and transitioning to circular models has the potential to change the trend to a more stable and predictable price scenario (EMAF, 2013a). Furthermore, 45 percent of global greenhouse gas emissions are from products and foods and may also be managed through the transition to a circular economy according to EMAF (2019a). As it is expected that the global middle class

by 2030 will reach 5 billion people, consumption will increase accordingly and lead to both increased price volatility and increased input costs as resources will be more scarce and further effects on the environment will diminish resources even more (EMAF, 2013b). Such development will be evident in the supply of food and water and the decreased soil fertility was for example estimated to globally cost \$40 billion annually (EMAF, 2013b). The value chains in the food industry can through a circular transition increase the asset value of soil through decreased harm and increased return of nutrients (EMAF, 2013b). The food industry has, with circular solutions such as biodegradable packaging, started the transition to a circular model and EMAF (2013a) emphasizes that the solutions have to be made on a system-level rather than just on individual components. If the food sector together with the plastics, steel, cement, and aluminum industries transitioned to a circular economic model by 2050, the annual global greenhouse gas emissions would decrease with the same volume as the global emissions of transportation (EMAF, 2019a, 2020).

Making use of by-products from the food industry, such as peel or processed water, as input resources in other value chains offers great benefits and cost savings opportunities (EMAF, 2013b). Changing from single-use packaging to reusable durable packaging offer significant net cost reductions with examples such as durable beverage glass bottles that could result in a 20 percent cost reduction with a reusability up to 30 times (EMAF, 2013b). In the European Union (EU), all Member States had to adopt the Circular Economy Package in their respective national laws by July 2020 (Bourguignon, 2018). The package includes four separate directives on packaging, waste, landfills, and electronic waste that each has a number of targets that are to be met by 2025 and 2030 (Bourguignon, 2018). There are targets on reuse and recycling rates by weight for different materials such as an 85 percent target on both paper packaging and glass packaging by 2030, and a 55 percent target on plastic packaging by 2025 (Bourguignon, 2018). EU Member States also need to prevent waste and collect bio-waste separately when it is technically as well as economically and environmentally applicable (Bourguignon, 2018). Bartl (2018) explains that the package implies a drive to an economic model where consumption patterns change and products and value are in more closed loops in accordance to a circular economy. Moreover, the more radically circular the design of a solution is, the higher the economic benefit it seems to yield (EMAF, 2013a). A circular model within agriculture and food may also increase biodiversity (EMAF, 2019a), quality of food, and food safety (EMAF, 2013a). Circular models also offer companies opportunities to deepen customer relationships and differentiate through the product benefits (EMAF, 2013a). In a

circular economy, the role of the consumer shifts towards one of a user implying a dependence on consumer acceptance for the shift, which may be problematic, and the way for increasing customer acceptance can be long and incremental (Hobson, 2016; Hobson, 2019). However, transitioning to a circular model in the food industry in which products are usually converted during use and have relatively short life cycles has some other challenges as well. About 20 percent of the value in such consumer goods are recovered and it is estimated that even without dramatic changes the value recovered may increase to 50 percent (EMAF, 2013a). There is, however, complexity in how to collect the value when it is consumed at distance from its origin as well as a need to change the packaging design in combinations of materials and components that are suitable for circularity (EMAF, 2013a). The packaging design may extend the life cycle of foods and decrease the amount of waste through design innovation and developments (EMAF, 2013b). There are identified categories of material that have the highest potential in a transition to a circular economy and with emphasis on the food industry three main categories are identified (EMAF, 2014). The first regards packaging such as cardboard and paper packaging that are in great volumes, has already high levels of collection, however, also has challenges in sustaining quality over the recycling cycles (EMAF, 2014). The second category is large-scale by-products such as peel or other types of food waste which can both decrease extraction and input of new resources in supply chains as well as it can have a continued value in another supply chain (EMAF, 2014). The third and last category for the food industry is future successful innovative materials such as high-quality biomaterials (EMAF, 2014).

There is no significant difference in how local and national attributes and contexts of cities affect the success and opportunity of the city's role and ability to support a transition to a circular economy for the food industry (EMAF, 2019b). Urbanization and cities also offer the food industry great opportunities in transitioning to a circular model. It can offer resilient and shorter supply chains where by-products can easily be converted into other value chains instead of being discarded and create more value per input resource (EMAF, 2013a;2013b). By 2050, it is estimated that consumption of food in cities will stand for 80 percent of the total food consumption (EMAF, 2019b). Moreover, only two percent of food by-products and waste in cities are made use of while significant amounts of edible foods are discarded daily (EMAF, 2019b). Moreover, with actors geographically close together the relocation of by-products can efficiently be made and potentially lead to the elimination of waste as a concept. However, Lazarevic and Valve (2017) identify the local focus of the circular economy to be a challenging aspect in practice as it could clash with the needs of a global economy. Lazarevic and Valve

(2017) explain that the local focus in the European Union (EU) limits the competitiveness in a global market, and therefore address a need for a more realistic approach than a circular economy.

Present global trends such as shifting demographics, resource scarcity, higher environmental standards, and digitalization are demanding a shift to a circular economic model (EMAF, 2020). A circular economy offers alleviation of supply risk and volatility, net material savings, economic resilience as well as decreased externalities (EMAF, 2013a). The continued development and innovation in IT offer opportunities for a more efficient circular economy where materials can be traced and their quality and status can be tracked, and issues throughout the value chain can through IT be identified, reported, and managed (EMAF, 2013a). Consumer behavior is also shifting and offering possibility as well as demand for circular solutions, however, shifting to a circular economy requires businesses to break the linear model and redesign products, strategies, and business models (EMAF, 2013a). Furthermore, Korhonen et al. (2018) identify the possibility of an offsetting of the material efficiency created by circular economy from reuse, remanufacturing, and refurbishment of products since production efficiency leads to lower prices which leads to higher consumption. A transition to a scaled circular economy also requires industry collaborations, technological developments, and governmental initiatives on regulations, taxation, and the business climate as a whole to create further incentives for businesses to change and collectively create a scaled circular economy with resilient growth and stability (EMAF, 2013a).

### 1.2.2. Implementing Circularity in Business

As firms need to change their approach to value creation an ample area to do so is with the business model (Drucker, 1994; Teece, 2010). Business models are connected to the core activities of how firms create, deliver, and reap benefits from value towards customers (Teece, 2010). As business models also affect strategic decisions made by firms, they also influence how firms operate outside customer specific questions (Osterwalder and Pigneur, 2010). Geissdoerfer et al. (2018) explain that business model innovations are expected to yield greater returns than product and process innovations and that sustainable business models are expected to be more advantageous than non-sustainable ones. Boons and Lüdeke-Freund (2013) and Rauter et al. (2017) explain that changing the business model enables the implementation of new perspectives and ideas throughout all organizational aspects.

For business model transitions, the value proposition has to match customer demand and behavior in order for a successful implementation (Lieder et al., 2020). The developments in customer demands towards circular consumption (Lieder et al., 2017) should therefore be taken into account in business model development. The circular business model is one emerging business model design that is built from the ideas of the circular economy in which waste and outputs are integrated into a closed-loop and used as inputs instead of being discarded when no longer needed and in that way retaining value (World Economic Forum, 2014). Changing to a circular business model can increase both environmental, societal, and economic values for the firm, its network as well as society in the short- and long-term perspective (World Economic Forum, 2014). Circular business models provide opportunities to increase value output per unit of resource input as well as new business opportunities thanks to changing customer demand as well as increased use of previously discarded resources in the production chain (Frishammar and Parida, 2019; Martin and Schouten, 2012). Circular business models are in direct contrast to linear business models where value creation is focused on the flow of new material entering initial activities and further value-adding is done through manufacturing and user actions (Linder and Willander, 2017). Circular business models are bending this linearity into loops of material flow instead and the aim of circular business models is to create additional and retained value without using new materials.

The shift from a traditional linear business model to a circular one may have different implications for different firms or industries and there is yet no agreed one-fits-all recipe on how that transition should be done. Such a transition may also include several different steps or phases and each step may have significant sustainability impact. Frishammar and Parida, (2019) explain that even small changes in incumbent firms may have significant sustainability impacts since those changes will be carried out in usually established wide-spread networks and hence the impact of even a small change is magnified. Furthermore, societal welfare development has been a dark spot in the field of international production value adding networks where the local societal improvements are in fact not as glamorous as one is led to believe (Phelps, 2017). As argued by Phelps (2017) the production process of GPNs contains several invisible intermediaries often neglected. Nature and society are often such intermediaries that is disregarded in GPNs, and it is presumed that the same neglect occurs in creating and analyzing GVC. Therefore, the GVC is an important aspect to consider when investigating the sustainable effects of a firm. As argued above, the food industry is one industry likely to play



a key role in the reach for sustainable development (Stockholm Resilience Centre, 2016) and the industry is characterized by two types of production processes (Dicken, 2015), one more global than the other. The more local production process, which emphasizes environmental, nutritional, and qualitative aspects of food production, is expected to utilize sustainable business models to a higher degree. However, as Dicken (2015) states the industry is highly characterized by global production led by powerful organizations interlinked in GPNs that might have unsustainable consequences. As more focus is put on sustainable development, the firms using global kinds of production processes might find themselves needing to change to more sustainable value projections in new GVCs. Changing towards more sustainable production processes is something that requires innovation or alteration of business models (Geissdoerfer et al. 2018), into sustainable ones, as business models overshadow key aspects of organizational activities (Drucker, 1994; Teece, 2010).

### 1.3. Aim and Research Question

*This section presents the aim and the research question of the thesis.*

This thesis aims at contributing to the scientific understanding of circular business models. More specifically this thesis aims to investigate the effect circular business model implementation has on GVCs. This thesis will empirically investigate how established international companies within the food industry have changed their business models to enable implementation of principles of circular economy, given that changes have been made. Furthermore, this thesis will investigate how and where such changes are made in the business models and what implications the change to a more circular business model has had on the GVCs.

Based on the above-described aim of investigation this thesis aims at answering the following research question:

*How does changing towards circular business models affect the global value chains of firms in the food industry?*

As this question is partially divided between both the effect on GVS and both business models, an investigation like presented above under aim is necessary. To be able to determine the effect that changing towards a circular business model has on the GVC of a firm there needs to be an investigation into how the business model has changed to determine causality.

## 1.4. Delimitations

*This section shortly describes the delimitation of this thesis.*

The research question sets the preliminary limitation of this thesis by specifying the relevant theoretical framework of business models and GVCs of international businesses. Furthermore, the participant selection method provides further delimitation of this research in the form of specific criteria steering the desired units towards international conglomerate enterprises in the food industry or firms in collaboration with these. As the food industry is rather large, with numerous actors, a further limitation is done to only include food processing firms, including distribution and retail, with expressed intention or past endeavors in projects with principles of circular economy. Additionally, all respondents have managerial positions in a Nordic country but are employed at enterprises with interest or operations outside of these countries. The limitations affect the generalizability and transferability of the findings to other industries and geographical markets as well as other types of firms in the food industry than established international firms.

## 1.5. Outline of Thesis

*This section shortly introduces the following chapters of the thesis.*

This chapter, 1. Introduction, brought forward the background issues this research is based on as well as presented the problem for this research. The following chapter, 2. Theoretical Framework, presents the previous literature on business models, circular economy, and GVCs. These theories will provide the basis for the analysis later on in this thesis. Consecutively, chapter 3. Methodology explains how the research for this thesis was conducted and why it was conducted in such a manner, the chapter also presents the different units of analysis and discusses the trustworthiness of this thesis. Following this, chapter, 4. Empirical Findings, brings forward the results of the data gathering for and presents the major findings connected to circular business models and GVCs. Chapter 5. Analysis continues with analyzing these major findings with the help of the theoretical frameworks presented earlier. Lastly, this thesis ends with chapter 6. Conclusions, where a summarizing discussion of the analysis is held and the research question is answered. There is also a discussion on the possible implications of the findings for concerned businesses.

## 2. Theoretical Framework

*This chapter presents the theoretical framework, that together with the empirical findings lays the foundation for the analysis in the fifth chapter. The chapter presents the concept of business models as well as a canvas for creating one. Thereafter, a circular business model framework is presented that connects the business model canvas and circular economy. Circular business model assessment is also presented, followed by the presentation of the theoretical framework for GVCs and the chapter ends with a connection between business models and GVCs.*

### 2.1. Business Model Framework

*This section presents the foundation of the theoretical business model framework of this thesis and presents the business model canvas by Osterwalder and Pigneur (2010).*

The definition of what a business model is varies between authors. However, some key similarities between the different definitions lie in how the business models are connected at heart to organizational value creation. Lewis (2000) defines the term business model as an art of planning how to make money and Teece (2010) shares this perspective on what a business model in its essence really is. Daly and Walsh (2010) argue that every enterprise has a theory of how that enterprise shall organize its business and should reflect structure, operations, value creation, and profit extraction. According to (Daly and Walsh, 2010), a theory of business has three parts. First, assumptions of the environment. Second, assumptions of the mission of the enterprise, and third, assumptions of the core competencies. Establishing a theory of business is fundamental to success although eventually all theories of business will become obsolete as the environment, mission, and core competencies change (Daly and Walsh, 2010). As Daly and Walsh (2010) explains, once a theory of business becomes obsolete it is relentless to repair or fix it, the only solution is to rethink the three assumptions and create a new revised theory of business.

There might be some connections between business model and strategy as Teece (2010) claims that business models build competitive advantage through mixing together hard-to-copy assets and resources. Teece (2010, p. 191) claims “Get the business model wrong, and there is no chance of business success - get it right, and customize it for a market segment and build in a non-imitable dimension, and it will contribute to the firm’s competitive advantage.” However,

as will be seen below there are no building blocks for dealing with competitors in the business model canvas developed by Osterwalder and Pigneur (2010). Strategy is rather a factor of the business model in the sense that strategy should allow the business model to work successfully, while at the same time being limited by the business model (Teece, 2010).

Teece (2010) proposes a framework for business models and defines a business model as the manner in which firms create value, deliver value and then capture the value. It concerns the benefits a firm is capable of delivering to its customers, how the firm organizes the deliverance and how it can capture a portion of the value delivered. A good business model is one that does this. Teece (2007) explained that organizations must create or select business models and in that way define their commercialization strategy and investment priorities. Furthermore, business models are just as important to organizations as the actual commodity it has selected to conduct business upon (Teece, 2007). Continuing on the work by Teece (2010) Teece (2018) also incorporates the ideas of capabilities and strategy, much like Daly and Walsh (2010).

Osterwalder and Pigneur (2010) go even further and bring forward arguably the most comprehensive canvas for business models. The canvas consists of nine parts for complete business model understanding. The canvas covers issues from who is the selected receiver of the value proposition, how the value will be proposed to the receiver and in which channels, to issues related to key resources, cost structure, and value chain design. In Osterwalder and Pigneur’s (2010, p.15) own words “The nine blocks cover the four main areas of business: customers, offer, infrastructure, and financial viability.” An adopted illustration of the canvas can be seen in Figure 1.

Figure 1. Business Model Canvas adopted from Osterwalder and Pigneur (2010)

Key Partnerships	Key Activities	Value Proposition	Customer Relationships	Customer Segments
	Key Resources		Channels	
Cost Structure		Revenue Stream		

According to Osterwalder and Pigneur (2010), customer segments is one of the building blocks in organizations' business models. The reason behind this is that without a customer base that is profitable, no firm will be able to survive. To be able to deal with customers' needs, customers can be divided into segments and a business model can be designed around one or several segment groups. This part of the business model defines who the firm's produced value should reach.

The value proposition building block of the business model canvas depicts the actual products and services offered to the customers selected in the previous building block to create value. The value proposition is the reason behind a purchase as it should cover and satisfy some needs of the customer. The value proposition consists of several products and services bundled together from all aspects of a value chain catered for a specific customer segment. Different elements can, when bound, create this value and satisfy the need of a customer group, some elements mentioned by Osterwalder and Pigneur (2010) are: performance, customization, price, design, and functionality. As Teece (2010, p. 117) mentions "Business models must morph over time as changing markets, technologies and legal structures dictate and/or allow", this must be true as well for the value proposition and would imply that firms need to change the bundle of products and services in their business model dynamically with the environment. Determining the importance of value proposition in contrast to other building blocks in the business model canvas is not something that Osterwalder and Pigneur (2010) do. Teece (2010) however mentions that understanding the truth of what customers are after is often the initial spark of a business model creation.

Channels are the third step in Osterwalder and Pigneur's (2010) business model canvas for the development of a business model and channels determine the sales and distribution channels as well as how a firm communicates its value proposition to the correct customer segments. The purpose of well-established design for channels is to, amongst other things, raise awareness of value proposition and the deliverance of value proposition. In short, the channel building block determines how an organization communicates and reaches the customer segment.

The customer relationship building block is focused on what the name suggests, the relationships a firm established with the specific customer segments. An organization should determine and specify what kind of relationship it seeks with its customers. The chosen method

for dealing with customers and how the firm views customers will according to Osterwalder and Pigneur (2010) greatly affect the customers' experience of both the firm and its value proposition communicated through the channels.

Revenue streams is the fifth building block in Osterwalder and Pigneur's (2010) business model canvas. Key issues to deal with and determine in this building block are price and payment methods. Teece (2010) determines extraction of value as one of the three main parts of the business model, and it deals with how a firm actually gets paid for its products and services. Channels, customer relationship, and revenue streams bundled together is seemingly coherent to Teece's (2010) extraction theory of the business model as these three building blocks determine how the firm can extract profits based on the value proposition it has communicated to the customer.

Key resources are a description of the most essential resources necessary to make a business model work. With Osterwalder and Pigneur's (2010) definition, key resources are the enabling factors of the other building blocks in the business model canvas. Key resources determine and allow for firms to create their value proposition, maintain the selected degree of customer relationship, and allow the firm to extract profits from its value proposition. As mentioned key resources are enabling factors of both the business model and its success, Teece (2018) explains that the capabilities of a firm are a key resource that needs to be implemented in a business model. Geissdoerfer et al. (2018) mention that for sustainable business models, one type of business model, having the capacity and capability of rapidly altering the business model in line with the environment is a key resource for its success.

Much like key resources, key activities are fundamental in business models. Key activities are those activities that according to Osterwalder and Pigneur (2010) an organization must undertake to make the business model work. These activities are the ones that deal with the above-mentioned building blocks of the business model, except for key resources. Key activities involve creating value propositions, communicating value propositions, maintaining relationships with customer segments, and finally activities for extracting profits from value propositions delivered. Osterwalder and Pigneur (2010) also mention that key activities, as well as key resources, differ based on the business model the firm wishes to implement.

Key partnerships refer to the network the firm has and what it wants to have with a business model. The network is different from customer relationships, as relationships with suppliers and partners are involved in making the business model work. Osterwalder and Pigneur (2010) draw a distinction between partners and alliances and present four subcategories of key partnerships: strategic alliances, cooperation, joint venture, and buyer-supplier relationship. Reasons for forming partnerships are many and some include optimization, reduction of risk, and particular resources and activities needed to implement the business model (Osterwalder and Pigneur, 2010).

As one building block deals with profits in the business model there must also be one dealing with the cost structure caused by operating a business model. Creating value in the value proposition block, maintaining relationships with customers, and generating revenue are all things that create costs for a firm (Osterwalder and Pigneur, 2010). Costs may be considered a hazard of any business operation and not particularly a building block for a business model canvas, but as highlighted by Osterwalder and Pigneur (2010), cost-driven business models are not uncharted territory. The example of airlines is brought forward as an industry in which it is not uncommon to build business models entirely around low incurred costs (Osterwalder and Pigneur, 2010).

As mentioned above, Osterwalder and Pigneur's (2010) business model canvas and Teece's (2010) theoretical definition of a business model share many similarities. Teece (2010) divides the business model into three major parts: value creation, deliverance, and extraction. The content of the different authors differs somewhat as Teece (2010) aims at creating a theoretical framework for business models whilst Osterwalder and Pigneur (2010) seek to create a canvas for business leaders that can be utilized when reviewing and creating business models.

## 2.2. Circular Business Model Framework

*The following section presents additional insight into how circular business models may be developed. The topic was presented in the problem discussion, however, here follows a theoretical framework starting with the core concept, the circular economy, followed by how circular economy principles may be incorporated into the business model as well as some challenges with the implementation of circular business models.*

### 2.2.1. Circular Economy

The concept of circular economy includes a variety of factors and has its core in restoration and regeneration and to use resources rather than consume them (Linder, 2017). It allows both economic and environmental sustainable development and growth and is promoted by both nations and businesses across continents (Korhonen et al., 2018). To promote such a shift, Stahel (2019) explains that liability plays a key role and is how policies can be used to accelerate the shift for all actors. Korhonen et al. (2018) also explain that collaboration between businesses, industries and society can offer great possibilities for an efficient circular economy although there is much development needed to establish those collaborations and collaborative networks needed. An enabler of the circular economy is the ongoing digital transformation (Linder, 2017). The digital shift enables circularity in a few different ways. It provides the opportunity for higher transparency, less use of materials when activities, products, or channels are digitized, and it also enables for new ways for customers as well as producers to participate in the economy. Linder (2017) further explains that businesses that adopt a circular economy can reap benefits such as higher resilience due to decreased resource dependence and also closer and better customer relationships.

Linder (2017) explains that treating the symptoms of the linear economic model can only lead to less bad scenarios rather than re-designing the system at its core. Only making incremental adjustments of the linear economic model is not enough to resolve core issues. The circular economy offers a cyclical model where resources flow instead of being discarded (Korhonen et al., 2018). The linear economic model creates waste and loss of value, leading to financial losses as compared to a circular economic model (Linder, 2017). The loss of both resources and the cost of waste management provide incentives for businesses to prevent waste and transform to a circular model instead (Stahel, 2019). As environmental changes increase in scope and magnitude and the global population and consumption is growing there is an evident risk that the resources available will not meet the demand of resources in the linear economic model (Korhonen et al., 2018). The circular economy is built on three main principles: system design, sustaining value and use of products, components, and materials, and regeneration of natural resources (Linder, 2017). Korhonen et al. (2018) present four levels of circularity where the first circle is reuse, the second is remanufacturing, the third recycling and the last one is disposal. Stahel (2019) explains that different types of actors are invested in different levels of the circular economy. Local actors play a key role in the first circle where reuse and repair are



included, regional actors are key players in the second level of circularity where remanufacturing and recycling depending on the material might be included, while global coordination is needed for the larger circles where materials in disposed products are to be extracted (Stahel, 2019). Korhonen et al. (2018) explain that time spent in the inner circles should be maximized as they require less additional resources for continued circularity and use and therefore are more economically profitable. Korhonen et al. (2018) further explain that it is business-wise motivated to want to prolong the use of the value that has been created while it, as well as when externalities in the linear model are out-designed, provides possibilities for environmental, social, and economical benefits (Korhonen et al., 2018; Linder, 2017). The aim of the circular economy as compared to the linear economy is to maintain value rather than to solely create value-added in each step which includes efficient use and management of products and resources (Stahel, 2019).

In the food industry there can be different levels of circularity and as Korhonen et al. (2018) exemplifies, bio-waste can be used for either energy creation or soil quality improvement by returning the nutrients to the soil. The latter is more circular than the former in maintaining and creating value (Korhonen et al., 2018). Another factor in the food industry is packaging. Linder (2017) explains that, globally, more than 50 percent of plastic packaging, equaling 30 percent in weight of total plastic packaging, are designed to become waste. Although there are great economic opportunities for increased recycling and reuse, there is a need for re-design at its core to implement circularity and make full use of the possibilities that reuse and recycling provide. However, looking at the whole value chain, especially in the food industry where packaging may play a key role in sustaining product quality and creating less food waste, the packaging waste might not be the most crucial aspect to eliminate to enable less total waste in the value chain (Linder, 2017). However, noting that there are not yet any reliable measurements of the cost of plastic pollution (Linder, 2017).

### 2.2.2. Circular Economy in the Business Model Design

Transitioning to a circular economy may take on different forms and has to be made on different levels and areas. For businesses transitioning and implementing a circular economy, it may be done in the business model which, as previously discussed, is at the core of businesses and has potential impact in all areas of a business (Osterwalder and Pigneur, 2010; Teece, 2010; Teece 2018). However, a circular business model may have different designs and implementations as

well as different challenges and opportunities in transitioning from a traditional linear business model to a circular business model. Definitions of what a circular business model is also differ in scope, focus, and level of circularity. Frishammar and Parida's definition (2019, p.8) has an innovative and environmentally, socially, and economically sustainable approach on value and follows:

“A circular business model is one in which a focal company, together with partners, uses innovation to create, capture, and deliver value to improve resource efficiency by extending the lifespan of products and parts, thereby realizing environmental, social, and economic benefits.”

While another definition is provided by Linder and Willander (2017, p.183) that focuses on sustained economic value in material and follows:

“We define a circular business model (CBM) as a business model in which the conceptual logic for value creation is based on utilizing economic value retained in products after use in the production of new offerings. Thus, a circular business model implies a return flow to the producer from users, though there can be intermediaries between the two parties.”

Looking at the different business model building blocks as outlined by Osterwalder and Pigneur (2010) there are different implications in how principles of circular economy may be implemented in the different building blocks. Lewandowski (2016) advocates a strong connection between the value proposition and customer segment building blocks. In a circular business model, the value proposition is central as in many linear models too, however, the difference is that when circular economy principles are integrated into the value proposition of a business model, the value proposition is circular as compared to a traditional linear value proposition. The circular aspect of the value proposition has to be aligned with the wants and needs of the customers in the targeted customer segment in order for the business to succeed (Lewandowski, 2016). A circular value proposition that extends the lengths, as well as number of cycles the product, component, or material are in use with sustained value require changes in design and potentially sourcing as the product, component, and material have to be designed in such a way and consist of such materials that may be reused, recycled, repaired, and/or redesigned to stay in a circular material loop for a long period of time (Lewandowski, 2016). The value proposition in a circular business model may also be virtually available implying less need for product materials (Lewandowski, 2016). A circular value proposition may take on other forms as well such as a service instead of a product, sharing, or subscribing

(Frishammar and Parida, 2019). The value proposition in a circular business model may also include incentives for customers to return value post-use such as buy-back initiatives (Lewandowski, 2016). No matter the design of the value proposition, it has to match the specific customer segment of the business. If there is not a fit between these two business model building blocks, the transition to a circular business model is likely unsuccessful (Lewandowski, 2016). There is also a risk related to better product performance if the longer lifespan of products decreases the number of sales and that is not taken into account in the business model design (Linder and Willander, 2017).

The next business model building block is channels that may play a significant role in implementing circular economy principles in the business model. For some businesses, it is possible to virtualize some or many channels. Businesses may virtualize the product itself, the channel the product is sold through, and/or the communication channels (Lewandowski, 2016). Lewandowski (2016) also suggests an additional business model building block for circular business models and although the added block is about channels the purpose is to differentiate between the traditional channel building block presented by Osterwalder and Pigneur (2010) and the change or development in channels needed for circularity of products, components, or materials. The reverse flow of products, components, and materials in different forms in a circular economy require other channels or development of existing ones. These reverse-flow channels often require other partners and customer relationships than the traditional channels to be successful and therefore have to be managed as a separate business model building block (Lewandowski, 2016). One challenge related to reversed-flow channels that Linder and Willander (2017) highlight is the potential lack of predictability of the reversed flow of resources which may decrease the possibility of a business to rely on fully circular flows.

Customer relationships are important in the circular economy as the circularity often has to be created in collaboration with and consideration for many actors' actions and interests. In circular business models, customer relationships play a critical role in the success of the circularity if the model is based on customer engagement or customer actions such as level of recycling (Lewandowski, 2016). Value created as a result of collaboration between enterprises and customers is what Porter and Kramer (2019) advocate in the concept of shared value creation as the solution to align interests of business and society. The concept of shared value is a notion that firms have the ability to incite real change. In a shared value perspective, costs of externalities are internalized on the entrepreneurial level and recognized as costs for the

firm, such as wasted energy or materials. Incorporating a sustainable viewpoint that deals with external costs could create greater benefits than if they were to be ignored (Porter and Kramer, 2019).

Another core building block in business models is the revenue stream that also is tightly related to the value proposition block (Lewandowski, 2016). In a circular business model compared to a linear one, the revenue stream might be a bit more complex. The level of complexity depends to a large extent on the value proposition. There are for example four different main revenue streams designs for product-service systems that have different points in time as well as number of times revenue is generated (Lewandowski, 2016; Van Ostaeyen et al., 2013). The revenue stream building block also includes regained value through a reversed flow of collected products, components, or material and making use of heat or energy from production (Lewandowski, 2016). Revenue streams in circular business models are initially usually more complex to implement compared to an implementation in a linear model.

The key resources in a circular business model have the same purpose as in a linear model but what resources that are required usually differ to different extents depending on the business' situation and context. Lewandowski (2016) concludes that there are two different approaches to this business model building block in a circular business model that however can be used in combination. One relates to input materials and implies responsible and circular sourcing as well as sustainable material performance. Related to this, Linder and Willander (2017) explain that adopting circular business models is one way to increase resource efficiency. The other approach that Lewandowski (2016) presents relates to natural capital regeneration and restoration and thus, making efficient use of resources as well as using renewable resources. This also relates to choice of suppliers and the resources returned in the reverse flow in circular businesses (Lewandowski, 2016).

Key activities in a circular business model presumably differ to some extent from the key activities in a linear model, and key activities in different circular business models also presumably differ from each other as these activities are based on the value proposition (Lewandowski, 2016). In a circular business model, these activities can be related to performance through optimized or improved technology, design, and production which also includes quality and choice of materials as well as improved planning and minimization of wasted resources (El-Haggar, 2007). Making use of remanufacturing and reusing of products,

components, and materials can also increase the value chains' net value (Linder and Willander, 2017).

As shortly mentioned in the previous paragraph on the channels' block in the business model, key partnerships are both important and may change when a business is adopting a circular business model. For circular business models, key partnerships may play a bigger role than in linear business models as circularity often relies on multiple actors and therefore require collaboration and cooperation (Lewandowski, 2016). Key partnerships can be central for the possibilities in other building blocks such as key resources where partnerships can enable access to the right or most suitable resources as well as partnerships can play a central role in key activities that are performed by partners rather than the company itself (El-Hagggar, 2007). Linder and Willander (2017) state that the more special the material that is used is, the closer the partnerships need to be. Partnerships can also enable collaboration throughout the production process and enable circular flow of value and material (Lewandowski, 2016) and the better the partnerships and control of the value chain, the better possibility of fulfilling circularity (Linder and Willander, 2017).

The last business model building block is the cost structure. Lewandowski (2016) suggests that the cost structure in a circular business model may be used to evaluate the success of the implemented circular economy principles. Traditionally certain costs are assumed to decrease in a circular business model as compared to a linear one, such as production and material costs (Sivertsson and Tell, 2015; Lewandowski, 2016). A circular cost structure requires other evaluation models than linear models do as the time and way in which costs occur differ (Lewandowski, 2016). A circular cost structure also has to include resources predicted to be needed for maintaining products, components, and materials in the cycle to deliver the value proposition. There are also risks that have to be taken into account that are associated with the value proposition. If the ownership of the product is at the business rather than at the user, as can be in product-service systems, the business may have a lot of capital tied in physical products as well as the associated financial and operational risks (Linder and Willander, 2017).

### 2.2.3. Suggested Transformation Steps

Changing from a linear business model to a circular one is a process that has both enablers and hinders depending on the context and situation of the particular enterprise making the

transition. Whether a factor is a hindrance or enabler differs but there are nonetheless a couple of factors to consider in and prior to a transition. Lewandowski (2016) concludes that these factors are typically quite general and relate to internal areas such as human relations, management, leadership, and risk, as well as external areas such as regulations and customer trends. Businesses adopting a circular business model also have to have control over their value and supply chain as well as being able to make long-term predictions in demand (Lewandowski, 2016; Linder and Willander, 2017). Moreover, geographical dispersion and unbalanced division of profit throughout the supply chain of a business may be hindering factors to a circular transition (Lewandowski, 2016). In a case study on adopting a circular business model design in Swedish agriculture, barriers to each business model segment were identified (Sivertsson and Tell, 2015). The hindering factors did however come from the same issues, mainly old norms in the industry culture, hard-to-change systems regarding both farming methods and supplier networks, and that many activities needed for a circular business model are perceived too time-consuming (Sivertsson and Tell, 2015).

How incumbent firms best make the transformation to circular business models is not yet agreed upon in literature. There are however a few methods that suggest a sequence of steps for incumbent firms to go through. Frishammar and Parida (2019) suggest several phases that each has different objectives, principles, and activities. Starting with mapping requirements of circularity and possible opportunities, and ending with the small-scale and selective building block implementation to assist in further up-scaling. Lewandowski (2016) also presents different factors that should be taken into account for a successful transformation. The focus is on how different business model building blocks have to fit together and there are three main crucial fits. The first one is the fit of the value proposition and the customer segment which refers to the importance of alignment between the two building blocks for a match hence allowing for a successful business model (Lewandowski, 2016). The second fit is the one of the cost structure and the revenue streams since those two building blocks have to be balanced and allow for profitability in order for a business model to be successful. The third and last fit for a successful transformation is the one of the adaptation factors that may hinder the transition and the changes that are implemented to make the transition as these have to be aligned (Lewandowski, 2016). When these three pairs of business model blocks are matched and fit together, the transition to a circular business model is more likely successful (Lewandowski, 2016).

#### 2.2.4. Asses Circular Business Models

As circular business models differ significantly from linear business models in either one or several of the building blocks, the method for measuring and assessing success of business models differs, and there are some potential challenges to evaluating a circular business model. Determining the success of a circular-based value proposition or another circular economy principle implementation in the business model is related to a higher degree of uncertainty and risk compared to the same product being implemented in a linear model (Linder and Willander, 2017). As the circular business model has a longer time frame, the measuring point where an initiative may be concluded successful or not is later in time than in a linear model. In a linear model, success of an initiative is determined in the first cycle as compared to a circular model where success has to be determined in several consecutive cycles to evaluate whether the initiative had the anticipated effect or not (Linder and Willander, 2017). That also implies a challenge to test ideas small-scale in circular business models before implementing it full-scale as the evaluation period usually is too long and therefore, there is an increased investment risk in relation to the invested resources in circular business models compared to linear ones where there usually is more room for test and reevaluation (Linder and Willander, 2017). Another challenge is that circular business models have to predict market conditions for a longer timeframe than a linear model since there might be developments throughout the time period that affects the success of the circular business model, such as shifting customer demands or new competitors (Linder and Willander, 2017). This challenge is in line with the first assumption mentioned by Daly and Walsh (2010) previously that addresses the importance of aligning with the environment.

### 2.3. Global Value Chain Framework

*This section presents the concept of the global networks that constitute GVCs and provides a detailed description of the characteristics of GVCs, as well as a comparison of other terms used to describe other types of global chains of production and distribution.*

#### 2.3.1. Concepts of Global Value Chains

Gereffi (1994) created a framework for two types of global commodity chains, the buyer-driven chain, and the producer-driven chain. Global commodity chains are defined as supply chains with an emphasis on internal governance structure set up by lead firms in global production and sourcing networks (Gereffi et al., 2001). The buyer-driven and producer-driven theoretical

frameworks showcased the power on the supply side and demand side of global production and distribution networks (Gereffi, 2011). The GVC framework presented by Gereffi (1994), Gereffi et al. (2001), and Gereffi (2011) can be considered as an overarching framework encompassing both the buyer-driven and producer-driven global commodity chains while focusing on value creation and value capture across the full range of production and distribution activities. Much like the commodity chains presented by Gereffi (1994), GVCs are also concerned with the global fragmentation of production and distribution systems (Gereffi, 2011).

### 2.3.2. Characteristics of Global Value Chains

Since GVCs are links of separate yet complete firms when bundled together through repetitive interactions there exists a need for governance of the interactions between the firms. The control and governance of GVC are often the task of the leading firm. In different industries, firms with different industry- and GVC-roles can have the responsibility as lead firm. Predominantly it is firms closer to the end-consumer in the value chain that has the highest control over the value chain (Gereffi et al., 2005).

According to Gereffi et al. (2001), several chains or links of interconnected economic activities exist, and these have different units in focus. Ranging from supply chains, which is the name given to an input-output relationship from raw materials to finished products, to GVCs (Gereffi et al., 2001). As there exists a myriad of chains in the contemporary world economy, separating one from another can be hard, and according to Gereffi et al. (2001) there are many overlapping terms used to describe complex global organizational relationships that make up the economy. In an effort to clarify what GVCs are, Gereffi et al., (2005) created a framework for GVC's. Gereffi et al., (2005) also discuss the fragmentation of value-adding activities within GVCs. Gereffi et al., (2005) argue that firms find it advantageous to break out and outsource activities that are not part of the firm's core manufacturing and service, which brings the questions for how these chains are coordinated and who controls the potential changes. According to Gereffi et al., (2005) the construct of a GVC mainly depends on three factors; the complexity of transactions, ability to codify transactions, and supply-based capabilities, which then creates the power balance. Power is according to Gereffi (2011) exerted by lead firms, and in the producer-driven chains, lead firms are the final product manufacturer, and in the buyer driven chains, retailers or marketer firms of the final products are lead firms. These factors are in turn



constructed by the products or services as well as the process of bringing these forward. The control and coordination of value chains most often goes to buyers and first and second-tier suppliers, but this as well is slightly dependent on industry and market characteristics.

Governance is determined as a key factor in GVCs to the extent that it affects the structure of the chain (Gereffi et al., 2005). In buyer-driven global commodity chains, which are predominantly in labor-intensive industries, buyers use coordination to construct global chains of material and services to contemplate vast production and distribution systems without ownership, thus highlighting the high degree of control over other actors (Gereffi, 1994; Kaplinsky, 2004; Gereffi et al., 2005). Producer-driven global commodity chains are characterized by producer-driven coordination where control of crucial technologies plays a role (Kaplinsky, 2004). Different levels of coordination and control, i.e. power, is what characterizes the five differentiated GVC models presented by Gereffi et al. (2005). The five chains described by Gereffi et al. (2005) are market, modular, relational, captive, and hierarchy, the type of governance can, according to Gereffi (2011), change when industries evolve and one section of the chain can be characterized by one form of governance while another section of the chains is characterized by another form. Gereffi et al. (2005) explain that the market chain is characterized by market price as the core factor with low complexity of transactions and low coordination and power asymmetry. Modular is characterized by a high degree of complex transactions with individual adjustments. Relational is also characterized by high complexity and also high capabilities, here there is also a mutual dependence that may be controlled through trust and long-lasting relationships. The captive chain is characterized by high power asymmetry with high dependence of suppliers on the lead firm. The hierarchy is characterized by integration where the lead firm controls and owns all actors and activities.

Kaplinsky (2004) has a similar definition of value chains as Gereffi et al. (2001), where a value chain is all the activities that are required to bring forward a product or service from concept to after-use disposal. Advancing on this, the value chain is more than only the production and transportation of a product, but contains all value-adding activities put into the product such as design and marketing working together in links. Furthermore, the links are most often two-way, meaning that one activity has constraints and opportunities on it from previous activities, and also brings restrictions forward (Kaplinsky, 2004).

### 2.3.3. Global Value Chains Compared to other Chains

There are several types of chains and links covering the global economy ranging from supply chains to global production networks, each one entails different units of analysis. GVC is more connected to the actual process of product development and is more all-encompassing than supply chains but less so than global production networks. As mentioned above, GVC is a concept of interconnected activities adding value to a product or service as it moves from conceptual idea to finished disposable product (Gereffi et al., 2001). The value-adding links can be many or few and involved in several value chains, giving rise to different complexity issues (Gereffi et al., 2001; Kaplinsky, 2004). Thinking in the manner of GVC has allowed for incomplete firms, where fragmentation of production and responsibility has allowed for firms to specialize in core aspects of value-adding rather than the whole process Gereffi et al. (2005).

Gibbon et al. (2008) discuss what happens to value in GVC and the distribution of returns and state that the distribution can be considered a result of economic rent. The distribution of rent between lead firms and suppliers in a GVC is connected to differentiation, and the possibility of extracting rent could be connected to power in the chain. This viewpoint is however somewhat problematic as Gibbon et al. (2008) argue since the cost of production is also a determination of rent extraction.

## 2.4. Linking Business Models and Global Value Chains

*This section presents the connection between business models and GVCs.*

According to Schweizer (2005), the business model has three dimensions, of which the value chain constellation is one. However, Schweizer's definition of what a business model is varies compared to the business model framework presented above. Especially strategy is something that is viewed with higher regard by Schweizer (2005). Furthermore, Mahadevan (2000) explains that a business model is a concept of interconnected types of streams. The value stream concerns the perceived value and benefits of the value proposition for the customer segment and the logistical stream of the business model regards the design of the supply chain (Mahadevan, 2000).

The value chain is centered around a flow of products through an organization (Schweizer, 2005) and a network of organizations (Gereffi, 2011), while the business model is centered

around firm-specific actions necessary to complete a task (Schweizer, 2005). Furthermore, Schweizer (2005) states that the value chain is a core dimension of business models and that it defines how the organization is positioned within the industry and how the organization is adding value in what Schweizer (2005) terms as a deconstructed process. The business model design determines what activities can be done within the organization and what activities suppliers in the value chain can do instead based on what capabilities the different actors have (Teece and Linden, 2017).

Dicken (2015) states that the increased focus on sustainability and sustainable development puts pressure on firms with global production to adopt more sustainable practices in their GVCs, which is a characteristic of more local production processes, one of the two production processes with different functions and geographical aspects that Dicken (2015) argue that the food industry is polarizing into. Geissdoerfer et al. (2018) further explain that adopting more sustainable practices requires changes in the business model as business models cover an organization's whole operation and one such change is changing towards circular business models (Teece, 2010; Linder and Wilander, 2017).

## 3. Methodology

*This chapter presents the type of and process for research conducted by the authors. Furthermore, sampling method, criteria, and outcome are presented as well as how data was collected from the samples. The chapter ends with discussions regarding the quality of this thesis.*

### 3.1. Type of Research

*This section presents the research process as well as what type of research this thesis was conducted with.*

This study started with the authors wanting to investigate how firms can become more sustainable and create sustainable value for themselves and for customers in their everyday operations. Business models were discovered to be a relevant field to study as business models are the overarching instruments for companies to define their value process. Furthermore, to account for sustainability the authors determined that sustainable business models should be at the core for this thesis. Circular business models were considered as one such business model suitable for investigating creation of sustainable value. The authors found a lack of scientific research and literature regarding how circular business models affect the structure of actors and activities within a value-adding chain. There is extensive literature on the three theoretical frameworks of circular economy, business models, and value chains separately, and there is some literature trying to connect the theories to different extent. Two common connections in the literature regards the circular economy and its effect on GVCs, such as Kalmykova et al. (2018) and supply chains, such as Govindan and Hasanagic (2018), however many disregard incorporating the effects of circular business models.

Furthermore, the authors found no study concerning the connection between the three theoretical frameworks. New understandings of how value is best created and utilized, as discussed in the first chapter, have now brought the connection-issue into the spotlight, thus making the connection an interesting aspect to study. To also account for the aspect of international business the authors decided to investigate the connection between implementation of circular business models of international firms and the effect on their GVC. To limit the scope of research, relevant industries to study were evaluated, and because of the

food industry's environmental impact, global span, and combination of both biological and technical aspects, as well as the lack of previous literature, it was chosen as a suitable industry to study. When the industry was chosen, the scope of research was further narrowed to the type of company to study and since a change in business model had to be made to see an effect on GVC, established international firms were chosen. Thereafter, type of research and theoretical frameworks were identified and decided upon, as well as the participant selection which is further described in the next section.

With a research question formulated as the one in this study, the basic assumption for the research is rooted in an abductive approach. While the deductive approach drives the research forward an inductive element is apparent in the end. As the study is based on gap spotting, the results of this study furthers the theory within the relevant fields. The results are not merely empirical generalizations but more evolved in the manner that they help explain consequences of organizational behavior. Thus, the abductive research approach.

## 3.2. Participant Selection

*This section presents the sampling method and criteria as well as the outcome of the sampling resulting in the case firms interviewed.*

### 3.2.1. Method for Sampling

This study is of qualitative nature and the method for sampling should be suitable to answer the research question. As mentioned by Bell et al. (2019) purposive sampling is the most used sampling method for researchers when conducting qualitative research. The purpose of purposive sampling is to alternate the sampling to reflect the research question. However, Bell et al. (2019) explain, there is no set of rules for deciding when purposive sampling should be used. There are however two aspects to account for as suggested by Bell et al. (2019) when adopting purposive probability sampling, are that is when generalization is deemed important by the researcher and when the research question does not specify a particular category of unit of analysis. Therefore, non-probability purposive sampling is more suitable for this thesis. Moreover, sequential sampling was found suitable for this thesis. The implications of sequential sampling are that the primary sample is developed as the research moves forward with new sampling units adding nuisance to the analysis while at the same time remaining relevant to the research question (Teddlie and Yu, 2007). In this study, the primary sample was

individuals employed at, Research Institutes of Sweden (RISE), that contributed with both theoretical understanding and offered input regarding organizations and projects relevant to this thesis. Furthermore, the sequential sampling also offered ease in the thesis process of developing theoretical knowledge of circular business models and their effect on value creation in value chains. A predetermined number of cases and units in the sample would not facilitate this but a more lenient way was suggested as the most suitable way. This was to ensure relevant data was collected in an efficient manner. This sequential approach for sampling also shares similarities with what Bell et al. (2019) consider as snowball sampling, where initial contact is established with a small number of units and then these unit connections are utilized for further sampling, and in this study some cases were found in this manner.

Purposive sampling was selected based on the research question and the aim of the research, sequential sampling was a result of the nature of the research question and the aim of the research. Furthermore, as this thesis aims to investigate a specific phenomenon and response from organizations, a small purposive sample is best suited. As this thesis investigates organizational alterations, respondents with higher clearance and organizational knowledge were sought after and contacted by phone, e-mail, and LinkedIn.

### 3.2.2. Sampling Criteria

In this study, there are four criteria for sampling based solely on the research question. Since an answer to the research question seeks to answer a ‘how’, the question criteria must be that a change has occurred. In this study, that would be a change in organizational business models from a linear model towards a circular business model. This signifies that the first sampling criterion is that the case firms are incumbent firms. The second criterion is that there has been a shift in business model design. The third criterion is that the firms are international, and active in GVCs. For international determination the authors conclude that firms with operations, through relationships or subsidiaries, in two or more nations are considered international. The fourth sampling criterion is a limitation toward the food industry. However, as the circular economy is a phenomenon with a recent increase in popularity, there are few firm-wide implemented circular business models in the large firms characterizing the food industry, thus resulting in the need for the authors to look for firms with circular projects or brands with circular business models.

### 3.2.3. Outcome of Sampling

With the selected methodology for sampling, the following sampling units were investigated and used as sources for data collection. The units are presented in consecutive order with a brief explanation of enterprise, suitability of firm, and position of individuals interviewed, and are summarized in Table 1.

*R1 and R2:* Research Institute of Sweden (RISE) was contacted early on to establish theoretical relevance and deeper scientific understanding of the circular business field. RISE has extensive knowledge in the field and has had many finished and ongoing projects where circular thinking has been applied, both in the food industry and other industries in the Swedish economy thus making RISE a valid unit of analysis. R1 is a researcher and business developer specialized in the agriculture and food industry and R2 is a researcher specialized in sustainable business.

*R3:* Renahav Sverige AB is a collaborative enterprise based on the ideas of circularity. The firm uses waste material from other nearby suppliers to produce different products which are then sold back to the supplier. The factory specializes in biological waste and collaborates with Orkla, Marenour, and Leröy. As this is a firm founded on circular business thinking this unit is a suitable source of data. However, like mentioned above, this study is interested in international enterprises and thus the majority of the data collected from this source was concerned with the impact it has had on its collaborations which are all multinational enterprises active in the food industry. The individual interviewed, R3, at this firm was the chairman and founder.

*R4:* Svenska Retursystem AB (SRS) is a nonprofit-maximization enterprise that, like Renahav AB, has incorporated circularity into the business model to a high degree and has KPIs based on sustainability performance. The firm provides circular packaging and transportation solutions for the food industry and distributes about half of the fresh foods in Sweden. About 20 percent of their total distribution is outside of Sweden. R4 is a business manager working with business development at the firm.

*R5 and R8:* Orkla Foods is a Norwegian multinational enterprise with a large portfolio of brands. Orkla Foods has been described by the respondents as a large Nordic player but small international player. Orkla Foods has had some goals and projects aimed at circular

implementation, one of those is the collaboration with Renahav AB where Orkla provides residual waste which is then converted and Orkla then buys back other products that are an outcome of the residual waste. R5 is a senior project manager at Orkla ASA specialized in production strategy and development. R8 is the manager of product development at Orkla Foods Sweden.

*R6:* ICA Gruppen is a multinational enterprise active in the food industry. According to another respondent, ICA Gruppen holds a high amount of power over its value chains thus making it an excellent unit for analysis. ICA Gruppen uses SRS as a supplier for logistical solutions and has had several collaborations with this supplier where circular thinking has been implemented. R6 is employed at ICA Gruppen as manager of packaging and traceability with extensive knowledge of supply and value chains at the firm and industry as a whole.

*R7:* Unilever is a large international enterprise active in the consumer goods industry. Even though Unilever is not exclusively active in the food industry the firm holds a portfolio of brands active in this sector globally. Unilever has several explicit goals and programs of reuse and recycling thus making data from this unit a valuable source for this thesis. R7 is a supply chain manager at Unilever stationed in Denmark with broad knowledge of the firm's circular initiatives and its effect on value chains.

Table 1. Position of the Respondents

Respondent	Position
R1	Research Expert in Agriculture and Food
R2	Research Expert in Sustainable Business
R3	Chairman and Founder
R4	Business Manager
R5	Senior Project Manager
R6	Packaging and Traceability Manager
R7	Supply Chain Manager
R8	Product Development Manager



### 3.3. Nature of Data Collected

*This section presents the theoretical foundation regarding the selected method for collecting data, and how it in practice was implemented. This section also contains motivations for the selected method.*

#### 3.3.1. Defining Case Study

There are several different definitions of what constitutes a case study research, some authors like Yin (1994) argue for case study as an empirical investigation of a real-life contemporary phenomenon. Merriam (1988) defines case study as qualitative research with an intensive and holistic description as well as analysis of a single instance, phenomena, or social unit. What constitutes a phenomenon has also been heavily discussed and different viewpoints exist. A phenomenon for case study research is hard to define and can be a number of things, but what can be defined is the characteristics of a phenomenon. Merriam (1998) explains that if the phenomenon researched is not in itself bounded, there is no qualitative case study research. Merriam (1998, p.27) continues with “One technique for assessing the boundedness of the topic is to ask how finite the data collection would be”. If there are limitless units of analysis and data to gather and theoretical viewpoints to investigate, the phenomenon is not bounded and is thus not a case. The interpretation of the case for this study has been that the research question focuses on a specific alteration of how business is conducted within a predefined industry. As this alteration has just begun to take place this is indeed a phenomenon that can be classified as a case. However, if the move towards a circular economy continues well into the future, a repetition of this thesis might be hard to label as a qualitative case study research as the units of analysis, data to collect, and theoretical viewpoints to investigate expands.

#### 3.3.2. Motivation for Case Study Approach

With case study research there is no need for a predefined specific method for data gathering or data analysis (Merriam, 1998) which can be a benefit when investigating a new phenomenon in organizational activity. Furthermore, utilizing case study qualitative research facilitates the investigation and insight into a phenomenon, probably more so than hypothesis testing. Even though this study is built on a hypothesis of effect when organizations strive for implementation of circular business models, the aim of this thesis is to investigate and develop knowledge rather than simply testing if the hypothesis is true. The phenomenon of interest in this study is the actual alteration of business models, towards circular ones, with this in mind, a qualitative

case study is the most appropriate way to investigate and research the phenomena. Furthermore, case study is particularly suitable when investigating a process (Merriam, 1998).

### 3.3.3. Case Study Approach Used

The distinct differentiation between quantitative and qualitative research lies in how the data has been collected. Qualitative research collects data conveyed through words, whilst quantitative research collects data presented in numerical form (Merriam, 1998). What constitutes data is a result of the qualitative gathering technique, and the gathering technique is affected by the theoretical orientation, research problem, and aim of study. Interviewing and documentation mining are the most suited gathering techniques for this study as it aims to investigate and describe a phenomenon of organizational activity. Thus, words and statements regarding organizational activities and outcomes are considered data in this thesis.

The selection of a predominantly interviewing-based gathering over other techniques was due to the fact that this study investigates past occurrences that have not been well documented. This study also has an ad hoc purpose of connecting the occurrence of a phenomenon with an outcome, something that might not be interpreted through documentation mining, as observation of how people inside corporations have organized the value chains as a result of a change in how a corporation defines how value should be created and acts on this according to a new business model.

The interviews conducted in this study were done so to be able to extract enough data for perceived empirical saturation within a limited time frame. This is the motivation behind the selection of semi-structured interviews. The interviews can be considered person-to-person discussions with a purpose and limitation although they were conducted via the digital video meeting platforms Zoom and Microsoft Teams as well as a phone interview. The limitation of the discussions comes from the semi-structured interview form chosen that allows the respondent to talk more or less freely on determined topics. Semi-structured interviews consist of more and less structured questions. Some questions might be very specific to extract the perceived sought-after data, while other questions might be follow-up questions based on answers or viewpoints of the respondents. The questions asked did vary to some extent depending on the position and organization of the respondent as well as circular actions undertaken by the respondent's organization and the availability of information regarding

circular ventures of the respondent’s organization. The question asked were focused on the three theoretical frameworks mentioned in the previous chapter as well as an interconnection of these. Furthermore, an interview guide was sent out to the respondents prior to the interview to offer the respondents an opportunity to complement the questions with their expertise and knowledge. The interviews conducted varied in length as well as level of detail but shared a similar structure regarding topics discussed. Both authors participated in the interviews and there were in total eight interviews conducted resulting in an aggravated 10 hours and 18 minutes, divided according to Table 2. As Table 2 shows, there was a variance in the length of the interviews which according to Bell et al. (2019) is common in qualitative studies. Furthermore, all interviews were recorded, with consent from the respondents, and transcribed to facilitate the presentation of the findings as well as the data analysis.

Table 2. Interview Details

Respondent	Interview Time (minutes)	Interview Date (mm-dd-yyyy)
R1	30	03-26-2021
R2	58	03-30-2021
R3	31	03-31-2021
R4	119	04-08-2021
R5	144	04-08-2021
R6	107	04-14-2021
R7	47	04-19-2021
R8	82	04-21-2021

### 3.4. Approach to Analyzing Data

*This section presents the approach used when the collected data was analyzed.*

For analyzing data, the authors transcribed and coded the vast amount of data collected into more recognizable concepts that could be found, or at least referred to, in the three theoretical frameworks used in this thesis. However, as this thesis was conducted due to an apparent gap in the literature the authors also had to come up with new concepts, such as ecosystems, which were mentioned in the analysis of the data. Furthermore, to facilitate the readers' understanding of what the analysis was based on, the authors created eight categories built up by the concepts. These categories were then combined into four themes for analysis: circular economy in the food industry, circular economy in business models, GVC structure, and GVC control and coordination. The analysis consists of comparisons between empirical themes and theoretical frameworks and resulted in the creation of two main findings answering the research question.

### 3.5. Quality of Research

*This section presents the validity and reliability of this thesis and its findings, as well as a discussion regarding ethical consideration to provide a description of the quality of this study.*

#### 3.5.1. Reliability

Due to the nature of this study, which Bell et al. (2019) associates with reliability concerns, the authors have taken considerable steps to ensure that reliability is as high as possible. Reliability in research is connected to ensuring reproducibility and consistency of the results over time (Bell et al., 2019). The largest impact on the reliability of this thesis is the fact that the implementation of circular economy is at a relatively early stage and the findings may therefore differ if reproduced when there is a higher degree of circularity in the business models investigated. However, to ensure high reliability the authors have made several considerations. First, the respondents selected had senior positions at their respective firms and are thus more likely to share more detailed information firm-wise. Second, at the beginning of this research experts with extensive knowledge of the industry and circularity were interviewed, thus offering more scientific determination of interesting subjects connected to the theoretical framework. Third, the sampling criteria offer some reliability as the units of analysis where

incumbent firms within an industry with many regulations and standards. Fourth, interview guides were distributed to all respondents prior to the interviews to offer the respondents the possibility of altering the content of the questions to match their experience as well as providing the respondents with an opportunity to prepare. Furthermore, as can be seen in both the empirical and analysis chapters of this research, the collected data were similar on many concepts. However, as the interviews are semi-structured, a re-creation of this thesis with the same respondents might not yield the same answers, as some of the questions asked are more open in nature and are hard to pre-write.

### 3.5.2. Validity

While reliability regards the consistency of findings, validity regards the truthfulness of the findings in this thesis. According to Bell et al. (2019), there are two types of validity concerns for research, internal and external validity, although it is argued by Bell et al. (2019) that these are not primarily for qualitative research such as this thesis. Internal validity concerns the authenticity of the findings in regards, while external validity is more connected to the transferability of the findings. For this thesis, several actions were conducted with this in mind. First, the sampling criteria utilized for this thesis are according to the authors a good match for the research question and as mentioned, the respondents have senior experience in relevant positions. Second, the respondents were given time before the interview to study an outline of the questions that were to be asked and were encouraged to make suggestions and prepare answers. Furthermore, as this thesis does investigate, what the authors argue to be, rather complex subjects the authors explained the theoretical definitions of business models and GVCs used in the thesis during the interviews. There were also cases where the respondent demanded clarification of what the authors did consider as circularity, giving strength to the findings regarding this that are presented in later chapters. Furthermore, there was also participant validity of the information extracted from the interviews when it was appropriate to do so. The external validity is however moderate as the research and findings are rather narrowed and heavily painted by a certain industry and companies therein, there are however some key concepts that the authors argue as transferable to other contexts. The external validity is further hampered by the qualitative type of research. Furthermore, the authors tried to the biggest extent possible to include international firms of different relative sizes, but with limited success giving room for argumentation of less transferability even within the industry. Overall

the authors argue for high internal validity and, relatively, low external validity, however as can be expected with the type of research chosen.

### 3.5.3. Ethics

Ethical consideration from both authors and participants is advocated by Bell et al. (2019). For this research, there are some aspects that were conducted to ensure what the authors deem as fair research practice. The most basic of such regards the recording of the interviews, where consent was given by each respondent if recorded. Furthermore, the respondents have remained anonymous as no names have been mentioned, though place of employment and role is presented to offer reliability to the thesis. Furthermore, as this thesis investigates a phenomenon where some people might feel obliged to answer in a particular way, the authors have taken a case-by-case consideration for both truthfulness and pressure.

## 4. Empirical Findings

*This chapter presents the empirical findings generated from the interviews. The findings are divided by theoretical fields of analysis starting off with a combination of business models and circular business model findings, followed by findings relating to GVCs. This chapter ends with a short summary of the empirical findings.*

### 4.1. Circular Economy and Business Models

*This section presents the different factors, pressures, and possibilities relating to circular economy in the food industry and how the implementation of circular economy can be made with relevant business model building blocks as well as what hindering and enabling factors there are for the implementation.*

#### 4.1.1. Circular Economy in the Food Industry

There are according to R2 companies that have circular principles in place but that does not refer to them as circular, which is supported by R5, R6 and R8. R8 says that many of their circular solutions that have not been referred to as circular but yet are and have, in accordance to R6's explanation, been made as a solution to different problems and some even before sustainability and circularity was gaining attention.

There are different forces or factors that may drive a transition to a circular business model but as R4 asks "is circular equal to sustainably better?". Many assume so but the level of sustainability is according to R4 not part of the definition. R3 explains that today there is a possibility of selling a story focused on sustainability and then making a profit on this, and when firms are starting to discover that it is possible to both save money on manufacturing costs and make money on selling a circular story then this will be the new standard. Furthermore, R5 states that firms can make that transition for economic benefits, as there today is a high demand for sustainability-labeled solutions. R7 elaborates on this and states that responsibility goes hand-in-hand with profitability. Furthermore, R3 stated that in ten years, no one will be able to even start a firm without circular thinking as they then will suffer from low competitiveness and low interest amongst customers. R6 shares a similar thought and states that the incorporation of circular ideas will be the main focus in the future for larger firms. However, R3 and R5 believe that widespread circular implementation can only happen when firms realize that economic benefits can be achieved. Nonetheless, there can be pure sustainable

reasons behind the circular implementations as well, as R8 claims, one such example is adjustment of packaging to fit the recycling system of a particular market. Recycling is according to R8 one step towards becoming more circular but reuse of packaging a number of times before recycling is an even more circular solution and if organizations within the food industry want to become fully circular in packaging it is not enough to look at recycling, which is also concluded by R4. R8 explains that reusability of packaging is an important goal and something that is currently under development, but there are already some packaging, such as glass jars, that may be reused by consumers although they were not particularly designed for that. R5 mentions on the same note that reuse is not always sustainably better in the food industry as it can require high levels of heavy chemicals as well as energy to ensure a safe reuse.

R2 explains that companies will be pressured to change and implement circular principles because of legislation and EU politics while R5 emphasizes the pressure from customers and society at large and even stated that regulations of food safety might be hindering. R4 believes that there are regulations on the horizon that will affect companies and, therefore, companies want to adapt beforehand and have the changes made in time as well as approach it as business opportunities to seize. However, there are significant differences in how far companies and countries have come in the circular development according to both R2 and R6. R2 also explains that there is a need for different types of developments for different types of industries to become circular. The industries that focus on recycling as a big part of the solution have a substantial need for technological development to become circular according to R2 and R6. R8 also concludes that a longer time horizon is needed for further circular solutions to be developed and implemented in the food industry such as adopting sharing solutions and fully circular packaging solutions. R8 also states that “I think that in general, we tend to look inwards for opportunities, but that will get us only so far and to reach a higher level of circularity we have to look beyond our company walls”. R6 similarly explains that a holistic view might offer firms more detailed knowledge about the actual benefits and costs of circular implementation and that might mitigate the contradiction between benefits for a firm and benefits for the environment.

For the food industry, R2 and R4 identify waste and packaging solutions as the biggest possibilities for implementation of circular principles. R4 also emphasizes the possibilities of distribution solutions with circular principles. R2 explains that there is a significant waste of



resources throughout the value chain in the food industry. Each food product that is farmed but not consumed has required energy, cropland, and other resources throughout the chain without coming to use. R8 also emphasizes that there apart from environmental impact is economic potential in eliminating waste. R5 similarly addressed waste utilization in the food industry and explained that utilizing waste equals better material efficiency. R2 says that one way to utilize the biological products to the fullest is to instead of discarding them, use the by-products as input in another value chain. This is a method adopted by many actors, both Renahav, Orkla, and Unilever do it to different extents according to R3, R5, R7, and R8. When implementing circular principles, R2 suggests companies to “Start with the products that you have while planning long-term and making pervasive changes” since big circular changes such as completely new product designs may require long processes and R2, R3, and R5 states that there often is a lot of potential in the current products with relatively small adjustments. R8 also identifies significant potential in changes in the everyday-consumption because of its volume and hence small changes may yield significant impact.

#### 4.1.2. Implementing Circular Economy in Business Models

##### 4.1.2.1. Business Model Building Blocks

In a business model, everything is connected and a change in one business model building block will affect the other building blocks according to R2. However, a business model change that moves more towards recycling, for example, may only affect a few parts of the business model as increased recycling to a large extent regards sourcing, which relates to new suppliers that deliver recycled raw materials and not so much to all other business model building blocks. Thus, depending on the reason behind and the sought-after outcome of a change in the business model to incorporate circular principles, it will have effects on how the business model change takes place. Changes made in only some building blocks, like cost structure and value proposition, have according to R2 a lot to do with incremental changes via efficiency improvements, and those incremental changes do not result in overall circular implementation, and as R5 states “Looking at selected business model building blocks instead of all of them in their entirety will not lead to circular business models”. Although these changes might create value for the firm, the main purpose is according to R2 to cut costs. Additionally, R4 explains that for firms transitioning to circularity, an overlook of the value propositions might be needed as R4 states “Today consumers have many choices and can buy anything anytime anywhere, should it be like that? Do consumers really need to have the ability to buy 111 different kinds

of tomato pulp?’. R8 also addresses the value proposition building block and explains that it is foremost in that block enterprises have the responsibility or possibility to change the role of the consumer in the value chain, e.g. with waste reduction or choice of packaging. A problematic scenario of a change in the value proposition building block highlighted by R8 is that if enterprises are highly successful in creating circular value propositions and the demand for these exceeds the actual circularity possible, i.e. customers are demanding more saved waste than what is generated, it results in incentives for firms to produce more waste and not less.

The most crucial building block for enterprises that are changing towards circular business models beyond incremental changes is according to R2 key partnerships. This belief is shared by R3 and R8, however with different motivations. R4, R5 and R6 also mention this business model building block as important but not most crucial. R3 stated that once organizational harmony and strategy is implemented and the business model is to change, an essentiality in a transition to circular business models, and the most important building block, is key partnerships. R8 stated that although the most important building block is key partnerships, as collaboration in new forms and with new actors are crucial to become fully circular, all building blocks are to some extent relevant. Furthermore, R8 explained that to make the transition to becoming fully circular, enterprises need to have a perspective beyond company walls and partner up. Moreover, R4 and R6 mentioned that enterprises can create more circularity when collaborating and thus evening out the inefficiency due to wider spread usage.

R8 also emphasizes key activities when looking at the internal transformations that may be done to become more circular, for example in both production and innovation and product development. R4 also stated that the changes made in the business model do not necessarily have to be the changing enterprise, as third-party organizations can offer circularity as their value proposition, something R5 agrees with. Furthermore, R5 also mentioned key activities and stated that key partnerships play a role in the availability of these, and in the availability of key resources.

For the food industry, R6 advocates revenue stream and value proposition as the building blocks that a firm has to get right when transitioning towards sustainable solutions. Furthermore, the cost structure is also important in circular business models as different solutions might have different hidden costs later on. This is in line with R5’s beliefs that the

value proposition is the first building block to change and that it needs to be changed in accordance with the customer segment building block.

#### 4.1.2.2. Internal and External Configuration

“In every step of the process, you have to ask, alright what happens here and what more can we make out of this? Once you start to think like that you will suddenly find a lot of possibilities” is a statement by R3. The whole industry is according to R3 built around traditional linear thinking with material going in and product going out. This kind of thinking is obsolete according to R3 and a more suitable mindset is that everything needs to become something, as even sewage could be used as input into something, a shared belief between R1 and R3. The mindset that has previously predominantly influenced business models and strategies in the industry has viewed everything besides what a firm is good at and what was planned production as a problem that the firm needs to get rid of. The mindset needs to, according to R3, change towards treating the previous problem as extra resources and investigate how these new additional resources can be used to create revenue streams. R5 shares this belief and states that having the right people with the right mindset is important for circular implementation.

With similar thinking, R6 argues that once implementation of a circular solution is decided upon, the next step is to override traditional processes of the enterprise so that the implementation will happen on all levels. R6 exemplifies this by combining sales and product development departments with logistics departments to account for both departmental and enterprise-wide costs. R6 mentions that firms have, and will have, a hard time brushing the whole enterprise with circular thinking in the broad sense and like-minded departmental wise. Gone are the days where departmental cost efficiency through key performance indicators (KPIs) is highly regarded and instead the total efficiency level throughout an enterprise should be advocated.

Connecting to what R3 stated regarding internal structuring, R7 shares a similar viewpoint where ambition and motivation have led to the understanding that business model changes are in fact not profit deteriorating and that taking responsibility and being in the forefront leads to monetary gains. When R7 discussed the circular changes made at Unilever and the effects on the business model, an increased level of employee motivation leading to overall organizational

implementation and ambition that enables the firm to position itself as one of the front runners in the change towards circular business models was mentioned.

Outside of the enterprise conducting the change, there is also a need for revolution. After the firm has successfully restructured according to strategy and communicated internally and then externally towards customers to enable commercialization, R3 mentioned that there has to be an incorporation of sourcing into the focus of the corporate strategy. R3 painted the picture of going from undertaking sourcing with a spot market rationale to considering it a part of the overall strategy. Continuing on this track R8 mentioned that in order to become fully circular there is also a requirement on making people and other actors in the value chain aware of the challenges and what needs to be done in the value chain to solve it. R8 also emphasizes the need and influence of cultural shifts and collaboration to solve the behavioral patterns that cause preventable waste. If one actor in a value chain starts implementing circular principles there is a possibility for other actors to latch on and also shift and the probability of that depends on the type of relationship and the complexity of the value chain according to R8. When one actor makes a shift it can both be inspirational and also show that it actually works. This is also an area for partnerships where R8 states that working together with different actors in the value chain is a key factor for the organization in making such a shift. Sourcing circular materials could either require new actors, new requirements on existing actors or even new requirements on the machines so the machine suppliers have to change.

#### 4.1.2.3. Hindering and Enabling Factors

When transitioning to a circular business model there are a few factors that may act as hindrances or enablers. According to R2 the size of the firm matters, and an enabling factor with being a large established firm is that they have a history and probably well-established contacts to rely on when seeking financing to invest and grow. R8 and R6 state that established larger firms have the capacity to make changes but as R2, R5, R6, and R8 explain, established firms are rooted in their way of working. Established firms have processes, culture, and structures in place that probably have to be changed to fit a circular business model, which requires resources. R4 further explains that large established firms may already have done heavy investments which might hinder the will to make great changes. Another key challenge mentioned by R8 that is applicable to not only established firms is the process of getting the right partnerships, since the right partnerships do not necessarily come automatically yet are

needed for organizations to become circular. R7 concludes the biggest hindering factor to change to a circular business model is the actual cost of changing.

Two other hindering or enabling factors that R8 mentioned are the product portfolio and the context in which the firm operates. R8 believes that it might be easier for a firm with one type of product to shift than firms with several different product categories that each need individual adjustments. However, having a diverse product portfolio has advantages in other aspects. R2 also reflected on the importance of the products and stated that having a good product with a high customer value to start with is a significant success factor in making a shift to a circular business model. R8 explained that an international organization relies on the global market and global suppliers as compared to, for example, a dairy company that usually has all suppliers in one country which probably implies a shared culture and common way of working. Although it is not necessarily easy for dairy firms to implement circularity, the two different contexts offer different possibilities for organizations to implement circularity throughout their value chains. Another key factor in making a successful shift is according to R2, R3, R7, and R8 commitment. R2 expressed that the board of directors has to believe in the shift, be perseverive, and really want to follow it through as it most often requires significant changes and as there will be challenges to overcome. R7 and R8 explained that making big shifts, as changing business models may be, requires that there is a higher purpose that the company is committed to while it is still crucial to make money along the way. R3 states that it might be necessary with a complete restruction organizational-wise to align the culture and interests within the organization to make a successful shift. Alignment is also heavily emphasized by R6 as a key factor in the success of implementing circularity. R6 states that organizational structure and organizational measuring tools to fix the problem of insufficient and contradictory KPIs are important. R3 and R4 also mentioned the separation of departments as a hindering factor explaining that traditionally, in a linear economy, different organizational departments have limited structural interactions as one department is often at the other end of the linear spectrum. R3 concludes that if a circular implementation is to have effect this mindset is a cornerstone problem. According to R6 organizations will, without a holistic perspective, experience different attitudes for KPIs which will result in a hindering of implementation and there is also a need to address the whole value chain to ensure a holistic approach. Another hindering factor is mentioned by R7 that stated that there is a lack of transparency in the industry towards the consumer regarding the attributes of activities and value propositions which limit the possibility of customers to understand the purpose and judge the attributes.

A factor that R8 concludes to be both hindering and enabling is when circular solutions fit the existing linear processes. Although there have been circular initiatives and solutions implemented at Orkla, R8 explained that these solutions have been made in the existing linear process without a circular perspective although the solution is circular, which R4 also says is still common in the industry. Having a linear organization and process where circular solutions fit is an enabler in the way that circular changes have been made fairly simple and quick and the know-how is already there. But it is also a hindrance in the way that there is a need to shift the way of working to implement full circularity which is not possible if you do not let go of the present way. However, having the possibility to try out circular solutions within the current structure might build the courage needed to make a greater shift later on when the organization has more experience as well as evidence that it works. This is also supported by R2 that, as previously mentioned, suggests that firms should start with what they have while planning long-term. R8 also explained that it is easier to try circular solutions in one factory rather than for one brand. Although that may lead to scattered ways of working there are both different needs and situations for different types of productions and there is also the possibility to learn and apply solutions from different contexts. Renahav is one example of this where circularity is implemented at the factory rather than a particular brand.

R2 and R4 explain that there is usually no history when starting a circular system, implying that the life expectancy of the circular products or material may or may not be accurate. When it is not accurate, there is the possibility of over or underestimating the life expectancy of circular products or materials. This implies that both the financial and environmental benefits may be greater or smaller than expected but the financial benefit is however only certain when the product has been fully depreciated. R4 as well as R3 and R5 stated that although environmental benefits may be important, the financial benefits have to be there too to get everyone on board to motivate the shift or it at least is easier that way. R7 shares this perspective and explained that there is a lack of investment in the circular economy which makes it harder for firms to understand and profit from benefits thus making the change a costly learn-by-doing venture. R4 also elaborates on the importance of the relationship between number of loops and time perspective when assessing circular loops.

## 4.2. Circular Economy in Global Value Chains

*This section presents the empirical findings related to changes in the GVCs in the food industry as an effect of circular implementation in business models. The changes are defined as either structural changes of the GVCs or changes related to control and coordination of the GVCs.*

### 4.2.1. Global Value Chain Structure

#### 4.2.1.1. Construct of Actors and Activities

R1 argues that, when firms transition towards more circular thinking with recycled and circular materials the value chain will be affected, and one such effect could be closer relationships between buyer and supplier, as these products would be more complex and users would need to secure deliverance. R5 states that the chains will change as there will, with circular business models, be new ways of creating value instead of discarding products and that this will lead to the incorporation of new collaborations in the value chain. R2 emphasized the importance of having the right competencies in the value chain when transitioning to circular business models. Furthermore, and in line with the beliefs of R1, R2 mentioned that traditional value chains will become more complex with more types of actors, and an increased complexity in the local-global perspective. However, the most important part when thinking of a value chain with circular thinking is the opening up to new and more partnerships and collaborations. R2 exemplified this with the minimization of waste generation in packaging and stated that this might require changes in how actors collaborate. Furthermore, R2 mentioned that in order to think new enterprises must probably listen and learn from what others are doing and support and give value to each other in order to benefit from it oneself, thus highlighting the need for partnerships to combat the increased complexity circular business models will bring upon value chains. R6 also mentioned increased complexity of value chains due to circular business models. However, without explicitly mentioning the importance of partnerships R6 states that a harmonization and alignment of the value chain to combat differentiated internal and external goals and drivers, which was mentioned as a hindering factor, will be the biggest effect circular business models will have on value chains. Universally implemented management of different systems could, according to R6 result in quicker response times in value chains and new ways of sharing information and increase visibility and understanding throughout the value chain. Additionally, tracking in the value chain is another, more specific, change that needs to be implemented due to the nature of circularity according to R6. R4 explained that a circular

system offers a foundation for technological permanent attributes that in itself can be a value proposition of tracking, information, or other forms of data that enable a connection of the physical and information flow. Information sharing will be important according to R6 as it allows for better collaboration with the suppliers and partners in the value chain. However, to be able to do this there have to be evidential benefits for all parties concerned as R5 and R6 stated. In the food industry today there is room for improvements that do not require a high degree of resources, and for finding those opportunities partnerships and information sharing are important as it could result in more overview of the whole chain. Although, with the rise of information sharing comes problems with sharing too much as some data might be sensitive firm-specific information.

In the circular economy, according to R1 and R4, there is a dual responsibility on the consumers. Firstly, the consumers need to return the material and secondly, the consumers need to be selective in purchasing. R1 explained that it is important to both incentivize and enforce customer selection of products that are the outcome of circular thinking. R8 also reflected on the possibility of organizations to take further responsibility and build the awareness and offer what they think the consumers need although the consumers have not specifically asked for it. Simplifying circular acting for consumers was mentioned by R1 as a necessity for functional waste and material recycling, and thus better and more advanced recycling systems for households could be a key activity needed for circular implementation on a wide scale as some of the material for recycling in the food industry is created at the household level. Incentives for household recycling could be economic or legislative, as it is now based solely on goodwill.

R1, as well as R2, R5, R7, and R8, further conclude that there will be visible changes in the actual construct of the value chains. Overall, R1 believes that the biggest effects of transitioning towards circularity in the food industry will be seen in the sourcing of raw materials and by-products. According to R1, this will mean longer circles with new actors and directors and these do not necessarily need to be confined in the food industry, such as complementary activities from the sewage or minerals industry. Furthermore, R2 stated that another significant change is that there in a take-back system will be unique products rather than a million identical products which will lead to reorganizations and change of processes, logistical chains and require a much more flexible system and smaller scales. Similarly, R5 and R7 believes that sourcing has to change, and when it does new actors will be brought into the value chain, and R7 further mentioned that old existing actors with sufficient knowledge about the new materials



could be made bigger, as they can easily capture market shares as the market grows at the pace of circular implementation. On the same note, R7 stated “Some changes also lead to the reconstruction of partnerships as the need for certain materials shift, with some of [Unilever’s] initiatives there was a low supply of key materials, so ensuring deliverance with key partnerships was an important aspect”. Continuing on this, R7 believes that the firms that have the necessary components for circularity today will be better suited for the future and seeking relationships with these suppliers will be beneficial for an enterprise transitioning to a circular business model. Innovative firms capable of transformation and predicting resource needs will also be preferred as suppliers in the future. The need for closer relationships might according to R7 as well as R1 to some degree change sourcing towards more local suppliers. Similarly, although from a different perspective R8 also claimed that there will be changes in the value chain construct. However, R8 explained that the greatest changes we can expect to see are at the side streams that will lead to new value chains. Furthermore, R8 mentioned “becoming fully circular does not have to be done within the food industry but rather having different circles intermingling”. This is a belief shared by R2 when it is stated that “One of the biggest changes when implementing a circular economy will be that there are a lot of new actors that one has to collaborate with and that the [value] chains can be considered ecosystems rather than chains”. R5 also states something similar and claims that with circular thinking value chains will be integrated and adding-on to each other, and that there must be a connection across industries. Furthermore, R1 also supports the notion of other industries becoming integrated in the value chains in a circular food industry. R1 exemplified this with the energy and sewage industry.

The respondents also argue for more specific visible changes in the value chain. R2 and R5 argue for a change in the level of flexibility, as realizing goals of waste minimization might be dependent on that. According to R2 consumers are used to fully-stocked shelves of fresh foods, which results in waste when not sold in time, and changing this norm and having more flexibility in the volume of these goods implies an opportunity to minimize waste at that level in the value chain. R7 also discussed ways of combating waste and stated that firstly, enterprises need to make sure that throwing away is the last resort, and when waste is necessary enterprises should make sure that it is used as an input in something else. When something can be done to combat waste this will lengthen the value chains with both activities and actors to improve what R7 defines as side steps in the process. Enabling this however requires active choosing of materials used for the various stages of value proposition development, such as

packaging, and thus sharing the same belief of R1, that sourcing of new materials for circular business models will alter the construct of value chains.

#### 4.2.1.2. Global and Local Perspectives

With the changes in relationships, value chain actors, and value chain activities outlined above in mind, several of the respondents have discussed changes in the geographical dispersion of value chains and sourcing that fits circular business models. Both R1 and R2 discussed the possibilities of that value chains at the beginning of the transition to circular business models will be locally and regionally focused. However, R2 also mentioned that some activities such as recycling of certain materials may be concentrated to a few locations globally, since some regions do not have the possibilities to recycle as well as to reach a large enough volume to make recycling profitable, and as R5 stated, some things are better suited for global coordination. Moreover, R3 as well as R4 views geographical proximity in value chains as a benefit, since some materials for sourcing in a circular business model is often more expensive and thus reduced transportation costs can be beneficial and it might facilitate the practical implementation of circular business models. While R1 discussed close collaboration as a factor behind more local value chains, as mentioned above, R2 mentioned that reparation, maintenance, and the upgrading of products will require more local and regional competence as well as access to certain components. R2 argues that this implies more disruptive value chains for the currently trimmed and lean chains. Especially disruptive will it be for those industries that have based their value chains on large quantities and economies of scale. R8 on the other hand does not believe that geographical distance will play an important role in value chain construction due to the size of the international suppliers as well as the size of the industry, and thus a scenario that relies on domestic sourcing will not be probable. Furthermore, R8 argued that offering food as a service in a closed loop in a global industry with value propositions for customer segments that are used to global goods will require many different loops that intermingle across business, similar to the transition of linear value chains into ecosystems argued by R2. The intermingling loops can then be on both global and local scale. According to R8, to succeed in the industry, the loops need to be on a global scale, however, the local or domestic loops are easier in several aspects and can thus complement the global loops. In local loops sharing goals and approaches to circular solutions is facilitated due to proximity as well as a probable similar business culture making it easier to collaborate. This argument by R8 is in line with the views of R1 regarding international enterprises and local collaboration as well as the discussion by R8 in an earlier section regarding the importance of

context for possibilities of implementing circularity through value chains. R5 also shares a similar opinion and stated that there will be more focus on local chains, whilst keeping the global coordination.

As mentioned by R1, R2, R4, R5, R6, R7, and R8, there are challenges in the difference in level of development or access to certain systems, for example recycling systems that differ between countries and thus making standardized implementation of circularity in all country markets that the organization is present in unfeasible. R4 also mentions governmental initiatives such as increasing the domestic food supply as an influence of the geographical dispersion of value chains. However, R8 does not believe that the global differences are a hindrance for continued global sourcing when transitioning to circular solutions. As of now in for example packaging, the solutions are national and as long as waste can be controlled and collected throughout the value chain, sourcing is not necessarily affected. But there is a need or opportunity to put pressure on the other actors in the value chain through the goals and requirements put on suppliers. The possibilities will then spread to other country markets as well by making changes step by step as R8 explains. R4 mentioned that although there are different systems in the different markets, SRS has partnerships throughout the European markets that allow their circular distribution. According to R4 there is also the possibility of large international actors to take advantage of the differences in the markets thanks to their size. They have the possibility to utilize the differences as a means of sourcing and adjusting their circular solution to fit the characteristics of particular markets. For example, biodegradable packaging is a more effective solution in a market where littering is a problem as compared to a market with a well-developed recycling system such as Sweden.

## 4.2.2. Control and Coordination of Global Value Chains

### 4.2.2.1. Relationships and Collaboration

When discussing control and coordination R1 stated that large international firms in the food industry have a trend of consolidating control, which could boost the desire for local and regional close collaboration between supplier and buyer. With collaboration, circularity would then have the additional benefit of building trust between buyers and suppliers when co-creation of value is emphasized in circular business models, and as R5 stated “trust is be-all and end-all with circularity, without it it all goes up in smoke”. The greatest changes in value chains for firms in the food industry are according to R7 the increased transparency and

increased information exchange, which R4 and R6 also discussed the importance and possibility of. There will be a drive for higher transparency and sharing of information in the value chain to be able to provide customers with more information to showcase the benefits of the value proposition based on circular principles, according to R7. R2 and R5 explained that this may be done via the use of certifications or standardization to ensure a certain quality or process through the value chain. R7 also mentioned the need for awareness and states that it will drive firms in the value chain to find out more details about the final value proposition via information exchange. Sharing of information and being transparent could, according to R8 lead to better implementation of circularity across the value chains as the activities are connected and since the possibilities in one activity is restricted by the previous and for the value chain to be circular there has to be collaboration, R6 also emphasized this. Beyond this, R6 claims that for there to be collaboration there has to be evidential benefit for the initiating firm and the supplier for it to work properly, something R5 also mentioned. R8 also addressed this with an example of the plastic packaging around cucumbers, where if the plastic film would be removed, to showcase sustainability, the waste throughout the chain would increase because of increased breakage and shorter shelf life implying that the value chain would be less circular than the consumer might perceive.

Another aspect that control and coordination of value chains incorporates is collaboration. R2 explained that for the firms that have not yet seen a significant change in the inflow of material as they are still transitioning to a circular business model, the biggest disruption is still in how to collaborate in creating and enhancing value for the customers. R6 also emphasized collaboration and stated that circular implementation in the value chain will be in collaboration with the actors of that value chain. R2 further elaborates on the actors in the value chain and explained that the different actors in a value chain are good at different things and it is not certain that the actor that owns the product or product design is confident it has the right competencies required for making this change alone and may then partner up with another actor to make the shift successful. R8 also reflected on competencies and suggested enterprises to ask “can we do it ourselves, or do we need a partner?” Furthermore, R4 mentioned that the suppliers have made changes according to SRS’s request and dared to invest based on partnerships over a long period of time. R4 states “we have the approach to work with our suppliers over a long period of time and that has made our suppliers dare to make investments.”

#### 4.2.2.2. Control and Ownership over Value Chain Activities

What actor it is that drives the change towards a more circular value chain may differ. R2 stated that it is either the original equipment manufacturers or manufacturers that own their brand, but there are also companies that do not produce their own goods that could be the driving actor in this kind of change. The latter mentioned kind of actor can according to R2 have the power of the value chain since they design and have the best knowledge of the products and thus are in the best position to improve the product to fit a circular flow. There could also be value chains where the supplier of the raw material is the actor that implements circularity and that adopts recycling strategies to sustain the value and quality of the raw material in loops. R2 concludes that when adopting circular economy principles in value chains, the main focus shifts from the inflow of materials to the extension of the value chain, and what actor it is that takes ownership of this shift of the value chain differs. SRS has according to R4 had and continues to have the power to influence the actors in their value chain to adopt more circular practices thanks to their internal goals on circularity and those changes would not have been done at the suppliers if SRS would not have requested or demanded that.

R4, as well as R5, explained that the importance of control and trust in GVCs differs significantly between linear and circular business models and with most emphasis on costs and how costs are to be divided since there may be several actors involved. R7 argued that with circular business models the value proposition might create a need for higher control and influence in the value chains as firms implement take-back systems and since the materials might be more expensive. If an item is reusable there needs to be a good system for tracking it as well as functional return systems, and this requires information exchange which has been addressed previously. Continuing on control, R7 mentioned that Unilever has established goals for 2025 and 2030 regarding reuse and recycling connected to shared responsibility in the value chains and to ensure the fulfillment of these there has to be control according to R7. R7 continues to explain that in complex and long networks with several thousand suppliers trust is a good thing but not sufficient for satisfaction, an example of control that R7 discussed is auditing which R7 mentioned as necessary for controlling that the suppliers are actually following the goals set by Unilever. When there is circularity incorporated into the business model R7 believes there will be more control, similarly R5 stated that there already is high control of GVCs in the food industry and what will instead increase is the factors to control, such as circularity or sustainability. A justification for this can be to ensure claims made

towards customers regarding value proposition attributes and the need to control the validity of this. R8 shares similar opinions as R7 but also identifies a duality between control and trust when implementing circular business models as complexity often requires increased control and coordination but the need of partnerships most likely implies letting go of some control and increasing trust as one cannot control everything themselves.

### 4.3. Summary of Empirical Findings

*This section summarizes the empirical findings presented in this chapter.*

The chapter presented the most relevant empirical findings and acts as a foundation for the analysis to answer the research question. The findings are divided accordingly in Table 3.

Table 3. Summary of Empirical Findings

<p><b>Circular Economy in the Food Industry</b>  The definitions of circular business models vary.  Organizations need to have a broader perspective to implement circularity fully.  Waste and packaging solutions are the main areas for circular implementation.  Taking responsibility leads to economic benefits.  Organizations should start with what they have when starting to implement circularity in their business models.</p> <p><b>Implementing Circular Economy in Business Models</b>  All business model building blocks need to change when adopting a fully circular business model.  Key partnerships is the most important business model building block when transitioning. The value proposition may be used to incentivize circularity.  There are a number of hindering and enabling factors to take into account.</p> <p><b>Circular Economy in Global Value Chains: Global Value Chain Structure</b>  Sourcing shifts to more complex materials which requires relationships and collaborations.  Collaboration facilitates learning and ensures the right competencies.  The consumer is incorporated into the value chain and has dual responsibility.  New activities, actors, and requirements can lead to ecosystems rather than value chains.  Global-local complementation and different market characteristics for circularity.</p> <p><b>Circular Economy in Global Value Chains: Control and Coordination of Global Value Chains</b>  Collaboration is crucial for the functionality of GVCs.  Increased transparency and information sharing is needed for the functionality of GVCs.  Value chains with circular thinking are more complex than linear value chains and thus more control over more actors and activities is needed.  Control is crucial for the functionality of GVCs.  Standardization, and certifications are useful for increased control over the GVC.  The owner of a GVC depends on knowledge of product and ownership of brand and material.</p>
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## 5. Analysis

*This chapter presents an analysis of the empirical findings, presented in the previous chapter, based on the theoretical framework presented in the second chapter.*

### 5.1. Circular Economy in the Business Model

*This section regards the implementation of circular economy in the business model, and includes analyzes of the transformation, what business model building blocks that are of importance as well as potential hindering and enabling factors in implementing circularity in business models.*

The definitions of a circular business model differ and the two definitions by Frishammar and Parida (2019) and Linder and Willander (2017) presented previously in the theoretical chapter showcase the difference in scope and focus. The lack of a shared definition is showcased by the respondents that suggest that solutions may be labeled as circular at different levels of circularity and while some assume circularity to be based on sustainability, some respondents question whether a circular definition has to involve increased sustainability. The scattered perception among the respondents on what circularity is and what level of circularity is required for business models to be called circular fits Lewandowski's (2016) view that suggests that business models can be circular to different extents by incorporating one or more principles of a circular economy. Moreover, in accordance with Korhonen et al. (2018) and Linder (2017), the findings suggest that taking responsibility leads to greater benefits including economic ones in terms of lower costs and more revenue and the findings suggest that economic benefits have to be evidential to initiate a shift. The findings also align with both Linder (2017) and Stahel (2019) that identify packaging and waste as key areas in the food industry in the implementation of circular principles. Linder (2017) also emphasizes that although recycling rates have to increase and there are benefits to draw from that, which the findings also showed, there is a need for re-design at the core to be fully circular which was also mentioned by the respondents, however, in a longer time-frame. Some of the respondents identified regulations and EU initiatives as drivers to a circular transition in accordance with Lewandowski (2016) and Stahel (2019), and some claim that market factors are the foremost driver for change. The findings also identified market differences throughout the value chain as a hindrance to make a successful transition in accordance with Lewandowski (2016) and Linder and Willander (2017). R4 however, also identified the differences as a possibility for large international firms

to utilize the difference between markets and reap different benefits to support their circularity. The findings suggest that there is a need for a wider perspective to implement circularity successfully. This is in line with Frishammar and Parida (2019) and Lewandowski (2016) that suggest that circular business models rely on multiple actors and require collaboration and cooperation.

Osterwalder and Pigneur (2010) define a business model as a construct of different building blocks and Teece (2010) defines it as the model by which an enterprise defines how it will create value, deliver value, and capture benefits in form of profits. The findings, in accordance with Osterwalder and Pigneur (2010), find all business model building blocks important and also interconnected. The findings further suggest that an implementation of circular principles in one building block will affect the other building blocks and thus a holistic perspective is needed when designing a new business model. According to Frishammar and Parida (2019), a circular business model is characterized by resource efficiency through creation, capture and deliverance of value, the same aspects that Teece (2010) define as the total business model. Thus it can be assumed that going from linear to circular business models requires total reconstruction of all aspects of the business model, much in line with what Daly and Walsh (2010) argue. R2 however argues for the possibility of incremental, or limited, changes towards circularity that only affects parts in the business model and thus all changes towards circular business models do not need total reconstructions of the interconnected building blocks, however, these incremental changes will not result in fully circular business models. However, there are some building blocks that are identified as more or less important by themselves and in combination.

The value proposition building block is one such building block that according to respondents and Lewandowski (2016) is important. As Lewandowski (2016) states, the value proposition of a circular business model has to be aligned with the demand from customers, and further states that if there is not a fit between value proposition and demand, the transition will fail. The respondents agree with this and go even further and claim that an enterprise can, and perhaps should, influence the consumers' role in the value chain, in line with the beliefs of Porter and Kramer (2019). Additionally, respondents claim that although many firms do not yet have circular value propositions there is an opportunity to sell circular value propositions due to customer demand and make the fit described by Lewandowski (2016). Furthermore, Linder and Willander (2017) states that there is a risk in producing too good products with



circularity which will then reduce sales, there is little empirical support for this but as R8 state, enterprises have a risk in creating too much demand for circular products that the circularity fails, i.e. demand exceeds the rate at of recycle and reuse. The circular solutions yet made by the case firms are however not fully circular, which may explain this gap between the different circular value propositions suggested by theory and the value propositions discussed by the respondents. Furthermore, respondents support what Lewandowski (2016) mentions regarding core changes in the value proposition to allow for incorporation of the principles of circularity, such as circular product design, as well as in the alternate forms of value delivery described by Frishammar and Parida (2019).

Although the value proposition was found by both the respondents and theory to be a central business model building block in circular business models and that all building blocks are interconnected, the findings show that there is one business model building block that is more important than the others, and that is key partnerships. The finding goes in line with Lewandowski (2016) that states that for circular business models, key partnerships could play a bigger role than in linear business models, and with Linder and Willander (2017) that explain that the better the partnerships the better possibility of fulfilling circularity in the value chain. The findings suggest that transitioning to a circular business model may either imply new requirements on existing partners or a need to establish completely new partnerships. With circular business models, the findings identify a need to collaborate to a larger extent, which Lewandowski (2016) as well explains is needed because a circular flow is dependent on the performance of several actors and hence require collaboration. Respondents also identified key partnerships to be a core building block in circular business models because of its interconnection to other building blocks in accordance with El-Haggar (2007) that suggest a close connection to the key activities and resources needed in a circular business model. The findings also suggest that firms implementing circularity can altogether skip changing business models, and instead rely on partnerships' solutions for circularity.

Three sets of business model building block fits that according to Lewandowski (2016) are needed when transitioning to a circular business model are emphasized by the respondents to different degrees. As mentioned above, the findings support the need for a fit between the value proposition and the customer segment. The next fit, between the cost structure and revenue streams is not addressed although the two blocks are found important. The lack of emphasis on this fit might be because no case companies had made significant circular changes in the

revenue stream and still process most circular solutions in their existing linear chains. The third fit was neither emphasized by the respondents however they have identified several factors that either work as an enabler or hinder when implementing circularity in the business model and will be discussed in the next section.

Lewandowski (2016) identifies a number of internal factors that can enable or hinder a transition to a circular business model. Three of those factors are leadership, human resources, and management, which are in line with the findings that for example emphasizes alignment of internal interest as a core factor, which also connect to the hindering factor identified by Sivertsson and Tell (2015) as old norms and the need for right capabilities in accordance with Teece (2018). Another factor that Lewandowski (2016) identifies is risk, which is also mentioned by R2, R4, and R7 as well as by Linder and Willander (2017) when discussing evaluation of circular business models. The findings show that there are different types of risks associated with transitioning to a circular business model and that most respondents highlight risk related to investments while others focus more on risk related to uncertain evaluation possibilities that are more in line with the discussion by Linder and Willander (2017). However, some of the identified risks related to investments have more perspectives to them. As identified by R8 and supported by R2, there are some factors or contexts that may or may not mitigate that risk. One example of this is having processes in place that are linear but that initially fit some types of circular solutions. The enabling perspective on this is that it offers an opportunity to test and learn without committing to too heavy investments. The respondents also identified great possibilities in starting with already existing products or processes which can lead to circular solutions without too extensive changes. The hindering perspective is that it might decrease the willingness to change as needed to become further circular when the current linear process allows circularity although to a low degree, which is in line with Sivertsson and Tell (2015) that found norms and hard-to-change systems as hindering factors.

## 5.2. Global Value Chain Structure

*This section presents the analysis of the findings related to the change in structure of GVCs when circular business models are implemented.*

As argued by Schweizer (2005) and Mahadevan (2000), the value chain is connected to the business model of an enterprise and thus it is rational to believe that when a business model transitions to a circular one the structure of the value chain will follow in a similar manner.

Between value chains formed from linear business models and those formed from circular business models there must be a change of focus at the core. Gereffi et al. (2001) describe value chains as chains of inflow and outflow of material between value-adding links from concept to after use disposal. On the other hand, empirical findings promote value chains with circular thinking as loops characterized by return-flows, minimization of waste, and enablers of environmental and economic benefits, and with Gibbon et al. (2008) in mind this will open up new possibilities for firms in the value chain to differentiate and extract economic rent.

Value chains are fragmented links of production and distribution (Gereffi, 2011), and thus production and distribution require interaction between enterprises in a value chain. As mentioned in the previous section, partnerships and collaborations are according to the findings very important in the implementation of circular business models. Furthermore, according to Lewandowski (2016), in a circular business model key resources are affected, and sourcing and channels changes to allow for the flow of material backward in the value chain. As the findings show, once enterprises transition to circular sourcing there have to be changes in the relationships between buyers and suppliers in the value chains. There are different motivations for this necessity in the findings and one motivation follows Linder and Willander's (2017) argument of complexity and predictability of these new channels as well as the specialty of the materials resulting in closer partnerships. To support circularity in the value chain, some respondents noted that it requires the right capabilities and competencies throughout the chain in accordance with Teece (2018) and Daly and Walsh (2010) and, as R8 concluded, if enterprises do not have the right competencies within the organization there is the possibility of partnering up. Furthermore, as Firshammar and Parida (2019) states, when designing and developing a circular business model, inspiration as well as alignment of external actors can help. As business models and value chains are related and affect each other a similar mindset can be applied to the relationships and structure within value chains as supported by the findings. Furthermore, relationships will, according to the findings, facilitate tracking of products and harmonization of the value chain which could result in a reduction of the complexities that come with circularity in the already complex value chains as described by Gereffi et al. (2001) and Kaplinsky (2004). However, the findings did not emphasize digital value propositions to the same extent as theory which might be because of the physical characteristic of the food industry as well as the current level of circularity.

Overall, according to the findings, there seem to be changes in how partnerships are constructed with circular business models, and as Osterwalder and Pigneur (2010) states there are four different types of relationships included in the design of business models (strategic alliances, cooperation, joint venture, and buyer-supplier), and based on the findings, buyer-supplier relationships will transition more towards cooperation while remaining at a buyer-supplier level when implementing a circular business model. The findings also address the need for evidential benefits for all actors to enable collaboration throughout a GVC that supports circularity.

The findings also support the incorporation of a new type of actor in the value chain, the consumers. According to Lewandowski's (2016) approach for incorporating circular principles, the customers and consumers play a part. In line with the findings, this will then result in the incorporation of consumers in the value chains. As the findings show the consumers play a vital role in the complex value chains. Lewandowski (2016) claims that customer relationship is important for circular business models if it is based on customer actions, such as recycling. The same importance for value chains is backed up, and even extends to the end consumers and households according to respondents. Effectively, the consumer has a dual responsibility as they need to be selective in the choice of products and must play their part in the value chains, according to R1. Thus, value creation with circular business models could result in what Porter and Kramer (2019) advocate as co-creation between enterprise and consumer. Besides the incorporation of consumers as an actor in the value chain, circularity has several other effects on the construct. The respondents explained that new circular business models will result in the opening up for new activities and actors in the value chains which is in line with Lewandowski (2016) that explains that with circular business models comes the need for new activities and new key resources as there will be new value propositions to deliver, and in accordance with Teece and Linden (2017) that states that the business model determines what key activities can be performed by the enterprise and what should be performed by other enterprises in the value chain. Since respondents claim that there will be a great change in sourcing and respondents assume that some resources and activities will be divided between the firms in a value chain and that they collectively and through relationships and collaboration will form the complex loops of circular value propositions, much like what El-Haggar (2007) mentioned. Furthermore, according to the findings the value chains with circular thinking can, or even must, span across industries and thus form ecosystems of intermingling value chains.

Additionally, there is, according to the empirical findings, not just new actors in the chains but new activities as well, as mentioned above. According to El-Haggar (2007) and Stahel (2019), one new type of activity in circular business models is the reduction and utilization of waste, which is in accordance with the findings, and R2 and R5 mentions collaboration in the value chain to minimize waste generation and more effective use of material. Furthermore, R2 promotes flexible systems for taking back resources and material on different geographical scales, however, the theoretical framework does emphasize this to full extent (Frishammar and Parida, 2019; Stahel, 2019). A reason for the misalignment between empirical findings and theoretical frameworks could be due to what was mentioned above, that there in reality, according to findings, are no fully circular business models in today's economy. Furthermore, as presented in previous sections, circular business models require new resources and activities which may either be performed within the organization or by partners according to El-Haggar (2007) and Lewandowski (2016). Whether these new resources and activities require new partners or if the existing ones can fulfill the new requirements decides to what extent the value chain constellation is affected by the change.

There are discrepancies in the empirical findings for where the value chains of circularity should be situated on a geographical dimension. Stahel (2019) offers a dividing of local, regional, and global actors in the value chain based on circular activities, and there is some empirical finding in support of this. However, what is more emphasized by the respondents is that there can be a division of different loops in a geographical aspect, and that these local and global scaled loops intermingled form a value chain or ecosystem. The reason for this could be what most of the respondents mention regarding differences in the development of, and systems for, circularity between markets. Dicken (2015) states that there are two separate production processes for the food industry, one local and one global, with different geography and function, but as the findings show the separation is not that clear cut. Furthermore, R1 stated that the trend of consolidating control by large international firms in the food industry could have the effects of an increased number of local loops as this offers closer collaboration.

### 5.3. Global Value Chain Control and Coordination

*The previous section discussed the implications on the structure of GVCs that implementing circularity in the business model has, and this section continues on the same note and discusses what implications it has on the control and coordination of GVCs.*

The findings show, in accordance with Linder and Willander (2017) that control is an important factor in fulfilling circularity. The respondents suggest that control and coordination of GVCs of organizations with circular business models to a large extent rely on relationships and collaboration. That suggestion aligns with what Korhonen et al. (2018) explain as an enabler for a circular economy as well as with Lewandowski (2016) that explains that collaboration enables a circular flow of both value and material. Also in accordance with Korhonen et al. (2018), R8 identified establishing these relationships and collaborations as a challenge to fully implement circularity. As discussed in previous sections, one actor that the respondents in accordance with Linder (2017) and Lewandowski (2016) found to have importance in the value chains when adopting a circular business model is the consumers, and Porter and Kramer (2019) explain that consumers and enterprises may collaborate and together create value in the GVC. Another factor that the respondents found important for a circular flow was increased transparency and sharing of information between the actors in the value chain to, for example, allow a successful take-back flow, which is in accordance with Linder (2017). Linder (2017) also suggests that increased transparency is possible to achieve thanks to the digital transformation which R4 emphasized as well.

With many actors in a value chain, complexity is likely and hence control and coordination over the chain is needed according to Gereffi et al. (2005). In accordance with Gereffi (2011) and Gereffi et al. (2005), the findings show that the lead firms of the GVCs have power and are also in a position to control the value chain. However, also in accordance with Gereffi (2011), R2 identifies the possibility for variations in what actor it is that might be the lead firm in the value chain. Apart from the product manufacturers, retailers, and marketeers of the final product that Gereffi (2011) and Gereffi et al. (2005) identify, R2 also identifies the possibility for suppliers of for example raw material to be the actor that implements circularity in the chain, which may be applicable for packaging solutions in the food industry for example.

As previously discussed, there are new actors that come into the GVCs when firms adopt circular business models. One of the actors that the respondents found to play a significant role

in the new value chains is the consumers, thus also a need to perform control over them to a larger extent than before. The findings go in line with what Kaplinsky (2004) identifies as constraints and opportunities that arise thanks to, or because of, the influence that the previous activity in the value chain has and thus enable or hinder the possibilities of the coming activities. The findings also support what Gereffi et al. (2005) suggest about how coordination can allow control over the chain and other actors yet without ownership of those activities. Another argument by Gereffi (2011) that the findings support is that the type and extent of control change as the industries and value chains evolve. Gereffi (2011) also concludes that different parts of a value chain may require different types of control. The findings suggest that transitioning to circular business models implies an extension of the value chain and inclusion of more activities and actors. However, some respondents also identified a duality in the question of increased control in the new GVCs. The findings suggest that extended value chains and the high reliance on other actors in a circular system require control, both to have proof of circularity towards consumers and also to maintain the circular flow. The findings also identify that achieving this flow requires partnerships to a large extent that also implies a need to let go of some control as one organization cannot perform all activities oneself. One of the different forms of value chains, and control needed in that chain, that Gereffi et al. (2005) present is the relational control, which implies a value chain with high complexity and high capabilities and includes trust as a way of managing the chain. The respondents concluded that the food industry is characterized by low trust and high power which may have to change to allow a fully circular flow. One control mechanism that was presented by the respondents to a larger degree than the literature was the use and need for standardizations as well as certifications to allow a trustworthy and fully circular large-scale flow.

## 6. Conclusions

*This chapter answers the research question 'How does changing towards circular business models affect the global value chains of firms in the food industry?' by concluding the findings from the previous analysis chapter. The chapter also provides theoretical and managerial implications of the study as well as a presentation of the limitations to the thesis and suggested future research.*

### 6.1. Main Findings

*This section provides a summary of the main findings and answers the research question.*

This thesis aimed at investigating the effect circular business models have on GVCs in the food industry and how enterprises shift from traditional business models to circular ones. The reason for this thesis is the apparent lack of existing literature connecting GVC theory and circular business model theory within the scientific community. This research takes its standpoint in three different and interconnected theoretical frameworks, business model theory, circular business model theory and GVC theory. As stated in the theoretical chapter of this thesis the three theoretical frameworks are of relevance to one another. To answer the research question several interviews were conducted with researchers and high level enterprise employees. The interviews resulted in empirical findings that showcased the apparent effects that transitioning to circular business models have on GVCs, which will be discussed below.

Partnerships were found to be an important business model building block in a circular business model as all respondents mentioned partnership consideration as either an important or the most important building block in the circular business model in accordance with the theoretical framework. The reasons for the importance, the authors argue, is due to the nature and requirements of circularity. According to the authors there are three findings that especially showcases the necessity and importance of partnerships. First, the need for collaboration for incorporation of circularity, as well as ensuring functionality via harmonization and alignment in the value chain, and the importance of the building block for other building blocks, such as key resources and key activities. Second, enterprises can rely on other actors to help in the implementation of circular principles. Third, partnerships can help in the reduction of complexities in the value chain, leaving lead firms with more coordination mechanisms than just control. Partnerships also have the additional benefit of allowing firms to offer circular



solutions without themselves having to change their organization by relying on other enterprises to provide circular solutions.

Overall on the importance of partnerships, the authors can conclude that the way actors in GVCs are interrelated will change when enterprises transition to circular business models in the food industry, as key partnerships are important enablers of the principles of circular economy. However, what cannot be concluded is the level or type of relationships and how this will evolve depending on the level of circularity.

Additionally, it is not only relationships in GVCs that are presumed to change as the findings of this thesis show that there will be major changes in how value chains are structured when one or more actors in a value chain transition to circular business models. A major finding of this thesis is that the structure of circular value chains will move from a progressive line to an ecosystem of interconnected value chains, illustrated in Figure 2. This conclusion is supported by three distinct findings in the analysis; consumer incorporation, new actors and activities, and the intermingling of value chains, which each will be further elaborated on below. As can be seen in Figure 2, the ecosystem consists of intermingled value chain loops and linear GVCs and it is the connectivity, via circularity, that links several linear GVCs of the food industry into loops. It is the intermingling of loops that create the structure for the ecosystem that spans across countries and industries.

Figure 2. Illustration of Ecosystem with Intermingling Loop-Like Global Value Chains

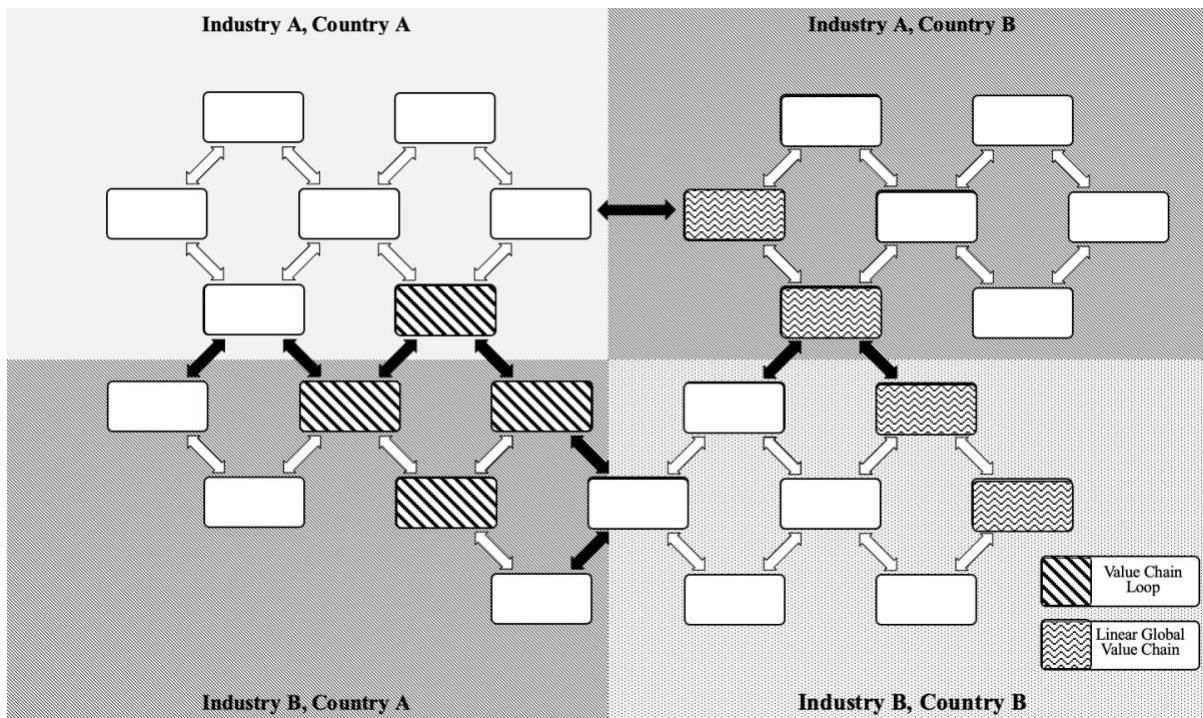


Figure 2. Each block represents an actor in a value chain, and a value chain loop is demonstrated in the figure with stripes, and a linear value chain is demonstrated with waves. The arrows mark the links between actors in a value chain and the black arrows demonstrate a flow and connectivity over industry or country borders. In the figure, linear GVCs in the food industry, connected by circular thinking, form value chain loops that in turn intermingle with other loops across countries and industries and thus form an ecosystem.

The analysis of the empirical findings and theoretical framework showcases the importance of incorporating customers and consumers into the GVCs in the food industry, and that consumers, depending on the product, will constitute the last actor in a normal flow and the first actor in a reverse flow. Furthermore, since there is a dependence on the consumer in the value chain the findings suggest that firms have the opportunity for, and perhaps responsibility of, incentivizing the consumers and ensuring that their role in the value chain is performed successfully. In essence, the value chain will be extended to also fully incorporate the last actor when established firms in the food industry implement circular business models. Although the theoretical frameworks mention the role of the consumer, theory does not incorporate the consumers in GVCs to the same extent as the findings. Additionally, as the findings of the study show, when consumers are incorporated as an actor, control and coordination over consumers is possible and perhaps even necessary to the same extent as over other actors in the value chain. GVCs of firms with circular business models require control and coordination to ensure a circular flow and to realize the benefits of a circular economy. An activity that was

found essential for control and coordination of circular flows in GVCs is through information sharing and standardization.

Apart from consumers being integrated as an important and active actor in the value chains, the findings of this thesis suggests that there will also be new value-adding activities, as well as activities for retaining value, in the value chains constructed by firms with circular business models. According to the theoretical framework, there are benefits and advantages of fragmenting the production and with the support of the findings, the authors conclude that a transition to a circular business model could result in new actors and new requirements on current actors, and that these new actors do not need to be confined to the same industry. An increase of activities and actors can lead to issues related to coordination and control of circularity as activities do not need to be confined to the changing enterprise, and relying on partners rather than the own organization most often implies less control over the activity. Another finding is that besides the traditional lead firms described by the theoretical framework, there is the possibility for other actors in the GVC, such as the supplier of raw materials, to take responsibility for circular implementation in the GVC.

With new actors and activities that do not necessarily need to be confined to certain industries, the empirical findings show that value chains will become parts of intermingled loops. These loops do not need to be bound to a certain geographical level and that there are benefits with local as well as global loops. Global loops were found crucial for being successful in the food industry to match the demands and characteristics of the industry. With this in mind, the authors conclude that value chains in the food industry will intermingle into ecosystems of loops spanning across industries and geographical levels due to the ability of the loops to complement each other. The intermingling of loops across industries and geographical levels can be concluded to offer firms the advantage to keep and make use of their current relationships and market knowledge to operate in these intermingling loops.

To summarize and answer the research question, the main effect on GVCs when firms in the food industry transition toward circular business models is the extension of value chains and the movement towards ecosystems consisting of intermingling value chains, enabled by partnerships. The level of governance for these new chains are suggested by the authors to move toward the relational governance structure, although still with high levels of control. The authors conclude that the circular value chains can span across industries and form ecosystems

of intermingling value chains and in effect blur the lines of the beginning and end of value chains. Instead of activities of one actor in the value chain constituting the link that unites the previous, current, and future activities, it is whole loops that unite and thus forming connected chains, like chainmail. These loops can span across all horizons of actors, industries, and country markets and combined form an ecosystem of intertwined value chains. However, there is little theoretical support for the comprehensive extent of this structural change of value chains when circularity is implemented. A reason for this could be the lack of fully circular business models in today's economy.

## 6.2. Implications

*This section presents the theoretical, followed by managerial, implications of the findings of this thesis.*

### 6.2.1. Theoretical Implications

The thesis contributes to the furthering of theoretical knowledge on circular business models and the effect it will have on GVCs in the food industry in four aspects, ranked in order of gravity of implication. First, the approach of connecting circular business models and GVCs in the food industry, with insights from actors within the global food industry value chains, contributes with insights on how implementation of circular business models plays a key role in the construction of GVCs in the food industry. The thesis identifies an extension and connection of the GVCs that transition the structure of value chains to intermingling loops without specific structural boundaries. The authors have named these intermingling loops as ecosystems rather than GVCs, which was missing in theory on the connection between circular business models and GVCs in the food industry. Second, this thesis furthers the understanding of geographical dispersion of GVCs as the authors argue that local and global loops will intermingle and complement each other, suggesting that firms should focus on the advantages they can exploit with their current situation and rely on other loops for other advantages connected to the geographical level. Third, this thesis shows that the creation of said ecosystems, based on circular business models, heavily depends on relationships in the value chains and the effectiveness of control and coordination by the lead firm, as several other building blocks of a circular business model relies on the design of key partnerships. Furthermore, information exchange between actors in the value chains is suggested to promote harmonization and alignment of the so-called ecosystems facilitating its functionality. Fourth,

the study contributes to the circular business model theory in identifying a variation in how the term circular business models is used in practice in the food industry and identifying a lack of a common definition.

### 6.2.2. Managerial Implications

Based on the findings, it would appear that there will in fact be a development in the food industry towards a circular economy and enterprises need to be ready for it by identifying and aligning the capabilities and competences needed for the shift to remain relevant and to exploit new opportunities in the market. Another suggestion is to be open minded towards establishing the new relationships and collaborations needed for a successful GVC of a firm with a circular business model as the successfulness of circular value chains relies on the performance of several actors and activities. The most beneficial relationships may be across industry and country borders, hence the need to have an open minded and creative approach. Moreover, the new activities and actors involved in these value chains require control and coordination to ensure a strong value chain or ecosystem. A few different methods identified in the thesis to control and coordinate GVCs include standardization and digital tracking. The thesis findings also suggest that any actor in the value chain may incorporate circularity and thus take ownership of that particular circular flow and extract economic rent, hence the implications are applicable to any actor in the GVCs in the food industry, however, the circularity may regard different circular flows. Hence, raw material suppliers may take on additional responsibility and reap benefits throughout the value chain of the material. The findings also suggest that circular flows in the GVCs in the food industry will remain global, out of necessity, even if there are new local chains intermingled. The thesis suggests that when firms transition to a circular business model, it is advantageous to start with the products and processes enterprises already have in order to minimize risk and heavy investments early on that might otherwise discourage firms from transitioning. It is advantageous for two combined reasons, first, most enterprises can reap benefits with relatively small changes by identifying shortcomings and opportunities with their current situation. Second, this approach allows for continuous improvement and development of the current process while simultaneously allowing long-term planning of bigger changes.

### 6.3. Limitations and Future Research

*This section presents the limitations to the thesis' findings as well as suggestions for future research.*

The scope of this thesis, as presented in 3.2.2. Sampling Criteria, is limited to established international firms within the food industry. This affects the transferability of the findings, hence, although, some findings may be applicable outside of the food industry and for other types of businesses, the scope of the study should be kept in mind. Studying a different industry would therefore be interesting for further research. The finding of this thesis on the food industry in the current state of circular development focused on technical loops although there is an evident biological loop in the food industry as compared to many other industries. Therefore, studying both the technical loops in other industries for comparison and a focused study on the biological loops would be interesting as the development of circularity continues. Moreover, although the case companies of this study are international, the respondents were all employed within the Nordics implying that the findings may not be applicable to all established international food companies globally, and thus studying another geographical area would be interesting for future research as the findings also identified significant variations between country markets.

The findings also suggest that the circular development and implementation within established firms within the food industry is limited. That limitation should be kept in mind when interpreting the conclusions. It therefore poses an opportunity to re-do the study when the circular development has proceeded further to identify differences in the effect on GVCs depending on the extent or level of circularity implemented in a business model. Another interesting question that the findings of this study provoke is whether circular flows are always sustainably better in some or all contexts. Moreover, to further elaborate on the finding regarding the extension of GVC of this thesis, there is a possibility to do an in-depth study on the new value chains, or ecosystem, to map the actual degree of extension made as well as what particular types of relationships it is that best support the collaboration in these suggested new global ecosystems. Another study that could give a deeper understanding to the findings of this thesis is to study the difference in effect on the GVC depending on the actor in the chain that incorporates circularity, for example the difference between the effect of a retailer implementing circularity or a raw material supplier.

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