

Comparing an alternative food network to a collaborative network organization based on multiple case studies

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Abstract

In light of the sustainable development goals, new forms of organizing are needed. There is a need for organizations to collaborate with each other to co-create value, which gave rise to the collaborative network organization. In light of the value creation in novel business models in order to achieve sustainability, sustainable business model archetypes can be used to assess these new forms of organizing.

In the agri-food industry, alternative food networks have emerged, to enable small- to medium enterprises to collaborate in order to accomplish a more sustainable food system based on planet, people and profit.

Results show how alternative food networks differ from a collaborative network organization based on the computer networks and the heterogeneous actors. Evidence was found for alternative food networks that do not use a computer networks with actors that are homogeneous based on the products they produce. In literature this can be defined as a local food hub.

Keywords: collaborative network organization, alternative food network, local food hub, sustainable business model archetype

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1. Introduction

To achieve the sustainable development goals (SDGs) and the Paris Agreement, there has been a growing awareness of the urgency to revise our current food production- and consumption system (Steffen et al., 2015). Sustainable Development Goal number two (SDG-2), aims for better food security and more sustainable agriculture (*Transforming Our World: The 2030 Agenda for Sustainable Development* | Department of Economic and Social Affairs, 2015). Agriculture can produce an exceeding amount of CO₂, which increases the Greenhouse effect, but it can also pollute the soil and negatively harm groundwater. To collectively reach the sustainability goals in the contract, an economic and social transformation is needed, combined with the highest quality of research (United Nations, 2015). In the face of reaching the sustainability goals of the Paris Agreement, researchers have argued that current organizational forms are unfit, calling for new forms of organizing in the agricultural sector (Kaufman & Danner-Schröder, 2022). New forms of organizing, entail new business models, that address the creation of multiple values, including the environmental need for more sustainability (Jonker & Faber, 2021).

Reaching the SDGs, revolves around collective, collaborative, and coordinated effort (Shepherd et al. 2023). Due to the challenges faced by business entities, collaborative networks (CN) have emerged (Camarinha-Matos & Afsarmanesh, 2006). While the precise origin of the term collaborative network organization (CNO) may not be pinpointed to a single publication, the concept gained prominence through the research of Powell et al. (1996). Since then, numerous scholars from various disciplines have elaborated on the concept, especially within strategic management (Provan et al., 2007; Hernandez-Almazan et al., 2022) and innovation and entrepreneurship (Chesbrough, 2003; Camarinha-Matos, 2009). Within a collaborative network organization, the role of trust and commitment between the actors has been deemed relevant for successful inter-organizational collaboration (Bierly & Gallagher, 2007), which will unfold into principles, ethical codes, collaboration culture and incentive systems (Di Cagno et al., 2016). The actors of a CNO will need to share resources, competencies, and responsibilities to achieve a common goal (Camarinha-Matos, 2009) or an individual goal (Fragidis, 2021). A CNO induces innovation through the co-creation of new sources of value (Camarinha-Matos & Afsarmanesh, 2006). A CNO can be viewed as a value network containing organizational entities that collaborate to co-create value (Romero & Molina, 2011). The existing key body of research elaborated on how companies use their business models to create and capture value within a value network (Osterwalder et al., 2005; Zott et al., 2011; Bocken et al., 2014).

Bocken et al. (2014) has identified eight sustainable business model archetypes (SBMA) to establish a best practice within the strategic management literature. Evidence has been found for the industry-specific nature of SBMA, which makes that research is needed based on one specific industry to conclude about the SBMA (Birkie, 2019; Neesham et al., 2023). There are only some publications to be found that use SBMA within the agri-food industry to establish best practices in order to reach the SDGs (Barth et al., 2017; Ulvenblad et al., 2019; De Keyser & Mathijs, 2023). Since the importance of

circularity have only recently entered the debate on sustainable development within the agri-food systems, there is still research to be done (Geissdoerfer et al., 2017; De Keyser & Mathijs, 2023). Furthermore, comparative studies across different industries need to be conducted to understand how value is created, which will contribute to identifying commonalities and differences.

In order to reach the sustainable development goals, farms need to increase their productivity and profitability. To do so, agri-food entrepreneurs need to adopt a strategic and innovative perspective to participate in BMI (Barth et al., 2017). Small- to medium enterprises in the agri-food business that have successfully overcome these challenges, adopted a network approach or a value-net approach. Agri-food networks (AFNs) simultaneously focus on environmental sustainability and community involvement, without losing their core advantage of being a small independent producer (Barel-Shaked, 2023). Especially in Europe, more research needs to be done on AFNs, since these HUBS are appointed as a means for the scaling of short food supply chains (Berti & Mulligan, 2016; Hyland & Macken-Walsch, 2022). In particular, more research is needed on the long-term goals and strategies of the actors within the network, to assess their level of involvement (Berti & Mulligan, 2016). Since AFNs are novel concept within literature, the research gap can be filled by testing existing frameworks for the assessment of agri-food systems (Michel-Villerael et al., 2019). This provides evidence on how AFNs differ from conventional agri-food systems.

1.1 Problem statement

To reach the SDGs, new forms of organizing need to be implemented in the current food production system. This new form of organizing entails a collaboration between small food producers working together as CNO. By sharing resources, small and medium-sized food production companies can offer enough produce to compete with large companies and form an AFN. AFNs offer a more sustainable business model but due to the novelty of the concept, it needs more scientific attention. Subsequently, current literature fails to explain how to create value within such a network and how to manage it from a strategic point of view. Therefore AFNs will be compared to a more well-known concept within the literature; CNO linked to SBMA.

This study aims to contribute to the current literature on collaborative network organizations, highlighting FHs as AFNs to create a more sustainable food production system. Many case studies were performed to assess AFN within Asia (Barel-Shaked, 2023), Canada (Evans & Miewald, 2010; Laforge et al., 2017), and the USA (Laforge et al., 2017). However, little is known about AFNs in European countries, especially about FHs as an AFN. Qualitative research will be used to compare the chosen case study to other case studies that were done on European AFNs. Since this research is exploratory, the following research question will be answered; *How do AFNs differ from collaborative network organizations from a value-based perspective?*

1.2 Outline

This thesis is divided into several chapters that contribute to answering the research question. In the first chapter, an overview of the available literature on CNOs and AFNs will be provided. The end of the chapter will contain a synthesis of previous AFN cases within literature. Subsequently, the methodology of the research will be explained including the research strategy and the data collection. The methodology chapter will include an elaborative explanation of the case; Sustainable Food Print. In the fourth chapter, the results of the analysis of the qualitative data will be explained. The synthesis will be used in the result chapter, to analyze the case. The last chapter will entail a discussion of the results and the research methodology as well as the limitations of the research. In addition, the recommendations for further research will be elaborated on, followed by the conclusion.

2. Theoretical framework

2.1 Collaborative Network Organization

To tackle the sustainability challenges that are faced by business entities, business models need to incorporate economic as well as social values, revolving around a network of collaboration and sharing (Bocken et al., 2013; Lowitt, 2013). Consequently, this has led to the emergence of different forms of collaborative networks (Camarinha-Matos & Afsarmanesh, 2005).

A collaborative network is defined as follows; “A collaborative network (CN) is constituted by a variety of entities (e.g., organizations and people) that are largely autonomous, geographically distributed, and heterogeneous in terms of their: operating environment, culture, social capital, and goals.” (Camarinha-Matos & Afsarmanesh, 2005, p. 439). This means that actors have individual goals for their organization and common or compatible goals that they aim to achieve by participating in the network. However, the motivation of the actor to participate can either be to achieve an individual or a common goal (Fragidis, 2021). Attaining these goals is closely related to collaborative value creation since there is collaboration needed to reach these goals. To enable other actors in the network to create value, resources are shared and exchanged (Fragidis, 2021). Hence, collaborating allows organizations to acquire information, knowledge, resources, and competencies that lie outside of their organization (Camarinha-Matos et al., 2009).

Within sustainable business model innovation, the alignment of different actors, requires extra effort, compared to traditional business model innovation (Geissdoerfer et al., 2017). Having a sustainable vision together with all the value-creating actors within the network is essential in the implementation of sustainable business models (Attanasio et al., 2022). Therefore, it is essential for the manager of the stakeholder network, to align all of the actors with the objective of the sustainable business model (Attanasio et al., 2022). Which makes it particularly relevant to measure individual values, compared to the desired sustainable vision.

The process of value creation has received a growing amount of attention within the field of CNOs (Fragidis, 2021). Since CNOs are complex and require analysis for full understanding, it is important to study the determinants of value creation (Camarinha-Matos & Afsarmanesh, 2006). To create and implement a more sustainable business model, a holistic view of the value proposition is needed, which requires the inclusion of the value provided to other stakeholders.

2.1.1 Business model archetypes

Bocken et al. (2013), identified different archetypes of business models based on their value proposition, value creation & delivery, and value capture. A business can fully conform to an archetype but most often they conform to a combination of several.

Table 1: overview of SBMA

Sustainable business model archetypes	Description and operationalization
Maximise material and energy efficiency	Do more with fewer resources, generating less waste and emissions, and fewer pollutants.
Create value from waste	Eliminate ‘waste’ by turning waste into useful and valuable input in other production activities; making better use of under-utilized capacity.
Substitute with renewables and natural processes	Reduce the environmental impact and increase business resilience by addressing resource constraints associated with renewable resources and man-made artificial production systems.
Deliver functionality, rather than ownership	Provide services that satisfy the users’ needs without having to own the physical products.
Adopt a stewardship role	Pro-actively engage with all stakeholders to promote their long-term health and well-being.
Encourage sufficiency	Identify solutions that will reduce consumption and production.
Re-purpose the business for society/environment	Prioritize the delivery of social and environmental benefits rather than economic benefits (i.e. shareholder value) through close integration between the company and local communities and other stakeholder groups. Recognize that the traditional business model in which the customer is the primary beneficiary may shift.
Develop scale-up solutions	Deliver sustainable solutions on a large scale to maximise benefits for society and the environment.

Note. Adapted from “An overview of sustainable business models for innovation in Swedish agri-food production” by P.O. Ulvenblad, P. Ulvenblad & J. Tell, *Journal of Integrative Environmental Sciences*, 16, p.8 (<https://doi.org/10.1080/1943815X.2018.1554590>)

2.2 Alternative food networks

Traditional food systems were created within a market-based capitalist economic system, where the purchase of food was purely transactional and based mainly on financial value (Lingham et al., 2022). Hence, traditional food systems lack multiple value creation and fail to include societal and environmental values (Lingham et al., 2022). Traditional food systems are guilty of depleting natural resources and inefficient use of complementary resources in general (Westhoek et al., 2016). Due to the concerns about the unsustainable nature of these traditional food systems, the interest arose to consider more sustainable food systems; AFNs (Forssel & Lankoski, 2015).

According to Web of Science, one of the first articles to introduce an AFN, was Paulson & Rogers (1997). The goal was to improve food security by producing locally to regional and embedding

the alternative agro-food system in communities. The AFN has been a growing trend since the concept has improved social and environmental change (Michel-Villarreal et al., 2019). The term alternative food network is still an umbrella term for different types of food production and distribution and does not provide clear parameters on how to create a more sustainable food system (Forssell & Lankoski, 2015). Therefore the characteristics of an AFN will be elaborated on.

First of all, a core characteristic is the increased requirements for products and production (Forssell & Lankoski, 2014). These requirements would be; products that are unprocessed and/or without additives and traditional small-scale production methods. Hence, AFNs rearrange value from large established food producers towards small producers and consumers due to short supply chain management (Forssell & Lankoski, 2015).

Secondly, the reduced distance between producers and consumers is a core characteristic (Forssell & Lankoski, 2015). Marsden, Banks & Bristow (2000), pointed out that ‘more natural’ and ‘more local’ foods would potentially allow the traditional food systems to develop into a short supply chain food system. Renting et al. (2003) defined the short food supply chain (SFSC) as an alternative to the traditional food system. Both Marsden et al. (2000) and Renting et al. (2003) defined the shortened relationship between the producer and the consumer as an important characteristic. This shortened relationship allows the farmer to communicate the information about the value of the product directly to the consumer creating transparency (Berti & Mulligan, 2016). Due to this construction of value, the product gets more value than solely the product itself, for both the consumer and the producer (Marsden et al., 2000). When the positive characteristics of the farm are communicated to the consumer effectively, this can create a foundation for trust and loyalty between the seller and the consumer.

Lastly, new forms of market governance can be seen as an important characteristic (Forssell & Lankoski, 2014). An Alternative food network (AFN) is used for community-supported agriculture and other networks of producers, consumers, and other stakeholders offering alternative methods in food supply (Renting et al., 2003). More specifically, an AFN can be a consumer or producer cooperative to share economic risks and/or resources (Forssell & Lankoski, 2015).

2.2.1 Producer’s motivation

The motivation of a food producer to participate in an AFN revolves around the need for added value and can be divided into two categories; economic and non-economic (Gori & Castellini 2023). Economic motivations may entail the need for higher prices by cutting out intermediaries and creating a short supply chain (Michel-Villarreal et al., 2020). In addition, participating in an AFN leads to better brand positioning. Non-economic motivations include network opportunities, connecting closely with the consumers, and the aspiration to sell healthier products (Vittersø et al., 2019). In addition, producers motivation’s include the need for increased access to local food, fair pricing, and the sustainability of the food system (Saulters et al., 2018).

2.2.2 Business model archetypes in the agricultural industry

In a study on Swedish Agricultural business models, many firms did not match the sustainable business model archetypes or they matched several archetypes (Ulvenblad, Ulvenblad & Tell, 2017). A reason for this could be that there is a lack of industry-specific tools to look at sustainable business models in the context of agri-food. According to a study done in Sweden, most agri-food companies adopt a stewardship role (Ulvenblad et al., 2017). This could be because the agri-food sector has unique characteristics. Agri-food entrepreneurs are dependent on their land and their connections with neighbors. They feel the responsibility for their company, the environment, and for growing things, making them all-round care-takers (Barth et al., 2017). Hence agri-food entrepreneurs most often fit the ‘adopting a stewardship role’.

2.3 Synthesis

Due to the growing amount of publications on AFNs, a synthesis is needed to analyze and summarize the findings. Case studies done in Europe are critically analyzed based on the characteristics of a CNO and its SBMA (table 1). To contextualize the case studies, the characteristics of an AFN will also be used to compare them. Based on the definition of a CNO given by Camarinha-Matos & Afsarmanesh (2006), the following characteristics can be defined; *geographically distributed, heterogeneous organisations, common or compatible goals, and computer networks*. The heterogenous character of the actors will be assessed based on the products that they sell, since it is not possible to address the culture based on the case descriptions. The SBMAs can be found in table 2 and for each case, an SBMA will be assigned based on how the network creates value. To distinguish between different types of AFNs, the research of Forssell & Lankoski (2015), has explained three characteristics; *increased requirements for products and production, reduced distance between producers and consumers, and new forms of market governance*.

2.3.1 Case A: Collaboration dairy farms in Sweden

In Sweden, a dairy cooperative company, owned by 28 small and medium-sized milk farms, collaborates to sell milk and high-quality cheese (Ulvenblad et al., 2019). The cooperative was founded to increase the price of milk to make sure that the farms would get paid enough. The produce is sold in groceries in the neighborhood and some is sold directly to the consumer at the farm.

2.3.2 Case B: Farm charcuterie in Sweden

A farm charcuterie in Sweden sells high-quality sausages and other meat products, made with locally handcrafted sausages in farm shops (Ulvenblad et al., 2019). The meat is produced by meat farms in the neighborhood. The company organizes courses about sausage craftsmanship, food waste minimization, and nutrition, in which they aim to educate consumers.

2.3.3. Case C: Stroudco in England

Stroudco is a member-owned community interest company controlled by producers and consumers, aiming to provide local food to low-income households (Della Gala & Reed, 2017). Stroudco functions as an online FH system, using an internet-based administration system. The software allows producers to communicate directly with the consumers. The producers, arranged from small to medium enterprises, sell processed foods as well as unprocessed fruit and vegetables (Stroudco, 2023).

2.3.4. Case D: Dean Forest Food Hub in England

Dean Forest Food Hub is a worker's cooperative and social enterprise that uses the software of Stroudco, aiming to connect producers and consumers to provide affordable access to local and high-quality food (Della Gala & Reed, 2017). The 20 producers sell unprocessed and processed food in the mixed woodland, that can be bought by consumers from 11 accessible pick-up points.

2.3.4. Case E: Ecofeixes in Spain

In Ibiza, 14 small organic farms, collaborate within a cooperation to sell local produce (Vercher, 2022). The cooperative element allows the farm to collectively manage, plan, and commercialize the products of the farmers. Members argue that they aim for local and cooperative agriculture to achieve fairer prices for farmers and to promote the local economy's competitiveness. The producers sell unprocessed fruit and vegetables, and wine (EcoFeixes - Ibiza Produce, 2019).

Table 2: Synthesis- comparing cases

			Case A	Case B	Case C	Case D	Case E
			Collaboration dairy farms in Sweden (Ulvenblad, Ulvenblad & Tell, 2019)	Farm charcutery in Sweden (Ulvenblad, Ulvenblad & Tell, 2019)	Stroudco in England (Della Gala & Reed, 2017)	Dean Forest Food Hub in England (Della Gala & Reed, 2017)	Ecofeixes in Spain (Vercher, 2022)
CNO	geographically distributed		All farms are located in between 25 kilometers and vicinity is one of their core values	All farms are located in the neighbourhood	All food producers are located within 25 kilometers of the farmer's market in Stroud	All food producers are located within 110 km2 of mixed woodland	All food producers are located in the island of Ibiza, within 571,6 km²
	heterogeneous organisations		Homogenous dairy farms	Homogenous meat farms	Heterogeneous food producers	Heterogeneous food producers	Heterogeneous food producers
	common or compatible goals		Creating more value for the customer and enabling a higher price to earn for the producer	Generate revenue and educate customers	Building a connection between local consumers and producers by selling sustainable local food to low-income households	Building a connection between local producers and providing affordable access to quality local food sold for a fair price for the producer	Improve the availability and accessibility to local organic produce
	computer networks		Non existent	Non existent	Stroudco software; internet-based administration system as an Open Food Network	Stroudco software; internet-based administration system as an Open Food Network	Non existent
BMA	see appendix B		re-purpose the business for society/environment	encourage sufficiency	re-purpose the business for society/environment	re-purpose the business for society/environment	re-purpose the business for society/environment
			substitute with renewables and natural processes	substitutewith renewables and natural processes	substitute with renewables and natural processes	substitute with renewables and natural processes	adopt a stewardship role
				adopt a stewardship role.	Develop scale-up solutions		
AFN	increased product requirements	small scale production methods	Dairy farms with 30-500 cows	Handcrafted meat products without additives	Producers arrange from small to medium enterprises	Small food producers	Small organic farms
		unprocessed food	Processed dairy products with only the necessary additives	Processed meat products without additives	Processed foods	Unprocessed animal products, fruit, and vegetables, processed product in several categories	Processed wine and unprocessed foods
	reduced distance between producers and consumers	local produce	All farms are located in between 25 kilometers and vicinity is one of their core values	All farms are located in the neighbourhood	All food producers are located within 25 kilometers of the farmer's market in Stroud, selling to customers living in Stroud	All food producers are located within 110 km2 of mixed woodland selling to customers within the woodland.	Local producers selling to customers on the Island of Ibiza

3. Methodology

The methodology chapter gives an overview of the chosen methodology and the data that is used in the research. Carefully elaborating on the choices that are made within the research process, improves the replicability, and validity, following the transparency code of conduct. First of all, the design and method of the research are discussed, followed by the plan for data collection. In addition, the quality of the research will be addressed, followed by a description of the research ethics.

3.1 Research design and method

This research aims to add to the current body of research on CNOs, by analyzing different case studies on AFNs in Europe, using a value-based perspective. To achieve this research goal, qualitative research was chosen as the research method. To add to the current case studies in AFN literature, an exploratory case study was done.

To analyze the motivation of the actors to participate in the AFN and their SBMA, to eventually conclude about the specific phenomenon in society, qualitative research is needed (Bleijenbergh, 2015). To add, an AFN revolves around its actors and the values these actors perceive to add and receive, making it a socially constructed concept, which can best be understood using a qualitative research method (Myers, 2009). Within research on value created in SBMA it is essential to ask the actors on what they perceive the value to be, since this can differ per person (Bocken et al., 2015).

This thesis is concentrated on further exploring the concept of AFN in comparison to CNO literature. Firstly, theory building had to take place on both concepts, creating theoretical constructs and theories derived from empirical evidence to understand the social phenomenon, which can be done by case studies (Eisenhardt & Graebner, 2007). Starting by gathering background information, followed by thoroughly analyzing the case to enhance knowledge. By analyzing the cases based on the theoretical background information, a theoretical framework can be created to decrease the gap between theory and practice.

The research design for this study is exploratory in nature, aiming to gain insights and a deeper understanding of an AFN in comparison to a CNO. Exploratory research is needed due to the novelty of the concept of AFN and the lack of research that connects AFNs to well-known concepts such as CNO and SBMA. Particularly given the limited development of SBMAs in the agri-food industry and the scarcity of empirical evidence regarding its use, more research is needed (Ulvenblad, et al., 2019).

Within the literature on AFN, both single-case studies and multi-case studies are used to gain a deeper understanding of the novel concept and its actors (Forssell & Lankoski, 2017; Brinkley et al., 2021; Barel-Shaked, 2023). Since AFNs may change depending on geographical factors, there is a need for exploration of other forms of AFN by conducting a cross-analysis on AFNs in different countries and socio-economic contexts (Gori & Castellini, 2023). Even though FHs as a form of an AFN is a growing concept, researchers and scholars have failed to engage in strategic research in the European

context (Berti & Mulligan, 2017). Since there is a lack of research on AFNs in European countries, this study consists of an analysis of AFNs exclusively located in Europe which is shown in the synthesis found in the theoretical framework. A single case study was selected to focus on a specific AFN in the Netherlands and provide a detailed analysis of its actors. The results of the case study are compared to the other cases found in the synthesis. To deliver a practical contribution to AFNs in the Netherlands, the producer's motivation is compared to the findings in other cases based on the research of Gori & Castellini (2023). Furthermore, the SBMAs found in this thesis are compared to research on SBMAs in the agri-food industry.

3.2 The context: Local Food Hubs

A local food HUB (LFH) is a specific form of an AFN that has been widely used in several countries, including the Netherlands, aiming to increase the sustainability of local food production (Berti & Mulligan, 2016). In contrast to the conventional food system that is based on economies of scale, LFHs allow for an equal distribution of economic value among the actors in the network (Berti & Mulligan, 2016).

A food HUB (FH) is defined as a coordination structure that allows a company or an organization to manage the aggregation, marketing, and distribution of food products that originate from small local producers (Barham et al., 2012). Small local producers often struggle with supplying a large amount of produce regularly leaving them unable to satisfy the needs of the big buyers (Sgroi & Marino, 2022). To create scale efficiencies, smaller companies have to collaborate. The goal of a Food HUB is to lower entry barriers for small to medium enterprise farms, creating joint assembly points and combining the infrastructure to expand LFHs (Smaal, 2022). Consequently, the amount of short supply chain companies in the agriculture industry of the Netherlands has grown by over 25% in the period 2017-2020 (Venema et al., 2021). The biggest amount of short-supply chain companies can be found in the province of Noord-Brabant, followed by Gelderland and Zuid-Holland (Venema et al., 2021). However, to ensure the success of implementing short supply chain companies, the consumer needs to be stimulated to buy local produce that is in season. Research has been done to evaluate the most optimal network structure for short-supply chain farmers (Gaitán-Cremaschi et al., 2022).

The foundation of the Food HUBs is the set of values that are shared by all the actors in the network (Avetisyan & Ross, 2019). Within Food HUBs, a distinction can be made between the added value and the shared value (Hyland & Macken- Walsch, 2022). 'Added value' can be based on the direct communication of the attributes of the product to the consumer, whereby value is added to the product. 'Shared value' is based on the mutual benefits from the collaboration network that actors receive. While initiating a food HUB, the manager must pay attention to the fact that dissimilar mission statements of the actors, limited personal relationships, and a pessimistic perception of the feasibility of the project all contribute to the unwillingness to collaborate (Bauermeister, 2016).

3.3 Case description

The case that has been selected for this research is the project called; Sustainable Food Print. Together with Rvn@, the pioneers of OrangeX are in the process of setting up the Sustainable Food Print, to create a more sustainable way to produce and distribute food. The general idea is to set up a sustainable food production system in Nijmegen, by combining several stakeholders in a collaborative network. It has been well known that agriculture has negative environmental effects on land, energy, freshwater, and pollution. These effects increase the urgency to innovate towards a more sustainable business model remarkably high. Considering the pace of the declining biodiversity in the last decades, restoring it needs to be part of every corporate strategy but also municipalities and governments need to include this in their policy (Jonker & Faber, 2021). In other regions in the Netherlands, similar initiatives have been implemented using short supply chain companies; FoodUp Brabant, Limburgse programma LOF, stichting Voedsel Verbindt, DrentsGoed steekproducten, and Friese voedselbeweging (Venema et al., 2021).

In the Netherlands, provinces have their subsidy desks, which allows them to stimulate innovative initiatives to strengthen their international competitive position. The province of Gelderland has formulated several goals to eventually shorten and close the food chain (OrangeX, 2021). In the province of Gelderland, the POP3 subsidy can be used to start or continue an innovative project with a local food producer, a municipality, and a customer (*Verantwoording POP3-subsidies*, 2022). The general goal of POP3 is to professionalize collaborations within the short supply chain (Provincie Gelderland, 2023). The subsidy improves the joint responsibility between the government, food producers, and other members of the supply chain and stresses the importance of working together to become successful (Venema et al., 2021). Rvn@ was granted the POP3 subsidiary, to let the pioneers of OrangeX execute an innovative project within the municipality of Nijmegen (OrangeX, 2021)¹.

One of the greatest challenges for OrangeX in setting up the project is creating awareness of the need for sustainable improvement within the group of consumers, which is essential for changing their consumption patterns (OrangeX, 2021). There is still a need for more research on the understanding of consumer behavior concerning governmental food awareness programs (Dong, 2021). A trend that Sustainable Food Print wants to participate in is the localization and production of new sources of protein (OrangeX, 2021). The EAT-Lancet Commission on food, planet, and health (Willett et al., 2019) advises the total population to decrease and limit the consumption of meat, sugar-based products, and processed industrial dishes, which in turn leads to an increase in fresh, healthy, unprocessed produce. One of the solutions to achieve the two beforementioned goals is to increase the plant-based alternatives for meat (Saint-Eve et al., 2021). However, since consumers experience the plant-based alternatives as tasting unpleasant, it is exceedingly difficult to develop products that will

¹ This is an internal document which can only be accessed with permission of OrangeX.

draw consumers to buy the product and change their consumption behavior (Hartmann & Siegrist, 2017; Saint-Eve et al., 2021). When considering the production of plant-based products, Sustainable Food Print aims to optimize the cycle of fertilizer and minerals (OrangeX, 2021). To achieve this goal, OrangeX has included Pixelfarming Robotics B.V. Using the technology of pixel farming, small farmers in the Netherlands will have the information to optimize the efficient use of fertilizer, pesticide, and irrigation water use (Meier et al., 2020). This is an essential social and cost-saving economic step for the small farmer to survive in the industry. In addition to this, the optimized use of fertilizer limits the pollution of Europe's groundwater resources (Meier et al., 2020). Another challenge for the Sustainable Food Print is reducing food waste, which is also the overall goal of the project (OrangeX, 2021). Versfabriek will use coffee waste produced in the catering industry of Nijmegen to grow fungus (Versfabriek, 2023). The current actors were selected based on the beforementioned issues, which makes it possible to study all of them.

3.4 Data collection

The explore the concept of AFN compared to CNO in multiple cases, different data collection techniques were used to allow for the obtainment of different angles to look at the phenomenon (Myers, 2009). This technique is called data triangulation and increases the validity of the research.

The cases that were selected to analyze within the synthesis in the theoretical framework were all done in Europe and were chosen based on the ability to compare the cases based on the characteristics of an AFN and a CNO and allowed for the identification of the SBMA.

Before data collection started, the researcher had several meetings with the initiator Eward in order to gain a deeper understanding of the case. These meetings served as an orientation moment and were therefore not included as an official data source. However, it did allow the researcher to advise on the case after the data analysis, which can be found in Appendix F as an additional finding.

Eventhough efforts were made to interview all the participants onsite, only two out of four interviews included an observation, which has created a convenience bias. To overcome the bias, the data will be carefully analyzed and validated.

3.4.1 Interviews

The use of semi-structured interviews will ensure that all participants will be answering the set of questions that are stated beforehand, which increases the reliability (Bleijenbergh, 2015). However, this could steer the participants in a specific direction, which could negatively impact the validity (Bleijenbergh, 2015). Therefore, this research will make use of semi-structured interviews, leaving room for the researcher to ask additional questions where there is a need for clarification and additional information. During the semi-structured interview, the researcher will carefully check whether the respondent understood the question and will adjust the language of the question to the jargon used by small entrepreneurs. As a result, the likeliness of the respondent giving an answer that fits the question will be increased, ensuring the reliability of the measuring tool (Bleijenbergh, 2015).

Since the case exists of five agri-food entrepreneurs, five interviews were conducted and included in the data analysis. The initiator and the supporting staff were interviewed as well and have been used to ensure field validity and to gain a deeper understanding of the case and its SBMA. The interviews will be held in Dutch since this is the native language of the researcher and the participants. All the transcripts will be translated into English using an online text translator to increase transparency for non-Dutch speakers. To ensure that the generator has translated correctly, the text will be checked and rewritten where needed. However, translating an interview to another language will most likely, decrease the reliability of the research.

The interview protocol and -questions can be found in Appendix C and D. The interview questions are based on the characters of a CNO and an AFN. To discover the business model archetypes, several questions were asked about their business in general and how value is created by the individual actor. Appendix B elaborates further on how the interview questions originated from theory.

Only the interview with Versfabriek and the Smaak van Hier allowed for an observation, since these interviews were conducted in person. These two observations can be found as a memo in the Appendix E.

3.4.2 Documentary evidence

To analyze the BM of the Food World Pro, the business case and other relevant documents were analyzed. Complementary to the semi-structured interviews, the websites of the actors were analyzed based on their mission and vision statement. Since the similarity of the mission statement of the actors of the AFN impacts the willingness to collaborate, the websites of the actors were consulted to compare their vision statements. In addition, the websites were used to provide background information about the actor.

The participants were asked whether they could provide additional information about their current collaborations. Since De smaak van hier is currently initiating a separate FH next to the Food World Pro, the business plan that was provided by Vincent is analyzed in the findings chapter. Data was collected from April 2023 to June 2023.

3.5 Data analysis

After the interviews with all the actors of the AFN had been conducted, the recordings were transcribed and coded. Afterward, the data was linked to the documentary evidence to create a database using ATLAS.ti. Since the nature of this thesis is exploratory, Grounded Theory coding was used to analyze the data (Glaser & Strauss, 1967). Based on the theoretical background of CNO and AFN has allowed for sensitizing concepts, which can be found in Appendix B (Bleijenbergh, 2015). Since only two of the cases mentioned a *new form of governance*, this characteristic was left out of the analysis.

Based on the statements about how value is defined, delivered, and captured, that have been elaborated on in the research of Ulvenblad, Ulvenblad & Tell (2019), the SBMA can be determined for the actors of the network (Appendix B). The motivation to participate will be compared to the concept from literature and the most fitting motivation will be used as an indicator. The common goal does not have a specific indicator. The answers of all the actors are compared to assess whether they have common or compatible goals.

Different data sources have been used per actor of the network. To appoint the different types of sources in the data analysis chapter the name of the entrepreneur is used as a code, combined with the numbers 1 to 4; 1) interview, 2) observation, 3) internal document, 4) website. The websites can be found in the list of references.

Table 3: Overview of data sources

	Code	Location	Duration
Interviews	Ruud1	Production facility close to the city centre of Nijmegen	26 min
	Vincent1	Home office in Berkel-Enschot	24 min
	Michiel1	Online	32 min
	Gerard1	Home in Beek	33 min
	Cindy1	Online	34 min
Observations	Ruud2	Production facility close to the city centre of Nijmegen	51 min
	Vincent2	Home office in Berkel-Enschot	53 min
Internal documents	Good Growth Collective; Business case presentation slides OrangeX; presentation slides OrangeX; report from introductory meeting Vincent3; Collaboration plan with other similar local agri-food entrepreneurs		
External documents	Ruud4; website Versfabriek Vincent4; website De smaak van hier Michiel4; website Feed and Food Production Gerard4; website Oregional Cindy4; website Pixelfarming Robotics		

3.6 Research ethics

To make sure that the integrity of the research and the researcher is enforced, the principles of the code of conduct for Dutch universities will be followed carefully (Netherlands Code of Conduct for Research

Integrity, 2018). Integrity is bifurcated into the following principles; honesty, due diligence, transparency, independency, and responsibility.

To ensure the honesty of the research, sources that are referred to in scientific articles will be carefully checked. Also, the limitations of the research will be elaborated on honestly, without ignoring any counterarguments.

Regarding due diligence, the relevant conversations with the actors of the network of the case study will be carefully documented in addition to the observations and interviews.

The interview participants will be informed about the goal of the interview and the general parameters, being estimated time and number of questions to increase transparency. Afterward, the participants are asked to review the transcript of the interview to check for any errors in misinterpretation via sound. The way the data is collected and analyzed will be explained in detail since this is a crucial component of conducting responsible research, which will ensure transparency. Since the native language of the researcher and the participants is Dutch, the interviews will be held in Dutch. However, to ensure transparency to English speakers as well, all transcripts are translated into English.

Concerning independency, the case study for the research was chosen without any commercial incentives. The justification for choosing the specific case study revolves around the interest of the researcher and the societal and theoretical implications of LFHs within the Netherlands.

Considering the boundaries of this research, the concerning contact person of OrangeX, will be carefully listened to, which shows the responsibility of the researcher. His boundaries for the involvement of the researcher will be respected. Even though the results of the research will have a distinctive practical relevance for OrangeX, the researcher will at all times, keep in mind and ensure the theoretical relevance of the research. In addition, the participants will be asked for permission to record the conversation so that the researcher can analyze the conversation in detail. The participants will all be asked individually whether they prefer to remain anonymous in the research. If so, the researcher will protect their privacy by applying random name codes to the participants, instead of using their real name.

4. Data analysis

In the data analysis chapter, the findings of the qualitative study on AFNs as CNO are presented. Relevant documents and semi-structured interviews with all the participants in the network are analyzed. The results will be categorized based on the actor of the network and the network as a whole. To summarize, all the findings from the different methods will be combined to conclude about the case. The data analysis concludes with a synthesis.

4.1 Versfabriek

Versfabriek is a food producer as well as a waste processing company. Ruud uses coffee waste that he retrieves from the catering industry located in the city center of Nijmegen to grow mushrooms. As translated from the website; “my mission is to realize sustainable developments that contribute to the decreasing of residual flows within Nijmegen, by trading openly and honestly in fresh and local produce. My vision is to create a healthy and local production cycle of food and residual flows without any waste and available to everyone.” (Ruud4). The BM of Versfabriek, clearly fits the *create value from waste* SBMA. As the core value, he clearly stated that his productions “need to be located in the city center” and that he wants to produce for the city (Ruud1). Since he aims to recycle as much as possible, the BM also fits the *maximise material and energy efficiency* as a SBMA.

The motivation to participate in the Food World Pro is to *create a short-supply chain, better brand positioning* and to seek *network opportunities*. Other motivations for Ruud are; sharing logistics with other entrepreneurs that need raw materials from the city and transporting them back to the city after production. He is also in need of a location. The common goal for Ruud is perceived as; creating a short supply chain food system. However, he did mention that he has doubts about whether the current plans match his core values; “The city is very important to me. Which is a point of contention with Eward, because I think he has a location in mind that is outside the city, so I really have my doubts about that”(Ruud1).

In the interview with Ruud, he described that “Other mushroom producers in the Netherlands are in a groupchat where they exchange knowledge and network connections” (Ruud1), which compares to a collaborative network. However there is a clear difference in ambition between the entrepreneurs; “...some of them are highly motivated and some are only producing as a hobby” (Ruud2). Up till now, a more formal collaboration between the entrepreneurs has not been initiated successfully. However, homogenous agri-food entrepreneurs working together could fit the BM of an LFH.

4.2 De smaak van hier B.V.

De Smaak van hier B.V. is a company that “produces and sells dairy in collaboration with several farms located in the province of Noord-Brabant” (Vincent4). De smaak van hier takes care of the brand management and the logistics to create a short supply chain and “offer a fair price to the dairy farms”

(Vincent3). The brand revolves around healthy and sustainable dairy produced by local farms. The BM of the Smaak van hier fits the *re-purpose the business for society/environment* and the *Maximise material and energy efficiency* SBMAs.

The motivation for participating is to *create a short food supply chain, network opportunities,* and the *sustainability of the food system*. To add, his motivation revolves around; “When you have a bigger selection of products that you can sell, this will be more appealing to customers” (Vincent1). The common goal for the collaboration revolves around sustainability, innovation, and commercialization.

Before the interview started Vincent showed me a new collaborative network he was working on with similar organizations to his own (Vincent3). The collaboration was between companies that all produced local dairy and aim to deliver the products to a small store that sells to the local community (Vincent3). The collaboration currently consists of less than 10 dairy farms that are located close to each other. Considering the elements of an LFH; collaboratively managing the aggregation, marketing, and transportation with small producers (Barham et al., 2012), the collaborative network described by Vincent fits the description of an LFH.

4.3 Feed and Food Production B.V.

Feed and Food Production B.V. sells containers in which entrepreneurs can produce mealworms (Michiel4). The containers are not in production yet because it is necessary to find customers to buy the mealworms (Michiel1). They also aim to offer an alternative for farms, to buy a container for worms so that they can produce sustainable protein. “Currently the market of the mill worms in the Netherlands is for the pet food industry” (Michiel1). The entrepreneur differs significantly from the others in the case since the other produce for human consumption. The mission revolves around offering a more sustainable alternative to meat and leaving the world a better place, which is only possible if the worms will be used for human consumption products; “That is where we need to go to if we want to have a lower carbon footprint for our animal protein” (Michiel1). The BM of Feed and Food Production B.V. fits the *substitute with renewables and natural processes* SBMA.

The motivation for Michiel to participate in the Food World Pro revolves around all economic motivations; *Create a short food supply chain*. To add, Michiel aims to increase his sales by participating, which could be interpreted as ‘network opportunities’ by which he can find buyers and increase his sales; “Actually I am only looking for entrepreneurs that want to buy the worms.”(Michiel1). However, he mentioned that the financial consequences of the new location, determine the level of participation. Considering the need for collaboration, Michiel is solely looking for a buyer and not particularly for collaboration partners. To add, Michiel wants to collaborate with a chef to process his food in a likable way for the consumer. The common goal of the network was described as; “I think cost reduction on site, if you rent with more people the rent or lease of the location will decrease.” (Michiel1).

For the concept to be successful, multiple entrepreneurs in the same city, located close by, need to produce worms to produce enough to even create demand.

4.4 Oregional Groothandel B.V.

Oregional is a cooperation that aims to deliver fresh produce from the farmers to the consumer, based on a short supply chain method (Gerard4). They retrieve the fresh produce from their farmers and only sell it to the locals to make sure that products only travel a minimum amount of kilometers. Their idea is that "... local food needs to become the standard. Everyone needs to be able to eat it." (Gerard1). "We will experiment with a true pricing system" and they will "...use these fair prices to convey the story" (Gerard1). From the profit Oregional makes, they invest in the future of their network of farmers, aiming to create a more sustainable farm making use of resources more efficiently, which fits the *adopt a stewardship role*. In the interview, Gerard mentioned his focus on changing consumer behavior and creating a community, which makes that his BM fits the *encourage sufficiency* and the *re-purpose the business for society/environment* SBMA.

The motivation for Gerard to participate in the Food World Pro revolves around economic and non-economic motivations; *create a short food supply chain, network opportunities, sell healthier products, increase access to local food, fair pricing, sustainability of the food system*. The common goal is described as; "... that we collectively create a sustainable food system."(Gerard1).

4.5 Pixelfarming Robotics

Pixelfarming Robotics combines digital technology and robotics in agriculture to support biodiverse farming. The alternative way to grow crops is super-efficient, without the use of artificial chemicals (Cindy4). Which fits the *maximise material and energy efficiency* SBMA. Their vision in general is to introduce robotics technology in the world of agriculture and to prove that it works. Pixelfarming fits the *develop scale-up solutions* SBMA in the sense that they develop sustainable solutions to maximize benefits for society and the environment. Their innovative system can be implemented in communities by the purchase of their robot. "A group of citizens in the neighbourhood will determine the demand which we will insert in the robot" (Cindy1).

The motivation for Cindy to participate in the Food World Pro is to *Sell healthier products, creating a short food supply chain* and for the *Sustainability of the food system*. Looking at the need for collaboration, Pixelfarming Robotics, would greatly benefit from the knowledge of local farmers; "Well definitely per area, we will need specialized cultivation knowledge"(Cindy1). The common goal for Cindy is to create a sustainable food system in terms of environment, people, and quality of food. "So that we can make sustainable use of facilities for the long-term" (Cindy1). To add, by keeping the quality of the food high, which will lead to returning customers, "Valuable relationships for entrepreneurs will ensure them of profit. And yes, for me that is a form of sustainability" (Cindy1).

4.6 Food World Pro

The relevant internal documents were analyzed to gain insight into the initial goal of the project as a whole. To add, the initiator Eward, and the supporting staff Kevin and Ashley were interviewed to get some background information. Food World Pro is described as; a sustainable food network, that is committed to creating local, healthy, and circular food chains with the support of innovative agri-food systems (Good Growth Collective, 2023)². All actors are located close to the city center of Nijmegen and differ in the food they produce, their business model archetype, and the producer's motivation (table 4). The common goal can be described as creating a short supply chain and sustainable food system.

4.7 Synthesis

To give an overview of the findings described above, some of the aspects are visually represented in the following figures.

² This is an internal document which can only be accessed with permission of Good Growth Collective.

Table 4: Overview of results- actors within the Food World Pro

	Versfabriek	De Smaak van Hier	Feed and Food Production	Oregional	Pixelfarming Robotics
SBMA	<p>Maximise material and energy efficiency</p> <p>Create value from waste</p>	<p>Maximise material and energy efficiency</p> <p>Re-purpose the business for society/environment</p>	<p>Substitute with renewables and natural processes</p>	<p>Adopt a stewardship role</p> <p>Encourage sufficiency</p> <p>Re-purpose the business for society/environment</p>	<p>Re-purpose the business for society/environment</p> <p>Develop scale-up solutions</p>
Producer's motivation	<p>Create a short food supply chain</p> <p>Better brand positioning</p> <p>Network opportunities</p>	<p>Create a short food supply chain</p> <p>Network opportunities</p> <p>Sustainability of the food system</p>	<p>Create a short food supply chain</p> <p>Network opportunities</p>	<p>Create a short food supply chain</p> <p>Network opportunities</p> <p>Sell healthier products</p> <p>Increase access to local food</p> <p>Fair pricing</p> <p>Sustainability of the food system</p>	<p>Create a short food supply chain</p> <p>Sell healthier products</p> <p>Sustainability of the food system</p>
Additional producer's motivation	<p>Sharing logistics to reduce costs</p> <p>In need for a location for production facility</p> <p>Bigger selection of products to sell</p>	<p>Bigger selection of products to sell</p>	<p>Sharing logistics to reduce transport costs</p> <p>Reducing costs in renting a location</p> <p>Increasing sales</p>		<p>In need for a location to test robot within a community</p>
Perception of common goal	<p>Creating a short supply chain food system</p>	<p>Collaborating for sustainable, innovative and commercial goals</p>	<p>Creating a short supply chain food system</p>	<p>Creating a sustainable food system based on circularity and short supply chain</p>	<p>Creating a sustainable food system in terms of environment, people and quality of food</p>

Table 5: synthesis- comparing case studies

			Case A	Case B	Case C	Case D	Case E	Case F
			Collaboration dairy farms in Sweden (Ulvenblad, Ulvenblad & Tell, 2019)	Farm charcutery in Sweden (Ulvenblad, Ulvenblad & Tell, 2019)	Stroudco in England (Della Gala & Reed, 2017)	Dean Forest Food Hub in England (Della Gala & Reed, 2017)	Ecofeixes in Spain (Vercher, 2022)	Sustainable Food Print
CNO	geographically distributed		All farms are located in between 25 kilometers and vicinity is one of their core values	All farms are located in the neighbourhood	All food producers are located within 25 kilometers of the farmer's market in Stroud	All food producers are located within 110 km2 of mixed woodland	All food producers are located in the island of Ibiza, within 571,6 km ²	All producers will produce from the same location
	heterogeneous organisations		Homogenous dairy farms	Homogenous meat farms	Heterogeneous food producers	Heterogeneous food producers	Heterogeneous food producers	Heterogeneous food producers
	common or compatible goals		Creating more value for the customer and enabling a higher price to earn for the producer	Generate revenue and educate customers	Building a connection between local consumers and producers by selling sustainable local food to low-income households	Building a connection between local producers and providing affordable access to quality local food sold for a fair price for the producer	Improve the availability and accessibility to local organic produce	create local, healthy and circular foodchains with the support of innovative agri-food systems
	computer networks		Non existent	Non existent	Stroudco software; internet-based administration system as an Open Food Network	Stroudco software; internet-based administration system as an Open Food Network	Non existent	non existent
BMA	see appendix B		re-purpose the business for society/environment	encourage sufficiency	re-purpose the business for society/environment	re-purpose the business for society/environment	re-purpose the business for society/environment	re-purpose the business for society/environment
			substitute with renewables and natural processes	substitutewith renewables and natural processes	substitute with renewables and natural processes	substitute with renewables and natural processes	adopt a stewardship role	adopt a stewardship role
				adopt a stewardship role.	Develop scale-up solutions			
AFN	increased product requirements	small scale production methods	Dairy farms with 30-500 cows	Handcrafted meat products without additives	Producers arrange from small to medium enterprises	Small food producers	Small organic farms	Producers arrange from small to medium enterprises
		unprocessed food	Processed dairy products with only the necessary additives	Processed meat products without additives	Processed foods	Unprocessed animal products, fruit, and vegetables, processed product in several categories	Processed wine and unprocessed foods	Producers sell unprocessed foods
	reduced distance between producers and consumers	local produce	All farms are located in between 25 kilometers and vicinity is one of their core values	All farms are located in the neighbourhood	All food producers are located within 25 kilometers of the farmer's market in Stroud, selling to customers living in Stroud	All food producers are located within 110 km2 of mixed woodland selling to customers within the woodland.	Local producers selling to customers on the Island of Ibiza	All food producers will deliver their produce to the municipality of Nijmegen from a location less than 5 kilometers to the city centre

5. Discussion and Conclusion

In the conclusion and discussion chapter, the implications of the findings of the case study will be discussed. The scientific contribution will be elaborated on based on the research gap as discussed in the introduction chapter, followed by the practical contributions. The chapter will end with the conclusion and the acknowledgements.

5.1 Discussion

This research aimed to contribute to the literature on collaborative network organizations, by comparing case studies of AFNs based on the characteristics of a CNO and an AFN.

A noticeable difference between the cases of AFNs that were analyzed and the characteristics of a CNO, in general, is the computer network (Camarinha-Matos & Afsarmanesh, 2006). While some cases revolved around software that supported their AFN (case C and D), other cases did not use any computer networks (case A, B, E, F). This might be because AFNs are based on local production, where all actors are located close by, leading to a close communication line between them, and limiting the need for a computer network. This can be concluded from the characteristics of a CNO, the actors in CNOs are geographically distributed, whereas the actors of the AFNs are often located close to each other, which again might be due to the local character of the AFN.

As seen in the theoretical framework CNOs contain heterogeneous organizations (Camarinha-Matos & Afsarmanesh, 2005). However, AFNs often contain small homogenous producers, that collaborate to meet the demand and create scale efficiencies (Case A & B) but also in the LFH in which De smaak van hier is operating (Vincent3). Considering the two smallest actors, based on the maturity of their company, Versfabriek, and Feed and Food Production, their need for collaboration fits an LFH with homogenous entrepreneurs (Barham et al, 2012). This might be because LFHs directly fulfill the need for small agri-food entrepreneurs to gain scale efficiencies by collaborating with other homogenous producers to compete with large food producers. This is also illustrated by the additional producer's motivation, where both entrepreneurs mentioned the need to share logistics to reduce costs. De smaak van hier is already operating in an LFH with homogenous actors and collaboratively manages their aggregation, marketing, and distribution of food.

In the agri-food industry in Sweden, the most common SBMA is *maximise material and energy efficiency*, followed by *adopting a stewardship role* (Ulvenblad et al., 2019). Only one of the agri-food entrepreneurs fits the adopting a stewardship role (Gerard1) and two of them fit the *maximise material and energy efficiency* (Ruud1; Vincent1). The most common SBMA found in the actors in the case is *re-purpose the business for society/environment*, which is actually the least found SBMA in the agri-food industry (Ulvenblad et al., 2019). Looking at the cases in the synthesis, the most commonly found SBMA is *re-*

purpose the business for society/environment (case A, C, D, E, F) followed by *substitute with renewables and natural processes* (case A, B, C, D). The SBMA *adopting a stewardship role* was only found in two cases (case B & E). The actors and cases that fit the SBMA *adopting a stewardship role* all interact with the consumer and teach them to change their consumer behavior which explains the fact that they fit the SBMA (Bocken & Short, 2016). Since the results differ significantly from the findings of Ulvenblad et al. (2019), more research is needed to establish best practices of an SBMA within different countries.

Considering the cases that were analyzed based on the characteristics of an AFN, increased product requirements showed some different results. Unprocessed food was one of the requirements but none of the cases (Case A-F) were selling unprocessed food exclusively. The Food World Pro does aim to sell unprocessed foods mainly, but some of the actors also aim to sell processed foods.

All the elements of producer's motivation that were discovered in the research of Gori & Castellini (2023), were also found in the case study, which shows the applicability of the framework. However, some producer's motivations were found in the case that were not identified by Gori & Castellini (2023). It was noticeable that the reason to participate in the Food World Pro for Michiel revolved around economic motivations; to create a short-supply chain and to increase sales (Michiel1). However, generating more sales was not clarified prior to the data gathering as a motivation to participate in an AFN. This is due to the fact that the motivation to participate in an LFH revolves around shared value creation, meaning more than only financial value (Barham et al., 2012). Within the other case studies that have been synthesized, increasing revenue is seen as a common goal (Case A & B), combined with a non-economic motivation. Even though the motivation for most actors to participate revolves around creating a short food supply chain and other non-economic motivations, increasing sales can also be a reason, as shown in this research. In order to add this motivation to the current framework of Gori & Castellini (2023), more research is needed to assess if this argument is significantly present for other actors to participate in an AFN.

However, regarding the findings on the homogeneity of the actors, more research is needed that digs deeper into the culture and ethic codes of the actors. The actors in this research were only assessed based on the products they sold and the size of the company. Therefore, more thorough research might uncover the fact that the actors are more heterogenous than homogeneous.

As an additional finding, two actors mentioned the need for a chef to process their local food into likable dishes for the consumer. Further research is needed to discover how a chef within an AFN can contribute to changing consumer behavior.

While the case study of Food World Pro is rich in the amount of data gathered, the BM has not yet been implemented and introduced within the market, which urges the need to address the fact that the results might change once the BM is actually implemented. In general, the actors in the case were all a bit skeptical

about what the collaboration would look like and whether it would work. The initiator needs to pay attention to these pessimistic statements to successfully implement the BM (Bauermeister, 2016).

5.2 Scientific implications

The results of this research are useful for the current body of knowledge on CNOs by showing how a CNO functions in a specific industry. Within the literature on AFNs, there is a need for testing existing frameworks in order to assess whether these networks actually differ from conventional agri-food systems (Michel-Villerael et al., 2019). This research has applied the existing framework of CNOs to multiple cases, which contributes to filling the knowledge gap. The findings have shown that computer networks are not a necessary characteristic of CNOs in the agri-food context. To add, heterogeneity is not a necessary characteristic for AFNs.

While other research only analyzes a single case study or compares multiple case studies on AFNs (Barel-Shaked, 2023; Fransceschelli, Santoro & Candelo, 2018), this research has compared existing case studies on AFNs. By analyzing the current case studies that have been performed within Europe based on the characteristics of a CNO and an AFN, a scientific contribution has been made. By performing an analysis of the case Food World Pro, this research adds another case European case study to the current body of literature. The case study Food World Pro, also adds another form of AFN to the literature since all actors produce their different products in the same location, which has not yet been found in literature as a LFH. Considering the results of the case study, it is noticeable how the AFNs can differ in nature, making it difficult to compare them. Therefore there is still a need for cross-country analysis in different cultural contexts using similar AFN models (Hyland & Macken-Walsch, 2022; Gori & Castellini, 2023). In addition, there is still need for a research on different types of AFNs (Michel-Villerael et al., 2019).

5.3 Practical implications

Due to the current SDGs, new forms of organizing are needed in the agri-food industry, as elaborated on in the introduction (Kaufman & Danner-Schröder, 2022). This research has analyzed multiple cases of AFNs based on their SBMA, which other AFNs can learn from to improve the way value is defined, created, and delivered, by the actors and between the actors (Birkie, 2018).

The case that was studied is particularly relevant since short-supply chain food systems are growing in numbers in the Netherlands (Venema et al., 2021). This research is practically relevant for similar initiatives that aim for a short supply chain food system. To add, the actors combined simulate some of the current trends in agri-food (Hartmann & Siegrist, 2017; Meier et al. 2020; Saint-Eve et al., 2021).

Throughout this research, the case of Food World Pro has been analyzed thoroughly. Since the comparison of individual values to the collective sustainable vision is essential for the implementation of

SBMs (Attanasio et al., 2022), the results of the semi-structured interviews have practically contributed to the successful implementation of the AFN. Based on the comparison of the AFN case to other AFNs in the literature, several practical implications can be addressed to ensure the successful implementation of this novel BM, which can be found in Appendix F as an additional finding.

5.4 Conclusion

This research aimed to add to the current body of literature on CNO, by analyzing multiple case studies based on the characteristics of a CNO and an AFN. The main research question that is to be answered is; *How do AFNs differ from collaborative network organizations from a value-based perspective?* To answer the research question, multiple AFN cases were analyzed and compared to the characteristics of a CNO. To add to the current case studies on AFNs in Europe a thorough analysis was performed on a new AFN; the Food World Pro. To answer the research question; some AFNs have the same characteristics as a CNO. Especially LFHs differ significantly from CNOs based on the lack of computer networks and the fact that the actors are homogenous and not geographically dispersed.

Despite the contribution to science and the practical implications, this research has several limitations. Firstly, only five cases from scientific articles were analyzed, and one case was added to the current body of literature on case studies on AFNs in Europe. Since limited research has been done on case studies on AFN within Europe, these six cases are not enough to base firm statements on. Further research needs to be done on case studies on AFNs within Europe to further fill the gap in the literature.

Secondly, Considering the methodology, data analysis revolved around document analysis and semi-structured interviews. Based on the collected data, the researcher concluded on the characteristics and the SBMA, which was not checked by peers, which decreases the reliability. Even though these methods combined, have provided valuable findings in respect to the comparison of an AFN to a CNO, observations could provide valuable insights and could verify the results of the analysis. Also, since the bias discussed in the methodology was not successfully resolved, the reliability has decreased further.

Thirdly, Since this research was done by one researcher, despite the efforts to remain objective and to verify the results with the initiator and the staff of the project, some subjectivity of the researcher is inevitably involved in the research. Therefore, when performing research on the analysis of AFN based on case studies, more researchers need to be included.

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Appendix A: continuous interplay between theory and practice

Firstly, the most important aspect of the continuous interplay between theory and practice is the focus of the research. Sjors Witjes brought me into contact with Eward Heijmans and he introduced the case study Food World Pro. Initially, I was triggered by change agents and wanted to do my research on the role of change agents within the implementation of a complex sustainable business model. However, not much research has been done on the manager within an AFN and I was only able to interview one manager. Looking at the case and after discussing it with Sjors, it was much more relevant the research the complex BM of the case. The Food World Pro has received a grant for initiating an innovative BM, which made it much more relevant to study the complexity of the BM. Due to the fact that the BM in the case is a novel way of organizing, it was difficult to find concrete and relevant information within the literature, therefore the BMAs were used to give analyze what was actually happening within the case. The literature on AFN does not contain many concrete frameworks but it does contain many case studies from all over the world. The case studies in Europe that were possible to analyze based on the CNO characteristics were selected to be compared in this study. To add, the collaboration between the actors was interesting to study. However, the case that was used is yet to be introduced in the market, meaning that a sustainable and innovative business model is introduced in the market. The actors were not yet collaborating, which made it impossible to study the actual collaboration between the actors. Therefore the decision was made to focus on the different actors of the network within the case. Considering the literature search on CNOs within the agri-food context, the concept of AFN arose as an important aspect within the literature, shifting the focus to the comparison of AFN to CNO

Secondly, an important aspect of the continuous interplay between theory and practice is the interview design. Before the first interview, the interview questions were based on the theoretical framework. Eward checked the questions and adjusted the questions to make them more understandable for the participants. The first question aimed to ask the participant how value was created within their company. However, this question was too vague, so more questions had to be asked about the mission and vision since this clearly shows how value is created within the business. For the companies that had a clear mission and vision statement on their website, the question was not asked in the interview. Within the first interview, it was noticeable that the questions needed to be arranged since it felt more natural to the researcher. From the first two interviews, it was noticeable how they both explained a particular AFN, where small homogenous agri-food entrepreneurs work together. Going back to the research, this perfectly fits the LFH model, as described in the methodology chapter.

Appendix B: Operationalization scheme

Concept & definition	Dimensions	Indicators ³	Interview questions ⁴
SBMA = Sustainable business model archetypes (Bocken et al., 2014).	<p>Maximise material and energy efficiency (Bocken et al., 2014).</p> <p>Create value from waste (Bocken et al., 2014).</p> <p>Substitute with renewables and natural processes (Bocken et al., 2014).</p> <p>Deliver functionality, rather than ownership (Bocken et al., 2014).</p> <p>Adopt a stewardship role (Bocken et al., 2014).</p>	<p>Conserving resources to reduce emissions, pollution and waste (Ulvenblad et al., 2019).</p> <p>Actively working to recycle waste (Ulvenblad et al., 2019).</p> <p>Reducing the environmental impact by using renewable energy sources or natural processes. (Ulvenblad et al., 2019).</p> <p>Services meet user needs without their ownership of the physical product (Ulvenblad et al., 2019).</p> <p>Actively ensure the long-term health and well-being in both environmental and social terms.</p>	<p>1. Can you give a description of your company?</p> <ul style="list-style-type: none"> - What are the core activities? - What is the importance of sustainability within your company? - How is value created? - What is the mission and vision? - What do the current ties of collaboration look like at this moment?

³ An elaborated version of the indicators for BMA can be found in a separated table.

⁴ The interview questions that were actually asked, differ from the questions stated beforehand, due to the semi-structured nature of the interview. Also, questions that were not stated beforehand were asked during the interviews to clarify answers or to dig deeper into interesting answers.

	<p>Encourage sufficiency (Bocken et al., 2014).</p> <p>Re-purpose the business for society/environment (Bocken et al., 2014).</p> <p>Develop scale-up solutions (Bocken et al., 2014).</p>	<p>(Ulvenblad et al., 2019).</p> <p>Influence customers to reduce consumption by offering sustainable products and services. (Ulvenblad et al., 2019).</p> <p>Delivering social and environmental benefits rather than economic profit maximization by close cooperation with the community (Ulvenblad et al., 2019).</p> <p>Using franchising or licensing to scale up our business (Ulvenblad et al., 2019).</p>	
<p>Producer's motivation= Economic and non-economic motivations to participate in an AFN (Gori & Castellini 2023).</p>	<p>Economic</p> <p>Non-economic</p>	<p>Need for higher prices (Michel-Villarreal et al., 2020).</p> <p>Better brand positioning (Michel-Villarreal et al., 2020).</p> <p>Creating a short-supply chain</p>	<p>2. How did you become familiar with the Food World Pro?</p> <ul style="list-style-type: none"> - What is your motivation to participate? - How will you participate? <p>3. What do you gain by collaborating with the other actors?</p>

		<p>(Michel-Villarreal et al., 2020).</p> <p>Network opportunities (Vittersø et al., 2019).</p> <p>Connecting closely with the consumers (Vittersø et al., 2019).</p> <p>Sell healthier products (Vittersø et al., 2019).</p> <p>Increased access to local food (Saulters et al., 2018).</p> <p>Fair pricing (Saulters et al., 2018).</p> <p>Sustainability of the food system (Saulters et al., 2018).</p>	<ul style="list-style-type: none"> - ...network opportunities? - ...knowledge? - ...raw materials? - ... other?
CNO = Collaborative network organization	Common or compatible goal (Camarinha-Matos et al., 2009).	⁵	4. What is your perception on the common goal of the Food World Pro?

⁵ After the interviews, the answers will be compared to each other, to check whether the actors have a common or compatible goal.

(Camarinha-Matos et al., 2009).			
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SBMA	Indicators ⁶
Maximise material and energy efficiency	<ul style="list-style-type: none"> a. We conserve resources in order to reduce emissions, pollution, and waste. b. We work to streamline the value chain (production and transport) by using fewer resources and reducing emissions, pollution and waste. c. We work with optimum material usage and reduced waste and emissions as a way to reduce costs.
Create value from waste	<ul style="list-style-type: none"> a. We recycle waste. b. We actively work with our partners to recycle waste. c. We work to reduce costs by reusing materials and taking advantage of spillage and waste.
Substitute with renewables and natural processes	<ul style="list-style-type: none"> a. We work to reduce the environmental impact by using renewable energy sources or natural processes. b. We develop our company by using renewable energy sources or natural processes to reduce waste. c. We use renewable energy and reduce the use of non-renewable resources to increase our financial return.
Deliver functionality, rather than ownership	<ul style="list-style-type: none"> a. Our services meet user needs without their ownership of the physical product (e.g. leasing of equipment). b. Our business focus requires us to maintain close contact with our partners and on-going dialogues with our customers. c. Customers pay for services and do not take ownership of the products.
Adopt a stewardship role	<ul style="list-style-type: none"> a. We actively work to ensure the long-term health and well-being (environmentally and socially) of employees.

⁶ The indicators of the SBM are retrieved from Ulvenblad et al., (2019).

	<p>b. We ensure that our activities and our partners (third party certified) are focused on health and well-being (both environmental and social).</p> <p>c. To actively ensure the long-term health and well-being (in both environmental and social terms), we work to strengthen our brand, which allows us to increase our prices.</p>
Encourage sufficiency	<p>a. We work to influence customers to reduce consumption by offering sustainable products and services.</p> <p>b. We and our partners focus on recycling.</p> <p>c. We help to increase demand by educating and informing the public about our sustainable products.</p>
Re-purpose the business for society/environment	<p>a. We operate a business that contributes to a low environmental impact as a member of the sustainable society.</p> <p>b. We focus on creating social and environmental benefits through non-traditional relationships (e.g. employee ownership of the company).</p> <p>c. We focus on delivering social and environmental benefits rather than economic profit maximisation by close cooperation with the community</p>
Develop scale-up solutions	<p>a. We work to develop and disseminate sustainable solutions to maximise benefits for society and the environment.</p> <p>b. We work with partners who can develop and deliver sustainable solutions.</p> <p>c. We use franchising or licensing to scale up our business.</p>

Appendix C: Interview protocol (English)

Before the start of the interview, the researcher reached out to the participants, using the following text in an email; I received your contact information from Eward. I would like to interview you for my master thesis. Below is an introduction to my research. My name is Marloes Israels and I am currently working on my master's thesis for Strategic Management at Radboud University Nijmegen. In collaboration with Eward, I am researching the value creation within the food world pro. I am mainly interested in the complexity of the business model, in which different entrepreneurs work together to achieve a successful outcome. I would like to interview you for this. This will take about half an hour and the results will remain anonymous where desired. Participation will help me greatly with my thesis! In preparation for the interview, you can think of answers to the questions; why am I participating in the project? What values do I get out of this for my company? What is the common goal we want to achieve as a collective?

The interview will start with the introduction; Dear <participant x>, I would like to thank you for participating in this interview which I am conducting for my master thesis. In this research, I will look at how value is created within the network and evaluate the difference between the shared and the individual ideas about the value within the project. I would like to invite you to check the transcript of the interview, to check for any errors in interpretation, to ensure the quality of the research.

With your permission, I would like to name your company in the research. If this does not fit your ideas, then all the results will be processed anonymously. The results of this research will be shared with Eward, your person of contact. In case you are interested to receive the full results of the research, I would be pleased to send them to you. I would like to urge you to answer as honestly as possible. In case you cannot answer a question feel free to speak up. Do you have any questions? We will start the interview with some general questions about your company.

1. Can you give a description of your company?
 - What are the core activities?
 - What is the importance of sustainability within your company?
 - How is value created within your company?
 - What is the mission and vision?
 - What do the current ties of collaboration look like at this moment?
2. How did you become familiar with the Food World Pro?
 - What is your motivation to participate?
 - What are the goals you aim to achieve by participating?
 - How will you participate?
3. What do you gain by collaborating with the other actors?
 - How can value be created within the collaboration by network opportunities?
 - How can value be created within the collaboration by accessing knowledge?
 - How can value be created within the collaboration in respect to the access to raw materials?

- Are there any other thing you aim to gain by collaborating?
- 4. What is your perception on the common goal of the Food World Pro?
 - Besides your own company and motivations, what do you perceive as the common goal?
 - How do you value the importance of sustainability within the Food World Pro

Appendix D: Interview protocol (Dutch)

Voorafgaand aan het interview is de participant benaderd met de volgende email; Uw contactgegevens heb ik ontvangen van Eward. Graag zou ik u interviewen voor mijn masterscriptie. Hieronder volgt een introductie van mijn onderzoek. Mijn naam is Marloes Israels en ik ben momenteel bezig met mijn scriptie van de master Strategic Management aan de Radboud Universiteit Nijmegen. In samenwerking met Eward ben ik bezig met een onderzoek naar de gedeelde waarde creatie binnen de food world pro. Ik ben voornamelijk geïnteresseerd in de complexiteit van het business model, waarin verschillende ondernemers samenwerken om tot een succesvolle uitkomst te komen. Ik zou u hier graag voor willen interviewen. Dit zal ongeveer een half uur duren en de resultaten zullen anoniem blijven waar dat gewenst is. Deelname zal mij erg helpen met mijn afstudeeronderzoek! Ter voorbereiding aan het interview kunt u vast een antwoord bedenken op de vragen; waarom doe ik mee aan het project? Welke waardes haal ik hier uit voor mijn onderneming? Welke gedeelde waarde willen we als collectief bewerkstelligen?

Het interview begint met de introductie; Beste <participant x>, graag wil ik u bedanken voor het deelnemen aan dit interview wat ik uitvoer ten behoeve van mijn master scriptie. In dit onderzoek kijk ik naar hoe er gezamenlijk binnen jullie netwerk waarde wordt gecreëerd en naar het verschil tussen de gemeenschappelijke en individuele visie over de waardes binnen het project. Graag nodig ik u uit om na afloop van het interview de uitgewerkte data te controleren om de kwaliteit van het onderzoek te waarborgen.

Met uw toestemming, zou ik graag de bedrijfsnaam, vermelden binnen dit onderzoek. Mocht u dit niet appreciëren dan zullen alle resultaten anoniem worden verwerkt. De resultaten van het onderzoek worden gedeeld met Eward, uw contactpersoon. Hij zal de resultaten verwerken en benutten ten behoeve van het project. Mocht u zelf nog geïnteresseerd zijn in de uitslagen van het onderzoek dan kan ik deze met u delen na afloop. Ik zou u willen vragen om zo eerlijk mogelijk te antwoorden. Wanneer u ergens geen antwoord op zou willen geven, geef dit dan vooral aan. Zijn er nog vragen? We zullen het interview beginnen met een korte introductie vraag waar ik meer te weten kan komen over u en uw bedrijf.

1. Kunt u een korte omschrijving geven van uw huidige onderneming los van het project Food World Pro?
 - Wat zijn de huidige kernactiviteiten binnen uw bedrijf?
 - Wat is het belang van duurzaamheid binnen uw bedrijf?
 - Hoe wordt er nu waarde gecreëerd binnen uw bedrijf?
 - Wat is de missie en visie voor uw bedrijf?
 - Hoe zien de samenwerkingsverbanden er op dit moment uit?
2. Hoe bent u bekend geworden met het project Food World Pro?
 - Wat is uw motivatie om deel te nemen aan het project?
 - Welke doelstelling zou je willen behalen door me te doen aan het project?
 - Op welke manier zou u willen deelnemen aan het project?

3. Wat biedt de samenwerking aan wat u niet alleen had kunnen doen?
 - Hoe wordt er waarde gecreëerd door middel van netwerk activiteiten?
 - Hoe wordt er door de samenwerking kennis vergaard?
 - Hoe verandert het verkrijgen van raw materials door samen te werken?
 - Welke andere waardes die bereikt kunnen worden door de samenwerking zijn nog van toepassing?
4. Wat ziet u als het algemene doel van het project?
 - Los van uw individuele belang binnen project wat ziet u als het algemene belang?
 - Hoe ziet u het belang van duurzaamheid binnen het project?

Appendix E: Memos

Memo versfabriek

For the interview, Ruud gave me an address at some sort of industry terrain. After arriving at the terrain, the location of the company was still unclear to me so I called Ruud and he explained to me where I could find his company. He made an overlapping appointment with another student working on a thesis. The goal of her research is to find the perfect recipe for a burger made of shrooms. He first gave me a tour of the production process. There were three containers, one for the shiitake and koningspaddenstoelen, one for the winter season of the oesterzwam, and one for the summer season of the oesterzwam.

During the tour, he mentioned that he aims to produce all the bags with substrate himself. However, the coffee residue that he collects from the hospitality industry is very vulnerable to infections. The coffee residue is being collected from the hospitality facilities in the city center of Nijmegen. He mentioned the fact that he is annoyed by the plastic material and that the bags are made of plastic. Furthermore, he mentioned that he has to pay money to recycle the material inside the plastic but if he would live next to a farmer he would be able to just distribute it over the land as fertilizer. This information was not recorded but I asked a follow-up question in the recorded interview. After the recording of the interview stopped, he mentioned one of his business contacts that could be interesting for my research. There was more chit-chat about his vision to produce within the city, for the city. He further specified the need to contact Eward because he still struggles with the fact that Eward wants to look for a location outside of the city center. It was noticeable how he mentioned that the value and vision of all the partners need to be aligned based on more than just the need for a location. The interview was only 24 minutes but in total, I have spent 75 minutes at the location. I discussed the interview briefly with Eward Heijmans and he continued to stress the fact that not all stakeholders are the same and that sustainability may have a different meaning for them. It was noticeable how he covered his face with his hands when he was talking about funding and finance and started to move his hands up and down his face. After the interview, I noticed in the transcription that he mentioned that similar entrepreneurs were working together. I called him to verify the relationship. The entrepreneurs have had the ambition for years to set up some sort of association. There have been several gatherings between the entrepreneurs. He mentioned that there have been several attempts to sell the products collaboratively, but the entrepreneurs all want to use their mushrooms to process into the products. Some of these attempts included using collective marketing channels. There is a group chat on Whatsapp in which they share some knowledge about the production of the shrooms.

Memo de smaak van hier

To get to the location to interview Vincent, I had to take a bus for half an hour from the railway station of Tilburg to Berkel-Enschot. The interview took place at his home where I met his wife. It is very noticeable how I immediately entered his personal space. Before the interview, Vincent told me a story of his previous enterprise in flowers that were being sold under a brand name. They were very successful in the beginning and they decided to make their product and production process more sustainable. They wanted to produce without fertilizer but their agricultural advisor said that it was not possible to do so. They continued to search for another solution and they decided to add two other minerals to make it possible. This illustrates his value for knowledge sharing. He sold the company with a profit to a sales director, who turned the company into its old, less sustainable state. He explained how he was bummed that people choose profit over the planet and people values. During the interview, he mentioned the perfect balance between sustainability, innovation, and commerce. He drew a triangle and started circling the ends of the triangle, to stress his point. In the end, he mentioned one of his projects where he worked together with 80 people with a budget of 300 million. To align all the interests and to manage the team to work together properly, they spend a total of two days in a hotel where they were trained according to the DISC model. He mentioned that this was very important for the collaboration between the employees. I asked one follow-up question to clarify his point since I suspect to advise future researchers to look at the way the network is actually collaborating. At the end of the interview, he referred to the story about his previous business. He said that his previous experience has taught him the value of getting to know more people and sharing knowledge to enable growth within the business. This illustrates part of his motivation to contribute to the project of Eward. The interview took less than 25 minutes, but I spend a total of 75 minutes at his dinner table.

Appendix F: additional finding

Due to the fact that the agri-food entrepreneurs within the Food World Pro have different producer's motivations, BMA, and have a different perception of what the common goal is, an intervention is needed to align the actors within the network. Within the literature search on BMAs, a suitable intervention was found that fits the current problem within the case. The intervention uses a value mapping tool, which was created by Bocken et al. (2013). The value mapping tool is valuable in raising awareness of the conflicting values and negative outcomes that often occur as a result of the business activities (Bocken et al., 2013). When the workshop was introduced as an interesting find to the initiator of the Food World Pro, Eward mentioned that he had seen similar models that had been deemed relevant and confirmed the usefulness of the workshop. Therefore the additional finding will elaborate on the workshop using the value mapping tool.

To assist firms in helping them to better understand the firm's overall value proposition for all relevant stakeholders within the network, a value mapping tool was created especially for sustainable business models (Bocken et al., 2013). The value mapping tool is especially relevant for generating value across the full network. The value mapping tool can achieve the following (Bocken et al., 2013);

- Creating an understanding within the network of stakeholders of the positive and negative aspects of the value proposition.
- Identifying conflicting values of the individual stakeholders, to eventually tackle these disagreements.
- Realigning the conflicting interests limits the negative outcomes and improves the overall value for all the stakeholders within the network.

There are two types of mapping tools identified; the comprehensive model (1) is best for stimulating discussion and debate across a detailed list of stakeholders and the simplified model (2), is suitable for a quick assessment of key issues between a broader distinction of stakeholders. As shown in figure x of the simplified version of the value mapping tool, the stakeholders are grouped into four categories; environment, customers, society, and network actors (table x). The workshop follows several steps that need to be followed carefully.

The pre-workshop preparation begins with inviting the participants to represent each of the main stakeholders that are relevant to the business. In the case study, the project currently contains 8 stakeholders collaborating, which means that all stakeholders are considered main stakeholders and are therefore all invited. A discussion should take place with the workshop participants to establish a general level of awareness and understanding of the relevant aspects of sustainability.

Workshop process

Following the discussion on the general level of awareness, the missing information about the key global sustainability challenges is given by the host of the workshop.

1. The workshop starts off with the introduction of the value mapping tool. An example will be given to explain the terms; value capture, value missed, new opportunities and value transformation.
2. The workshop participants should collectively define the unit of analysis. The product or service that the firm is offering needs to be defined and the industry the business is in needs to be confirmed. This is particularly relevant for larger firms, when only a unit is chosen to be analyzed in the workshop.
3. The stakeholder groups need to be identified by the participants. Each stakeholder groups needs to be represented by at least one stakeholder. In the case of food world pro, each stakeholder will represent their own company.
4. The purpose of the workshop will be discussed. The focus needs to be on the offering rather than the firm to support a network perspective
5. A facilitated brainstorm is then used to populate the tool.
6. Starting at the center of the circle, then moving further outwards, all stakeholders will name the various forms of value captured for that stakeholder. Each step proceeds the previous step whereas missed value can form an opportunity to create new value.
7. After filling n the value mapping tool, the stakeholder will vote on the most promising ideas, which might be used for further brainstorming.

Considering the facilitation of the workshop, the facilitator ought to have pre-defined questions to navigate the discussion. The stakeholder can write their ideas on colored post-its. The value mapping tool should be projected on the wall, to save paper which enables a sustainable workshop. The final results can be captured on camera or recorded with a voice recorder. A more detailed explanation of the workshop and an example can be found in Bocken et al. (2013).