



NaWiKo

Vernetzung • Synthese • Transfer

TIM GRUCHMANN, MADELEINE BÖHM, KLAUS KRUMME, SIMON FUNCCKE,
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Local and sustainable food businesses

Assessing the role of supply chain coordination

Nachhaltiges Wirtschaften – NaWiKo Synthese Working Paper No. 2



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Editors: Rainer Walz und Matthias Gotsch (Fraunhofer ISI)

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The project „Scientific Coordination of Research Projects on a Sustainable Economy" (NaWiKo) is a collaboration between Ecologic Institute, Fraunhofer Institute for System and Innovation Research (ISI) and the Environmental Policy Centre, FU Berlin (FFU).

The draft was completed in August 2018.

The document is available online at:

www.nachhaltigeswirtschaften-soef.de

Acknowledgments & Disclaimer

This working paper is a result of the research projects ILoNa and RegioTransKMU, which were funded by the German Federal Ministry for Education and Research (BMBF) (grant numbers: 01UT1406B and und 01UT1403A). The authors wish to thank BMBF for logistical and financial support to their projects as well as NaWiKo. All recommendations, proposals, concepts, names, proposal for communication etc. contained in this paper are the intellectual property of ZNU and protected by copyright laws. Any use thereof is only permissible with the prior written consent of ZNU. The authors are solely responsible for the content of this publication.

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Abstract

Zusammenfassung (Deutsch):

Die Bedürfnisse von Kund_innen verändern sich stetig. So werden im Zuge eines gestiegenen Bewusstseins für ökologische und soziale Problemstellungen in der Gesellschaft auch nachhaltige Geschäftsmodelle immer wichtiger. Diese leisten einen wichtigen Beitrag dazu, die insgesamt gestiegene Nachfrage nach regionalen Lebensmitteln und den Stellenwert von regionalen Erzeuger- und Vertriebsgemeinschaften zu komplementieren. In diesem Zusammenhang analysiert die vorliegende Studie nachhaltigkeitsbezogene Geschäftsmodelle in zwei regionalen Erzeuger- und Vertriebsgemeinschaften in Deutschland und Österreich. Hierbei wird ein Fallstudienansatz angewendet, um die Frage zu beantworten, welche Geschäftsmodelle ein nachhaltigeres Wirtschaften in der Lebensmittelindustrie ermöglichen. Durch den Vergleich der beiden Fallstudien konnten nachhaltige Geschäftsmodellelemente in regionalen Erzeuger- und Vertriebsnetzwerken identifiziert werden, die insbesondere einen Schwerpunkt auf logistische und finanzielle Koordination legen. Zusammenfassend leistet die vorliegende, qualitative Studie einen Beitrag zur Identifizierung und Beschreibung notwendiger Geschäftsmodellelemente innerhalb nachhaltigerer, regionaler Lebensmittelnetzwerke. Gleichzeitig wird argumentiert, dass nachhaltige Geschäftsmodelle immer auch von den Kunden angenommen werden und daher auch die Besonderheit des nachhaltigen Geschäftsmodells in der externen Kommunikation herausgestellt werden sollte. Zudem konnten weitere Erkenntnisse in Bezug auf Transfer und Skalierbarkeit regionaler Erzeuger- und Vertriebsnetzwerke gewonnen werden.

Abstract (English):

In food supply chains, products and services are continuously expanded and adapted according to changing customer demands. As concerns for environmental and social issues within societies grow, sustainable business practices in supply chains are coming to the fore. Altogether customers' growing demand for local food has led to an increased importance of local food production and distribution networks. In this context, the present study analyzes sustainability related practices in two local food production and distribution networks in Germany and Austria applying a multiple-case study approach in order to understand how business models can facilitate sustainable practices within the food industry. By comparing the selected cases, insights were derived with regard to sustainable business model elements in local food networks, in particular promoting logistics and financial coordination in the supply chain. By doing so, the article builds on academic literature by identifying and describing key elements of sustainable business models in local food networks. At the same time, it is argued that



sustainable business models have to be accepted by consumers such that sustainability advantages aspects need to be stressed through external communication. In addition, managerial implications with regard to transferability and scaling of regional food businesses are provided accordingly.

1 Introduction

Local¹, organic, and fair-trade food is a growing trend as end-consumers associate sustainable products with freshness, higher quality, and healthiness (Adams and Salois, 2010). Following this change of consumers' perception, many managers of conventional, corporate agri-businesses have invested in the niche of organic food and benefit from the change in consumer needs and expectations. In this line, many conventional food business models were adapted by including a more sustainable value proposition. However, Willer and Lernoud (2013) argue that it is not possible to meet this increase in demand by means of national supply alone. Hence, organic food became a globalized product. Following this observation, two different options have been mostly discussed in the literature as a direct response to the described market shifts, recognizing the need to secure customers' demand for sustainable products and the underlying sustainable business model archetypes (Bocken et al., 2014; Oekobarometer, 2013, 2016): either focusing on the question to which extent organic demand can potentially be met by local/regional food production or discussing a possible conversion of conventional food production into organic ways of production.

So far, it can be seen that an insufficient integration and coordination of decentralized local food production networks still limits growth such that local food businesses often remain in a niche (Willer and Lernoud, 2013). Accordingly, the following research questions guided our study: *How can supply chain coordination contribute to transferability and scaling of local food businesses and their sustainability efforts? How is this reflected in their business model?*

Therefore, we aim to shed light on tapping further increases in sustainability-oriented business practices in local food business models and inquire how network coordination approaches can contribute to the success of regional companies and their sustainability efforts. Specifically, we are interested which business model elements in local food networks are promising to promote sustainability in the food industry. For the analysis, we focus on two regional food networks in Austria and Germany, the connections between the network members and the networks' central intermediary company. Both networks aim at the promotion of sustainable food production, regional distribution and, to the furthest extent possible, a

¹ "Local" means the lowest political level of municipalities and districts.



closing of regional value chains. The analysis of both cases follows the conceptualization of business models proposed by Osterwalder and Pigneur (2009), which we extend with regard to sustainability-aspects according to Boons and Lüdeke-Freund's (2013) and Upward and Jones (2016). Based on this analysis, we develop an extended business model conceptualization for local and sustainable food networks.

The structure of the study is as follows: Section 2 gives an overview of relevant literature with regard to (sustainable) business models. The research design of this contribution is presented in section 3. Next, section 4 lays out the main results for both cases, and provides a combined analysis of both cases that lead to a new sustainable business model conceptualization for local food networks. The last sections 5 and 6 discuss the findings against the literature on supply chain coordination and conclude them accordingly.

2 Literature background

Business models have been extensively discussed and defined in the literature (Zott et al., 2011). Linked to strategy and innovation literature, the business model approach describes the ways in which a business creates and delivers value to their customers through designing the value creation, delivery, and capture mechanisms (Osterwalder and Pigneur, 2002, 2009). These elements of business model design generally include features embedded in the product/service; determination of the benefit to the customer when consuming/using the product/service; identification of targeted market segments; confirmation of the revenue streams and design of the mechanisms to capture value (Teece, 2010). Focusing on conventional business models, four main business areas were identified while creating business models: in particular the value proposition, for which customers are willing to pay; the relationships with the customers; the infrastructure and network of the partners; as well as financial aspects (cost and revenue structures) (Ballon, 2007; Boons and Lüdeke-Freund, 2013).

The business model perspective can be linked to the context of sustainability and has been of growing interest to scholars (Stubbs and Cocklin, 2008) in recent years, since it highlights the logic of value creation and allows for new/rediscovered governance forms such as cooperatives, public private partnerships or social businesses (Schaltegger et al., 2016). Accordingly, Schaltegger et al. (2016, p. 6) define the role of a business model for sustainability as: *"it helps describing, analyzing, managing, and communicating (i) a company's sustainable value proposition to its customers and all other stakeholders, (ii) how it creates and delivers this value, (iii) and how it captures economic value while maintaining or regenerating natural, social and economic capital beyond its organizational boundaries"*. Hence, the existing business model



definitions have been aligned with the Triple Bottom Line (TBL) approach (Carter and Rogers, 2008; Seuring and Müller, 2008) to not only foster economic, but also social, and environmental value creation. Extending the conventional business frameworks in accordance with the TBL, Boons and Lüdeke-Freund (2013) define the key parameters in sustainable business models as (i) value proposition of products and services should focus on ecological, social and economic value; (ii) overall infrastructure and logistics of the business guided by the principles of sustainable supply chain management; (iii) interface with customers enabling close relationships between customers and other stakeholders to improve co-responsibility in production and consumption; and (iv) equal distribution of economic costs and benefits among all actors involved. Broadening the systems' scope further, Neumeyer and Santos (2017) see business models as part of the whole entrepreneurial ecosystem, particularly dependent on the stakeholder's social network. Over the last few years, authors have started to consolidate the literature on sustainable business models by introducing sustainable business model ontologies and archetypes (e.g. Bocken et al., 2014; Upward and Jones, 2016). Here, Bocken et al. (2014) distinguish between nine different sustainable business model archetypes, particularly promoting maximization of material and energy efficiency, creation of value from waste, substitution with renewable and natural processes, delivery of functionality rather than ownership, adoption of a stewardship role, encouraging sufficiency, repurposing products and services for society and environment, as well as the development of scale up solutions. However, Lüdeke-Freund et al. (2016) see research in the field of sustainable business models as still rather limited, in particular with regard to empirical analyses. Moreover, industry and branch specific sustainable businesses need to be analyzed to access business model elements and archetypes which support the management of voluntary social and environmental activities in certain environments. Taking into account the different paradigms to include sustainability in a company's business model, the main contribution of this study is to compare two successful local food business networks and analyze how sustainability aspects are reflected within single business model elements. Within the few frameworks given in the literature, the extended sustainable business conception developed by Boons and Lüdeke-Freund (2013) is adapted and used as the deductive scheme for the analysis. In this line, Table 1 describes the related sustainable business model elements while Figure 1 depicts the adapted framework.



Table 1: Key elements in sustainable business models

Codes	Description
Value Proposition	<p>The value proposition of a company is decisive for a customer's buying decision. Here, products and services form a bundle covering the needs of a specific customer segment (Osterwalder and Pigneur, 2009). According to Schaltegger et al. (2016), the value proposition has to create, deliver, and capture both environmental and social as well as economic value by offering products and services. Therefore, a sustainable value proposition must identify trade-offs between product and service performance as well as social and environmental effects (Boons and Lüdeke-Freund, 2013). So far, a reduced resource consumption and potentially increased ecosystem services are the core of sustainable business models to reduce the environmental footprint (Stubbs and Cocklin, 2008). Further key activities focus on the access to markets, the perpetuation of customer relationships and achieving positive revenue streams (Osterwalder and Pigneur, 2009).</p>
Supply Chain	<p>The company or its network partners need to have access to key resources as a prerequisite for value creation. These key resources can be generally categorized as physical resources, financial resources, human resources, and intangible assets (Osterwalder and Pigneur, 2009). This perspective is relevant as sustainable innovations may require changed terms of competition and collaboration among the actors engaged in the supply chain (Boons and Lüdeke-Freund, 2013). In this line, the importance of incorporating a stakeholder approach is increasingly understood in sustainable supply chains and sustainable business models (Seuring and Müller, 2008; Lüdeke-Freund et al., 2016). For instance, the stakeholder approach requires that a company engages suppliers in its sustainable supply chain management to tackle environmental and social issues (Boons and Lüdeke-Freund, 2013; Seuring and Müller, 2008). In this line, the last mile distribution can be considered to be one of the most complex units of a supply chain (Schliwa et al., 2015). This complexity is generated by tight delivery time windows and a growing number of small orders which have to be delivered to rural areas (Punakivi et al., 2001).</p>
Customer Interface	<p>Company relationships can motivate customers and other company stakeholders to take responsibility for their consumption behavior (Boons and Lüdeke-Freund, 2013). Accordingly, the customer interface enables close relationships with customers and other stakeholders to be able to take responsibility for the production and consumption systems (Schaltegger et al., 2016). In order to approach the customer interface individually, customer groups are segmented by differentiating between different customer characteristics. Business models can either target a specific customer segment or produce for mass markets (Boons and Lüdeke-Freund, 2013). Moreover, a company operating on multi-sided platforms (multi-sided markets) serves different customer segments independently, if applicable (Osterwalder and Pigneur, 2009). Hence, the customer interface might help to develop approaches to advance business models into platforms for multi-stakeholder integration and value creation (Lüdeke-Freund et al., 2016).</p>

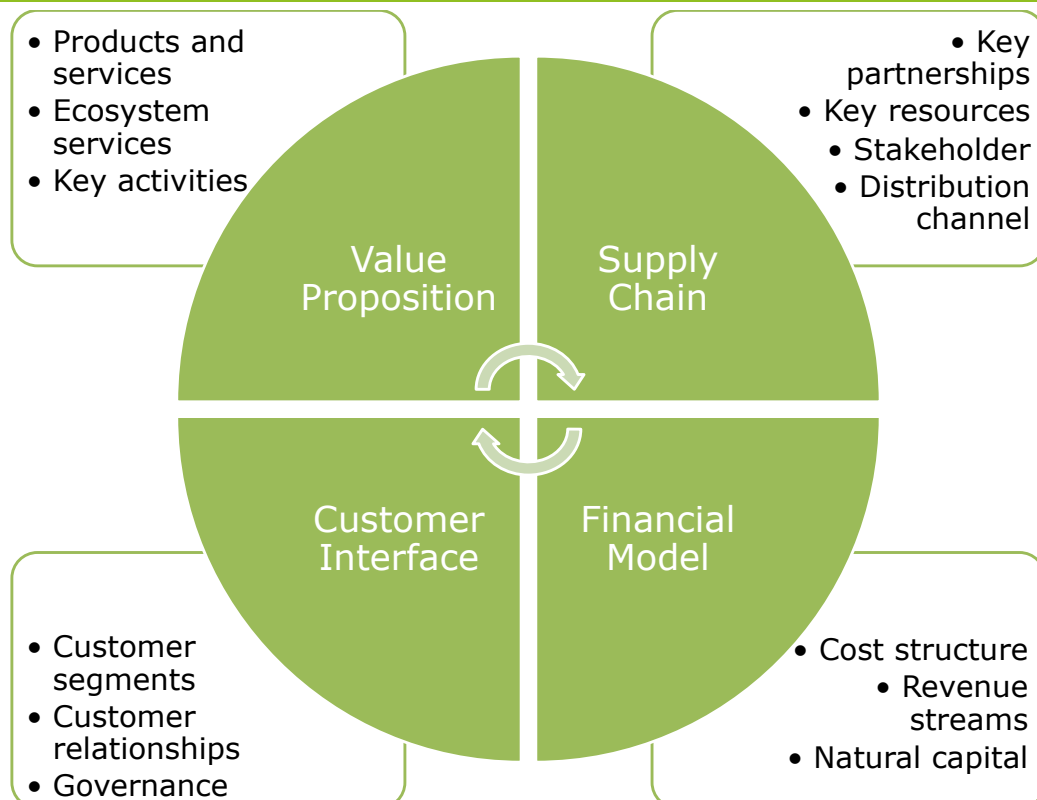


Financial Model

Value creation is linked to the use of resources and, consequently, linked to costs. In this context, sustainable business models foster the shift away from purely monetary-oriented paradigms of value creation (Lüdeke-Freund et al., 2016). Therefore, the comparisons of cost structures between similar business cases are essential to gain insights into how a business creates and delivers value to their customers (Osterwalder and Pigneur, 2009). Accordingly, the cost and revenue structure reflects the distribution of economic costs and benefits among actors in the business model (Maas and Boons, 2010). According to Stubbs and Cocklin (2008), shareholders often have to accept lower returns on investment in the short-term so that the company can directly invest profits into structural changes to support social and environmental improvements, which in turn can result in reduced costs. Thus, sustainable business models treat nature as a stakeholder, too, and promote environmental stewardship (Stubbs and Cocklin, 2008). In this line, renewable resources should be used instead of non-renewable resources (natural capital). Here, technological innovations should minimize and eventually eliminate non-recyclable waste and pollution. Related terms such as clean technologies are also used for innovations that have a superior environmental performance (Boons and Lüdeke-Freund, 2013).

Source: adapted from Boons and Lüdeke-Freund (2013)

Figure 1: Key parameters in sustainable business models



Source: adapted from Boons and Lüdeke-Freund (2013)



3 Research design

Considering the aim of the study, particularly the identification of promising business model elements to further promote sustainability in food business models, a case study approach was used as the boundaries of the phenomenon, its full scope and context were not entirely described beforehand (Yin, 2009). Case studies are also well suited for complex structures as they allow intense interaction with the informant and draw on multiple sources of information leading to robust data (Eisenhardt and Graebner, 2007). Although the sustainability potential of local food supply networks is evident in the literature (Bosona and Gebresenbet, 2011), how to implement and develop sustainable practices in such networks is not clear. Hence, a combined case study and business model approach is used to analyze local food production and distribution networks in Germany and Austria.

Case selection: In accordance with the scope of the study, two companies from the food sector, which act as a hub in their respective network, were selected. Both networks focus their operational activities on decentralized and organic food production and its local distribution. The cases NETs.werk² Hörsching and Regionalwert AG (RWAG)³ Freiburg were chosen as they focus on sustainability at the core of their business models. Moreover, these business cases were selected to cover different parts of the supply chain (upstream and downstream) in order to gain insights into as many aspects of sustainability as possible during the value creating process. The data collection from each case was stopped when no further significant new insights could be gained (Yin, 2009). The following Table 2 gives an overview of the observed business networks.

Data collection: In qualitative research, interviews are generally used as a methodology for knowledge production (Alvesson, 2003). Based on an interview topic guide (see Appendix) developed with the help of a literature analysis, eight qualitative interviews were conducted. The interviews lasted up to 60 minutes and were tape-recorded and transcribed in their entirety. Quotations from the interviews are translated into English and used to exemplify the results in section 4; the interviewees were anonymized and labelled by using capital letters and numbers (cf. Table 2). In addition, secondary data was collected from publicly available reports, internal company documents, web sites, and newspaper articles.

² "NETs.werk" can be translated as "network".

³ "Regionalwert AG" can be translated as "regional value public limited company".



Table 2: Case characteristics

Attributes	NETs.werk Hörsching	RWAG Freiburg
Location	Linz, Region Upper-Austria, Austria	Freiburg, Germany
Start of operation	2014	2007
Scope	Production and online distribution of organic food products and groceries to support local farmers	Investment in and facilitation of companies producing, processing, and distributing organic food products
Number of independent companies in the network	36	25
Respondents	Farmer (F1), CEO (C1), Logistics service provider (L1, L2)	CEO (O1), three network companies (U1, U2, U3)

Coding and data analysis: Due to the complexity of qualitative interviews, careful interpretation of the interview results is necessary to analyze to which extent the findings serve the research purpose (Alvesson, 2003). Therefore, the transcripts were analyzed by using a qualitative content analysis approach (Mayring and Fenzl, 2014; Schreier, 2014). To ensure methodological accuracy, the content analysis of the interviews was carried out in a structured manner by deductively using the business model canvas system adapted from Osterwalder and Pigneur (2009), Boons and Lüdeke-Freund (2013), and Upward and Jones (2016), (Mayring and Fenzl, 2014) (see Figure 2). Thus, the structural dimensions of cost structure, customer relationships, customer segments, distribution channels, ecosystem services, governance, key activities, key partnerships, key resources, natural capital, stakeholder, revenue streams and value proposition were chosen to code the interview transcripts. In terms of internal validity, the transcript coding was performed by two researchers, also ensuring intercoder reliability. The results of the deductive analysis can be found in the sections 4.1 and 4.2.

Comparative analysis and triangulation: In a second step, the results of the coding were analyzed inductively with a comparative process. Following Mayring and Fenzl (2014), the steps of clustering themes, determining the level of abstraction, and iteratively building new analytic categories were executed. To ensure external validity of the comparison, a triangulation with the literature was conducted, as suggested by Riege (2003). To further strengthen the external validity, multiple expert workshops were carried out to discuss the results with other researchers. The results of the inductive, comparative analysis can be found in section 4.3.



Figure 2: Deductive coding scheme

Ecosystem Services	Key Partnerships	Key Activities	Value Proposition	Customer Relationships	Customer Segments
Natural Capital	Governance	Key Resources		Distribution Channels	Stakeholder
Cost Structure			Revenue Streams		

Source: adapted from <http://www.flourishingbusiness.org>

4 Case analysis

For this contribution, we carried out an in-depth analysis of two cases of food production and distribution networks in Austria and Germany. All network companies intend to extend the production, processing, and distribution of local food in a coordinated manner. In addition, the cases focus exclusively on organic food products. In the following, the networks and the intermediary enterprises that govern the networks are described and analyzed. The analysis follows the deductive coding structure as presented in Figure 2. The cross-case analysis of the interview data is presented in section 5.

4.1 NETs.werk Hörsching

The food cooperation NETs.werk is an association with the mission to facilitate sustainable consumption patterns (<https://www.netswerk.at>). To do so, NETs.werk runs an e-food online platform to distribute locally produced organic food from small farmers in the Linz region in Austria. So far, customers order once a week via an online shop and pick up their order at one of the NETs.werk



branch offices by themselves.⁴ To drive the environmental performance in the last mile distribution, NETs.werk started collaborating with a local logistics service provider to offer a direct delivery service operated by electric vehicles. In this line, the intention is to acquire new customers, increase the service quality and decrease CO₂ emissions by avoiding single consumers' car rides and bundling the goods flow. Accordingly, NETs.werk governs the supply network through logistics and technological coordination and achieves positive environmental effects by integrating cleaner technologies. This partnership can be considered as logistics coordination of the network.

"Right now, [...] the products are transported [...] by the farmers themselves. Then the products are commissioned and put into boxes. Afterwards every Thursday, Friday and Saturday 80 to 100 customers drive to the NETs.werk branch offices with their own car to pick up their boxes - worst case. Hence, the sustainability of the product [...] is gone."
(F1)

Besides the organic products themselves, the value proposition accordingly includes a local and sustainable delivery service allowing an expansion of the consumers' catchment area. Key activities to run the NETs.werk distribution network are the processing of the customer orders including payments, the temperature-controlled transportation of the goods as well as the management of the returned packaging.

"The focus of the logistics service provider is clearly sustainability. Therefore, they encourage the electrification of their vehicles, also because consumers who particularly buy organic and sustainable food will require this. Hence, the mode of the delivery is very relevant." (C1)

Customer segments are people who work full-time and have limited time for grocery shopping (e.g. young and employed parents) as this segment needs to plan their shopping activities and is often sensitive towards health and sustainability related issues. Future customer segments are expected in business-to-business supply of restaurants, kindergartens, and nursing homes. Although the customer interaction while ordering is automated, NETs.werk builds personalized customer relationships via the drivers of the electric vans to offer additional customer services such as claim and retour management. To avoid anonymity and increase the transparency of the local farmers' production network, farm festivals are regularly organized, and a rating system will be installed on the online platform.

⁴ In this line, NETs.werk follows a Click & Collect approach.



"This is also a possibility to win new customers. Therefore, we deliver on demand [...] a low-carbon, organic product." (F1)

"You need to communicate the benefits of fewer CO₂ emissions which result from the bundled delivery to the customer." (C1)

Key partnerships of NETs.werk are the local farmers and Schachinger Logistik, a local logistics service provider who can combine the afternoon business-to-customer food deliveries with a business-to-business parcel delivery service in the morning. Hence, the logistics service provider is able to reduce operational costs per delivery by increasing the usage of the electric vans. In general, important key resources in the distribution network are the human resources, existing logistics infrastructure (such as trucks and warehouses) as well as NETs.werk's information and communication technology (ICT).

"NETs.werk wants to cooperate for transportation with Schachinger [...] while commissioning and warehousing stays with the farmers." (L2)

"Schachinger Logistik is part of the DPD network in Austria. [...] Therefore, more or less every B2B [business-to-business] parcel delivered in Upper and Lower Austria is done by Schachinger. [...] In the end, it is about conducting B2B deliveries in the morning and [...] B2C [business-to-customer] deliveries in the afternoon because the probability that the customer is at home is higher." (L1)

To operate this infrastructure, the main variable cost related to the energy consumption of the electric vehicle, driving and picking personnel and running the online platform while fixed costs are mainly related to investments into logistics and ICT infrastructure. According to the financial model, revenue streams are generated by charging the customers for a part of the delivery costs and co-financing the delivery service from the product margin.

"Delivery costs of 1.90€ are easily acceptable for the consumer to pay. 3€ is much harder. When you look at yourself, you don't want to pay 3€ for dispatch and delivery [...] but 1.90€, particularly when you order products for 40 or 50€, that's okay." (L2)

To summarize the NETs.werk case, Figure 3 depicts the single business model elements.



Figure 3: Sustainable business model canvas NETs.werk

Ecosystem Services <i>organic food production</i>	Key Partnerships <i>Logistics service provider, integration with other services of the provider</i>	Key Activities <i>low-carbon delivery service, certified organic production</i>	Value Proposition <i>low-carbon delivery service, certified organic production</i>	Customer Relationships <i>automated while ordering, personalized while delivering</i>	Customer Segments <i>people who work full-time and have limited time for grocery shopping, intention to extend further</i>
Natural Capital <i>delivery service operated by electric vehicles</i>	Governance <i>logistical and technological integration</i>	Key Resources <i>logistics infrastructure and ICT</i>		Distribution Channels <i>online distribution (parcel delivery, Click & Collect)</i>	Stakeholder <i>integrated stakeholder approach, intended to extend further</i>
Cost Structure <i>energy consumption electric vehicles, driving and picking personnel, online platform, investments into logistics and ICT infrastructure</i>			Revenue Streams <i>delivery costs are partially charged, partially financed by the product margin</i>		

4.2 Regionalwert AG Freiburg

RWAG was founded in 2006 and began its operation in 2007. By following the concept of a public limited company - without being listed at the stock exchange and mainly relying on local and regional citizens to buy shares of the network - RWAG strives to show the societal and ecological importance of locally produced and distributed certified organic food products (<https://www.regionalwert-ag.de>). It governs 25 companies along the supply chain financially or with organizational advice and strategically connects these companies in a regional network. Therefore, RWAG's main scope is "the participation (and share of capital), the support and foundation of companies in the field of ecological farming, forestry and wine agriculture. Also, the retail and wholesale trade sector in these fields and the food sector in the region of Freiburg should be enhanced with ecological goods" (Regionalwert AG, 2014, p. 41).

RWAG can be considered an intermediary between the network companies which are either partly owned by RWAG or licensed partners without financial involvement. For the co-owned companies, RWAG is becoming more than an intermediary but rather a strategic parent organization. This partnership can be considered as financial coordination of the network. In sum, RWAG's value proposition:

- promotes certified organic food production and consumption and offers social and ecological returns to its mainly local stockholders and the region,



- offers potential financial return to its stockholders with the premise that all social and ecological goals are achieved,
- promotes the exchange between different companies along the value chain of certified organic food and their ability to work together,
- supports entrepreneurs in planning and financing their businesses in the certified organic food sector (production, processing, wholesale and retail) as land and equipment are capital-intensive,
- and creates awareness for the different benefits of certified organic food production besides monetary gains, such as ecological and social criteria.

"I hope to be able to have a 'perfect' balance sheet in five years. A balance sheet with all the information one needs – whether social, ecological, regional-economical, or financial. [...] We hope to have new tools in accounting as well, in order to be able to track those improvements." (O1)

While the network companies and licensed partners are also recipients of RWAG's value proposition, RWAG's customer segments are very heterogeneous, mostly due to the network organization. We understand the RWAG head-company as a hub for innovation, being the central actor in the network. Thus, its customers are primarily the particular network member companies that use the RWAG's services. Accordingly, the RWAG itself only holds shares of the network partners but does not engage with final customers on its own. End customer relationships are only indirectly addressed through the network companies: The network's products are distributed to consumers in the region either via supermarkets stocking RWAG products, via restaurants run by the RWAG, via delivery services or on farmers' markets. Interestingly, none of the network members relies completely on the RWAG network members, but especially the businesses on the first steps of the value chain – the ones in the agricultural sector – argue that RWAG is good to reach out to business customers.

"These customers are our most important customers. The "Frischkiste"⁵ is our most important customer. Since last year, even Naturkost Rinklin [a wholesaler] is part of RWAG. This was the last really important customer that didn't use to be a part of RWAG." (U1)

RWAG has developed a unique financial model adapted to their business model. RWAG holds the majority of every network member that is co-owned by RWAG. Accordingly, these companies do not bear the entire economical risk themselves

⁵ The "Frischkiste" is a delivery service of locally and organically grown goods. Their products are distributed to the door of each customer.



and can seek practical and additional financial help from RWAG. RWAG's financial capital stems from registered shares with restricted transferability that are mainly sold to private people in the region⁶. This makes RWAG an organization carried by mostly private actors and requires a high degree of transparency that is reflected in how figures are made public.

"We have grown a lot in the region in the last couple of years. The retailers, for example a supermarket [...], they have tripled their economic turnover in five years, compared to their foundation. This is just one example. [...] Even if you look at all network partners in one, the income is increasing, I think it is 17 per cent; some single ones are increasing their turnovers by 30 to 40 per cent. And these are important effects." (O1)

Concerning the supply chain, the RWAG is the central strategic actor in the network, while others – like the Regionalwerk UG – are the key to network cooperation by organizing workshops and spaces for network members to meet and get in touch. Its key partners in the sense of human and physical resources are mainly the businesses within the network. All companies along the supply chain are important, even though some might be more central to the network than others (e.g. the producing partners; U1). A key activity for the network is, in addition, the administration of RWAG itself. They assist the network companies not only with capital but support the businesses especially in strategic questions and help to create future visions for them. In terms of financial resources, the RWAG's shareholders are crucial. They are essential for the business model to work because their investments are securing the RWAG's financial opportunities.

To summarize the RWAG case, it is important to keep in mind that every partner, member or customer might have changing roles for the value proposition through the different key activities mentioned, as well as for other categories mentioned in the business model. This role depends on the perspective of the actor and on the activity in question and enforces the understanding of a network of companies working together, with the RWAG itself being the network's hub.

To summarize the RWAG case, Figure 4 depicts the single business model elements.

⁶ The price for one share has differed between the last rounds of increase in capital. In 2016, one share was sold for 500 €.



Figure 4: Sustainable business model canvas RWAG

Ecosystem Services <i>ecological farming, forestry and wine agriculture</i>	Key Partnerships <i>network members</i>	Key Activities <i>organizing network and stakeholder dialogue, assisting in development of businesses strategies</i>	Value Proposition <i>financial and organizational support for certified organic food production, processing and distribution</i>	Customer Relationships <i>private and network meetings with member companies</i>	Customer Segments <i>network companies (customers because they use services and funds, only indirect engagement with end consumer)</i>
Natural Capital <i>measurable societal and ecological benefits</i>	Governance <i>financial integration to govern most parts of the supply chain</i>	Key Resources <i>relational resources, financial resources through the shareholders</i>		Distribution Channels <i>online and stationary retail, restaurants (network members)</i>	Stakeholder <i>integrated stakeholder approach for stockholders, key partners, and end customers</i>
Financial Model <i>shift from a company-specific perspective to a more regional and holistic value chain and network-perspective: RWAG holds majority of every network member, sharing the economic risk across the network</i>					

4.3 Analyzing driving factors for sustainability

As the main aim of this study is to compare successful business models while using the sustainable business model framework adapted from Boons and Lüdeke-Freund (2013) (see Figure 1), driving factors and specific characteristics were identified which promote sustainability, transferability and scaling of these regional business models (see Figure 5). Analyzing both cases, the use of local resources has the potential to extend a conventional to a more sustainable value proposition, particularly in the food sector (Kneafsey, 2010; Collits and Rowe, 2015). In the case context, the investigated businesses include additional logistics and financial services in their value proposition. Accordingly, intermediary organizations within the networks can coordinate sustainable production and consumption patterns through these services.

With regard to the empirical findings, sustainability benefits can be leveraged through more professional operations resulting from logistics, technological and financial integration, for instance through standardizing procedures while keeping personalized relationships as well as extending the value proposition toward offering more sustainable last mile alternatives in the NETs.werk case. Here, more efficient operations in line with a lower ecological footprint due to regionalization result from shorter distanced and generally less complex supply networks, potentially leading to a lower energy consumption, fewer CO₂



emissions, or a reduced water footprint amongst other positive benefits for sustainability (Hudson, 2007).

Another argument often used for regionalization is the support of local or regional value chains leading to positive impulses for regional economic development (Wiskerke, 2009) and strengthening the regional economy through stronger intraregional communication within the networks (Paloviita, 2010). In terms of financial coordination within local food supply chains, the cases provide evidence that products and services can become more competitive compared to conventional and globalized food supply chains, in particular through sharing economic risks and co-evolving of the supply chain partners. For example, the RWAG case fosters cooperation and exchange among the network members to build and keep (social) capital within the region.

The cases also have shown that there seem to be limits to the scalability of the mentioned effects since the number of producers and retailers in a certain region is limited and thus represents a hurdle for expansion. Within the observed cases, potentials for sustainability deriving from financial and technological coordination of local food production and distribution networks still show room for further (green) expansion, for instance by increasing the number of member companies and citizens in the RWAG case. However, the business cases indicate that logistics and financial supply chain services generally represent a driving factor for leveraging sustainability potentials in the investigated business cases. Here, supply chain services and the related infrastructure of network integrators demonstrated their relevance for the acquisition of new customer segments as well as to scale up (sustainable) businesses while contributing to necessary critical market shifts. Measurable effects in quantitative terms of sustainability benefits, such as CO₂ emission reduction and generally higher resource efficiency, are enabled by the stronger network integration and coordination of small scale farms and production sites. Further effects on social sustainability are enabled through integrative co-evolution between production and (partly new) retailing structures as well as stakeholder-tailored business strategies to decrease (sustainability-related) risks and to build new (knowledge-based) capabilities. Accordingly, the investigated driving factors extend current empirical knowledge about local food networks. To summarize the findings from the NETs.werk and RWAG case, Table 3 names the new analytic categories derived from comparing the single sustainable business model elements.

To conceptualize these factors, a sustainable business model framework is constructed informing the sustainable business conception developed by Boons and Lüdeke-Freund (2013) in the context of local food businesses. Figure 5 depicts the conceptual sustainable business model accordingly.

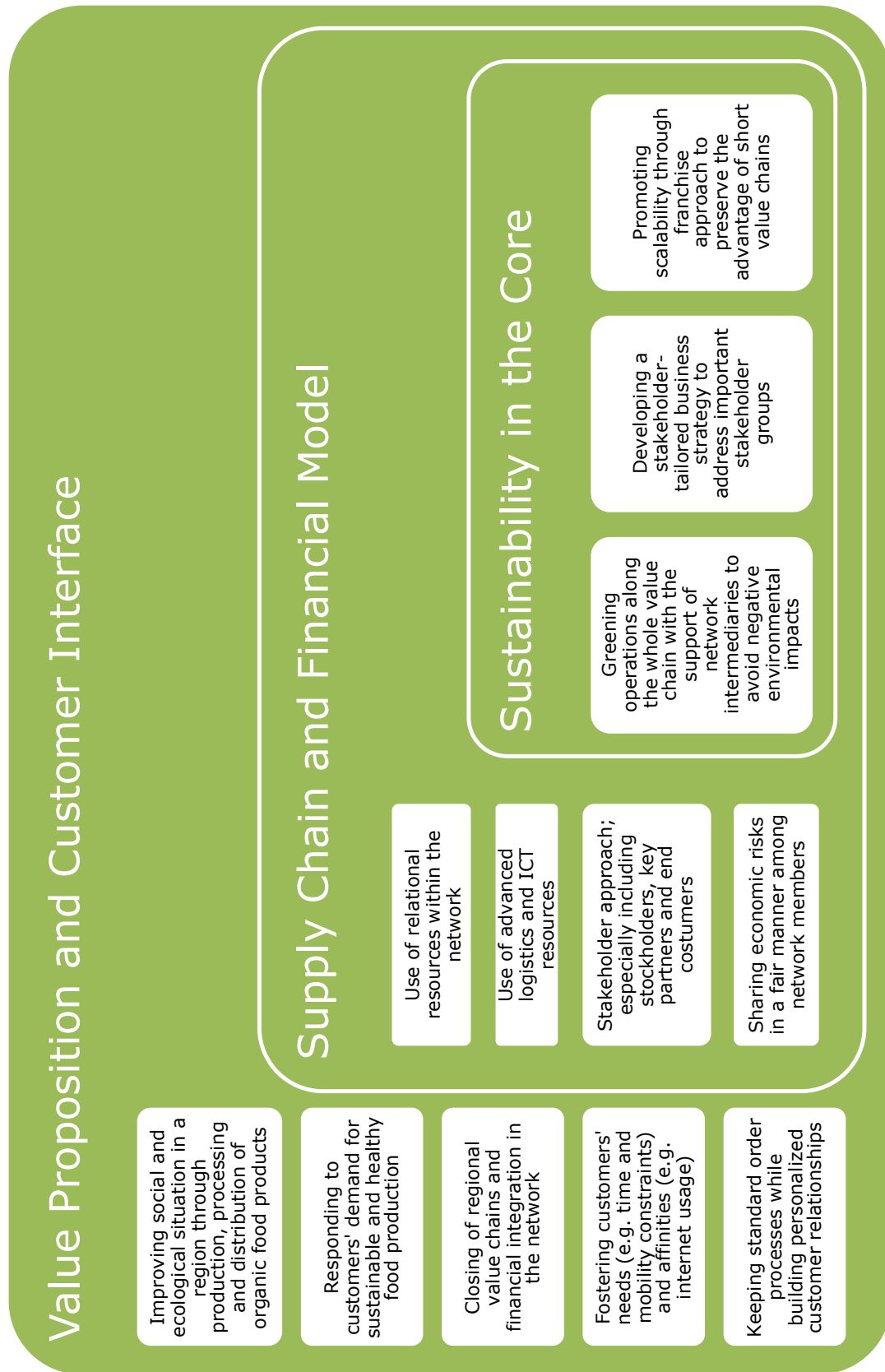


Table 3: Driving factors for local food networks

Analytic category	NETs.werk Hörsching	RWAG Freiburg
Extending the value proposition towards additional services	Logistics service: Providing additional infrastructure to implement a new distribution channel.	Financial services: Supporting entrepreneurs in financing their businesses and cooperating in a local network; one of the foci is on succession of farms.
Personalization of operational processes	Providing additional customer services such as claim and retour management.	Network members meet four times a year for personal exchange (also for initiation of business cooperation).
Efficient and green operations with the help of network integrators	Service provider Schachinger as network integrator: consolidating and bundling of goods flows with the help of e-vans, increased resource usage through extending an existing service; NETs.werk as network integrator: access to advanced ICT.	RWAG as network integrator: access to financial resources through RWAG (production or use of organic products as precondition).
Co-evolution with local partners	Cooperation with local logistics experts.	Cooperation and exchange mainly with partner companies.
Sharing supply chain costs and risks among network members	Charging customers for a part of delivery costs and co-financing the delivery service from the product margin.	Diversified investments into the network companies help to reduce risks; a scheme for profit redistribution among members is planned.
Scalability on local level	Limited number of local farmers limits growth on the supply side, therefore there is only the possibility of multiplying the business model in other regions.	Through regional growth, diversification, and financial investments RWAG is able to increase the number of network member companies.
Investments in infrastructure	Use of Schachinger's existing infrastructure, higher volumes are necessary to build independent logistics infrastructure.	High investments are financed through profit sharing or new rounds of capital increase.
Acquiring new customer segments	Business-to-business customers such as restaurants, kindergartens, and nursing homes.	Through new rounds of capital increase, citizens in the region can become shareholders.



Figure 5: Conceptual sustainable business model framework for local food networks





5 Discussion

In this study, we were able to construct an example for a possible sustainable business case by analyzing two networks with a business case closely connected to particular ideas of sustainability. Thus, we could show that a sustainable business case needs to be approached in a systematic manner. In this sense, the present study is generally embedded in the research stream of Supply Chain Coordination (SCC) as coordination and planning between several entities of a supply chain take center stage in this research. Skjøtt-Larsen (2000) defines SCC as coordinated collaboration between several companies in a network to share opportunities and risks, using an integrated planning based on a common information system. Similarly, Simatupang and Sridharan (2002) see SCC as a collaboration of independent companies to operate more efficiently as if operations are planned and carried out separately. In this context, Kanda and Deshmukh (2008) provide an SCC classification model where specific coordination mechanisms are described. With regard to these SCC mechanisms, they distinguish between contractual coordination, coordination through information technology, coordination by information sharing, and joint decision making. So far, the related literature highlights how effectively coordinated relationships can help manage potential economic supply chain risks (e.g. Scholten and Schilder, 2015). Therefore, logistics and financial coordination practices used to have a supportive role to primary functions such as purchasing, manufacturing, and sales in conventional business models (Halldorsson and Skjøtt-Larsen, 2004). Although the definition of logistics services has been expanded in the last years to also cover warehousing and transportation activities, purchasing, distribution activities, inventory management, packaging, manufacturing, and even customer service (Bowersox and Closs, 1996), they are still often analyzed from a purely economic point of view aiming to achieve competitive advantage (e.g. McGinnis et al., 2010). However, the necessity for logistics, technological and financial coordination capabilities to facilitate sustainable practices and businesses are coming to the fore as concerns for environmental and social issues within the society and at consumer side rise. Consequently, these capabilities can be interpreted as a key determinant for sustainability in supply chains.

Including the extended sustainable business conception developed by Boons and Lüdeke-Freund (2013), drivers to further promote economical, ecological and social sustainability in local food networks were identified on three main levels of the business model, in particular on the very core of the business model, its downstream SCC as well as its upstream customer orientation. With regard to downstream SCC through technological, logistics and financial integration (cf. Vachon and Klassen, 2008), the present study could show that such forms of collaboration do not just lead to a higher environmental performance, but also contribute to the social dimension of sustainability. With regard to upstream



customer orientation, service innovations play a major role in extending the value proposition of local food networks. In accordance to Kandampully (2002), three characteristics for service innovation promoted by SCC could be observed: (i) technology; (ii) knowledge; and (iii) relationship networks. The knowledge sharing and co-evolution of the supply chain partners was enabled through deploying ICT technology in the Nets.Werk case and through setting up a separate company in the RWAG case that i.a. is responsible for the personal exchange within the network. Hence, the central intermediary companies in the investigated cases do not just place considerable importance on relationships and networking downstream, but also upstream the supply chain to enhance customer satisfaction and firm performance. Tackling the core of the observed sustainable business models, green process improvement could be achieved through redesigning structures and relationships, in the Nets.Werk case particularly in the last mile. Moreover, social benefits could be achieved through incorporating stake- and shareholders in operational business activities, and vice versa motivating farmers as well as retailers to become shareholders of the network, in particular in the RWAG case. Accordingly, the creation of logistically, technologically and financially integrated networks improves the current business paradigms of local food networks by numerous green and social benefits such as the achievement of greater process efficiency, increased customer satisfaction, better strategic planning, as well as more flexibility and adaptation to market changes.

Highlighting these possibilities and the three core characteristics for service innovation discussed above, this work also shows the importance to shed light on communicating sustainability benefits. Sustainable supply chains need to be managed well internally – and thus well-communicated – and they need to be recognized externally as well. Lüdeke-Freund (2014, p. 311) was able to show that reputational effects were “the most important driver but also the most complex and hard to manage one”. This refers mainly to external communication, forming the basis for reputation. There are numerous approaches to external communication of social and ecological engagement: Rupper-Winkel et al. (2017) published a brochure presenting the possible ways to communicate social and ecological measures externally. Amongst them are brands, sustainability reports and the usage of social media. Their usage is vital to get recognition for the actions taken and this might also be of importance for companies moving towards sustainable business models, because also their benefits need to be recognized. The academic debate in this regard is still only beginning and offers gaps for future research.

The same is true for internal communication. Companies operating with sustainable business models – just like the two network examples discussed in this paper – need to reinforce the values and norms incorporated in the business model. At the same time, the employees need to recognize the business model themselves and reinforce its authenticity. Therefore, also the communication



internally is central for sustainable business models. Also this aspect is highly under-researched. One possibility to approach this gap would be, again, to turn to literature on CSR communication, such as Stehr and Struve (2017).

Besides the lacking focus on communication in the literature discussing business models, the present study also shows that the benefit of SCC also has limits when it comes to scaling local food business. Although a sufficient integration and coordination of decentralized production entities can promote growth, the present study sees further expansion potentials in the observed cases rather in multiplying in other regions on the producer and distributor level as well as improving efficiency in their (small scale) logistics.

6 Conclusion and outlook

So far, only a minority of local business cases reaches international benchmarks of the food branch, since most local food production networks still operate in a niche and often lack integrated logistics and ICT designs, and related skills to a large extent (Bosona and Gebresenbet, 2011). Hence, necessary logistics and financial capabilities can help local food networks to achieve a higher sustainability performance by leveraging the companies' embedded sustainability potentials in their core business. Moreover, a sufficient coordination facilitates necessary investments in infrastructure and more innovative distribution channels, increasing the competitiveness against conventional food supply chains.

In addition, trends in various other industries parallel to the food sector show a tendency towards decentralization and a strong need for integrated and consolidated services on the operational levels of the supply chain, particularly with respect to future sustainable economic systems and transition pathways. However, how far the role of decentralization accompanied with logistics and financial coordination can be transferred into other branches (material and chemical industry, mobility services, fashion, electronic sector, etc.) is a matter for further research. The food sector shows a high potential for especially regional patterns of production and consumption, unlike other sectors, where such potentials might be much harder to implement.

Concluding the present study, it can be argued that SCC have a high relevance for small-scale local and organic food business networks to achieve up-scaling effects in regional markets. It was demonstrated that specific sustainable business model elements can effectively contribute to a sustainable value-added chain for the main interacting supply chain partners: local food producers, processing and distributors, network integrators and (responsible) consumers in a regional market. Accordingly, the study at hand shows that in particular logistics and finance can play a fundamental role in pointing out alternative operational modes in business models of a future green economy system, with respect to the content instigated in the food industry.



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Appendix (Interview Topic Guide)

1. Vorstellung des Interviewers

- Grund des Interviews, Rahmen (Geschäftsmodelle)
- Behandlung der Daten
- Bitte um Erlaubnis, das Gespräch aufnehmen zu dürfen

2. Infos zum Interviewten

- Um Selbstvorstellung bitten
- Seit wann im Unternehmen
- Welche Funktion im Unternehmen
- Berührungspunkte zur Nachhaltigkeit

3. Darstellung des Geschäftsmodells

- Beschreiben Sie kurz Ihr Geschäftsmodell und die damit zusammenhängenden Dienstleistungen.
- Inwieweit könnte das Geschäftsmodell innovativ sein?
- Anknüpfung zu bisherigen, anderen Geschäftstätigkeiten
- In wie weit kann auf vorhandene Infrastruktur, Kompetenzen o. ä. zurückgegriffen werden?
- Sonstiges Know-How und Kompetenzen?

4. Strategische Ziele

- Welche strategischen Ziele werden mit diesem Geschäftsmodell kurz- und langfristig angestrebt (z. B. Deckungsbeitrag, Diversifizierung, neue Kunden)?
- Wie wird die Zielerreichung gemessen?
- Ab welchem Volumen arbeitet das Modell kostendeckend?

5. Nachhaltigkeit

- Sehen sie soziale oder ökologische Wirkungen Ihres Geschäftsmodelle?



- Welche Vor- und Nachteile sehen sie hinsichtlich Nachhaltigkeit im Vergleich zu vorherigen Geschäftstätigkeiten (z. B. stationärer Handel)?

6. Kooperation

- Wurden Kooperationen eingegangen?
- Gibt es Kooperation mit Kunden (z. B. Sharing Economy)?

7. Szenarien/ Optionen

- Wieviele Kunden würden Sie benötigen, um in nachhaltigere Optionen zu investieren?
- Denken Sie, wenn Sie Ihr Geschäftsmodell auf nachhaltige Produkte begrenzen, es Ihnen einen Wettbewerbsvorteil gibt?

8. Chancen und Hemmnisse

- Welche gesellschaftlichen Trends nehmen Einfluss auf die Geschäftstätigkeit?
- Inwieweit nimmt auch Digitalisierung Einfluss auf Nachhaltigkeit?
- Welche Hemmnisse sind mit Ihrem Geschäftsmodelle verbunden, z. B. andere SC-Partner (z. B. schlechtes Nachhaltigkeitsimage)?
- Welche Chancen sehen Sie mit Ihrem Geschäftsmodell?
- Welche Chancen sehen sie hinsichtlich einer Skalierung/Multiplikation des Modells?
- Adaptierung des Modells für die Zukunft geplant? (z. B. Werbung, andere Lieferanten)

9. Abschluss

- Vielen Dank!
- Feedback, Erwartungen getroffen, noch von Ihrer Seite offene Punkte, die bisher nicht angesprochen wurden?



Das Vorhaben „Wissenschaftliche Koordination der Fördermaßnahme Nachhaltiges Wirtschaften“ (NaWiKo) wird gemeinsam von Ecologic Institut, dem Forschungszentrum für Umweltpolitik der Freien Universität Berlin (FFU) und dem Fraunhofer-Institut für System- und Innovationsforschung ISI getragen und koordiniert insgesamt 30 vom Bundesministerium für Bildung und Forschung (BMBF) geförderte Projekte zum Thema nachhaltiges Wirtschaften.