

HELPING BAKERY STRIK CONTRIBUTE TO A CIRCULAR ECONOMY



MAKING THE

FOOD WASTE

LOOP



BECAUSE WHAT GOES AROUND,
COMES AROUND



Master Thesis by Feline Hunink

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Faculty of Industrial Design Engineering
Msc Strategic Product Design
February 2020*



Delft University of Technology

HELPING BAKERY STRIK CONTRIBUTE TO A CIRCULAR ECONOMY

BY MAKING THE FOOD WASTE
LOOP 100% CIRCULAR

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PREFACE

With this master thesis, I finish the final phase of finally becoming an engineer. I will be the third family member carrying this title with pride, after my brother (TU Delft) and my dad (TU Eindhoven). I want to thank STRIK for giving me the space and time to graduate on something that is important to me and interests me deeply, sustainability, while being able to apply it to an organisation like STRIK. While many people have asked me why a TU Delft student would want to work for a bakery, I hope that with this thesis and with the things I am planning to do for STRIK in the future, I can show everyone that the things you learn during the IDE program can be applicable everywhere, in big companies, in small companies and even at a local bakery like STRIK.

First, Jan and E.J., thank you both for the efficient coaching sessions we have had during the last 6 months. You have kept me focused and got me back on track whenever the overwhelming feeling of 'wanting to solve every problem' was taking over.

Maurits en Jacqueline, thank you for always having your doors open for me to ask questions. I know it was a busy and stressful period, and I think we are all glad that I will finally be available for all of those things we couldn't work on these last couple of months. Thank you for

giving me the time and space whenever I needed it and for trying to not put too much other weight on me, especially during the last 2 months.

I also want to thank my Mom and Dad. Despite the distance, you have always supported me with every decision I made. But most importantly, thanks to you I was able to fully focus on my education these 5,5 years. I cannot say IDE has always been a stroll in the park, which you may remember halfway during the first year of the Bachelor's program, but you have done your absolute best to unburden me from any other loads than that of getting my degree. So thank you!

Thanks to all of my friends for making my time in Delft worthwhile and making studying a lot more fun at times.

And finally, I want to thank Roos. We have been through so much together during these 6 years, moving from Delft to Amsterdam to Den Haag and back to Nijmegen. Together we have managed to get already 4 degrees, but I am really glad that this fifth degree is the final one. I don't think I can handle writing one more thesis report. Thank you for helping me go through my meltdowns and giving up your weekends to help me with my thesis. I am looking forward to a future at STRIK, with you!

ABSTRACT

STRIK is a well-known bakery in Nijmegen and surroundings, with currently 3 pastry shops, 2 chocolate/ice-cream shops and 1 central bakery for storing and production.

CEO van Geenen possesses a passion and talent for entrepreneurship and an expertise in pastry-making, but little affinity for- nor experience with sustainability. With the upcoming laws and regulations, governments are pushing companies to move from a linear towards a circular economy. However, a lot of companies, especially those smaller and medium-sized enterprises, struggle with implementing sustainable innovations. Guided by the Revamped Double Diamond model, this project tries to find an answer to the research question being: "How should STRIK patisserie contribute to a Circular Economy, while at the same time creating additional economic value?", while sliding through phases of discovering, defining, developing and delivering.

In the first discovering & defining phase, the project finds areas of opportunity for economic, environmental and social value creating using the Triple Layered Business Model Canvas (TLBMC). Within these steps, amongst others, the company ecosystem is determined, just as a carbon footprint analysis was conducted to understand which are the most impactful categories in terms of greenhouse gas emission. Moreover, a company analysis leads to a list of implementation criteria in terms of 'must', 'should', 'could', and 'won't' criteria. The conclusions from the TLBMC and criteria were used to define the design

challenge of: "How can we make STRIK's food waste stream 100% circular while gaining economic and social benefits?".

In the developing & delivering phase, ideas were generated and evaluated, leading to three selected concepts of 1) an educational web-page about food waste; 2) a new product line made from wasted parts ; and 3) a partnership for anaerobic processing of food waste. These concepts are turned into 'minimum viable products' for testing the key metrics of desirability and viability. From the results can be implied that there is a high desirability and viability for concept 2, while concept 3 can assure 100% circularity, concluding a recommended perseverance of concept 2 (new product line from wasted parts) as a first step and concept 3 (partnership for anaerobic processing) as a future step. The focus is on rapidly bringing concept 2 to the market, so further detailing is done on concept 2 only, looking into the product, packaging, price and promotion.

In a final 'present & validate' phase, the solutions for helping STRIK contribute to a circular economy are presented. The first and most important step towards circularity is making new products from wasted parts and promoting these in a qualitatively, tasteful and story-telling way. The validation phase concludes that, in addition to the earlier tested desirability and viability, that the solution hits the innovation sweet spot, as it is considered feasible, viable and desirable.


The thesis ends with a 'discussion, conclusion & reflection' chapter.

READING GUIDE

Throughout the report, different elements are used to give the report more structure and to guide the reader through the different project phases. This section concludes how to best read the report. First, it is important to mention that the report should be read as a spread. Even though all pages are individual, there are some overlapping visuals, texts and images. Therefore, make sure to read the report as a spread with the even page numbers on the left and odd page numbers on the right.

Reading tip!

Read the report as a **spread** with the even page numbers on the left and odd page numbers on the right.



Phases

SUB-CHAPTERS

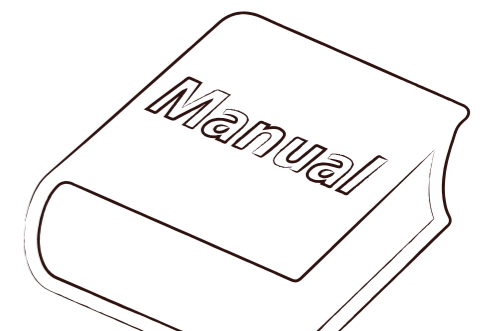
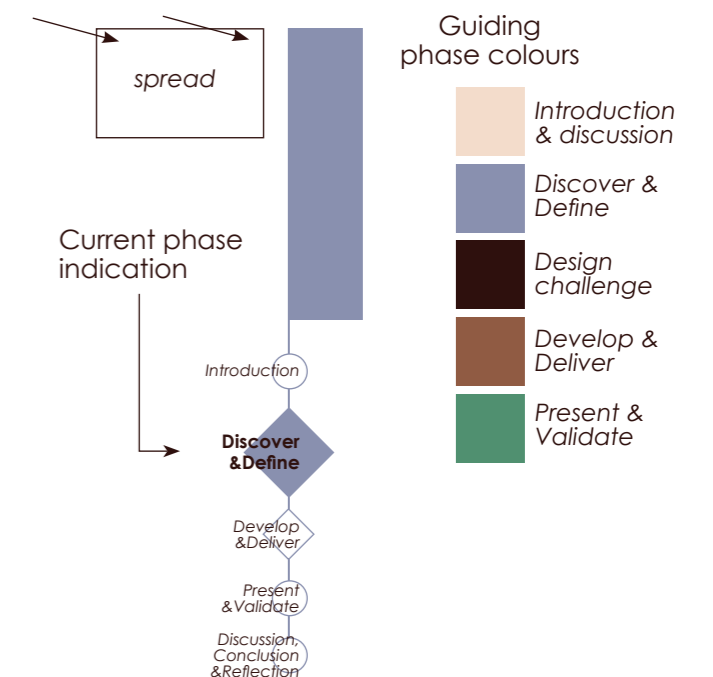
Report text
Key words

Quotations

CONCLUDING PARTS

HIGHLIGHTED PARTS

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LIST OF TABLES, FIGURES AND ABBREVIATIONS

LIST OF ABBREVIATIONS

BMC = Business Model Canvas
CE = Circular Economy
CEO = Chief Executive Officer
CF = Carbon Footprint
CO₂ = Carbon Dioxide
CO₂ eq. = CO ₂ equivalent
EMF = Energy and Material flow
GHG : Greenhouse gases (amongst which CO ₂ , N ₂ O, NH ₄ , etc.)
LCA = Life Cycle Assessment
kg = kilograms
Kwh = kilowatt hour
MVP = minimum viable product
NM3 = normal cubic meter
TLBMC = Triple layered business model canvas
TTW = tank to wheel
WTT = wheel to tank
WTW = wheel to wheel

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1-INTRODUCTION

Context, company introduction & approach

Introduction

Discover
& Define

Develop
& Deliver

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& Reflection

1.1-CONTEXT & THEORY

Despite the economic benefits the industrialization has provided over the previous years, the concerns about the negative effects that this industrialization has on our natural environment are significantly increasing (Dean&McMullen, 2007). Authors and scientists are arguing the likeliness of resource scarcity or restrictions on raw materials, energy and water due to emissions from the manufacturing and production of new products (Tennant, 2013; Brennan et al., 2015). In other words, we are in desperate need of sustainable development, known as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (Brundtland, 1987; Pacheco et al, 2010). It is therefore not surprising that nowadays policies, laws and regulations are changing to force not only companies, but also consumers to implement a more sustainable way of living. A recently often discussed strategy to address such sustainability issues in terms of material and energy efficiency is shifting from a linear mode of production towards a circular mode of production (Brennan, 2015; Geissdoerfer et al., 2017). In other words, shifting from a linear economy towards a circular one. This, because with population growth and the depletion of natural resources, the growing interest towards a circular business model has led to an increased perceived necessity of building towards a circular economy (Gafsi et al., 2006; Schwoob 2014; Chiaroni et al, 2018) mainly since the circular economy is

considered a promising approach to help reduce our global sustainability pressures (Bocken et al., 2016).

But what exactly distinguishes a circular economy from a linear one? While a **Linear Economy** "flows like a river, turning natural resources into base materials and products for sale through a series of value-adding steps", in a **Circular Economy** "the reprocessing of goods and materials generates jobs and saves energy while reducing resource consumption and waste" (Stahel, 2016). As from 1970, there have been multiple authors trying to define and understand the concept of Circular Economy (Andersen, 2007; Pearce & Turner, 1990; Stahel & Reday, 1976). There is the famous butterfly model from the Ellen MacArthur Foundation (2013), but also authors like Geng & Doberstein (2008), Yuan et al (2008), Webster (2015) and Bocken et al. (2016) added their own notions to Circular Economy in terms of material flows, closed loops and restorative design. Geissdoerfer et al. (2017) concluded that Circular Economy can be defined as a "regenerative system in which resource input and waste, emission, and energy leakage are minimized by slowing, closing, and narrowing material and energy loops". These existing definitions and perspectives formed the foundation of the model from Konietzko et al. (2020), concluding that the strategies that build towards a circular economy include **closing, narrowing, slowing** and **regenerating** resource loops. Figure 1

represents a visualized version of the model by Konietzko et al. (2020) with the explanation per strategy. The model follows an order in terms of strategy hierarchy, similar to that of the commonly used R-imperatives ladder (Jawahir & Bradley, 2016; Wu et al., 2014; PLO, 2019). The higher you climb up the hierarchy ladder, the less raw material is needed and the less our environment is polluted because of these raw materials (PLO, 2019).

Many authors have tried to understand the benefits of a Circular Economy from a **business perspective**. Geissdoerfer et al. (2018) mentioned that "the circular economy is based on the idea of putting private business into the service of the transition to a more sustainable system". Companies could considerably advance this transition by the creation of **additional value** that will both potentially benefit the society (e.g. increasing employment opportunities as according to Rizos et al., 2015) as well as create a competitive advantage from such missed, destroyed or neglected values (Geissdoerfer et al., 2016; Kramer & Porter, 2011; Nidumolu et al., 2009; Yang et al, 2016; Geissdoerfer et al., 2018). An effective tool to help companies reveal how they can create such additional value is by using the **Triple Layered Business Model Canvas** (TLBMC), in which the opportunities for implementing a circular business model can be explored (Joyce & Paquin, 2010). However, not only large organizations can benefit from adopting such circular business models. Small and medium-sized enterprises (SMEs) also see opportunity in following the circular economy model, allowing them to capture additional value from their products and materials,

while benefiting significantly from the economic opportunities in terms of saving materials costs, creating competitive advantages and reaching new markets (Ellen MacArthur Foundation, 2015; Rizos et al., 2015; Laubscher & Marinelli, 2014). And all of this simply by "reusing what we can, recycling what cannot be reused, repairing what is broken and re-manufacturing what cannot be repaired" (Stahel, 2016).

An important industry that is required to take action in sustainability is the **Food and Beverage Industry**, currently one of the largest industrial sectors of the Netherlands (Centraal Bureau voor de Statistiek, 2018c). Especially the small and medium enterprises (SMEs) within this particular industry can have a great impact, as these account for a large part of the national additional value and employment opportunities (Centraal Bureau voor de Statistiek, 2019). That SMEs within this industry are taking action shows, with new start-ups like 'in-stock', closing the food waste loop by cooking with wasted products from other restaurants, or 'too good to go', slowing the food waste loop by offering left-overs for a reduced price in their mystery boxes. Unfortunately, despite the possible number of benefits companies could achieve, **many are struggling with the implementation of circular strategies**, for reasons such as 'differences in mindset between the entrepreneur and the government', 'funding issues', 'the ambiguous definition of sustainability' or 'the overload of information but lack of practical action taking' (Wöstern, 2016). It is therefore that such SMEs are in need of guidance in order to contribute to a Circular Economy.

Introduction

Discover
& Define

Develop
& Deliver

Present
& Validate

Discussion,
Conclusion
& Reflection

Introduction

Discover & Define

Develop & Deliver

Present & Validate

Discussion, Conclusion & Reflection

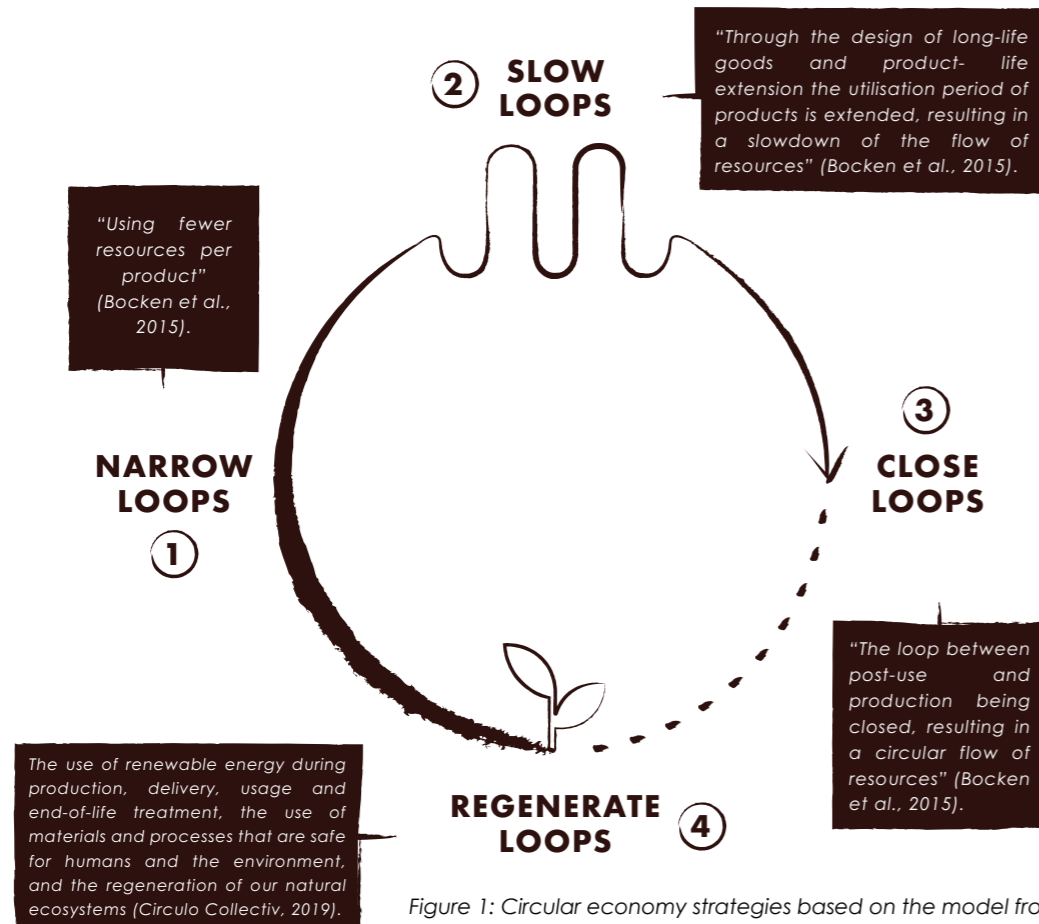


Figure 1: Circular economy strategies based on the model from Konietzko et al., 2020.

1.2-COMPANY INTRO

One of the SMEs struggling with implementing circular strategies is STRIK Patisserie. A local, well-known bakery in Nijmegen and surroundings with 3 pastry shops, 2 ice-cream/chocolate shops and 1 central bakery. Co-owner van Geenen is originally educated as a pastry chef and has developed a passion for entrepreneurship ever since he bought the company from at-the-time owner Piet Strik in 1991. Mr. Strik's father founded the company back in 1937 under the name 'STRIK - brood & banket' (*transl. bread & pastries*). Current owner Van Geenen decided to focus more on pastries than bread, while trying to expand not only with the business-to-consumer sales, but also the business-to-business sales. Within 28 years STRIK grew from a 600.000f

single-store bakery to a medium-sized, 6-store established company providing jobs for 30-60 employees and a yearly revenue of about ±2.7M Euros.

1.3-THE PROBLEM

Owner Van Geenen is a dedicated entrepreneur with a hard-working and profit-driven mentality. With this mentality he expanded his company significantly building mainly on his own resources and visions. However, the recent changes in laws and regulations around sustainability is challenging STRIK in ways they are not able to tackle with their available knowledge and assets. Currently STRIK is operating in a linear economy, in which materials are taken from nature and used to make products

which we consume and eventually dispose (Ellen MacArthur Foundation, 2015). With no further personal affinity-nor experience with sustainability and an additional lack of time, it is difficult for Van Geenen to invest in this area of sustainability. However, not only laws and regulations are pressing, but also a changing consumer's mindset is forcing STRIK to invest in this yet unfamiliar area. STRIK could significantly benefit from investing in strategies that build towards a Circular Economy, especially in terms of profitability (Ellen MacArthur Foundation, 2014). They simply need 'a little help'. It is therefore that this project focuses on the following research question:

1.4-RESEARCH QUESTION

"How should STRIK patisserie contribute to a Circular Economy, while at the same time creating additional economic value?"

The constructed **sub-questions** based on the company introduction and project context are as follows.

- 1) *What are the implementation criteria and opportunities that fit the company of STRIK?*
- 2) *What are the most interesting opportunities for the creation of (environmental) value?*

These sub-questions will determine the analysis and research methods.

1.5-PROJECT GOAL

Considering the defined problem and research question, the goal is to find a way to make STRIK shift from a linear economy towards a circular one while at the same time looking for ways to create additional economic value in doing this. To do this, the following sub-goals are determined:

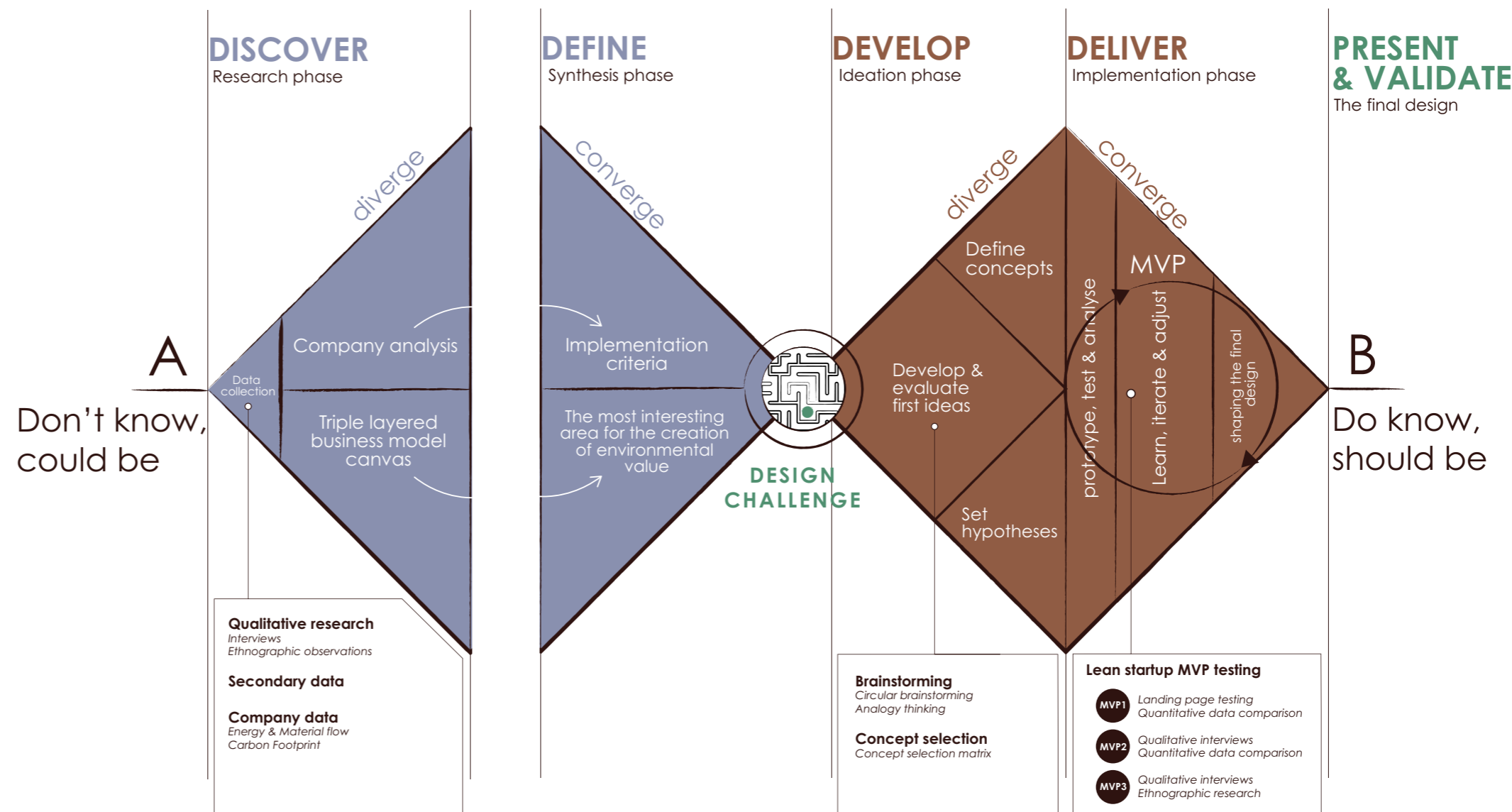
- 1 Company analysis:** what are the implementation criteria and opportunities that fit the company?
- 2 Value creation according to the Triple Layered Business Model Canvas:** what are the most interesting opportunities for the creation of (environmental) value?

With these sub-goals, the ideation phase will tackle the design challenge and find an answer to the main research question in terms of **finding suitable solutions for STRIK to engage in a Circular Economy.**

1.6-APPROACH & STRUCTURE

This project is guided by the Revamped Double Diamond (RDD) designed by Nessler (2016) based on the Double Diamond model from the British Design Council. This model tool provides designers, creative thinkers or project managers to set up, frame, organise, structure, run or manage design challenges, and projects through an agile approach of divergent and convergent design thinking (Nessler, 2016). However, as developer Nessler (2016) emphasized, one should always 'tweak the original recipe to your own needs and taste'. Therefore this model is combined using the 'lean startup' approach while testing and iterating upon ideas (Ries, 2011). The model for this project is represented in figure 2 and includes the following:

First, the methods of collecting data are discussed, after which the results are presented. To conclude, a list of implementation criteria describes what STRIK 'must', 'should', 'could', and 'won't' do, based on a company analysis. Additionally filling in the Triple Layered Business Model Canvas leads to opportunities for value creation in terms of economic, environmental and social value. The insights and conclusions of both outputs lead to a determined 'design challenge', followed by an ideation phase. Ideas will be rapidly tested and evaluated through an



This process is not linear, even though the report suggests otherwise. There have been constant iterations throughout the project, going back and forth from data to output.

iterative experimentation process using a 'lean start-up' approach. Then, the results and conclusions will be presented and validated in 'the final design'. To sum up, the 'don't know, could be' phase develops into a 'do know, should be' conclusion (Nessler, 2016) based on a 'lean design thinking' approach that combines the most promising aspects of two innovation strategies: design thinking and lean start-up (Müller & Thoring, 2012).

Figure 2: Project model based on the Revamped Double Diamond from Nessler (2016) using a 'lean design thinking' approach (Müller & Thoring, 2012)

1.7-METHODS

In order to answer the research question and the corresponding sub-questions, different methods were used throughout the design process. This section summarizes the total of methods used, while each used method per phase can be found at the bottom of figure 2.

The methods for data collection were chosen based on the underlying goals of finding the company's implementation criteria and filling in the triple layered business model canvas, as can be seen in figure 3. Therefore, **qualitative interview data** with the company's CEO's, **ethnographic field data**, **secondary data** and **company data** to conduct the carbon footprint analysis were collected.

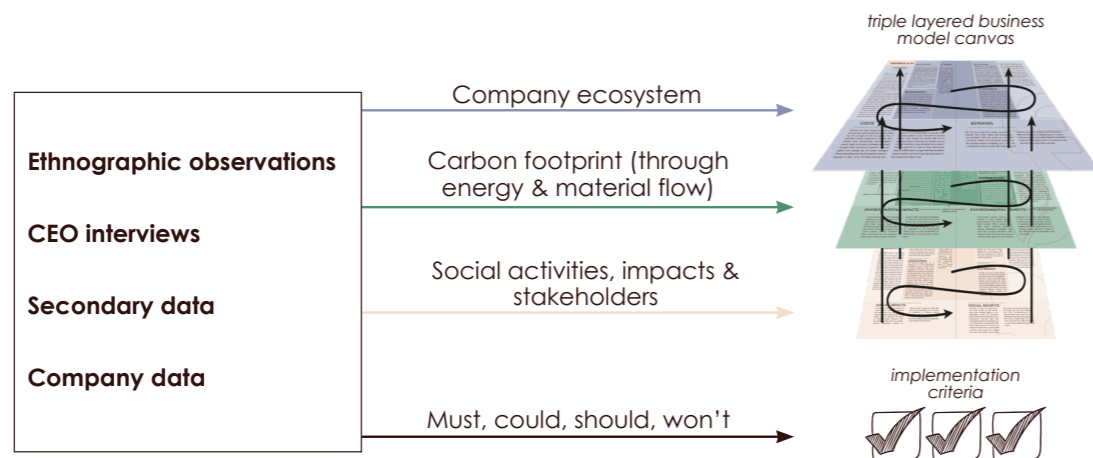


Figure 3: Methods selection foundation for discover & define phase

Based on the results and conclusions from these methods, the design challenge is defined on which ideation can build upon. The ideation is executed using different tools and techniques for creation such as **circular brainstorming** and **analogy thinking**. Ideas are selected through the **concept selection matrix** and tested using a **lean-startup approach**. Each concept is converted into a '**minimum viable product**' (MVP) and tested on determined key metrics of *desirability* and *viability*. Testing is done using different methods of qualitative and quantitative research, depending on the type of MVP. Concepts are adjusted and either pivoted or persevered based on the results. The final concept is further developed and presented, answering the initial research question.

How is trustworthiness assured?

Throughout the years several criteria have been explained to ensure rigor, known as trustworthiness, in qualitative research, as this type of research is very susceptible to biases (Morse, 2015). Strategies explained consist of **credibility** (internal validity), **dependability** (reliability), **transferability** (external validity or generalizability) and **confirmability** (objectivity). All of these together increase the overall trustworthiness of the research (ibid). Strategies of triangulation, member checks and peer debriefing are used to increase credibility throughout the report where necessary (Morse, 2015). With these methods, the researcher benefits from stepwise verification during the data gathering as this way the data corrects itself during the processes of collection and analysis (Meadows & Morse, 2001; Morse et al., 2002). The latter not only by using and comparing different sources of data for answering the same question (triangulation), but also by

regularly having the data checked by experts or managers (member checks). In case of unstructured interviews, a second interviewer was included in the data collection process for peer review debriefing. The qualitative interviews are not analysed using techniques of coding, which decrease the trustworthiness in terms of bias. However, the **qualitative interviews and observations are analysed using a deductive approach** in which the researcher builds categories in advance to the analysis to later on map connections in the data to the specific categories (rev.com, 2019). This deductive approach to qualitative research is used as the researcher already possessed a lot of knowledge about the organisation prior to the research. The categories determined prior to the analysis are based on the triple layered business model canvas and implementation criteria.

Then, as for dependability and confirmability, strategies of triangulation, inquiry audits and stepwise replication through diary- and note-taking templates are used (Morse, 2015). Ethnographic observations were conducted using templates such as AEIOU (Brenner et

al., 2016; Fitzpatrick, 2018) or self-made templates including a section for the running description, forgotten episodes, ideas and notes for further information use, personal impressions and feelings and methodological notes (Sangasubana, 2011). To deal with the 'pink elephant bias', which is the tendency for the researcher to see what is anticipated, the settings are entered with a neutral stance as much as possible (Morse & Mitcham, 2002). This means that pre-determined questions are kept as neutral as possible and the observer has tried to leave out assumptions and desired outcomes to the observed participants. The researcher tries to achieve transferability by decontextualizing and abstraction of emerging concepts and theory (Maxwell & Chmiel, 2014; Polit & Beck, 2012; Morse, 2015). This by specifically explaining each definition and strategy used with the application to the specific sector. At the end of the report a final chapter reflects on the methods and strategies that have been applied to ensure rigor throughout the research.

2 - Discover & Define

Throughout this phase, several analyses are conducted in order to answer the two sub-questions being:

What are the implementation criteria and opportunities that fit the company of STRIK?

What are the most interesting opportunities for the creation of (environmental) value?

As each analysis demands a different method, figure 4 explains again which methods are used in order to answer the sub-questions. This phase starts by explaining the methods of analysing after which the results and findings are presented. Conclusions are made in terms of implementation criteria and the most interesting opportunity for the creation of environmental value.

*It is important to mention that within this report, creating environmental value refers to **decreasing the carbon footprint** in terms of CO₂ emission.*

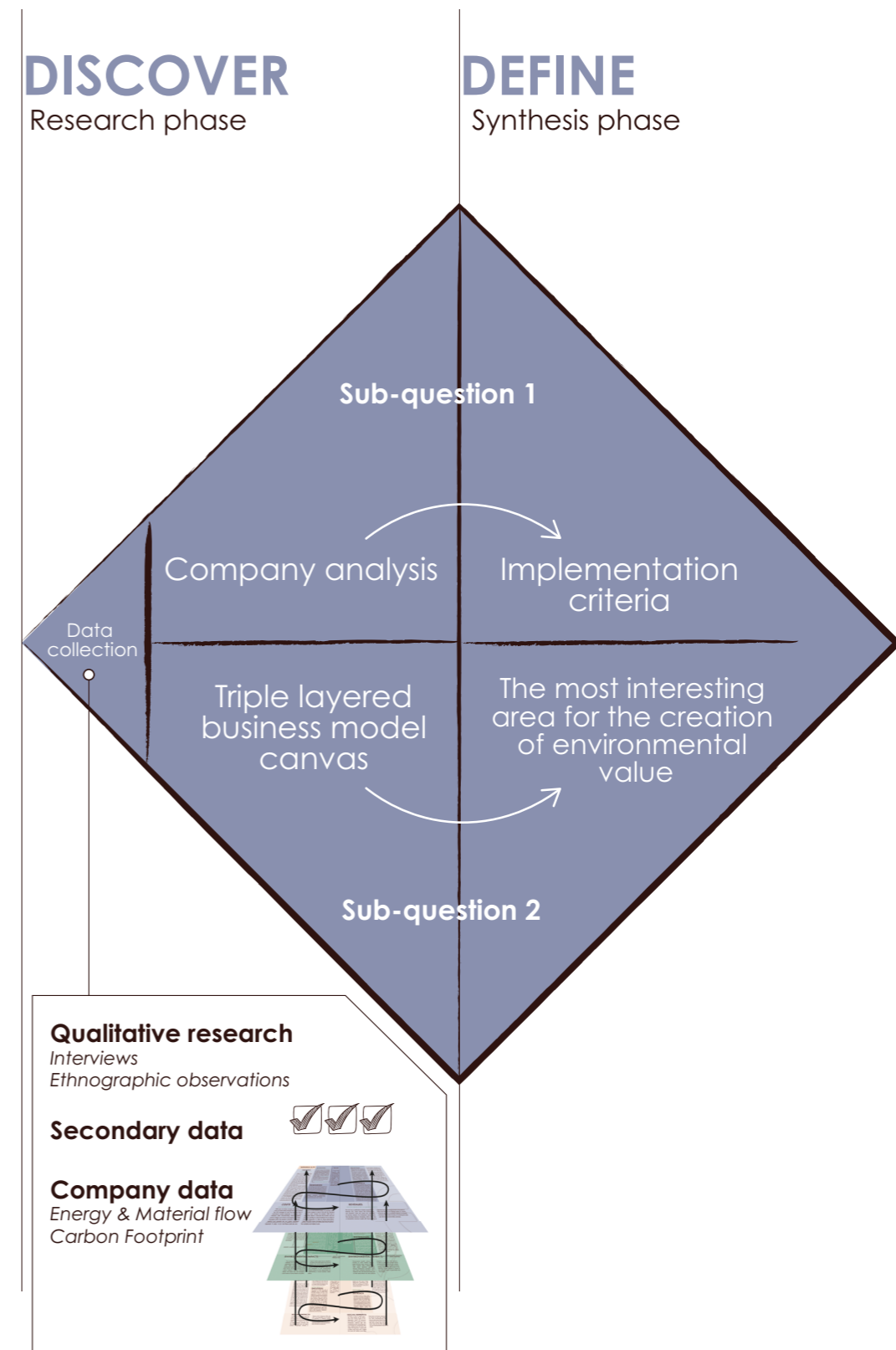


Figure 4: Discover & Define phase overview

2.1 - METHODS

2.1.1 DATA COLLECTION

As mentioned before, the Triple Layered Business Model Canvas (TLBMC) together with the implementation criteria (must, should, could, won't) were used as desired output of the collected data. Based on these the methods were determined and shaped. This means that from the desired output, the following **categories** were pre-determined as foundation for the qualitative research.

1 Must-, should-, could- and won't criteria

2 The company ecosystem (for the economic layer, including activities, stakeholders, channels, customers, relations, resources, partners, value and revenues)

3 The material & energy flow (for the carbon footprint analysis of the environmental layer)

4 The social activities and impacts (for the social layer, including social value, local communities, governance, employees, social impacts, social benefits, societal culture, scale of outreach and end-user)

Throughout the data collection, these categories are used as foundation for the specific observation themes, but also as analysing tool to code the qualitative transcripts.

It is important to mention that data collection was done in the central bakery in Malden and in every STRIK store, referred to as 'Ziekerstraat', 'Heyendaal', 'Wijchen' and 'Dukenburg'. However, during the data collection STRIK closed their store in Dukenburg. This means that some of the data will still include that of Dukenburg, but the solutions will focus on the three remaining stores only.

INTERVIEWS WITH CEO'S (N=2)

Two qualitative semi-structured interviews were conducted with the two co-owners of STRIK. Semi-structured interviews are appropriate here, as these allow for new issues to emerge for exploration (Saunders et al., 2007). The interviews were conducted through a general interview guide approach, which creates structure in the desired areas of information but still maintains a degree of freedom through semi-open ended questions (Saunders et al., 2007). The interviews are analysed using a *deductive approach*, coding based on the pre-determined categories. The analysed interview transcripts of both interviews can be found in Appendix 1-A.

FIELD OBSERVATION AND ETHNOGRAPHY

In addition to the interviews, a field observation and ethnography method was used, focusing on trying to find insights guided by the mentioned categories. Two different kinds of field observations were used, based on the pre-determined desired output.

A **first set of ethnographic observations** focused on work environment and employee tasks throughout the day in order to understand the habits, rituals, practices, patterns of interaction and other insider's perspectives (Saunders et al., 2007). For these ethnographic studies it is important that the researcher finds himself on-site or in a naturalistic setting in which real people live (Sangasubana, 2011). Moreover, ethnography is dialogic, as conclusions and interpretations formed can be given comments or feedback from those who are under

study (Sangasubana, 2011). Field notes or detailed descriptions should at least consist of a *running description, forgotten episodes, ideas and notes for further information use, personal impressions and feelings and methodological notes* (Sangasubana, 2011).

A **second set of ethnographic observations** was conducted with the aim of exploring the specific departments of STRIK amongst which the bakery, distribution and stores were analysed. This type of specific ethnographic research in a focused department demands for a somewhat different approach than the more exploratory ethnographic research of the first round. To deal with the 'pink elephant bias' (Morse & Mitcham, 2002), which is the tendency for the researcher to see what is anticipated, a specific framework was used to secure analysis structure (Brenner et al., 2016; Fitzpatrick, 2018). Guided by 'Activities', 'Environments', 'Interactions', 'Objects' and 'Users', the AEIOU framework increases validity and confirmability by providing an observational technique used to document contextual inquiries (ibid.). These observations were mainly conducted with the aim of understanding the organisational activities and the product journey, while this way trying to understand the **company ecosystem** and **energy and material flow** for filling in layer 1 and 2 of the TLBMC.

In a **third set of ethnographic observations**, STRIK's garbage was analysed. This was done by analysing the weekly store- and bakery garbage based on garbage

volume and weight. The reason for this is to complement the company data on the energy and material flow, specifically for the 'waste' section. All of the other elements for the energy and material flow could be collected from company data and qualitative research insights.

All of the ethnographic research output can be found in Appendix 1-B, again coded with the pre-determined categories.

SECONDARY DATA

Secondary data was used to support statistical data on customers and employees as a form of triangulation to complement the data from the qualitative research insights (Saunders, 2007). However, secondary data was also used to support the carbon footprint analysis, as the data provided the specific emission factors to calculate STRIK's emission from based on the conducted energy and material flow analysis.

COMPANY DATA

Company data was mainly collected for supporting the carbon footprint analysis in providing the necessary data to conduct an energy and material flow analysis. As there was little company data available, most of the data was collected from scratch. This means that evaluating which data to collect and use depends highly on the pre-determined categories. Most of the collected company data is turned into the **energy and material flow** for layer 2 of the TLBMC. In-text will be referenced to the company data where applicable.

2.1.2 CARBON FOOTPRINT ANALYSIS

The main goal of the second (environmental) layer of the TLBMC is to understand where the organisation's biggest environmental impacts lie, this way providing insights for where the organization could focus their attention on when trying to implement environmentally-oriented innovations to reduce such impacts (Joyce & Paquin, 2016). As there is no prior data available about STRIK's usage or emission, the environmental impacts need to be determined. This can be done from several perspectives (Joyce & Paquin, 2016). Even though an LCA approach focusing on the environmental impact assessment at the macro, meso and micro levels is suggested (Joyce & Paquin, 2016), this project will use a carbon footprint (CF) approach, as this method is easy to use, understandable for non-expert readers and suitable when there is little to no prior company research done about

sustainability or the necessary data can be difficult to collect (Elia et al, 2017). The carbon footprint analysis is conducted calculating the greenhouse gas emission in terms of a CO₂ equivalent. This means that all greenhouse gases including carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF₆) are considered, while expressed in a concluding carbon dioxide equivalent (CO₂eq) to compare within and between categories.

In most cases previous research has already concluded generalized '**emission factors**'. Whenever these factors are multiplied by the corresponding unit (magnitude depending on company usage) the resulting CO₂ equivalent is derived (e.g. the emission factor for grey energy is 0,649 Kg CO₂/kWh, so a usage of 10.000 kWh per year results in 6.490 kg CO₂ eq per year).

2.1.3 OUTPUT

The following sub-chapters use the collected data and processes it into the desired output of **implementation criteria** and a completed **Triple Layered Business Model Canvas**.

The implementation criteria will be used at the end of the process to validate the final design whereas the triple layered business model canvas will be used to determine the most interesting areas for value creation to take into the ideation phase.

The concluding section for the implementation criteria, describing the criteria that 'must', 'should', 'could' and 'won't' be met by STRIK, can be found on page 29 and is supported by appendix 1 and 2.

The concluding section for the triple layered business model canvas can be found on page 35 and is supported by appendix 1 and 3.

2.2-OUTPUT 1: IMPLEMENTATION CRITERIA

The output is structured using the 'criteria canvas' including criteria that 'must', 'should', 'could' and 'won't' be met (Designabetterbusiness.com, 2019). The following section will dive deeper into each with the corresponding data.

MUST -----

MATCH THE TARGET GROUP

Throughout both interviews (appendix A), the importance of the current target group is mentioned. According to both CEOs, these people are older and have a little more to spend on quality products. According to van Geenen, *"we value these customers, as these are the customers that still spend 35 Euros on a box of chocolates"*. One of the most important reasons STRIK values this target group, aside from their spendings, is that they are very loyal, according to two of STRIK's longest working employees (general ethnographic observations, diary 2, employee 1 & 6). *"They return once a week and some even return every day"*, mentioned one of the Heyendaal employees. Aside from the need that new innovations still match the current target groups, STRIK should also focus on the younger target groups (continued in section 'should').

MATCH THE BRAND IDENTITY

Throughout the interviews, the CEO regularly mentioned the importance of STRIK sticking to what they are good at. *"Quantity in combination with*

craftsmanship and quality", that is what has made STRIK grow and that is what we should focus on, as according to van Geenen. Words like quality, craftsmanship but also scalability are often mentioned by the CEOs themselves. However, the Facebook followers have another important thing to mention about what comes to mind when they think of STRIK, as appeared from a small online questionnaire (N=52). 26% of the respondents links **'tastefulness'** to STRIK while 23% linked specifically **'pastries'** to STRIK, even though STRIK sells more than just pastries. Aside from this, 20% of respondents mentioned a personal 'nostalgic' memory to STRIK such as *"When I think about STRIK, I think about when I was younger, being at my grandma and grandpa's. They always used to have STRIK pastries on the table when we came over, no matter the occasion!"*. Finally another 10% mentioned being **together** with friends and family an important aspect when they think about STRIK. Find the questionnaire output in appendix 2-A.

Moreover, in terms of the products itself, according to Mr. van Geenen the product should be distinguishable. *"The foundation of our existence is the product, so it should be distinguishable, tasty and new"*. And especially new in terms of being one step ahead of the competition, as mentioned by Mrs. van Geenen. STRIK should renew their traditional products, so that it is new and surprising to the customer, but not too innovative or far away from what they are good at (appendix 1A, interviews).

The perception in the mind of the customers about the brand and its associations determine the current brand image and can enable a brand to develop a rich and clear brand identity by comparing it to what the brand wants to stand for (Ghodeswar, 2008). Now understanding how the customer sees STRIK comparing it to how the CEOs see STRIK, the following value proposition can be concluded:

"For wealthy elderly and wealthy young families, STRIK offers unique, craft pastries that are tasty and of high-quality, and give people a feeling of celebrating life to free themselves from their busy day-to-day life together with friends and family".

ACT FROM A PROFIT DRIVEN MIND-SET

STRIK has grown to its current size only because of their **profit-driven mindset**, as van Geenen mentioned several times. Van Geenen: *"We have always acted from a mindset of: let's focus on profits first and if the profits are there, let's see what it really is we need and solve things whenever something goes wrong"*.

Aside from the direct mentioning of the importance of profits, throughout the interviews, both CEOs regularly mentioned 'price' as an important aspect to innovation, new products or expanding markets. This even translates into STRIK not taking too big financial risks, as van Geenen mentioned: *"Personally I find it very difficult when the horizon of investments are longer than 5-8 years and the investments are big. Then it becomes too risky*

for me. I prefer saying, let's do A now and look into B in 5 years". This even occurs now, as STRIK is looking into becoming more sustainable. According to van Geenen: *"We invest in new sustainable equipment whenever the old one breaks, but mainly because of financial incentives"*.

SHOULD -----

INCLUDE EMPLOYEES

Personal impressions from the first round of ethnographic observations revealed that employees should at all times be involved in the decisions made concerning circularity implementations. Currently employees are experiencing lack of communication, stress & chaos, lack of structure and the feeling of not being heard (general ethnographic observations, diary 2). Moreover, according to Mr. van Geenen, *"we do see that as we are getting bigger, solving everything ourselves is not working anymore and we are more reactive than pro-active as there is little to no policy"*. This, despite the acknowledgement of the importance of employees, mentioned by Mrs. van Geenen. According to Yukl (2010), leaders who show more concern and integrity towards their employees are more likely to gain trust, likeability and satisfaction from employees. Moreover, according to Lee (2008), the leader's goal should be to help employees become healthier, wiser and more willing to accept their responsibilities (Yukl, 2010) and above all to motivate

them in performing to their fullest capacity (Bambale, 2014). This should be done through overall involvement, trust, performance information and the involvement specifically in decision making (Spreitzer & Mishra, 1999). Such strategies will not only get the best out of your employees, creating employee satisfaction, but also increasing the overall organizational performance because of employee performance (Lee, 2008; Spreitzer & Mishra, 1999). This is something STRIK should most definitely work on.

USE THE PATISSERIE COLLEGE TO LEARN

As mentioned by mr. van Geenen, the Patisserie College (the bakery association with +50 members across the Netherlands) is very valuable for him personally and for STRIK. It has helped STRIK grow and innovate for several years. And it works in two ways. STRIK helps members of the Patisserie College, just as much as they help STRIK. This should at all times be valued.

NETWORK EXPANSION

"To reach more people, you should expand your network", as according to mr. van Geenen. STRIK has grown thanks to van Geenen's network, so this is something that should be treasured and valued.

EXPAND THE CURRENT TARGET GROUP

As mentioned before, STRIK values their current target groups. However, both CEOs mentioned that STRIK should try to focus on the younger target groups, especially since *"older people are*

expected to die at one point, so we need to keep focussing on the younger target groups as well" (appendix A, Interview A02). Mr. van Geenen adds to his by mentioning *"our wish is obviously to lower the age reach of our target group and we have started this process a little bit by starting with ice cream and profiling ourselves differently on social media"*.

Expanding the current markets to new age groups is something STRIK should focus on, especially as the older 'loyal' generations are slowly disappearing. Aside from this, it is important that STRIK understands **who these customers are** in order to reach more of them, which is one of the CEO's desires. To do this, a target group analysis based on in-store ethnographic observations and secondary data was conducted. This was done for the two biggest target groups:

- **wealthier elderly**
- **wealthier young families**

The findings and summarizing personas created based on the findings can be found in appendix 2-B. The main insights showed that amongst the wealthier elderly, those that are aged between 65 and 73 are the most interesting in terms of income, behaviour and preferences. These people prefer a good price-quality balance and value a good store service. The social activity is more important to them than the activity itself. If a store offers good quality products, good customer service and transparency in their products and offerings, brand can win a life-long loyal customer in them. In addition, amongst the younger families,

the biggest group is that with young children and one full-time working parents and one part-time working parent. These people are not very brand loyal, but do prefer specialty stores for the full store experience. They prefer a healthy life-work balance and want to make time to enjoy life together with their network of friends and family. They also value a healthy lifestyle and do not hesitate to step to another brand if the product offer is better, the store is within reach or the brand is more sustainable.

SWITCH FROM WORKING-HARD MINDSET TO MORE STRUCTURE AND ORGANISATION

Something both CEOs mentioned several times is that STRIK has always grown because of their hard-working mindset. However, they have become too big now to keep on going the way it is going. STRIK should, and will with the new developments of the younger generations taking over, work on getting more structure and organisation, even though STRIK is not a company for standardizations as mentioned by Mrs. van Geenen. *"I think that when we invest in structure and organisation, STRIK has a positive future in terms of company growth"* - Mr. van Geenen.

GROW IN EXISTING STORES

Both CEOs mentioned the importance of growing in the current stores. Mr. van Geenen explained how growing in current stores is very desirable, as *"increasing profits while keeping the same costs is the best you can get"*. Moreover, as according to Mrs.

van Geenen, *"we have more margin in our stores than we have with other customers groups"*. STRIK should thus try to increase either the stores' customer reach or increasing the spendings per visit for the existing customers.

DO SOMETHING WITH OUR FOOD WASTE

As sustainability is becoming more and more an important topic, both CEOs mentioned the importance of STRIK investing in sustainability as well. However, according to Mr. van Geenen, *"sustainability should always be directly linked to increasing profits"*. Something Mr. van Geenen sees future in is looking into food waste. *"I would very much like to work on our food waste within STRIK"*.

A BETTER WORK ENVIRONMENT

Something that was mentioned by Mrs. van Geenen during the interview, was the desire for a better work environment, so that everyone likes working for STRIK. Personal impressions from the ethnographic observations in the stores imply that STRIK could clearly benefit from working on a better work-environment. Even though some employees did mention they like working because of the colleagues, many mentioned that there is too much stress and chaos and there is a big distance between employees from different stores (Appendix 1-B, general ethnographic observations, diary 2).

ADJUST STRATEGIES TO SPECIFIC STORE

While Mr. van Geenen did strategically choose the store locations and store types to be so different from each other,

simply because *"you should not put all your eggs in one basket"*, Mrs. van Geenen mentioned the clear differences between the stores as well, supported by the ethnographic observations. It is therefore important that STRIK focuses on these differences in order to make innovations work.

COULD -----

EXPLORE TRENDS

Mr. van Geenen mentioned STRIK closely manages trends to play into, especially towards their customers. *"We try to show to our customer: look, STRIK is playing into the trends and introduces something new"*. To give an overview of such trends, a DEPEST trend analysis within the bakery industry was conducted. This can be found in appendix 2-C.

INCREASE WEBSHOP SALES

According to Mrs. van Geenen, the webshop is something STRIK would like to focus on more. *"It is simple money, as it does not require much effort"*. Moreover, *"at some point you've reached the maximum capacity of your stores, whereas the webshop can still grow beyond this"*. Currently STRIK's webshop is not very active, even though they manage to get a weekly webshop reach of +500 visitors with about 5 online orders per day. STRIK could increase profits from their webshop by updating and managing it closely.

WON'T -----

GROW & EXPAND OUTSIDE OF EXISTING OR COMPARABLE MARKETS

Both CEOs mentioned that it is important for STRIK to stay in the current or a comparable market. According to Mrs. van Geenen, *"we should innovate those products that are traditional and give them a new look"* and *"we should keep doing what we are good at"*. STRIK's CEOs are not fond of taking too much risk and prefer staying in the existing markets with existing or adjusted products. This same is mentioned about innovating in terms of sustainability. STRIK acknowledges the importance of sustainability and will definitely join the movement, but, as CEO van Geenen mentioned: *"we will never be the frontrunner"*. STRIK should focus on what they are good at, and not try to grow outside of their comfortable area. Not only is this not desired by the CEOs, but as STRIK customers unconditionally link STRIK to pastries (Facebook questionnaire output, appendix 2-A) it is also risky as there is a chance that people might never link STRIK to this new market.

BECOME TOO BIG

Both CEOs mentioned that STRIK is currently not a company that is suitable for opening another 5 stores. STRIK should focus on increasing the profits with their current assets and not expand too soon and too much in terms of stores. They will not invest in innovations that might grow beyond what they can handle.

TO CONCLUDE

MUST

- 1 Match the current target group:** even though it is wise to expand the target groups to younger generations as well, the older and wealthier generation is much valued because they are loyal and have much to spend.
- 2 Stick to the brand identity and value proposition** (page 25).
- 3 Keep a profit-driven mindset:** the financial incentive is very important to STRIK. It has made them grow and it will keep on doing that. Every innovation must have a financial benefit.

COULD

- 1 Explore trends:** branch trends could be used to make innovations, and specifically circularity implementations become more desirable and viable
- 2 Increase webshop sales:** STRIK could invest more in their webshop to increase sales coming from their webshop and expand their current market.

WON'T

- 1 Grow and expand outside of existing or comparable markets:** STRIK should focus on what they are good at and not take risks in trying to be too innovative. They should adjust the traditional products while surprising customers with something new, without being the 'frontrunner' of the innovation.
- 2 Grown beyond what STRIK can handle:** the balance between craftsmanship and scalability is just right. Expanding to a place where demand is bigger than offering so that it either jeopardises the quality or craftsmanship is not desired by STRIK. STRIK should increase the profits using their current assets.

SHOULD

- 1 Include employees:** For the sake of the company and the work environment, employees should at all times be involved in the decisions made concerning new implementations or innovations.
- 2 Work on a better work environment**
- 3 Value and use the relationship with the Patisserie College:** The association of bakeries is and always will be important to STRIK. To grow, innovate and learn from.
- 4 Grow in existing stores:** It is very desired by STRIK that the profits and revenues are increased in existing stores with the current cost model.
- 5 Switch from a hard-working mindset to more structure and organisation.**
- 6 Adjust strategies to the specific store**
- 7 Expand the current target group to the younger target groups:** STRIK should understand who these people are and what they desire.
- 8 Always keep expanding STRIK's network**
- 9 Focus on sustainability by tackling the food waste**

**based on insights from qualitative research (CEO interviews, ethnographic observations in-store and supporting secondary data, supported by appendix 1 and 2)*

2.3-OUTPUT 2: OPPORTUNITIES FOR VALUE CREATION

2.3.1 THE ECONOMIC LAYER

The output of the second analysis part is the Triple Layered Business Model Canvas, as mentioned before. The first step of this method is to fill in the economic business model canvas, in which the (1) **partners**, (2) **activities**, (3) **value proposition**, (4) **relations**, (5) **revenues**, (6) **costs**, (7) **customers**, (8) **channels** and (9) **resources** are included categories. As a concluding output of these categories, in order to understand how and where economic value should be added, the company's ecosystem is visualized in figure 5. The following section explains per main activity the impacts versus potential benefits in terms of additional economic value.

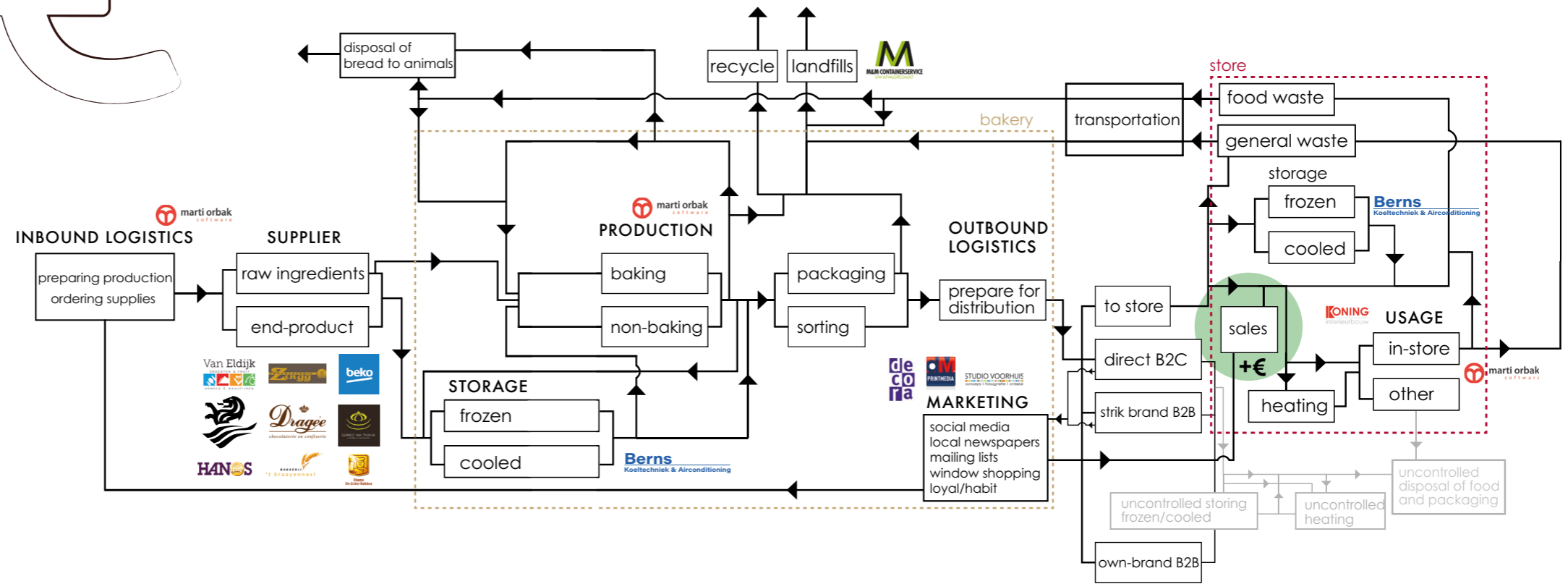


Figure 5: Current company ecosystem, layer 1 output
*based on insights from qualitative research (CEO interviews, ethnographic observations and supporting secondary data, supported by appendix 1 and 3A)

Appendix 3-A provides the detailed data, including the completed economic business model canvas from which conclusions are derived

ECONOMIC IMPACT VERSUS POTENTIAL BENEFITS

Each activity, either directly or indirectly, adds to the value proposition (page 23) of STRIK. All activities are currently managed by the CEOs without any management layers in the infrastructure. The following section compares for each activity the impact versus potential economic benefits, while taking into account the partners, resources and channels.

Sales & Marketing

One of the most relevant aspects of the sales activity is the fact that STRIK heavily relies on their in-store sales as the most important revenue stream. This stream of revenues should at all times be the desired key metric of STRIK's business models, considering the profit-driven mindset of the CEOs and the high profit margins compared to other revenue streams. Furthermore, STRIK keeps a close relationship with customers through

loyalty programs and social media. They also make good use of different channels to reach these customers. STRIK could benefit from managing the effects of their marketing, as they spend a lot of money on it but never measure the effects. Moreover, STRIK should invest in employee sales training to increase their in-store revenues as most of these revenues depend greatly on employee performance.

Inbound logistics

STRIK manages a good relationship with their suppliers, however they do not closely manage their stocks and yearly ordering numbers, leading to left-over items that need to be thrown away or reused. STRIK could benefit from stock management and being pro-active instead of re-active in terms of stocks.

Production

STRIK distinguishes different production departments and closely manages their quality & cost control. They have efficient short-term planning, being able to accept almost every order one day before delivery date. They acknowledge the importance of product design and development, but could benefit more from investing time into these. STRIK could benefit from focusing on long-term planning, as their current planning is very short-term. This could save a lot of money and stress while being more efficient.

Outbound logistics

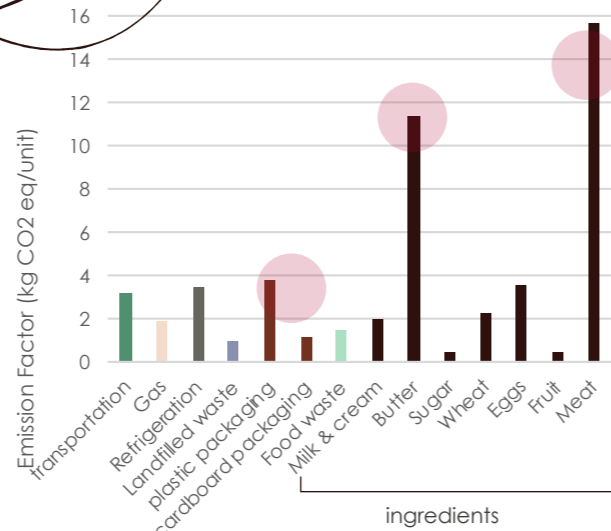
STRIK could benefit from structuring and organizing, as this activity seems to influence all other follow-up activities. Transportation logistics could be more efficient and less depending on one person. Digitalizing should increase efficiency and decrease failures.

Human resources

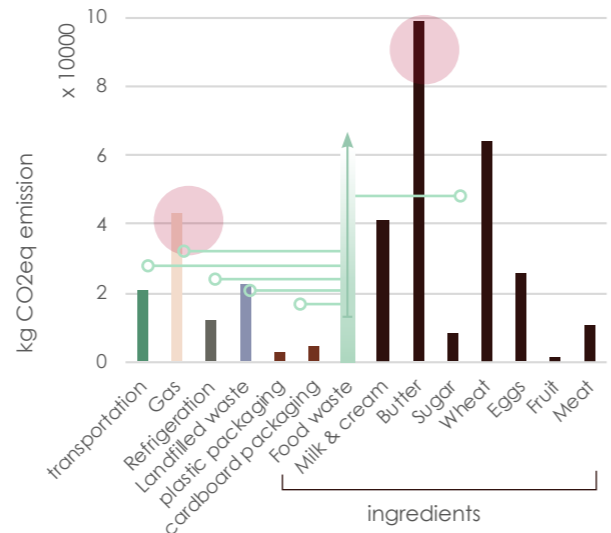
The line of communication between CEOs and employees is short, but this sets a higher threshold for employees to ask questions to the manager. STRIK should spend time on employee satisfaction and focus on stricter policies and a better work environment. Moreover, STRIK does not make much use of their human and intellectual resources, even though they could significantly benefit from using the expertise of employees.

2.3.2 THE ENVIRONMENTAL LAYER

The second layer includes the environmental business model canvas, in which the (1) **functional value**, (2) **production**, (3) **materials**, (4) **supplies and outsourcing**, (5) **environmental impacts**, (6) **end-of-life treatment**, (7) **use-phase**, (8) **distribution** and (9) **environmental benefits** are included topics. As a concluding output of these layer topics, a first step was to analyse the energy & material flow of STRIK (figure 6). Even though the figure presents many different areas of production, usage and distribution, a selection is highlighted based on the **environmental impact**, calculated in a carbon footprint analysis. It is important to mention that there is no final concluding number of CO₂ emission, simply because a lot of categories intertwine. The carbon footprint analysis, as mentioned before, was calculated by combining the company data from the energy and material flow with the secondary data on emission factors. These calculations and considerations are concluded into two representing graphs. Graph 1 shows the emission factors per category, independent of usage. Graph 2 shows the actual CO₂ emission based on STRIK's usage. For each and every category there is something to say about what is included and what is not included in the calculations, guided by the topics of the TLBMC. All of these considerations are explained in appendix 3-B, just as the detailed calculations per category leading to graph 1 and graph 2 are. The 'impact' versus 'benefits' section concludes the findings for the second (environmental) layer of the TLBMC.



Graph 1: Emission factors per chosen category



Graph 2: CO₂ emission based on STRIK's usage per category. The emission from food waste increases as most of the other categories are wasted with food waste as well. It is therefore potentially the biggest unnecessary polluter of all categories.

***Each category is briefly described based on what is included in the calculation below. The explanation per category can be found in appendix 3-B.**

Transportation: includes the 'well-to-wheel' calculation of company-owned vehicles

Gas: includes all gas-using equipment (monthly bill)

Refrigeration: includes the biggest refrigerant-using equipment based on 'global warming potential' (GWP) value and leakage

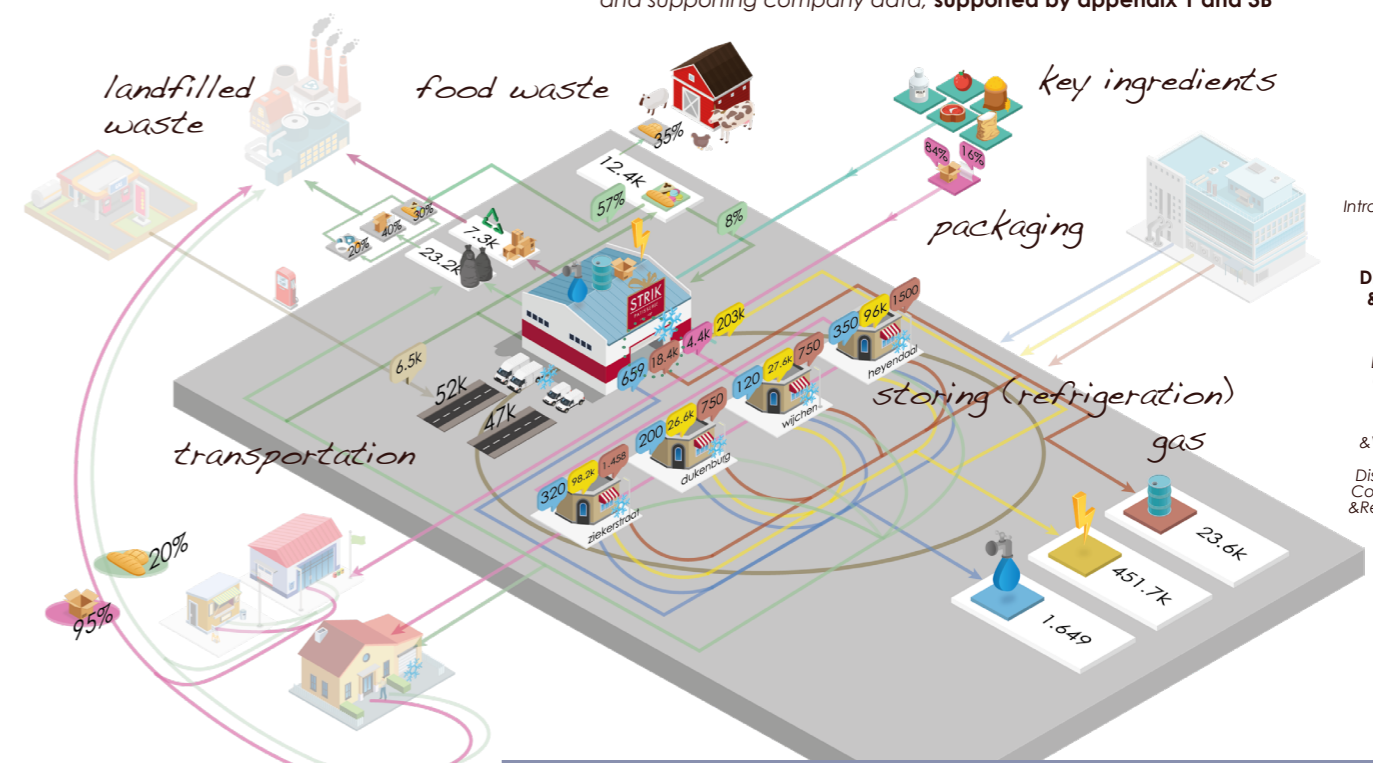
Landfilled waste: includes the emission due to the burning of STRIK's general waste.

Packaging: includes the end-of-life emission from the plastic and cardboard share of STRIK's total packaging.

Food waste: includes the end-of-life emission for STRIK's wasted bread (=35% of all food waste), the emission from burning consumers' estimated bread waste and the emission from burning part of STRIK's own internal food waste (the part that does not get reused or repaired).

Ingredients: includes the data of STRIK's most purchased ingredients in unprocessed form.

Figure 6: Energy and Material Flow overview
 *based on the company ecosystem from layer 1, ethnographic observations and supporting company data, supported by appendix 1 and 3B

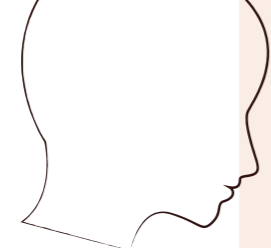


Appendix 3-B provides the detailed explanations per category, including the completed environmental business model canvas

ENVIRONMENTAL IMPACT VERSUS POTENTIAL BENEFITS

From the environmental layer of the TLBMC can be concluded that the most impactful categories for STRIK are that of key ingredients, packaging, storing (refrigeration), gas, transportation, landfilled waste and food waste. Where some of these categories clearly jump out in terms of CO₂ emission based on STRIK's usage (graph 2), such as ingredient usage and gas usage, other categories jump out in terms of emission factors, such as ingredients and packaging. However, an important aspect in determining the most interesting area for creating environmental value is the **controllability by STRIK**. While packaging and ingredients are considered to have a big impact, they are also less suitable for innovating as STRIK has close contracts with their suppliers because of collaborative purchase benefits from the Patisserie College (layer 1). Moreover, STRIK is not front of making big investments with an investment model of more than 5 years, as mentioned by van Geenen in an interview (appendix 1-A, interview A01). This means that for example replacing all gas-using equipment, refrigerant-using equipment or transportation vehicles is probably too risky for STRIK. Between all of these categories, there

seems one category that jumps out: **food waste**. The main reason for this is because the estimated ±20k kg CO₂ equivalent does not even include the unnecessary wasted ingredients, packaging, gas or even transportation. Not to mention that while most of the emissions from other categories are not all considered 'unnecessary' such as packaging or storing, food waste is considered a completely unnecessary category. This means that when calculated every part of the products' life-cycle that gets wasted, this category may become one of the biggest unnecessary polluters of them all. In addition to the numbers, this category is also a desired category to look into according to an interview with the CEO (appendix 1-A, interview A01). Finally, this category is something STRIK is already very familiar with, as it stays very close to their current operations and expertise. **To conclude, food waste causes a lot of unnecessary greenhouse gas emission while being a very controllable and familiar category for STRIK to invest in. It is therefore implied that this category is most suitable for creating environmental value in terms of decreasing the carbon footprint.**



SOCIAL IMPACT VERSUS POTENTIAL BENEFITS

2.3.3 THE SOCIAL LAYER

The third layer includes the social business model canvas, in which the (1) **social value**, (2) **employees**, (3) **local communities**, (4) **governance**, (5) **scale of outreach**, (6) **societal culture**, (7) **end-user**, (8) **social impacts** and (9) **social benefits** are included categories.

As mentioned before, all of these categories were considered while collecting the data. The data was complemented by some company data for the specific layer categories. The miniature version of the canvas is presented in figure 7, with a summarizing conclusion for each category. The detailed explanation per category can be found in appendix 3-C. The following section will conclude in which ways STRIK could benefit from adding social value and in which ways STRIK is always doing this.

The third layer of the TLBMC reveals that STRIK is already actively involved in local communities, not only by supporting events and charity foundations, but also by reaching and including the citizens from the local neighbourhoods of their stores. However, a big area of improvement or opportunity for STRIK to create a bigger social impact with innovations is by including their employees more actively. Currently employees are left in the dark in terms of decision-making and new innovations, even though there is a willingness of STRIK to be transparent. Employees are expected to show initiative and actively ask about such innovations, as the communication from STRIK towards their employees lacks consistency. A final area of opportunity derives from a commonly discussed social impact that most bakeries cope with, which is the risk of diseases due to the stimulation of unhealthy behaviour. STRIK could decrease this risk while adding social value if they invest in healthier product.

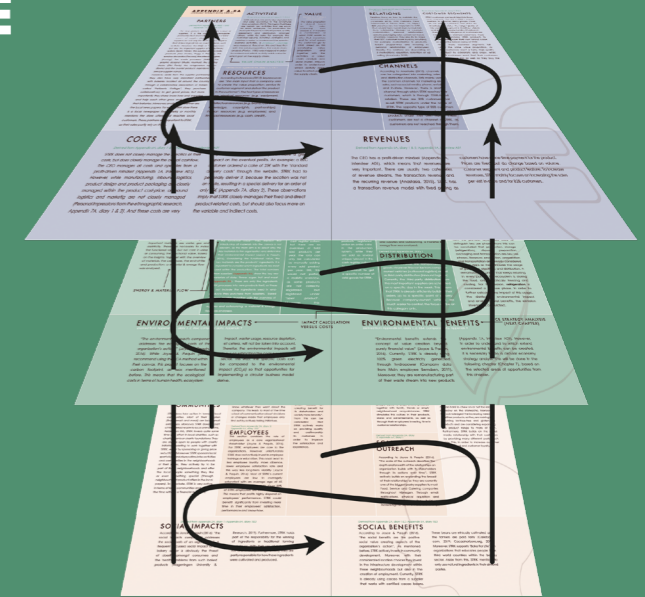
Appendix 3C provides the completed environmental business model canvas

LOCAL COMMUNITIES STRIK actively invests in local communities. They do this by: - Using local suppliers - Supporting local charities - Sponsoring local sport clubs - Donating bread to local farms - Stimulating activity and community in their stores' local neighbourhoods	GOVERNANCE Decisions made by the CEO. Employees are not included in decisions and actively need to inform themselves about changes EMPLOYEES Employees are core stakeholder. Profits depend highly on employees' performance. STRIK should invest more in employee satisfaction, performance and know-how as they currently do not do this.	SOCIAL VALUE STRIK actively works on providing quality and craftsmanship to customers in order to improve the satisfaction and experience. SOCIAL IMPACTS - Threat of obesity - Wining ingredients/traditional farming techniques SOCIAL BENEFITS 	SOCIETAL CULTURE STRIK values a culture of socialism and plays into this through advertising, product range and customer relationships. SCALE OF OUTREACH STRIK builds on increasing the depth of their relationships with stakeholders through: - email notification - physical acquisition - custom-made folders	END-USER Adjusting product range and advertisement to target group's wants and needs. STRIK builds on creating loyal and involved customers through social media, advertisements, loyalty programs and folders/local papers.
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Figure 7: A miniature concluding representation of the third (social) layer of the Triple Layered Business Model Canvas

TO CONCLUDE

To conclude the findings from the Triple Layer Business Model Canvas, the areas of opportunity for value creation differ per layer. The TLBMC provides 'horizontal' coherence within each layer for exploring the economic, environmental and social value while the 'vertical' coherence supports developing a deeper understanding of an organization's value creation (Joyce & Paquin, 2015; Lozano, 2008). The findings per layer are summarized below.



(Joyce & Paquin, 2016)

LAYER 1: ECONOMIC BMC

1 STRIK could benefit from more **structure**, better **long-term planning**, more **efficiency** and a better **work environment** in terms of added value. Moreover, the 'sales & marketing' activity is key to STRIK. Especially the **in-store sales** are important, providing the most important stream of revenues. Business models are most interesting when

build around in-store sales. Investing more in **employee trainings** and **analytics of sales** could also deliver potential benefits in terms of revenues. Moreover, STRIK should make more use of their **intellectual and human resources**. Finally, **key stakeholders** should be included in decisions and innovations in order to increase the viability of such innovations.

LAYER 2: ENVIRONMENTAL BMC

2 The most impactful categories in terms of CO₂ emission include that of key ingredients, packaging, storing (refrigeration), natural gas usage, transportation, landfilled waste and food waste. However, **food waste** is considered the most interesting area of opportunity for creating environmental value and thus

decreasing the carbon footprint. It has a large unnecessary impact, it overlaps with most of the other categories, it is controllable by STRIK and it is a familiar category to a currently non-sustainability-expert like STRIK. Moreover, the CEO of STRIK considers this a big problem within the organization.

LAYER 3: SOCIAL BMC

3 STRIK is already actively involved in **local communities** in multiple ways and they should keep on investing in these as a way of creating additional social value. Two other areas of opportunity for STRIK in terms of social impact can be derived from **actively involving employees** and dealing with

STRIK's unconscious **stimulation of unhealthy behaviour**. If STRIK can implement (one of) these areas into new innovations or business models, the validity is likely to increase as innovations would then benefit not only from profit and planet, but also from the 'people' part of the triple bottom line (Elkington, 1994)

3 - Design Challenge

As a final converging step before heading into the 'Develop & Deliver' phase, it is important to determine the specific **design challenge**. This will give the project guidance in finding an answer to the research question being:

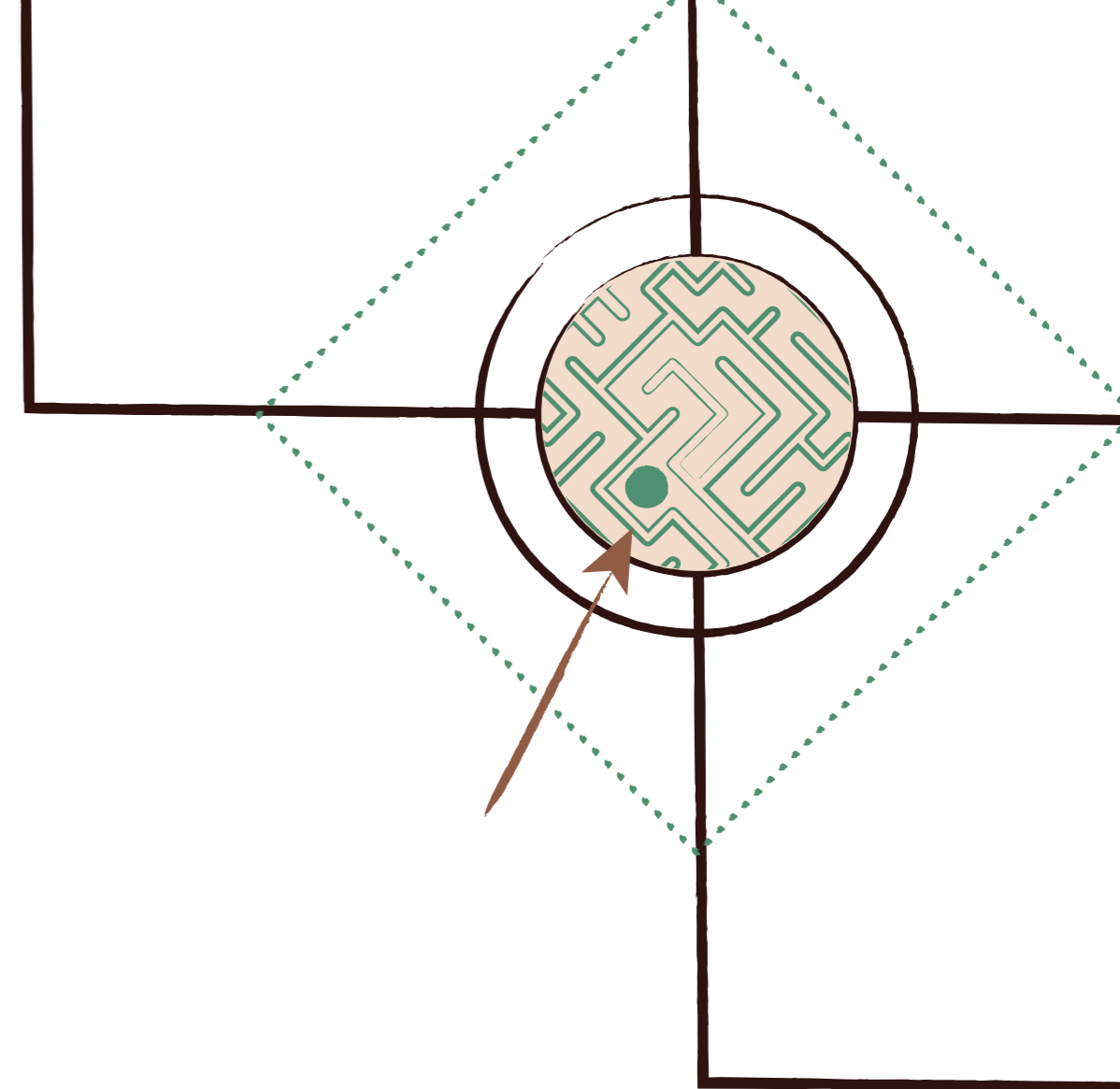
"How should STRIK patisserie contribute to a Circular Economy, while at the same time creating additional economic value?"

Based on the output from the 'Discover & Define' phase, the following design challenge derived:

HOW CAN WE MAKE STRIK'S FOOD WASTE STREAM 100% CIRCULAR WHILE GAINING FINANCIAL AND SOCIAL BENEFITS?

WHAT IS MEANT WITH 100% CIRCULARITY?

In the context of this project, 100% circularity for food waste means that a circular solution for all of the disposed food by STRIK is found. In addition, part of the externally disposed food of STRIK by consumers could be taken into account as well, despite the uncontrollability by STRIK itself.



4 - Develop & Deliver

The main goal of this phase is to develop concepts out of ideas and test these concepts based on the key metrics of viability and desirability. Several tools and techniques are used to come up with ideas and selecting them, after which a 'lean approach' will help testing the chosen concepts in a quick and effective way. Figure 8 explains again which methods are used in order to come up with a suitable solution to the problem. The phase starts again by explaining the methods of generating ideas, selecting them and testing the chosen concepts, after which the results and findings are presented and conclusions are made in terms of the most suitable concept to persevere with. Finally, the final chapter of the phase further details the chosen concept into a final design.

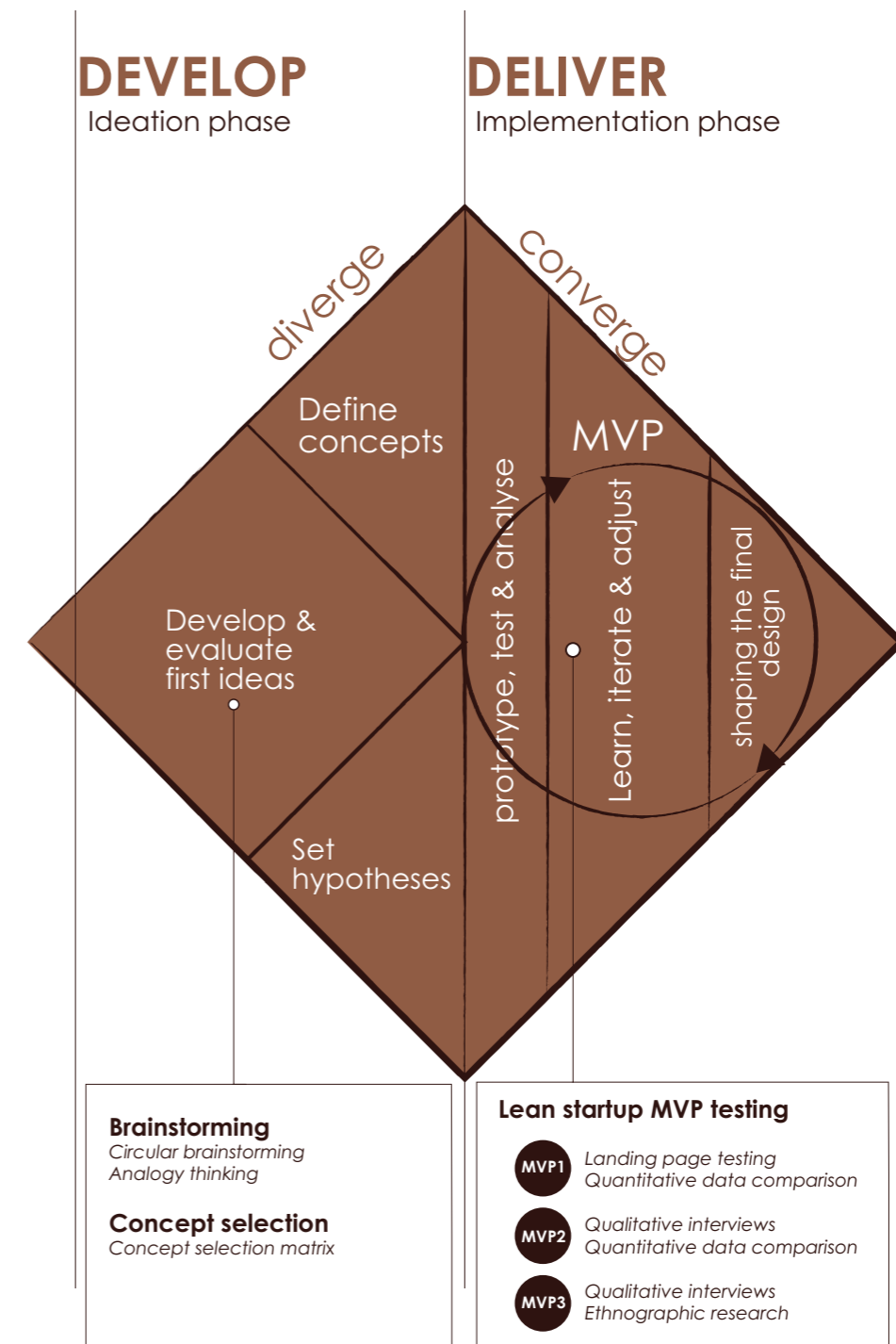


Figure 8: Develop & Deliver phase overview

4.1 - METHODS

4.1.1 IDEA GENERATION

The idea generation was done using different tools and techniques. First, **circular brainstorming** was used in order to generate initial and quantitative ideas (Ellen MacArthur foundation, 2016; Circular Design Guide, 2019). Within this session the industry and target group trends from the 'Discover and Define' phase were used as a starting point, as these could on one hand lead to interesting opportunities for STRIK, while on the other hand expand creativity to beyond the current context. Moreover, the company ecosystem from the first layer of the BMC (Discover & Define phase) was used as a starting point as well, reveals all of the important stages and activities occurring within STRIK and thus also the possible areas for implementing circularity. Overall the brainstorming was guided by asking 'how might we' questions within the **slowing, narrowing, closing** and **regenerating** circularity strategies (Konietzko et al., 2020).

Second, as a more qualitative approach, the **analogy thinking tool** was used within the session (Board of innovations, 2019). This tool compares existing solutions to the design challenge both within and outside the industry in order to choose applicable and suitable solutions for the company of STRIK (Board of innovations, 2019). The list of existing innovations from the Circular Economy Club (2019) was used as a starting point.

The output from the creative brainstorm session can be found in appendix 4-A.

4.1.2 CONCEPT SELECTION

From the ideas generated within the brainstorm session and the additional analyses, concrete concepts were analysed and selected using the **concept selection tool** from the Ellen MacArthur foundation (2016). This tool guides in assessing the quality of the derived concepts from a more '*strategic business perspective*' and the '*ability to progress them as an organisation*', as mentioned by the Circular Design Guide (2019). The potential ideas derived from the creative brainstorm session are placed within a concept selection worksheet from the Circular Design Guide (2019), based on work from the MacArthur Foundation (2016). Here, ideas are classified based on impact and achievability. Placing the ideas in the worksheet was done in consultation with one of STRIK's store managers while using the strategy hierarchy ladder and insights from the 'Discover & Define' phase. The placement explanation can be found in appendix 4-B.

Within the matrix ideas are placed in one of four areas. **The area to consider is the area of 'low hanging fruit'**. The ideas within this area are easy-to-achieve ideas with a high impact. It is likely that such ideas are more attractive to STRIK, considering they have no experience with- or expertise about circularity yet. Moreover, ideas are selected based on **internal** or **external** food waste reduction. As the challenge is to make STRIK's stream of food waste 100% circular, it is important to consider those ideas that are capable of achieving this goal.

4.1.3 CONCEPT TESTING

In order to quickly test assumptions about the concepts before spending time, resources and cash, the Lean Startup approach, formalized by Ries (2011), is used (Project Entrepreneur, 2019). This methodology is an experiment-driven approach to rapid, in-market learning (Euchner & Ganguly, 2014). An important aspect of the Lean Startup methodology is the use of 'MVPs', known as 'minimum viable products' (Ries, 2011). Such MVPs are early-stage versions of final products, only including the necessary features enough for evaluating them and learning from them (Project Entrepreneur, 2019). These MVPs will be tested through determined hypotheses, derived from trying to find the 'innovation sweet spot' in terms of desirability (what people want), feasibility (what is functionally possible) and viability (what is likely to become a sustainable business model (Brown, 2009; Dennehy et al., 2019). However, as this testing phase tries to find answers to whether and how STRIK **should** persevere with the idea and not whether they could do so (Ries, 2011), the focus will not be on feasibility, but mainly on **viability** and **desirability** as key metrics

for hypothesis testing. The hypotheses are determined in a way that testing can assume a concrete answer of 'yes' or 'no'. This means using specific tangible acceptance boundary like 10% or 100 respondents.

The chosen methods of measuring and testing are based on the specific concepts. Where one concept demands for qualitative in-store testing, another demands for quantitative online testing. Moreover, each MVP might require several rounds of testing. In line with the 'lean startup' approach, for each round of testing is determined how it was **build**, how it was **measured** and what was **learned**. Appendix 5 describes each round of testing per concept in detail, whereas the following sub-chapter presents the findings and results from the testing only.

4.1.4 SHAPING THE FINAL DESIGN

The final chapter of this phase dives deeper into the specifics of the chosen concept by focusing on what the product is, what the packaging should look like, what the price should be and how promotion should be tackled.



4.2-OUTPUT 1: IDEA GENERATION & CONCEPT SELECTION

4.2.1 CHOSEN CONCEPTS

After a creative session, a range of ideas was generated. These ideas were placed within one of the four areas of the concept selection matrix from the Circular Design Guide (2019) based on STRIK's store manager input, insights from previous research and the circular strategy hierarchy ladder. What can be concluded from the classification matrix (see figure 9) is that most ideas are considered to have a low impact. This, because some concepts are only applicable to a selection of products, while other solutions require adding resources. Moreover, some concepts' impact depend on the customer reach. While customer disposal behaviour is not fully controllable, it can be influenced considering education is an important driver in reducing consumer food waste (Stancu et al., 2016). With the design challenge in mind (*to make the food waste stream 100% circular*) it is important that focus is not only on the **internal** waste stream, focusing on STRIK's own disposal behaviour, but also on the **external** waste stream, focusing on what the consumers disposes from STRIK's products. Figure 9 represents the concept selection matrix and the chosen concepts derived. The following section explains each concept in detail.

CONCEPT 1: EDUCATIONAL WEB-PAGE

For the circularity of **external** food waste, several ideas concerning education and stimulation of behaviour are combined into the concept of an **educational web-page** (figure 9). Not only is the impact increased by a combination of different ideas, STRIK also plays into **the desire** to increase online shopping revenues (appendix 1A, interview A02) as this concept provides an opportunity to gain economic value by increasing traffic to the web-shop. Even though consumers might not visit the page for purchasing reasons, they will be exposed to STRIK's products or offers at a certain point. Moreover, the impact increases as STRIK reaches more customers, which is one of their strengths considering their big loyal group of in-store customers and social media followers.

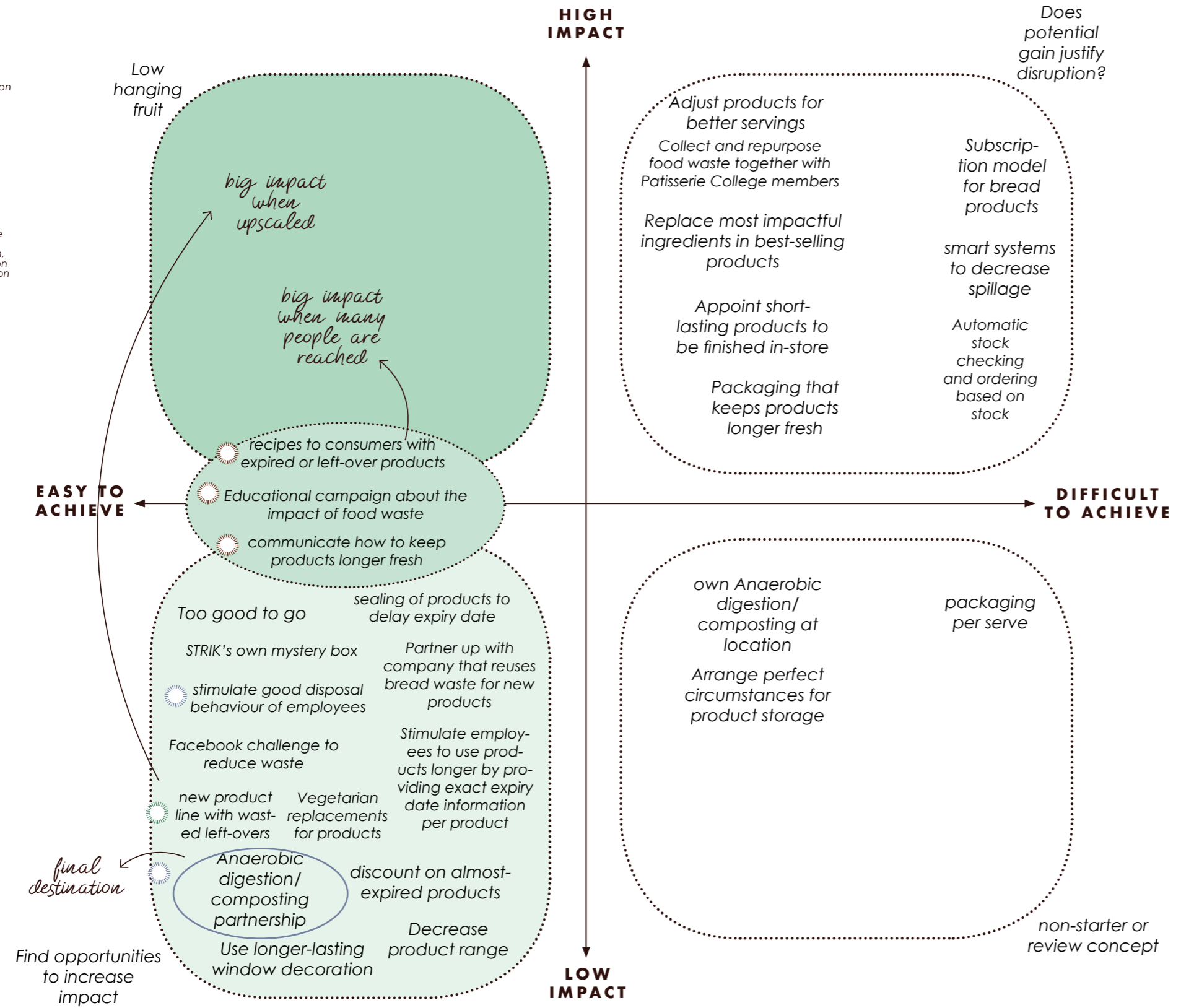
Circularity of external food waste through an educational web-page **builds upon the strategies of narrowing and slowing food waste loops**. Consumers are triggered to '**re-purpose existing products and components**' (Konietzko et al., 2019) through information about how to use left-overs in new recipes. Moreover, consumers are triggered to '**maintain their products**' by 'creating a service that enables users to care for their products' through information about storing or expiry dates (Konietzko et al., 2019). The circularity goal of providing such information is to eventually **decrease the 20% disposal rate of consumers** (Verburgh, 2018) for those products provided by STRIK.

CONCEPT 2: NEW PRODUCT LINE MADE OF WASTED PARTS

For the circularity of **internal** food waste, the concept for a **new product line of wasted parts/products** was chosen. Even though other concepts have a bigger impact in terms of the strategy hierarchy ladder (Konietzko et al, 2020), this concept has the opportunity to gain impact from up-scaling and quantifying. If the new product line is dynamic in terms of seasonal food waste, and designed together with STRIK's bakers, a large part of STRIK's food product range can be included while using the **expertise of employees** (PWC.nl, 2019). Moreover, it provides opportunities to be unique and distinctive through **storytelling** (Marktdata, 2017). One of the most important aspects of this concept is that STRIK is already partly **familiar** with it, as they are currently making their so-called 'Kruidcakes' from their bread and pastry left-overs. This means the threshold of investing in such innovations is low and rather risk-free. The concept differs from the existing way-of-working by looking for ways to **create even more value** as the considered downside of the product (it gets made from reused left-overs) is turned into the product's unique selling point. It provides opportunities for STRIK to gain economic value from their waste. Circularity of internal food waste through a product line from wasted parts **builds upon the strategy of closing food waste loops** (Konietzko et al., 2019). STRIK '**reuses components from discarded products**' (Konietzko et al., 2019) and resells these new products. The circularity goal of the concept is to **decrease the total weight of food within the general waste stream**.

CONCEPT 3: ANAEROBIC PROCESSING

A small remaining stream of internal food waste is **inevitable** as some products cannot be reused. Therefore, the third concept includes the anaerobic processing of food waste through a partnership. Currently most of STRIK's food waste is burned at the landfills. This end-of-life treatment is not preferred, as no value is created from the waste (Ellen MacArthur Foundation, 2015). Moreover, donating to local farms does add a social value, but no environmental or financial value. If such food waste is anaerobically processed into green resources (compost, biogas or green electricity), the life-cycle remains circular and does add value. In terms of the R-imperatives ladder (PLO, 2019), recycling into compost is not the most desired way of making waste streams circular, but it does enable STRIK to make their food waste stream 100% circular. This concept is a good final destination for food waste when the stream is already narrowed or slowed down in other ways. The reason this concept is considered a final destination is because it **lacks the opportunity to create financial value** from it, even though it does create environmental value. Partnering up for anaerobic digestion/composting makes it an easy-to-achieve concept for which STRIK does not require expertise. Circularity of internal food waste through partnering up for anaerobic digestion/composting **builds upon the strategy of regenerating food waste loops** (Konietzko et al., 2019). The circularity goal is to **minimize the total weight of food transported to the landfills**.



TO CONCLUDE

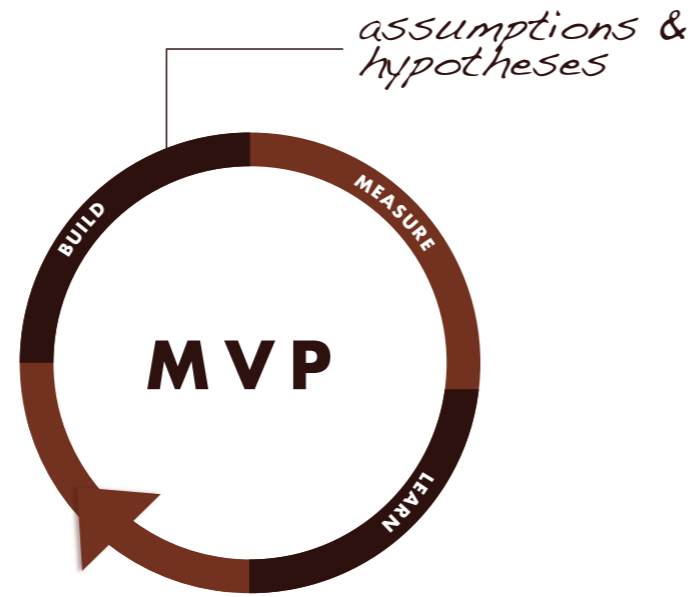


Figure 9: Concept selection matrix - explanation of matrix placement can be found in appendix 4-B

4.3-OUTPUT2: CONCEPT TESTING

4.3.1 MVP DEVELOPMENT

After choosing the three concepts, the concepts were turned into three 'Minimum Viable Products'. As mentioned before, these MVPs are early-stage versions of the final concepts, only including the necessary features enough for evaluating them and learning from them (Project Entrepreneur, 2019). The first MVP represents the concept of the educational web-page with information about (STRIK) food waste. The MVP is tested in the form of an initial landing page, including only the necessary features (introduction, information about recipes, storing and expiry dates, call-to-action email subscription and a link to STRIK's webshop by presenting an online product offer). The second MVP represents the new product line made from waste parts and products. The MVP is tested in the form of a physical prototype, made from an existing product but adjusted in terms of packaging and



advertising. The final MVP represents the partnership for anaerobic digestion. In this case there is not so much of a physical or digital product representing the concept, but the concept is tested on whether it could make the food waste stream 100% circular. Figure 10 represents each MVP in STRIK's food waste stream. The following section will briefly describe the 'building phase', 'measuring phase' and 'learnings' from each MVP. The detailed descriptions of the MVP processes can be found in appendix 5.

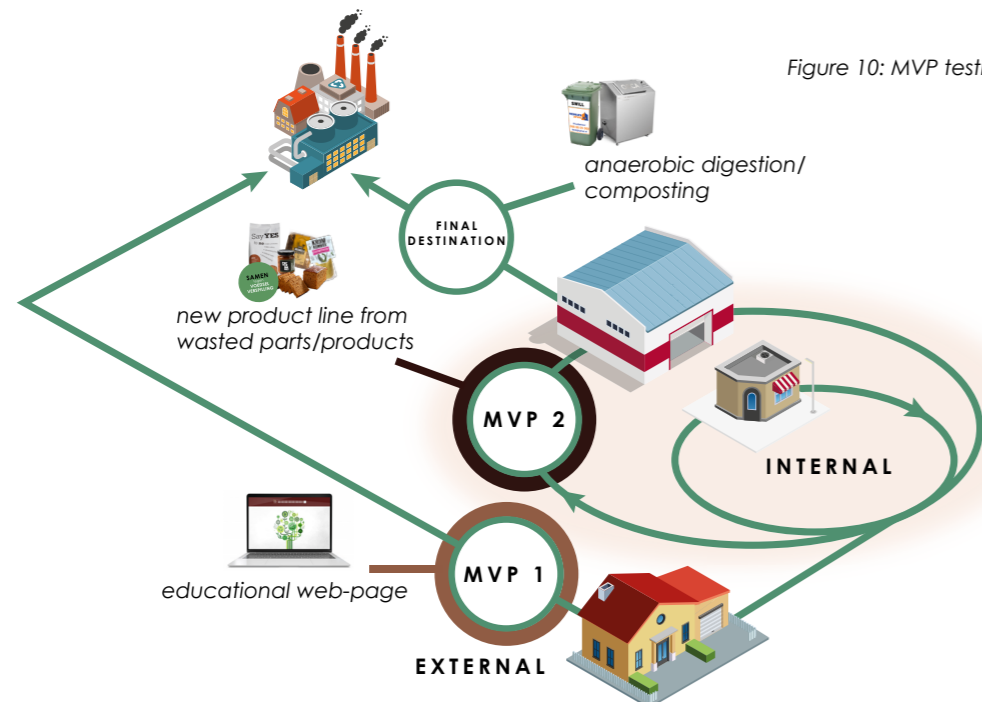


Figure 10: MVP testing

4.3.2 MVP 1: EDUCATIONAL WEB-PAGE



HYPOTHESES

- HA1 "More than 10% of STRIK's customers would be interested in information from STRIK about how to reduce food waste"
- HA2 "More than 10% of STRIK's customers visiting the food waste web-page is interested in STRIK's online offers as well".

LEARN

Even though customers do show a slight interest in information about food-waste, especially in recipes (16% CTR), it is implied that they are not yet willing to put much effort into it, as the call-to-action conversion rate for information about food waste is low, both in terms of email subscription as well as Facebook commenting (<10%). Moreover, customers do not yet show much interest in purchasing products online, not when a special online offer is provided and neither when customers are directed to the web shop through social media (<10%). This means that **HA1 and HA2 must be rejected** and the initial concept should be **pivoted** due to low desirability, viability and circularity. Moreover, some additional insights were gained from the testing results. Facebook content with the biggest reach and engagement include videos, win-posts and content about the production. Visual content on Facebook tends to get a bigger reach, even though the engagement rate remains constant (on average 5,3%). Additionally, the results imply that recipes are the type of information about food waste customers show the most interest for.

BUILD & MEASURE

methods/tools	call-to-action	sample collection

Two rounds of building resulted in a first basic landing page, exposed to STRIK's Facebook followers as a representative sample of STRIK's customers. The landing page included call-to-action sections of email subscription and a purchase button directing to STRIK's webshop. In addition to the landing page several additional Facebook posts were built to compare to the initial post about the landing page in order to make conclusions about the posts' performances. Measurements were done using Facebook's own post statistics, but also by evaluating the landing page activity through Hotjar, evaluating where people click and how they scroll through the page. The click-through-rate (CTR) of Facebook posts were compared, together with the post reach and engagement. Moreover the subscription rate and CTR for the purchase button were compared.

4.3.3 MVP 2: NEW PRODUCT LINE MADE FROM WASTED PARTS

4.3.4 MVP 3: ANAEROBIC PROCESSING OF ORGANIC WASTE

Introduction
Discover & Define
Develop & Deliver
Present & Validate
Discussion, Conclusion & Reflection



3 rounds of testing

HYPOTHESES

- HB1

"At least 10% of STRIK's customers is interested in a product line made from wasted products"
- HB2

"Sales of a product made from food waste get increased with at least 15% if the story behind the product is explained and promoted through the product packaging"

BUILD & MEASURE

methods/tools	call-to-action	sample collection
	 Purchasing Live reaction Grab	 In-store Facebook

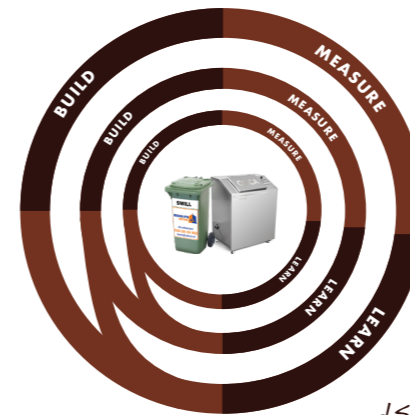
Three rounds of testing were conducted, including physical prototype testing in-store (N=449), online-questionnaire testing (N=161) and a qualitative live reaction testing (N=10). The prototype presented an example of products that could be included in the new product line. Each were provided with an adjusted packaging, advertising the (sustainable) story behind the product. The testing measured the actual sales increase compared to the sales from a year before. Moreover it tested how many discount cards (placed in front of the prototypes) for the new product line people grabbed. The second test included an online questionnaire asking about the likeliness of purchase (LOP) and the willingness to pay (WTP), distributed through Facebook. A final round of tests captured customers' live reaction to the prototype.

LEARN

All of the MVP testing suggest that there is a high desirability and viability for the concept, as >10% of the customers showed their interest, either through the online questionnaire, live reactions or by grabbing a discount card. Moreover, sales increased with >15%, and customers mentioned both in the questionnaire as well as face-to-face (live reaction) that they are willing to pay the same or even a higher price for the (adjusted) product. This means that **HB1 and HB2 can be accepted** and the concept that helps closing the food waste loop should be **persevered**.

However, for the concept actually decrease the environmental impact due to food waste, it is important that the product line reaches as many customers as possible so that more of the food waste can be used to make the new products. This means the product should grab customers' attention. For the more critical customers it is important that the story behind is it clear and transparent. This should be communicated with employees as well, as they are the face behind the product for most customers.

Introduction
Discover & Define
Develop & Deliver
Present & Validate
Discussion, Conclusion & Reflection



3 rounds of testing

HYPOTHESES

- HC1

"Partners can assure 100% recycling of the food waste stream"
- HC2

"Employees are capable of correctly separating the food waste from the general waste, creating a clean food waste stream"

methods/tools	sample collection
	 Employees Potential partners

Three rounds of testing were done. One for testing HC1 by interviewing two potential partners to understand what happens to the food waste and whether actually 100% gets recycled. Moreover, an additional test was done using a physical prototype of the so-called organic 'SWILL' bin to test HC2 and check whether employees are capable of separating the food waste correctly in the right bin, since the food waste will only be recyclable if the stream is clean. As it appeared that employees needed some guidance in their disposal behaviour, a third test evaluated whether providing information about what could or could not be disposed with the food waste would help employees in creating a clean stream.

LEARN

Even though the third concept should be considered a 'final destination' for the inevitable remaining stream of food waste, it does provide a way to make STRIK's food waste stream 100% circular. Interviews with potential partners revealed that processing partners are able to recycle 100% of the collected food waste (N=2) and STRIK's employees are willing to- and capable of separating waste so that the food waste stream becomes more than 95% clean if they are educated and informed about what they can and cannot dispose. The costs savings for separating food waste from general waste weigh out the costs for implementing special garbage bins for food waste. All of the later assumes that **HC1 and HC2 can be accepted** and the concept that regenerates the food waste loop should be **persevered**, but only after other measurements are taken to first slow, narrow or close the food waste stream.

TO CONCLUDE

Throughout the previous chapter, three Minimum Viable Products (MVPs) were created and tested based on the key metrics of desirability and viability. The first MVP, an educational web-page informing customers about food waste prevention, was tested through a designed landing page. The landing page was promoted via Social Media, as STRIK has an immense customer reach on Facebook (± 8.000 followers). The results showed that even though there was a slight interest in information about food waste, respondents did not react to the 'call-to-action' (<1%). The latter was confirmed by additional comparisons of other Facebook posts. From the tests could be assumed that both the desirability as well as the viability is low for this concept. Therefore, the concept was pivoted.

The second MVP, a new product line made from wasted parts and products, was tested in several different ways. Sales numbers, in-store quantitative data collection (N=449), questionnaire output (N=161) and in-store interviews (N=10) revealed a high desirability (>10%) and viability for the concept (>15% sales increase with story-telling promotion).

The third MVP, anaerobic processing through a partnership, was tested using potential partner interviews (N=2) and in-store employee observations. From the tests could be implied that partners assure 100% recycling of food waste, while employees are capable of- and willing to separate the food waste from other waste in the STRIK stores. This means that, despite the given that this concept will not add any economic value, it does provide a solution to make STRIK's food waste stream fully, and thus 100% circular.

All of the latter leads to a perseverance of concept 2 in order to close STRIK's food waste loop and minimize the total weight of food waste going to waste processors. Additional concept 3 is recommended for future adoption as a way to make the food waste stream 100% circular and minimize the total weight of food going to the landfills.

The following chapter will dive deeper into concept 2 as a final design, looking into the financial aspects as well as design, packaging and marketing aspects.



4.4-SHAPING THE FINAL DESIGN

4.4.1 THE PRODUCT

For the selection of products it is important that there are products coming from a solid stream of food waste (bread, pastries) throughout the year in addition to products that are made from wasted parts depending on the season. This way the product line anticipates on the specific type of food waste in the food waste stream. To diminish the possibility that the demand becomes bigger than the offering and the story becomes more commercial than sustainable, the stocks are only filled based on what is available. The ultimate goal is that the food waste is in balance with the new product line sales, so that STRIK does not dispose more than they can reuse, as well as that they do not sell more than they dispose. Additionally these products could also be used for those give-away products that STRIK currently uses to build on local communities and customer relationships.

Moreover, it is important that for each product is communicated to the employees what is in the product. If this is not done correctly, employees might give an explanation that makes customers think about the products in a negative way. They should be trained on word choice and STRIK should explain to them how the product is produced. The most important aspect is that the products are not made from 'old' parts or products. This is not the case at all. The good parts are separated from the bad parts, whereas the remaining good parts are reused for the new recipe.s The parts that are unusable (such as whipped cream parts or custard parts) should be separated by the employees for anaerobic processing. Again, this requires training employees in doing this correctly and informing them about their role.

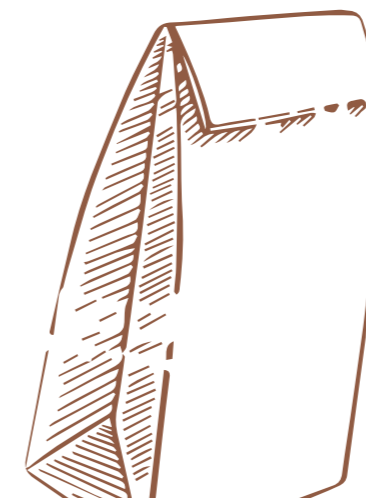
4.4.2 THE PACKAGING

An important aspect is that the product draws customers' attention through its packaging and promotion. Currently it occurs that some products are not even noticed by weekly-visiting customers (chapter 4.3.3). In order for the new product line to decrease environmental impact, it is important that it **draws customers' attention** so that sales increase to a point where there is a minimum stream of food waste left. STRIK's current color palette consists of the following colors.



The new product line should be **sustainable** in its appearance, but also draw attention in between the existing packaging colours. In terms of style and appearance it should match STRIK's current brand identity of **quality, tastefulness** and **accessibility**. To obtain the experience of a tasty yet honest product, it is important that part of the packaging remains **transparent** so that customers can see what is actually in the packaging. Especially considering this is a new product from STRIK, so STRIK should

diminish all possible doubts customers could have about the quality of the product. Moreover, in terms of packaging materials, previous research revealed that the impact of the packaging itself is significantly low compared to the food wasted due to not storing it correctly (Østergaard & Hanssen, 2018; Williams & Wikström 2011; Silvenius et al., 2014). Therefore the packaging material will be chosen based on what will **keep the product longest fresh** to minimize possible external food waste. A final mentioning goes to whether the packaging should be **pre-printed or not**. On the one hand packaging that is printed per product is more sustainable (Lecture Verspillingsfabriek, 2019), saving a bunch of add-on stickers and labels. However, on the other hand it is most likely more expensive and new packaging is required for each new product in the line. Therefore, those products that remain constant throughout the year (such as those made from bread-waste) should get pre-printed packaging, while the more dynamic products that could benefit from using the same packaging should get standardized packaging.



4.4.3 THE PRICE

For the price of the product it is important to determine what will be included in the price and what not. Where one could consider that there should not be calculated a price for the left-overs, as you would otherwise throw them away, another way to look at it is that it is an expensive ingredient considering it was already processed, transported and stored once. According to CEO van Geenen, 25% of the retail price are processing costs and 25% are ingredient costs. For a regular pastry (weighing about 115gr), the in-store price is €2,20 (€2,40 incl. BTW), so this means that ingredients and labour cost already €1,10 per pastry. In the spirit of 'creating value from waste', these labour- and ingredient costs that were already put into the product should be taken into account. Therefore, in calculating the kruidcake price, a price/kg of €9,57 for pastry left-overs should be used. As can be seen in graph 3, Kruidcakes use about 5,2kg of pastry left-overs for ±50 units, while

adding a selection of other ingredients, so the price of the Kruidcake should be €8,38. This way the **left-overs are treated as a valuable product instead of a waste product, in which labour and ingredients are already put in.** This price calculation should be used for each of the product in the new product line, in which 50% of the left-over product's store-price is used as ingredient price for the new product.

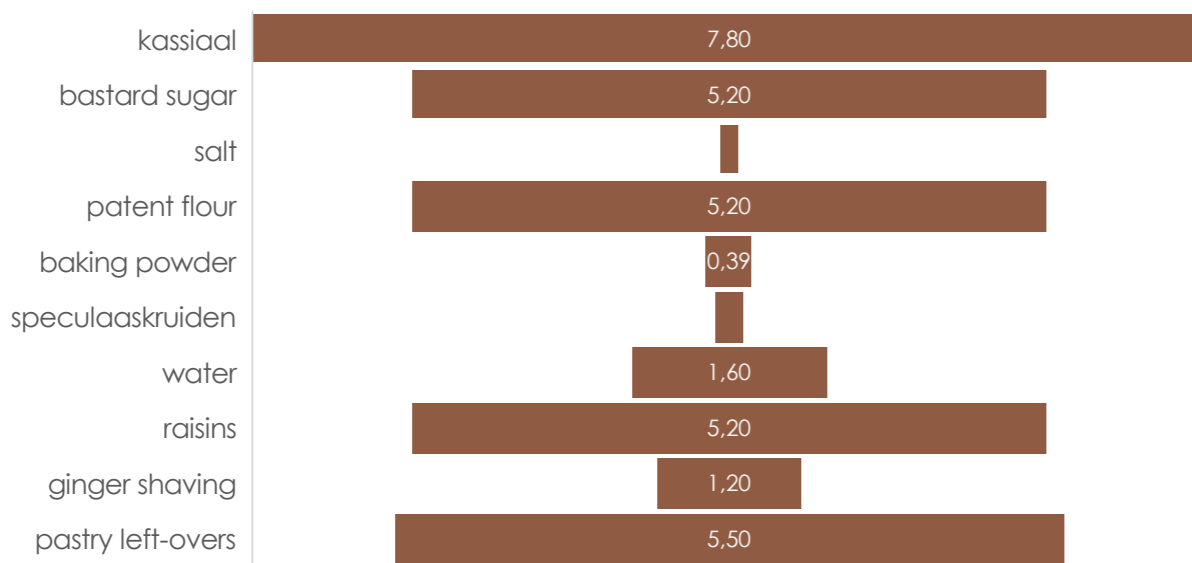
To gain additional social value from the success of the product line, STRIK could put some extra profit on the product to give to a charity of their choice at the end of the year, in line with fighting against- or doing something with food waste. They should make the stores compete with each other in terms of performance, and let the winning team decide on the charity at the end of the year. This way they include employees and give them a motivation for making the new product line succeed.

4.4.4 THE PROMOTION

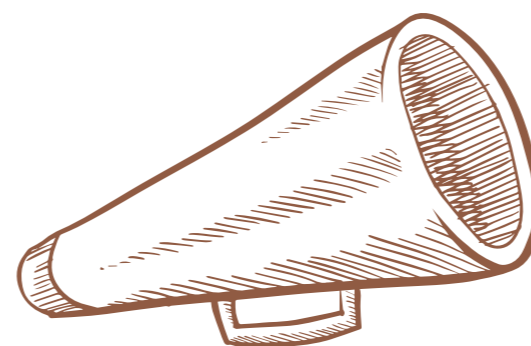
The promotion of the new product line should include methods for reaching the existing target group, but also potential new target groups both through physical (in-store) as well as through digital promotion. It is important that the strategy for promotion **differs per STRIK store**, as each store has a different target group with different desires. This should be evaluated together with the store **employees.** For reaching new potential target groups, especially the STRIK location in the city centre (Ziekerstraat) should promote the new products on the street, considering a lot of such younger target groups live here (Nijmegen, 2018). Here, STRIK could also get the attention of the people doing their sustainable grocery shopping at the Ekoplaza across the street, as mentioned both by STRIK employees and by customers throughout interviews. For the other stores STRIK should use their **network** and **partnerships** with local papers to promote the new product line to the existing target group. From the MVP testing can be implied also that Facebook can be a very accessible and easy way to reach a lot of (potential) customers for STRIK if they use the right approach (chapter 4.3.2).

For customers to get familiar with the new product line, STRIK should use **visual** Facebook promotions, but also **videos** to be transparent in the processing of the products. Finally, STRIK should communicate all of their sustainable initiatives on their website.

Aside from the ways of promotion, it is also very important to consider the **content** of the promotion. The product should match STRIK's brand identity, of which **quality** and **tastefulness** are important aspects. Therefore, customers should never experience the product being made from recycled parts as something negative even though the sustainable aspect should always be central to the promotion, as the MVP testing implied that the sustainable aspect is something that appeals to almost every target group (chapter 4.3.3). Therefore, word choice is critical. At Verspillingsverukkelijk.nl (2019) several brands use smart word choices to explain that the product is from recycled materials, but in a positive way. These should be used as inspiration to promote STRIK's new product line in a qualitative and tasteful way.

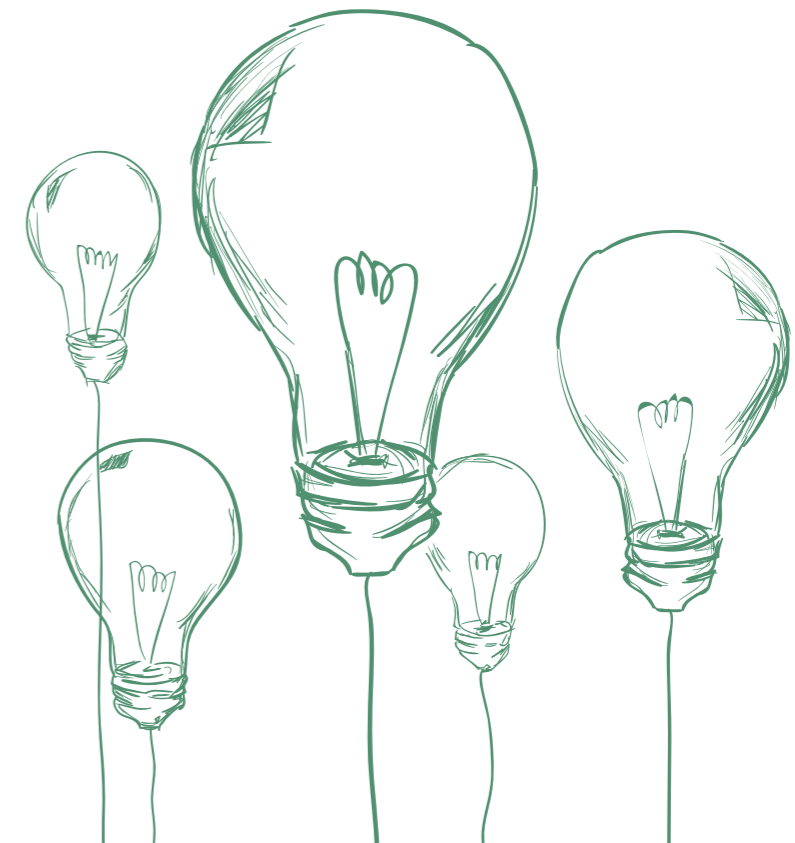


Graph 3: Kruidcake recipe (kg necessary for 50 Kruidcakes)



5 - Present & Validate

The final phase of the project includes the 'present & validate' phase. First, the final design will be presented, shaped based on the conclusions of sub-chapter 4.4. Then, the final design will be validated based on feasibility, desirability and viability, but also on the initially determined implementation criteria. Then, the entire graduation project will be discussed in which the limitations, the contribution to the research domain and the personal reflections will be included. A final project conclusion ends the last project phase.

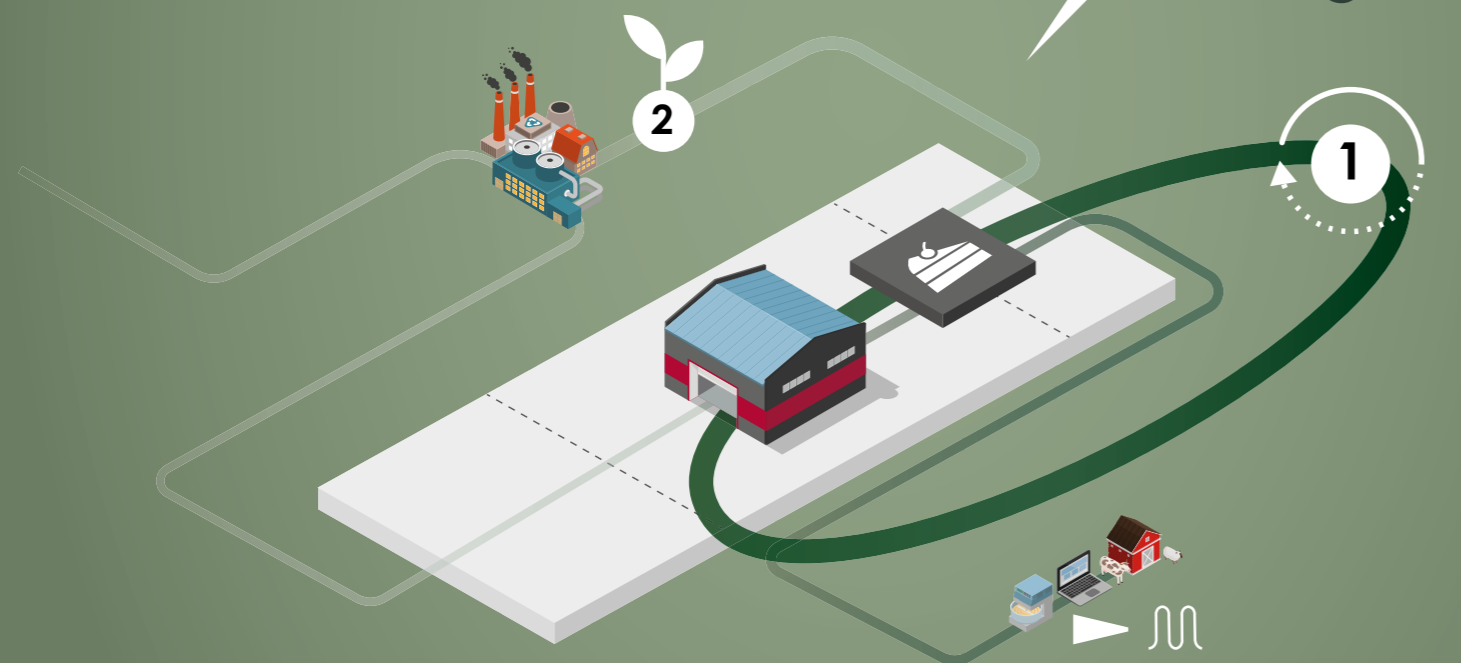


5.1 - PRESENTING THE FINAL DESIGN

FOOD WASTE LOOP

100% CIRCULAR

Over 12.000 kg of wasted food, with an estimated unnecessary emission of 40.000 kg CO₂ equivalent each year



Other measurements that can be taken to slow or narrow the food waste loop before anaerobic processing

When food is unnecessarily wasted, so are the impactful packaging, transportation, gas, ingredients and storing measurements (refrigeration) that were used or put into the food.



CLOSING THE FOOD WASTE LOOP BY INTRODUCING

A NEW PRODUCT LINE MADE FROM REUSED WASTED PARTS

- TRANSPARENT PART TO INCREASE QUALITY AND TASTEFULNESS PERCEPTION
- PACKAGING MATERIAL DEPENDING ON WHAT KEEPS PRODUCT LONGEST FRESH
- PRODUCTS AND STOCKS DEPENDING ON WASTE OFFER
- NEW REFRESHING PACKAGING IN LINE WITH CURRENT BRAND IDENTITY OF STRIK

The product line closes the food waste loop so that less of the waste gets transported to the landfills. This potentially saves ±6.800 kg CO₂ from the burning of STRIK's current weight of food waste only, while preventing the already emitted CO₂ from the product production to get wasted.

The reused parts are considered as valuable ingredients instead of as waste, by calculating 50% of the original production and ingredient costs into the new products' cost price. The new product line builds on the business model of increasing the in-store revenues through direct sales.

Optionally part of the new products' profits could get donated to a local charity, chosen by the store that has sold the most products. This way employees are stimulated to help the product line succeed, while they are included in the decision-making of the charity. STRIK creates additional social value by donating to the community and by involving their employees.

1



Circularity goal = reducing the weight of food within STRIK's waste stream

REGENERATING THE FOOD WASTE LOOP BY INTRODUCING

A PARTNERSHIP FOR ANAEROBIC PROCESSING



2

- No opportunities for a business model
- Employees should be educated about correct way of separating the food waste in order to obtain >95% clean food waste stream
- Circularity goal = reducing the weight of food waste transported to the landfills

The final destination for the inevitable stream of food waste, when all other measurements for narrowing, slowing and closing the food stream loop are taken. Can assure 100% circularity of STRIK's food waste stream.

5.2-VALIDATING THE FINAL DESIGN

In order to reach the 'innovation sweet spot' (figure 11), it is important that all three aspects of feasibility, desirability and viability are taken into account. The following sub-chapters discuss how each of the aspects was ensured within the final design. The focus is mainly on validating the final design for the new product line, as the anaerobic digestion is a recommended future step after all other measurements are taken to narrow, slow and/or close the food waste loop. For additional validation, a short validation session was organised together with the CEOs.

5.2.1 FEASIBILITY

Feasibility refers to what is functionally possible (Brown, 2009; Dennehy et al., 2019). This is the only key metric that was not evaluated in the MVP testing phase, simply because the focus was not on whether STRIK could persevere with the concept but because the focus was on whether they should. However, the new product line made from wasted parts and products is something STRIK is already familiar with, as they have been doing something similar throughout the years with their Kruidcakes. This means there is no investment needed from STRIK in new techniques or new ways of producing. Lastly, according to the CEOs, the solution is something they could and want to implement within the next few weeks, all implying a high feasibility of the final design

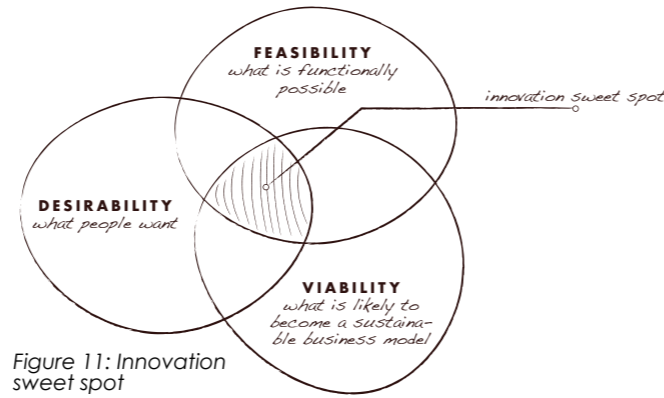


Figure 11: Innovation sweet spot

5.2.2 DESIRABILITY

Desirability refers to whether there is a desire of (potential) customers for the design. The new product line was tested on the desirability, revealing that customers are positive about the product (70%; N=10) and that they are likely to purchase such a product (47%; N=161). Additionally the CEOs mentioned they believe the solution fits their current product portfolio and would be a great way to show their customers about their sustainable innovations. This implies that there is a high desirability for the final design.

5.2.3 VIABILITY

Viability refers to whether STRIK could make a business model from the new product. From the MVP testing could already be implied that adjusting a product to promoting the sustainable story behind it would increase sales and people are willing to pay the same or even an higher price for such an adjusted product. Moreover, in chapter 4.4.3 'The price', cost calculations are made in which the wasted parts are considered as valuable instead of as waste, so that the initial labour and ingredients put into the wasted part are included in the business model, increasing the viability of the final design.

5.3-BACK TO THE IMPLEMENTATION CRITERIA

In the initial analysis phase several 'must', 'should', 'could' and 'won't' criteria were determined based on the company analysis. The final design should at least match the 'must' and 'won't' criteria. Each will be discussed below.

5.3.1 THE FINAL DESIGN MUST

Match the current target group:

The branding tries to emphasize the quality and tastefulness of the new products, which are values current customers link to STRIK. Moreover, MVP testing showed that the older target group also responds positively to STRIK investing in sustainable products (MVP 2).

Sticks to the brand identity and value proposition:

As mentioned above, STRIK emphasizes the quality and tastefulness of the product even though it fulfills a higher (sustainable) goal as well. There is consciously chosen for a more neutral, quality-like appearance while including transparent packaging parts to show customers the quality of the product.

Keep a profit-driven mindset:

By treated the wasted product parts as a valuable ingredient instead of a 'waste' product, the initial labour and ingredients put into the original product are included in the cost calculations of the new product. While reducing the environmental impact of their food waste, STRIK creates additional financial value by reselling the reused wasted parts.

5.3.2 THE FINAL DESIGN WON'T

Go outside of the existing or comparable market

The final design is something STRIK is already familiar with and that fits perfectly within their current market while possibly even attracting new target groups.

Grow beyond what they can handle

The product will only be stocked based on what is available in terms of food waste. This means some days there is more than others and customers are informed about this. This means that STRIK will never create more than they can handle.

5.3.3 SHOULD & COULD

The final design emphasized the sustainable story behind the product, playing not only into **trends** of sustainability, but also in that of being unique and distinctive through storytelling (Marktdata, 2017). It allows STRIK to **include their employees** in separating the food waste, in helping with the creation of new products from wasted parts but also by including them in the decision making for sharing part of the products' profits to a charity of choice. Moreover, by adding a new product section to the existing store, **growth in existing stores** is stimulated. The promotion and advertising of the new product line will be **adjusted based on the specific store**, each emphasizing a different aspect of the product.

6-DISCUSSION, CONCLUSION & REFLECTION

Limitations, contribution, conclusion & personal reflection

6.1-THESIS CONCLUSION: BACK TO THE RESEARCH QUESTION

Let's go back to the initially defined research question of:

"How should STRIK patisserie contribute to a Circular Economy, while at the same time creating additional economic value?"

As the Revamped Double Diamond model would lead us from a phase of 'don't know, could be' to one of 'do know, should be', we should now be able to answer the initially determined research question:

STRIK should move from a linear towards a circular economy by first focusing on the unnecessary greenhouse gas emission from their food waste. This is a familiar and controllable category to start with, while the environmental impact

is large considering that while food is wasted, packaging, gas, transportation, ingredients and storing measurements are wasted as well. They should do this by creating a new product line made from wasted parts, in which the wasted parts are treated as a valuable ingredient instead of a wasted one. This way they will turn their waste into value by closing the food waste loop, thus building towards a circular economy while turning it into a profitable business model. A future step would be to partner up for anaerobic processing, so that when every measurement is taken to slow, narrow or close the food waste loop, the inevitable remaining stream of food waste is regenerated into compost or green gas, making the food waste stream 100% circular.

6.2-LIMITATIONS

Throughout the project, many different methods were used to find an answer to the research question. However, considering there was no prior research or data available from the company, throughout the process decisions had been made on what to focus on and what not to focus on, especially considering the rather short time span and the broad approach. This section dives deeper into where such situations occurred and how was dealt with them.

6.2.1 DEALING WITH BIAS

A first important aspect to consider is bias. With the prior knowledge about and history with the company, the likelihood of bias occurring increased. In some cases bias was used as a privilege, to deductively pre-determine the categories for which information should be collected. However, it also led to quicker 'tunnel vision' and taking on a future-employee perspective instead of the perspective from an SPD student. To deal with bias as much as possible, the data was regularly validated by the employees and the CEOs. Moreover, in the case of MVPs, additional testing was done until the results did not simply depend on one outcome anymore. However, it is crucial that data, results and conclusions are constantly checked with the company, so that solutions developed with bias will not occur.

6.2.2 ANALYSING THE DATA

Throughout the project, several methods for data collection were used, amongst

which ethnographic observations, interviews and quantitative data comparison. However, none of these were analysed on significance or coding patterns, mainly due to the lack of time. Even though the outcome of this report does not require analysing the data in such a way, considering the data is mainly used as indicator or to make direction suggestions, it can be helpful to revise or re-analyse the data if it were to be used in a broader, more generalized perspective.

6.2.3 NEED FOR FUTURE RESEARCH

As there was no prior data available about the company, all the data had to be collected manually. However, considering there was so much data to collect, the overall collection of data was done with a broad perspective. Future research should dive deeper into the data per specific subject in order to make further conclusions on the numbers and statistics. STRIK could use this to learn from, focusing on optimization, cost control and efficiency.

This same goes for the carbon footprint analysis. Even though this analysis does conclude a graph with CO₂ equivalent emission numbers, the limited data available led to specific calculations intentionally including or excluding parts of the calculations. While the data is simply used as indicator to reveal the impact per category, in order to state facts about the data, future research should dive deeper into the entire end-of-life greenhouse gas emission per category.

6.3-CONTRIBUTION TO THE RESEARCH DOMAIN

This project specifically focuses on circularity solutions tailor-made for STRIK patisserie, limiting the contributions to broader domains. However, this does not mean that the thesis does not contribute to the domain of strategy and/or design.

First, the lean approach for concept testing used within this thesis is considered a valuable way of testing which can and should be applied in other studies or companies as well. This rather rapid and cheap way of testing challenges your pre-conceptions, but most importantly, reveals interesting insights about the implementation of potential concepts. Especially for those companies that are sure their innovations will succeed, with this method they can easily test whether this is the case or not, before spending a lot of money on something that might never succeed.

Second, working with the Triple Layered Business Model Canvas instead of with the original Business Model Canvas is something companies should permanently switch to. The CO₂ clock

is ticking away and time is running out. Sustainability should not be a choice anymore, it should be part of your company's strategy. Using adjusted models like the TLBMC as a standard will help companies implement sustainability and ethics at an early stage.

The third contribution is for the consultants or strategic product designers working with profit-driven SMEs. From working on this project I experienced the 'power of data'. Especially when the data is about cost savings or potential revenues. A lot of companies are aware of pitfalls or opportunities within their company, but nothing is as strong as the data proving it. There were several moments where I surprised the company CEOs with data, even though they probably already knew this was happening. This way of projecting the data in an understandable way, and especially the costs that could be saved or the profits that could be increased, helps changing companies' opinions about important matters or interesting innovations.

6.4-PERSONAL REFLECTION

At an early stage in the bachelor's program of IDE I figured I was more of a strategic entrepreneur than an actual product designer. Not only did I start my own sustainable fashion company in 2017 (after which I sold the entire label begin 2020), I also found myself taking on a role of corporate entrepreneur during my internship at Heineken, working on several initiated sustainability- and efficiency-increasing projects. SPD was the (strategically) right fit for me as an Industrial Designer. When I was discussing a graduation project at Heineken on sustainability, I was in serious doubt. On the one hand I knew that my thesis could make a huge impact because of Heineken's reach and capabilities, but on the other hand this would only happen if the report did not disappear in the major to-do-pile of projects big corporation like Heineken usually have. At the same time my involvement in the company of my parents in law (STRIK) grew as I co-managed the first ice-cream saloon in 2019, while they coped with sustainability issues themselves. This inspired me to take on the challenge of trying to implement sustainability in an SME instead of in a big corporate, which is in my opinion much more challenging considering the lack of expertise, the profit-driven mindset and the lack of financial capital available for such sustainability projects.

The graduation experience

"I started this thesis with a lot of pre-conceptions about- and personal concerns with the company and the projects' outcome. Throughout the process I learned to focus on what is suitable from an IDE and SPD perspective instead of from a future-manager perspective".

I've experienced what it's like to start a project literally from scratch, as there was no prior data available and no student had been here to 'pave the way' a little bit. This was tough, challenging, but also something I definitely learned a lot from. At first this made me go way too broad and have more personal concerns with the project and its outcomes. However, with some guidance along the way, I learned to take on a consulting role with an SPDer's perspective instead of a future-manager's one. I have gotten to know more and more about sustainability, definitely from an SME perspective, which has made me even more enthusiastic to try and find ways where sustainability and profits can go together.

A characteristic I discovered about myself is the perseverance to carry on for 5 months straight. Whenever I missed a week of work on the graduation project due to other work or circumstances, I would pick up the next week with 200% energy instead of postponing my deadlines. I should, however, be less stubborn in asking people for help. I

have always been the type of student that likes to try and fix it herself before asking someone, but in the last phase of the project I experienced that asking for help can be refreshing and actually inspiring, especially when you are too deep into something so that tunnel-vision is inevitable.

Finally, something I needed to force myself to do during the graduation project is focus. 'Focus' has been the guiding word during the project, while this is something I have always struggled with, especially when I need to stick to a page limit. My coaches have helped me so much in doing this. Even though it was a big step for me to leave out things and acknowledge that some things are not necessary or interesting enough for the report, I now see how much it has helped me focus and how it makes my conclusions and findings much stronger and clearer.

However, aside from all of the latter, the thing that has taught me most during the graduation thesis is the power of MVPs. I had never worked with MVPs before, and especially with my set of pre-conceptions and prior-knowledge due to my history with the company, this method of rapid and cost-free testing has opened my eyes in terms of that one should never build simply on his or her own assumptions. Such testing is so valuable, even if it is just asking 10 customers about their opinion. This is something I will most definitely take with me in my career.

The STRIK experience

Throughout the entire graduation project I was kept free to do whatever I wanted. Data was available at any moment, I simply needed to show initiative to get it. I have gotten to know many people that are somehow related to the company and learned so much about why STRIK does something the way they do. This is something I would have never be able to learn in such a short time-span if I were to simply work at STRIK. Moreover, in collecting as much data as possible, I found even more interesting opportunities for improvements along the way. I am proud to take all of these learnings and personal developments into my next phase of working at STRIK and possibly taking over the company in the far future. And in case this graduation report would end up in the to-do-pile here as well, I can now own-handedly make sure the insights and findings from the thesis will be wisely used.

REFERENCES

A

- Abdelaziz, O., Fricke, B., & Vineyard, E. A. (2012). Development of low global warming potential refrigerant solutions for commercial refrigeration systems using a life cycle cli-mate performance design tool.
- Abnamro.nl. (2018). Trends en ontwikkelingen in de machine-industrie. Online available at: <https://www.risicosinbeeld.nl/sector-en/industrie/machine-industrie/trends-en-ontwikkelingen-in-de-machine-industrie/>
- Anastasia. (2015). In Cleverism.com. Key Partners in Business Model Canvas. Online available at: <https://www.cleverism.com/key-partners-in-business-model-canvas/>
- Andersen, M.S. (2007). "An introductory note on the environmental economics of the circular economy", Sustainability Science, Vol. 2, No. 1, pp. 133-140.
- Ansari, F. A., Nasr, M., Guldhe, A., Gupta, S. K., Rawat, I., & Bux, F. (2019). Techno-economic feasibility of algal aquaculture via fish and biodiesel production pathways: A commercial-scale application. Science of The Total Environment, 135259
- ANWB. (2019). Dieselprijzen Europa. Online available at: <https://www.anwb.nl/vakantie/reisvoorbereiding/dieselprijzen-europa>
- Autoweek.nl (2019). Kenteken check. Online available at: <https://www.autoweek.nl/kentekencheck>

B

- Bakkersinbedrijf. (2018). Trends voor 2018: revolutie of evolutie? Online available at: <https://www.bakkersinbedrijf.nl/nieuws/trends-2018-revolutie-evolutie>
- Bank, C. (2014). Design & Dev: 15 ways to test your minimum viable product. Online available at: <https://thenextweb.com/dd/2014/11/12/15-ways-test-minimum-viable-product/>
- Bambale, A. J. (2014). Relationship between Servant Leadership and Organizational Citizenship Behaviors: Review of literature and future research directions. Journal of Marketing and Management, 5 (1), 1-16.
- Bluimincx, N. (2008). Bakkerswereld: Omzetverdeling bakkerij naar doelgroep. Online available at: <https://www.bakkerswereld.nl/nieuws/nieuws/2008/02/omzetverdeling-bakkerij-naar-doelgroep-1015236>
- Board of innovation. (2019). Our favorite ideation tools. Online available at: https://www.boardofinnovation.com/staff_picks/our-favorite-ideation-tools/
- Bocken, N. M., de Pauw, I., Bakker, C. (2015). Product design and business model strategies for a circular economy. Sustainable Design & Manufacturing Conference, Seville.
- Bocken, N.M.P., de Pauw, I., Bakker, C., van der Grinten, B. (2016). Product design and business model strategies for a circular economy. J. Ind. Prod. Eng. 33, 308-320.
- Brennan, G., Tennant, M. and Blomsma, F. (2015). Chapter 10. Business and production solutions: Closing Loops & the Circular Economy, in Kopnina, H. and Shoreman-Ouimet, E. (Eds). Sustainability: Key Issues. Routledge: EarthScan, pp.219-239.
- Brenner, W., Uebernickel, F., & Abrell, T. (2016). Design thinking as mindset, process, and toolbox. In Design thinking for innovation (pp. 3-21). Springer, Cham.
- Brook Lyndhurst. Food behaviour consumer research: quantitative phase; 2007, Retrieved from <http://www.wrap.org.uk/content/food-behaviour-consumer-research-quantitative-phase>
- Brown, T. (2009) Change by design: how design thinking transforms organizations and inspires innovation. New York: Harper Business
- Brundtland, G. H. (1987). Our common future—Call for action. Environmental Conservation, 14(4), 291-294.

C

Callebaut (2019a) main website. Online available at: <https://www.callebaut.com/nl-NL/homepage>

Callebaut (2019b) Cocoa Horizons. Online available at: <https://www.callebaut.com/nl-NL/sustainable>

Centraal Bureau voor de Statistiek (2017). Inkomensstatistiek: herziene cijfers. Online available at: <file:///Users/roosvangeenen/Downloads/Revisie-Inkomensstatistiek.pdf>

Centraal Bureau voor de Statistiek (2018a). Inkomensverschillen onder laagopgeleiden het kleinst. CBS-nieuwsbericht, 7 juni 2018.

Centraal Bureau voor de Statistiek. (2018b). Financiële situatie van een- en tweeverdieners. Online available at: https://www.google.com/url?sa=t&rcf=j&q=&esrc=s&source=web&cd=1&ved=2ahUKewj_OvqThfblAhXGEVAKHQdPBA8QFjAAegQLBRAC&url=https%3A%2F%2Fwww.cbs.nl%2F-%2Fmedia%2F_pdf%2F2018%2F32%2Ffinanciele-situatie-ee-en-tweeverdieners.pdf&usg=AOvVaw0eNKK7RN_lqkJKvEZsO

Centraal bureau voor de Statistiek (2018c). Het industriële landschap van Nederland. Online available at: <https://www.cbs.nl/nl-nl/achtergrond/2018/31/het-industriële-landschap-van-nederland>

Centraal Bureau voor de Statistiek (2019). Aandeel MKB in Nederlandse economie. Online available at: <https://www.staatvanhetmkb.nl/themadash-board/economisch-belang>

Chamber of Registration. (2019). Business Model Canvas. Online available at: <https://www.kvk.nl/advies-en-informatie/innovatie/organisatievernieuwing/business-model-canvas/>

Chapman, L. (2007). Transport and climate change: a review. *Journal of transport geograp-hy*, 15(5), 354-367.

Chiaroni, D., Urbinati, A., & Dabic, M. (2018). Implementing circular economy business models: a case study of a large Italian food multinational company.

Circular Design Guide. (2019). Methods. Online available at: <https://www.circulardesignguide.com/post/brainstorm-circular-solutions>

Circulo Collectiv. (2019). Mobility in a circular economy. Online available at: <https://medium.com/@circulo.collective/mobility-in-a-circular-economy-5f56d265610e>

Climate Smart (2014). To the moon & Back - Food and Beverage Industry Brief Launch. Online Available at: <https://climatesmart-business.com/2014/07/17/to-the-moon-back-food-and-beverage-industry-brief-launch/>

Co2emissiefactoren.nl. (2018). CO2 emissiefactoren 2018. Online available at: <https://www.co2emissiefactoren.nl/wp-content/uploads/2019/01/co2emissiefactoren-2018.pdf>

Coles R. (2003). Introduction. In: Coles R, McDowell D, Kirwan MJ, editors. *Food packaging technology*. London, U.K.: Blackwell Publishing. CRC Press. p 1-31.

D

Dean, T. J., & McMullen, J. S. (2007). Toward a theory of sustainable entrepreneurship: Reducing environmental degradation through entrepreneurial action. *Journal of business venturing*, 22(1), 50-76.

Dekker, S. (2017). Bakkerswereld - Trends patisserie: donkere smaken en gezond genieten. Available at: <https://www.bakkerswereld.nl/de-bakkerij/nieuws/2017/11/trends-patisserie-donkere-smaken-en-gezond-genieten-10144166>

Delahaye, R., Edens, B., Graveland, C., Hoekstra, R., Koren, W., Lammers, E., Lodder, B., Pieters, A., van Rossum, M., Schenau, S., Schuerhoff, M., Smits, J.P., van Velzen, M., Verberk, M., Vuik, J., Zult, 25 D., 2013. *Environmental Accounts of the Netherlands 2012*, Statistics Netherlands, Den Haag, Netherland

Dennehy, D., Kasraian, L., O'Raghallaigh, P., Conboy, K., Sammon, D., & Lynch, P. (2019). A Lean Start-up approach for developing minimum viable products in an established company. *Journal of Decision Systems*, 28(3), 224-232.

Designabetterbusiness.com (2019). Design criteria canvas. Available at: <https://www.designabetterbusiness.tools/tools/design-criteria-canvas>

Duurzaamnieuws. (2019). Millennials willen échte duurzame merken, geen MVO. Online available at: <https://www.duurzaamnieuws.nl/millennials-willen-echte-duurzame-merken-geen-mvo/>

E

Elia, V., Gnoni, M. G., & Tornese, F. (2017). Measuring circular economy strategies through index methods: A critical analysis. *Journal of Cleaner Production*, 142, 2741-2751.

Elkington, J. (1994). Towards the sustainable corporation: Win-win-win business strategies for sustainable development. *California Management Review*, 36(2), 90-100

Ellen MacArthur Foundation (EMF), (2013). *Towards the Circular Economy vol.1. Isle of Wight.*

Ellen MacArthur Foundation (EMF), (2014). *Towards a Circular Economy, Volumes 1-3*

Ellen MacArthur Foundation (EMF), (2015). *Circularity indicators: An approach to measuring circularity. Methodology.*

Ellen MacArthur Foundation (EMF), (2016). *The Circular Design guide. Cocept Selection.* Online Available at: https://www.ellen-macarthurfoundation.org/assets/design/Concept_Selection_Final.pdf

Ellen MacArthur Foundation (EMF), (2019). *Circular economy system diagram.*

Emerce.nl. (2019). 9 onlineconsumententrends voor 2019, het jaar van de normering. Online available at: <https://www.emerce.nl/achtergrond/9-online-consumententrends-2019-jaar-normering>

Espinoza-Orias, N., Stichnothe, H., & Azapagic, A. (2011). The carbon footprint of bread. *The International Journal of Life Cycle Assessment*, 16(4), 351-365.

Estiri, M., Hasangholipour, T., Yazdani, H., Nejad, H.J. & Rayej, H. (2010) Food products consumer behaviors: the role of packaging elements. *Journal of Applied Sciences*

Euchner, J., & Ganguly, A. (2014). Business model innovation in practice. *Research-Technology Management*, 57(6), 33-39.

F

Fernandez, M. (2019). 11 Web Design Principles that Will Boost Your Conversion Rate. Online available at: <https://optimmonster.com/11-web-design-principles-that-will-boost-your-conversion-rate/>

Fitzpatrick, D. (2018). AEIOU Observation Framework. Online available at: <https://openpracticelibrary.com/practice/aeiou-observation-framework/> Fjeldstad, Ø. D., & Snow, C. C. (2018). Business models and organization design. *Long Range Planning*, 51(1), 32-39.

Fsin.nl. (2017). Millennials stuwen restaurantbezoeken. Online available at: <https://fsin.nl/actueel/nieuws/452/millennials-stuwen-restaurantbezoeken>

G

Gafsi, M., B. Legagneux, G. Nguyen, and P. Robin (2006). Towards sustainable farming systems: Effectiveness and deficiency of the French procedure of sustainable agriculture. *Agricultural Systems* 90:226-42. doi:10.1016/j.agsy.2006.01.002.

Geissdoerfer, M., Bocken, N. M., & Hultink, E. J. (2016). Design thinking to enhance the sustainable business modelling process—A workshop based on a value mapping process. *Journal of Cleaner Production*, 135, 1218-1232.

Geissdoerfer, M., Savaget, P., Bocken, N. M., & Hultink, E. J. (2017). The Circular Economy—A new sustainability paradigm? *Journal of cleaner production*, 143, 757-768.

Geissdoerfer, M., Morioka, S. N., de Carvalho, M. M., & Evans, S. (2018). Business models and supply chains for the circular economy. *Journal of cleaner production*, 190, 712-721.

Geng, Y., Doberstein, B. (2008). Developing the circular economy in China: Challenges and opportunities for achieving "leapfrog development." *Int. J. Sustain. Dev. World Ecol.* 15, 231-239.

Gfk. (2018). *ShoppingTomorrow 2018.* Online available at: <https://www.shoppingtomorrow.nl/nl/consumentenonderzoek>

Ghodeswar, B. M. (2008). Building brand identity in competitive markets: a conceptual model. *Journal of product & brand management*, 17(1), 4-12.

Göbel, C., Langen, N., Blumenthal, A., Teitscheid, P., & Ritter, G. (2015). Cutting food waste through cooperation along the food supply chain. *Sustainability*, 7(2), 1429-1445.

Gommans, J. (2018). Bakkerswereld.nl - Bewust (on)gezond genieten? Online available at: <https://www.bakkerswereld.nl/de-bakkerij/blog/2018/01/bewust-ongezond-genieten-10144859?vakmedianet-approve-cookies=1&ga=2.253096073.1496390147.1570181319-1899948938.1570181319>

Graham-Rowe, E., Jessop, D. C., & Sparks, P. (2014). Identifying motivations and barriers to minimising household food waste. *Resources, Conservation and Recycling*, 84, 15-23. doi:10.1016/j.resconrec.2013.12.005

Greenhousegas Protocol. (2005). *Calculating HFC and PFC Emissions from the Manufacturing, Installation, Operation and Disposal of Refrigeration & Air-conditioning Equipment.* Online available at: <https://ghgprotocol.org/calculation-tools>

Greenhouse gas Protocol (2015b). *Category 5: Waste Generated in Operations, 2015.* Online Available at: https://ghgprotocol.org/sites/default/files/standards_supporting/Ch5_GHGP_Tech.pdf

H

Holbrook, A. L., Green, M. C., & Krosnick, J. A. (2003). Telephone versus face-to-face interviewing of national probability samples with long questionnaires: Comparisons of respondent satisficing and social desirability response bias. *Public opinion quarterly*, 67(1), 79-125.

I

in 't Veld, A. (2018). 11 ouderentrends om in 2018 rekening mee te houden. Online available at: <https://www.bureauvijftig.nl/11-ouderen-trends-om-2018-rekening-mee-houden/>

J

Jawahir, I. S., & Bradley, R. (2016). Technological elements of circular economy and the principles of 6R-based closed-loop material flow in sustainable manufacturing. *Procedia Cirp*, 40, 103-108.

Jawahir, I. S., Dillon, O. W., Rouch, K. E., Joshi, K. J., Venkatachalam, A., & Jaafar, I. H. (2006). Total life-cycle considerations in product design for sustainability: A framework for comprehensive evaluation. In *Proceedings of the 10th International Research/Expert Conference*, Barcelona, Spain (pp. 1-10).

Joyce, A., & Paquin, R. L. (2016). The triple layered business model canvas: A tool to design more sustainable business models. *Journal of Cleaner Production*, 135, 1474-1486.

Johansson, B. (2003). Transportation fuels – a system perspective. In: Hensher, D.A., Button, K.J. (Eds.), *Handbooks in Transport 4: Handbook of Transport and the Environment*. Elsevier, pp. 141–158.

K

Kidsenjongeren.nl. (2016). Een nieuwe generatie ouders vraagt om een andere aanpak. Online available at: <https://www.kidsenjongeren.nl/maatschappij/generation/>

Klein Lankhorst, M. (2019). De correspondent: De papierindustrie stoot meer CO2 uit dan de luchtvaart. Is het nog wel verantwoord om papieren boeken uit te geven? Online available at: <https://decorrespondent.nl/9463/de-papierindustrie-stoot-meer-co2-uit-dan-de-luchtvaart-is-het-nog-wel-verantwoord-om-papieren-boeken-uit-te-geven/509327049-b14c9d5f>

Konietzko, J.; Bocken, N.; Hultink, E.J. (2019). Mapping and analyzing circular innovation ecosystems. *Sustainability*.

Konietzko, J., Bocken, N., & Hultink, E. J. (2020). A Tool to Analyze, Ideate and Develop Circular Innovation Ecosystems. *Sustainability*, 12(1), 417.

Kramer, M. R., & Porter, M. (2011). Creating shared value. *Harvard business review*, 89(1/2), 62-77.
Lammertink, S. (2017). *Emerce.nl - De spending power van Generatie Z*. Online available at: <https://www.emerce.nl/achtergrond/spending-power>

L

Laubscher, M., & Marinelli, T. (2014). Integration of circular economy in business. In *Proceedings of the Conference: Going Green—CARE INNOVATION*.

Lee, K. L. (2008). An examination between the relationships of conflict management styles and employees' satisfaction. *International Journal of Business and Management*, 3(9), 11-25.

Lindner, F. & Maes, C. (2018). Patisserie trends. Online available at: https://www.foodinspirationmagazine.com/nl_NL/6352/91300/patisserie-trends_in_2018.html

M

Marktdata.nl. (2017). ONTWIKKELINGEN EN TRENDS IN DE BAKKERIJBRANCHE. Online available at: <https://www.marktdata.nl/nieuws/ontwikkelingen-en-trends-in-de-bakkerijbranche>

Markteffect.nl. (2018). Doen millennials anders boodschappen dan baby boomers? Online website available at: <https://www.markteffect.nl/meer/nieuws/generatie-boodschappen>

Marsh, K., & Bugusu, B. (2007). Food packaging—roles, materials, and environmental issues. *Journal of food science*, 72(3), R39-R55.

Maxwell, J. A., & Chmiel, M. (2014). Generalization in and form qualitative analysis. In U. Flick (Ed.), *The SAGE handbook of qualitative data analysis* (pp. 541–553). Thousand Oaks, CA: Sage.

Meadows, L. M., & Morse, J. M. (2001). Constructing evidence within the qualitative project. In J. M. Morse, J. M. Swanson, & A. Kuzel (Eds.), *The nature of qualitative evidence* (pp. 187–202). Thousand Oaks, CA: Sage.

Menkveld, N. (2019). AbnAMRO: Gezondheid? De foodsector aan zet. Online available at: <https://insights.abnamro.nl/2019/04/gezondheid-de-food-sector-aan-zet/>

Menkveld, N. Duijn, S. (2019). AbnAMRO: Suiker minder populair, maar chocolade ontspringt de dans. Online available at: <https://insights.abnamro.nl/2019/04/suiker-minder-populair-maar-chocolade-ontspringt-de-dans/>

Milieubarometer. (2019). Triade Party Rent – 2016. Online available at: <https://www.milieubarometer.nl/CO2-footprints/co2-footprint/triade-party-rent-2016/>

Milieucentraal. (2017). Feiten en cijfers over verspillen van voedsel door consumenten in 2016. Online available at: <https://www.milieucentraal.nl/media/3725/factsheet-voedselverspilling-huishoudens-mei-2017.pdf>

Milieucentraal. (2019a). Drinkwater. Online available at: <https://www.milieucentraal.nl/in-en-om-het-huis/gezonde-leefomgeving/gezond-in-en-om-huis/drinkwater/>

Milieucentraal.nl. (2019b). Papier en karton: bij het oud papier. Online available at: <https://www.milieucentraal.nl/minder-afval/welk-afval-waar/papier-en-karton/>

Mizsey, P., Newson, E., 2001. Comparison of different vehicle power trains. *Journal of Power Sources* 102, 205–209.

Morse, J. M. (2015). Critical analysis of strategies for determining rigor in qualitative inquiry. *Qualitative health research*, 25(9), 1212-1222.

Morse, J. M., Barrett, M., Mayan, M., Olson, K., & Spiers, J. (2002). Verification strategies for establishing reliability and validity in qualitative research. *International journal of qualitative methods*, 1(2), 13-22.

Morse, J. M., & Mitcham, C. (2002). Exploring qualitatively-derived concepts: Inductive—deductive pitfalls. *International Journal of Qualitative Methods*, 1(4), 28-35.ISO 690

Müller, R. M., & Thoring, K. (2012). Design thinking vs. lean startup: A comparison of two user-driven innovation strategies. *Leading through design*, 151, 91-106.

N

Nederlandvoedselland.nl. (2019). 709 miljoen kilo verspilde moeite. Online available at: <https://www.nederlandvoedselland.nl/artikel/709-miljoen-kilo-verspilde-moeite>

Nessler, D. (2016). How to apply a design thinking, HCD, UX or any creative process from scratch

Neijland, M. (2017). Trends: Millennials, Generation X of toch de Babyboomers? Online available at: <https://www.bodylifebelux.nl/magazine/artikel/855/15654/trends--millenials--generation-x-of-toch-de-babyboomers?>

Nibud (2016). Besteding van ouderen. Online available at: https://www.nibud.nl/wp-content/uploads/Bestedingen-van-ouderen_Nibud_PWC_juni-2016.pdf

Nibud (2018). Rondkomen na pensionering, nu en in de toekomst (2018). Online available at: <https://www.nibud.nl/beroepsmatig/rondkomen-na-pensionering-nu-en-in-de-toekomst-2018/>

Nidumolu, Ram, C K Prahalad, and M R Rangaswami., 2009. "Why Sustainability Is Now the Key Driver of Innovation." *Harvard Business Review* 87 (9): 56–64

Nijmegen. (2018). Demografische verkenning. Online available at: https://www.nijmegen.nl/rapportzoeker/Docs/2018_Demografische_verkenningen.pdf

NRDC. (2006). Smart Paper Policies Are Good for Business. *Natural Resources Defense Council's Website*.

O

Olivo, F. (2019). What is an MVP Website? What are its Benefits? Online available at: <https://sagapixel.com/web-design/what-is-mvp-website/>

Ordermentum Insights. (2019). Bakery Trends for 2019 - We've rounded up the biggest trends of the year. Online available at: <https://www.ordermentum.com/blog/bakery-trends-for-2019-weve-rounded-up-the-biggest-trends-of-the-year>

Østergaard, S., & Hanssen, O. (2018). Wasting of Fresh-Packed Bread by Consumers—Influence of Shopping Behavior, Storing, Handling, and Consumer Preferences. *Sustainability*, 10(7), 2251.

P

Paardekoper.nl. (2018). Trends in patisserie vertaald naar packaging design. Online available at: https://www.paardekooper.nl/nl_NL/blog/item/trends-in-patisserie-vertaald-naar-packaging-design-1401/

Pacheco, D. F., Dean, T. J., & Payne, D. S. (2010). Escaping the green prison: Entrepreneurship and the creation of opportunities for sustainable development. *Journal of Business Venturing*, 25(5), 464-480.

Pearce D, Turner RK (1990) *Economics of natural resources and the environment*. Harvester Wheatsheaf, London

PLO. (2019). Planbureau voor de leefomgeving: Circulaire economie in kaart. Online available at: <https://www.pbl.nl/publicaties/circulaire-economie-in-kaart>

Polit, D. F., & Beck, C. T. (2012). *Nursing research: Generating and assessing evidence for nursing practice* (9th ed.). Philadelphia: Lippincott, Williams & Wilkins.

Porter, M. (1985) *Competitive Advantage*, New York: The Free Press.

Project Entrepreneur. (2019). Build, Measure, Learn: How to Test Your MVP (Minimum Viable Product). Online website, available at: <http://projectentrepreneur.org/inspiration/build-measure-learn-how-to-test-your-mvp-minimum-viable-product/>

Pwc.nl. (2019). Terwijl in Nederland de bevolking groeit afneemt, komen er tot 2025 wereldwijd een miljard mensen bij. Online available at: <https://www.pwc.nl/nl/themas/megatrends/demografie.html>

R

Rajaniemi, M., Mikkola, H., & Ahokas, J. (2011). Greenhouse gas emissions from oats, barley, wheat and rye production. *Agron. Res*, 9, 189-195.

Retailinsiders.nl. (2019). Brood- en banketzaken. Online available at: <https://www.retailinsiders.nl/branches/foodspeciaalzaken/brood-en-banket-zaken/>

Rev.com. (2019). How to Analyze Interview Transcripts in Qualitative Research. Online available at: <https://www.rev.com/blog/analyze-interview-transcripts-in-qualitative-research>

Ries, E. (2011). *The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses*. New York: Crown Business.

Rijksdienst voor ondernemend Nederland. (n.d.). Rekentool_Verpackingsmateriaal. Online available at: https://webcache.googleusercontent.com/search?q=cache:BLJOfQ1BvzUJ:https://www.rvo.nl/sites/default/files/bijlagen/Rekentool_verpackingsmateriaal.

Rijksdienst voor ondernemend Nederland (2019a). MIA/ VAMIL. Brochure en Milieulijst 2019.

Rijksdienst voor ondernemend Nederland (2019b). Erkende Maatregelenlijst Energiebesparing Bedrijfstak levensmiddelenindustrie. Online available at: <https://www.rvo.nl/onderwerpen/duurzaam-ondernemen/energie-besparen/informatieplicht-energiebesparing/bedrijven-en-instellingen/erk-ende-maatregelenlijsten>

Rizos, V., Behrens, A., Kafyeke, T., Hirschnitz-Garbers, M., & Ioannou, A. (2015). The circular economy: Barriers and opportunities for SMEs. CEPS Working Documents.

RTLnieuws. (2016). 'Uitgaven millennials beïnvloeden de beurs nu al'. Available online at: <https://www.rtlnieuws.nl/geld-en-werk/artikel/739506/uit-gaven-millennials-beinvloeden-de-beurs-nu-al>

RTL Nieuws. (2017). Ouderen vermogender dan ooit, huizenbezitters rijkste groep. Online available at: <https://www.rtlnieuws.nl/geld-en-werk/artikel/383656/ouderen-vermogender-dan-ooit-huizenbezitters-rijkste-groep>

RTLnieuws. (2019). Stikstofcrisis: oplossing nog ver weg, onvrede in coalitie over Schouten. Online available at: <https://www.rtlnieuws.nl/nieuws/politiek/artikel/4867211/onvrede-coalitie-maximumsnelheid-inkrimping-veestapel-stikstof-pas>

S

Sangasubana, N. (2011). How to conduct ethnographic research. *The qualitative report*, 16(2), 567-573.

Saunders, M., Lewis, P., & Thornhill, A. (2007). *Research methods*. Business Students 4th edition Pearson Education Limited, England.

Schaap, E. (2019). Retailtrends: Wil je nieuwe bakker opstaan? Online available at: <https://retailtrends.nl/news/57355/wil-de-nieuwe-bakker-op-staan->

Schwoob, M. H. 2014. Towards sustainable agriculture? Local level reliance on economic networks and the consequences for China's agricultural modernisation pathway. *Asia Pacific Journal of Public Administration* 36:220-32. doi:10.1080/23276665.2014.944690.

Sevenster, M.N., Wielders, L.M.L., Bergsma, G.C., Vroonhof, J.T.W. (2007). Milieukentallen van verpakkingen voor de verpakkingenbelasting in Nederland. Ce Delft, Delft.

Silvenius, F., Grönman, K., Katajajuuri, J. M., Soukka, R., Koivupuro, H. K., & Virtanen, Y. (2014). The role of household food waste in comparing environmental impacts of packaging alternatives. *Packaging Technology and Science*, 27(4), 277-292.

Skipr. (2017). Stroom 'rijke ouderen' is een fictie in de ouderenzorg. Online available at: <https://www.skipr.nl/blogs/id3073-stroom-%27rijke-ouder-en%27-is-een-fictie-in-de-ouderenzorg.html>

Sonneveld.com. (2019). Consumententrends in de bakkerij. Online available at: <https://nl.sonneveld.com/blog/consumententrends-in-de-bakkerij/>

Sov.nl. (n.d.). Generatie Y en food: hoe maakt jouw merk kans? Online website available at: <https://sov.nl/generatie-y-en-food-hoe-maakt-merk-kans/>

Spreitzer, G. M., & Mishra, A. K. (1999). Giving up control without losing. Trust and its substitutes' effects on managers' involving employees in decision making.

Stahel, W., Reday, G. (1976). The potential for substituting manpower for energy, Report to the Commission of the European Communities.

Stahel, W. R. (2016). The circular economy. *Nature News*, 531(7595), 435.

Stancu, V., Haugaard, P., & Lähteenmäki, L. (2016). Determinants of consumer food waste behaviour: Two routes to food waste. *Appetite*, 96, 7-17.

Stek. (2017). Uw koelinstallatie en milieuwetgeving. Online available at: <https://www.stek.nl/wp-content/uploads/2017/03/Wetgeving-folder-03-2017.pdf>

Stimular.nl. (2019). Afvalregistratie en monitoring. Online available at: <https://www.stimular.nl/maatregelen/afvalregistratie-en-afval-monitoring/>

Svanes, E., Oestergaard, S., & Hanssen, O. (2019). Effects of Packaging and Food Waste Prevention by Consumers on the Environmental Impact of Production and Consumption of Bread in Norway. *Sustainability*, 11(1), 43.

T

Tennant, M. G. (2013). *Future manufacturing: sustainability*. UK: Foresight Government Office for Science.

V

Van Boeijen, A., Daalhuizen, J., van der Schoor, R., & Zijlstra, J. (2014). *Delft design guide: Design strategies and methods*.

Van Breda, P. (2018). *Metronieuws: Waarom moeten we minder water verbruiken?* Online available at: <https://www.metronieuws.nl/nieuws/binnen-land/2018/03/waarom-moeten-we-minder-water-gebruiken>

Van der Meer. (2016). KBO ONDERZOEK KOOPKRACHT. Online available at: <https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=6&ved=2ahUKEwiG8suM8vXIAhWNfFAKHARhCDMQFjAFegQIARAC&url=https%3A%2F%2Fwww.uniekbo.nl%2Finclude%2FdownloadFile.asp%3Fid%3D6151&usq=AOvVaw3qG0br65ftklFbtlKMPeA>

Van der Werff, L. (2019). Horecava: Dé trends van 2019 volgens Horecava: gezondheid en duurzaamheid. Online available at: <https://www.light-speedhq.nl/blog/horecava-2019-trends/>

van Goor den Held, M. (2018). In Down to Earth: Zoete zonde: de impact van 5 soorten suiker. Online available at: <https://down-to-earthmagazine.nl/zoete-zonde-de-impact-van-5-soorten-suiker/>

Van os, B. (2018). *Entreemagazine.nl: MEER BELEVING EN OMZET UIT PATISSERIE*. Online available at: <https://www.entreemagazine.nl/nieuws/branchenieuws/meer-beleving-en-omzet-uit-patisserie30634>

Verburgh, P. (2018). Rabobank: Dichterbij Gelderse Vallei. Online available at: http://dichterbij.rabobank.nl/pdf/gv/2018/4/3375_midres.pdf

Verspillingsverrullend.nl. (2019). Online website, available at: <https://verspillingsverrullend.nl/gro/>

Volksgezondheidszorg. (2018). Vergrijzing. Online available at: <https://www.volksgezondheidszorg.info/onderwerp/bevolking/cijfers-context/ver-grijzing#node-totaal-aantal-ouderen>

Volkskrant. (2016). Broodchips: say yes to no. Online available at: <https://www.volkskrant.nl/nieuws-achtergrond/broodchips-say-yes-to-no-bb32b074/?referer=https%3A%2F%2Fwww.google.com%2F>

Vroonhof, J. T. W., & Croezen, H. J. (2006). Waste processing and CO2. Quick scan of the greenhouse gas emission of the waste processing sector in the Netherlands 1990-2004; Afvalverwerking en CO2. Quicksan van de broeikasgasemissies van de afvalverwerkings-sector in Nederland 1990- 2004.

W

Wageningen University & Research. (2019). Kantelpunt bereikt voor herformulering voedingsproducten. Online available at: <https://www.wur.nl/nl/nieuws/Kantelpunt-bereikt-voor-herformulering-voedingsproducten.htm>

Webster, K. (2015). *The Circular Economy: A Wealth of Flows*. Ellen MacArthur Foundation, Isle of Wight.

Weiss, M.A., Heywood, J.B., Drake, E.M., Schafer, A., AuYeung, F.F., (2000). On the Road in 2020 – A life Cycle Analysis of New Automobile Technologies, Energy Laboratory, Massachusetts Institute of Technology, October 2000.

Williams, H., & Wikström, F. (2011). Environmental impact of packaging and food losses in a life cycle perspective: a comparative analysis of five food items. *Journal of Cleaner Production*, 19(1), 43-48.

Wösten, G. H. M. (2016). The EU Circular Economy Package and SMEs in Amsterdam

Wu, H.Q., Shi, Y., Xia, Q., Zhu, W.D. (2014). Effectiveness of the policy of circular economy in China: A DEA-based analysis for the period of 11th five-year plan. *Resources, Conservation and Recycling* 2014; 83: 163-175.

Y

Yuan, Z., Bi, J., Moriguchi, Y. (2008). The Circular Economy: A New Development Strategy in China. *J. Ind. Ecol.* 10, 4-8.
Yang, M., S. Evans, D. Vladimirova, and P. Rana., 2016. "Value Uncaptured Perspective for Sustainable Business Model Innovation." *Journal of Cleaner Production* in press: 1-11. doi:10.1016/j.jclepro.2016.07.102.

Yukl, G. (2010). *Leadership in Organizations*. (7th ed.) New Jersey: Prentice Hall.
Zahra, S. A., & Nambisan, S. (2012). Entrepreneurship and strategic thinking in business ecosystems. *Business horizons*, 55(3), 219-229.

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APPENDIX 1

supporting the data collection of the Discover & Define phase

A: INTERVIEW TRANSCRIPTS

Coded using a deductive approach with pre-determined categories

gedaan waardoor dat heel stabiel staat. En dat alles bij elkaar dus... Ja, als jij dan vraagt wat is er zo uniek. Dan zou ik toch zeggen de combinatie van schaalgrate in combinatie met het vakmanschap, het niveau, en de breedte van het assortiment, dat maakt ons wel uniek. **Must, brand identity**

101: Dus als jij Strik in drie woorden zou moeten omschrijven dan zou je zeggen ambacht, kwaliteit maar ook schaalbaarheid.

A01: Uhm, ja! Dus ambacht, kwaliteit, en schaalgraote. **Must, brand identity**

101: Ja precies. En wat is volgens jou de doelgroep van Strik? En is dat ook de gewenste doelgroep?

A01: Ja, even denken. Inmiddels... Ik denk dat onze doelgroep. Mijn doelgroep...

101: Het mag ook meer B2B of B2C zijn!

A01: Ja precies. Nee, ik denk dat onze doelgroep redelijk breed is en dan denk ik vanaf 30+ tot 70+! Een bewuste consument dat klik misschien heel gek omdat je zegt 'die koppen zoefigheid', maar wij hebben wel een consument die zegt van 'nou, wij zijn niet van die enorme graters en vreters maar als we iets lekkers willen of als we onszelf willen verwennen dan kopen we liever een mooi en goed en lekker taartje dan dat we een zak chips openrekken en die doelgroep mag wat mij betreft van een zo jong mogelijke leeftijd begimnen. In de praktijk, de van oudsher en traditionele Strik consument, die heeft een wat hogere leeftijd. Dat gaat zo'n beetje vanaf 40+ of misschien wel 50+! **De wens is natuurlijk dat je dat leeftijd getal iets omlaag weet te halen en ik denk dat die lijn al een beetje hebben ingezet doordat we natuurlijk met onze 15 afdeling zijn begonnen en omdat dat ons op een iets andere manier profileren op social media. Dit is een proces. Ik zou wel willen zeggen, die leeftijd willen we graag omlaag hebben, maar ik koester ook heel duidelijk mijn 80 en 70+ klanten want**

A01: Ja, dat is in de basis weer de aandacht van Strik en zorgen dat het er goed uit ziet en herkenbaarheid bij de consument en herhaling is ook nog voor een groot merk noodzakelijk. Dus ja, hoe bereik je de consument...

101: Ja, dat zijn toch goeie manieren! En vind je dat je ook nog veel aan innovatie doet binnen Strik.

A01: Uhm... Nou ja. Misschien echte innovatie... Ja, het is maar net hoe je er naar kijkt en wat je innovatie noemt. Ik denk dat de kern van ons bestaanrecht is toch echt het product. Alles eromheen moet kloppen. Maar het product moet onderscheidend zijn, moet lekker zijn, vernieuwend zijn. Ja, alles moet een beetje kloppen he. **De prijs moet leuk zijn** maar het moet toch met verassend zijn en het moet ook iets zijn wat de omgeving hier niet heeft en daarvoor is het van groot belang dat wij lid zijn van het patisserie college. Daar heb ik me de laatste jaren heel veel voor ingezet omdat ik dat aan de ene kant leuk vind maar aan de andere kant vindt dat ik best veel kan die club heb gehad. Ik heb me daaraan kunnen spiegelen, ik heb daar inspiratie opgedaan, ik heb bij collega's kunnen kijken, ik ben daardoor gemotiveerd geraakt om te zeggen 'oh, dat wil ik ook, maar dan beter.' En op een gegeven moment draaije dan ook wat beter en dan is het ook mooi als je wat terug kan doen. En wat we de laatste jaren zien binnen het patisserie college is dat we op product niveau heel veel... Als je aan mij vraagt wat doe je aan innovatie dan is het omdat ik heel veel heb geïnvesteerd in de club dat we daar heel veel vernieuwende en innovatie producten uit halen. **Company ecosystem**

101: En vind je dat je ook veel bezig bent met het opzoek gaan naar nieuwe markten of zit die innovatie welbinnen de huidige markten.

A01: Ja, eigenlijk te weinig als ik eerlijk ben. Maar dat ik ook gekomen door de laatste jaren dat we druk druk met die winkels

bovengemiddelde kwaliteit, dus meer dan gemiddelde bankierkwaliteit, dus op patisserie niveau. Wij pretenderen niet echt te onder. Dat vertaalt zich dan naar winkels met goeie, lekkere producten, legen enigszin betaalbare prijzen, niet te hoogdrempelig maar weer duidelijk onderscheidend van een gewone bakker. Nou, dit in combinatie met dat we eigenlijk nooit op een paard wedden. Dat wil zeggen, we hebben drie of vier winkels, maar die winkels liggen ook allemaal op verschillende locates. De een ligt in het centrum, de andere ligt in een wijk, de ander heeft wat meer horeca. Ook dat is een beetje een bewuste keuze van mij geweest omdat ik dan denk, nou ja, als het bij de ene winkel niet zo goed gaat omdat het bijvoorbeeld veel te warm is, kan het bij de andere winkel die in de woonwijk ligt en mensen dus toch wel binnen komen omdat ze brood willen kopen, dan loopt het daar nog lekker door. En andersom kan dat ook het geval zijn. En dat heb ik eigenlijk ook altijd gedaan met mijn bedrijven, met mijn horecaklanten. Ik wil eigenlijk niet te veel hele grote klanten. Die hele grote klanten kunnen namelijk een hele grote druk leggen op je productievolume, of op je productieapparatuur. Als ze dan in een keer een hele grote order hebben, daar zijn wij dan net weer iets te ambachtelijk voor. En ze kunnen te veel bespelen, ze kunnen eigenlijk de boel onder druk zetten en zeggen van 'nou goed, als je niks met je prijzen doet, of al dat je niks aan je assortiment doet, dan gaan we weg'. En als ik dan gelijk tien of twintig procent in mijn persoonlijke card, ik wil het liefste mijn zaken zelf regelen en gewoon zorgen dat ik het zelf voor elkaar heb en niet te afhankelijk zijn van... Dus mijn visie is ook altijd, spread je omzet en wed op meerdere paarden. Dat is eigenlijk... En dat is niet de snelste methode, gekozen. Want er zijn echt wel snellere manieren die dan tot succes zouden kunnen leiden. Maar die hebben ook grater risico's. **Wort** En wij hebben dat op een geleidelijke manier

ervan in dat we daar meer aandacht aan moeten besteden. Maar dat is in de basis niet een sterkte punt. Daar heeft nooit onze prioriteit gelegen. Ik denk overigens wel dat wanneer het erop aankomt, want dat is ook wel iets om te vermelden of mee te nemen, aan de andere kant is het wel zo dat in al die 28 jaar, heb ik natuurlijk ook wel eens een arbeidsconflict gehad, of conflicte maar het is in ieder geval nooit gebeurd dat ik naar de rechbank heb gemoeten. Het is nooit ontspoord. Dus ik ben wel in stat om op een gegeven moment in te schaffen van 'o jee, dit gaat hier nou echt mis, en nu moet ik ingrijpen en nu moet ik de brand blussen alleen dat kost wel de nodige energie. Maar goed, ik laat het dus ook niet zo ver komen dat het ontspoord.

101: Nee inderdaad. Oké! Duidelijk. Als we naar een ander thema overgaan, de groei, ben ik benieuwd hoe jij je nieuwe klanten bereikt?

A01: Ja, hoe bereik je je nieuwe klanten. Ja, goed, social media en ook de afgelopen jaren maar eigenlijk al wel vanaf het begin is het ook gelukt om redactioneel in het nieuws te komen dus ook lokaal. En ja, zeker ook in de beginperiode ook wel bewust, min of meer het netwerk opgezocht. Bewust geïnvesteerd in mezelf om naar buiten toe te treden. Dus durf is ergens op een beursje te gaan staan, ergens lokaal. Maar durf is je verhaal te doen. Loop is ergens naar binnen, presenter jezelf eens. En ik durf wel te zeggen, kijk nu doe ik dat wat minder, maar zeker toen wij in die groeifase zaten, om meer mensen te bereiken moet je in ieder geval ervoor zorgen dat je de netwerk wat uitbreidt. Ja, en wat betreft de consument, we hebben altijd behoorlijk geactiveerd. Meer dan gemiddeld. Ik heb daar ook meer dan gemiddeld budget aan uitgegeven, en dat wel eens collega's ziden van 'nou, ik snap niet dat jij zo veel geld aan advertenties uitgeeft'. Maar ik zie het wel breder dan alleen een advertentie, dus dat je zegt ik geef zoveel uit aan die advertentie en ik verkoop maar 30% meer van de taartjes

101: Oké! Wat goed van je. En waren de omzetten toen ook al goed?

A01: Nee, de omzet, dat klik heel raar, maar de omzet zit nu ergens tussen de tweeënehalf en de drie miljoen euro en desifits dat het in euro's op tweehonderdachtig duizend euro, affewel, het zat op zeshonderd duizend gulden omzet. Maar goed, dat was natuurlijk 1991, een hele tijd terug. Dat was een redelijke omzet, niet heel goed maar ook niet heel weinig en van die omzet was ook nog een behoorlijk gedeelte levering aan horeca. Dus ja, dat heeft natuurlijk voor en nadelen. Nu is het natuurlijk zo dat het nodeels dat wanneer de omzet niet zo hoog is, de winst ook niet zo hoog is. Maar het voordeel is wel... Ik schatte de zaak en de winst zo in dat daar nog een behoorlijke groei potentie in zou moeten zitten. Maar het allerbelangrijkste wat ik zag is dat ik groeipotentie zag zitten zonder dat ik daar verdere investeringen voor nodig had. Dus ik moest het bedrijf overnemen, ik moest betalen voor de machines en de naam. Maar ik wist gewoon van, als ik het eenmaal heb, dan ga ik aan de slag en dan ga ik betere producten maken en ik ga beter ook vanuit, dat het wat drukker zou worden. Daar hoefde ik dan verder niet nog extra dingen voor te kopen of te investeren, dat hoefde niet. En daar heeft zeker in de eerste jaren het verdienmodel gezeten.

101: Oké! Duidelijk. En dat is ook wel bleken dat het beter is gaan lopen, haha.

A01: Haha, klopt!

101: En wat denk je dat de unieke selling points van strik zijn, hoe onderscheiden jullie je van je 'company' competitie?

A01: Uhm... Ja, het huidige unieke selling point is dat we een mix hebben gevonden in aan de ene kant ambachtelijkheid, aan de andere kant een behoorlijke productiecapaciteit gecombineerd met

101: Ja, in het accountantsrapport staat altijd precies omschreven... Of ja, die tellen dat. In FTE zijn dat er ongeveer 28. Het wisselt natuurlijk, omdat we een seizoenbedrijf zijn, nu ook met het ijs, dat wisselt. Maar laten we nu zeggen, in personen als je alles bij elkaar oplekt, dan zal het ergens tussen de 40 en 50 personen zijn en in het hoogseizoen met het ijs, met alle ambulante van het ijs erbij dan zullen we wel over de 50 heen gaan.

101: Oké! En hoe gaan jullie om met personeelszaken voor die 50 man personeel?

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dat zijn ook nog de klanten die zeggen lade mij maar een pond bonbons van €35,- en ja, die hebben we ook heel graag in huis. Het is gewoon heel belangrijk dat je als bedrijf ervoor zorgt dat er nieuwe aanwas is. **Must, price**

101: Ja, dat denk ik ook zeker dat dat iets is wat zeer belangrijk is. Met name ook voor de groei hier wil ik nu graag wat dingen over weten. Ten eerste, hoeveel mensen heb jij iets dienst?

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die in de advertentie staan. Maar ik denk dat je het breder moet trekken. Het is toch weer de aandacht van Strik en zorgen dat het er goed uit ziet en herkenbaarheid bij de consument en herhaling is ook nog voor een groot merk noodzakelijk. Dus ja, hoe bereik je de consument...

101: Ja, dat zijn toch goeie manieren! En vind je dat je ook nog veel aan innovatie doet binnen Strik.

A01: Uhm... Nou ja. Misschien echte innovatie... Ja, het is maar net hoe je er naar kijkt en wat je innovatie noemt. Ik denk dat de kern van ons bestaanrecht is toch echt het product. Alles eromheen moet kloppen. Maar het product moet onderscheidend zijn, moet lekker zijn, vernieuwend zijn. Ja, alles moet een beetje kloppen he. **De prijs moet leuk zijn** maar het moet toch met verassend zijn en het moet ook iets zijn wat de omgeving hier niet heeft en daarvoor is het van groot belang dat wij lid zijn van het patisserie college. Daar heb ik me de laatste jaren heel veel voor ingezet omdat ik dat aan de ene kant leuk vind maar aan de andere kant vindt dat ik best veel kan die club heb gehad. Ik heb me daaraan kunnen spiegelen, ik heb daar inspiratie opgedaan, ik heb bij collega's kunnen kijken, ik ben daardoor gemotiveerd geraakt om te zeggen 'oh, dat wil ik ook, maar dan beter.' En op een gegeven moment draaije dan ook wat beter en dan is het ook mooi als je wat terug kan doen. En wat we de laatste jaren zien binnen het patisserie college is dat we op product niveau heel veel... Als je aan mij vraagt wat doe je aan innovatie dan is het omdat ik heel veel heb geïnvesteerd in de club dat we daar heel veel vernieuwende en innovatie producten uit halen. **Company ecosystem**

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Should, expand market

waren dat we eigenlijk aan de **maximum** van de **organisatie capaciteit** zitten maar ik ben ervan overtuigd dat wanneer wij het goed georganiseerd hebben en we zouden nog echt wat doen aan **acquisitie en nieuwe markten bereiken**, dan zouden we echt nog **nieuwe kansen kunnen pakken**. Ik vind niet dat we dat genoeg doen.

I01: Nee, precies. En qua assortiment, vind je dat jullie daarin veel vernieuwen? Of zijn dat dan kleine dingen binnen het huidige assortiment?

A01: Nou, ik denk dat we relatief gezien best wat vernieuwen. Het is natuurlijk altijd een beetje een spanningsveld tussen **efficiënt werken en zorgen dat het bedrijfscomisch goed in elkaar zit**. En daar past gewoon bij dat je basisassortiment goed voor elkaar moet hebben. **Daar verdien je ook je meeste geld aan**. Maar daarnaast denk ik wel dat wij met regelmaat met vernieuwende producten komen en vooral ook om te laten zien... Kijk die nieuwe producten zijn dan ook niet de producten waarvan ik denk 'nou, daar gaan we nou eens de klapper mee maken' of daar gaan we nou eens mee verdienen', maar meer dat we juist naar de consumer toe proberen te laten zien van 'hey, Strik doet mee met de trends en komt is met iets nieuws'. Dat is belangrijk.

I01: Ja, inderdaad. En als je zou mogen kiezen, uitgebreiden in de B2C sector of toch meer de B2B kant.

A01: Wat is B2C? De consumer?

I01: Ja! Of toch meer de horeca?

A01: Uhm... Ja ik vind dat wel moeilijk maar **company** wat ik een **comfortabele verdeling van omzet**. **Ecosystem** vind is ongeveer 70-30. Dus 70% in eigen winkels omzetten en 30% van levering aan derden, max. en in die verhouding zou ik op beide fronten nog wel wat willen inzetten. En ik denk vooral dat wanneer we kunnen **groeien binnen bestaande winkels** dan is dat **existing stores**

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INTERVIEW TRANSCRIPT A02 - CEO 2

Interviewer: F. Hunink (I01)
Interviewee: CEO 2 (A02)

I02: Goedemorgen! Fijn dat je de tijd wilde nemen voor een klein interview. Er zijn een aantal thema's die ik graag zou willen behandelen.

A02: Dat is prima.

I02: Super! Dan gaan we beginnen. Als eerste, zou je wat kunnen vertellen over de geschiedenis van Strik. Hoe jullie zijn begonnen...

A02: Je moet geen jaartallen aan me vragen hoor!

I02: Nee hoor! Verder ben ik benieuwd wat de omzettingen waren. Als je daar iets vanaf weet tenminste. Hoe de omzettingen nu dan zijn. Dus in z'n algemeen, waardoor is Strik volgens jou zo gegroeid?

A02: We zijn 25/30 jaar geleden **company** begonnen, met één winkel in de **history** Ziekerstraat en dat was een hele kleine winkel. We hadden 4 man, nee 3 man in de bakkerij en twee winkeldames en dan natuurlijk nog Van Geenen en ik. De omzettingen waren ook erg klein, ik weet niet meer precies hoe veel maar ik weet wel dat we bijvoorbeeld in het begin in de Heyendaal, wat we vele jaren later pas aankochten, dat als we daar op een maandag 500 euro hadden dan was dat prima.

I02: Op de locatie Heyendaalsweg?

A02: Ja op de Heyendaal! Oh trouwens, 500 gulden was dat toen nog. En tegenwoordig draaien we op een maandag daar tussen de 1200 en 1500 euro. Dus dat is wel een groot verschil.

Should, growth

verbruik omgaan. En omwille van de drukte en dat we altijd maar door en door gaan, gebeurt het nu zoals het gebeurt. En op het moment dat er nu iets kapotgaat en we moeten opnieuw investeren dan **kijken we wel of het energiezuijing kan maar dan is het ook weer vanuit geld gedreven**. Dus het is allemaal nog geld gedreven maar ik ben me er wel wat meer van bewust. Verspilling, en met name van voedsel... Ook als ik zie wat wij weggoelen. Dat is nog relatief weinig maar dat is wel iets waar ik langzamerhand wel over nadenk van 'bizar, wat wij eigenlijk wel niet aan afval produceren. Ik denk dat we **Energy & Material** vestiging de moeite nemen om naar onze **qua voedsel nog niet zo veel weggoelen**. **Ja brood, oud brood! Maar dat is normaal**. Maar afval produceren en verspilling is behoorlijk voor zo 'n bedrijfje.

I01: En heb je nu al initiatieven met betrekking tot duurzaamheid?

A01: **Leedverlichting**. En vanuit de overheid ben ik verplicht qua energie transitie om wat maatregelen te treffen. Ik heb door onlangs ook controle op gehad. Daar komen dan dingen uit die we kunnen en ook moeten aanpakken. Die zijn ook relatief klein. **Persoonlijk vind ik het zelf gewoon heel lastig dat wanneer de horizon van een investering langer dan 5 tot 8 jaar wordt, en de investeringen worden dan toch groot, dan vind ik het beste risicovol worden**. Dan denk ik 'ja, ik doe nu A en daar ga ik meer aan uitgeven, maar dan is er over 5 jaar weer iets heel anders. Maar ja, als je dat altijd maar blijft zeggen...

I01: Oké! Dan het laatste onderwerp. Wat zijn denk je jouw belangrijkste stakeholders?

A01: **Energy & Material flow**. **Should, sustainability**. En vanuit de overheid ben ik verplicht qua energie transitie om wat maatregelen te treffen. Ik heb door onlangs ook controle op gehad. Daar komen dan dingen uit die we kunnen en ook moeten aanpakken. Die zijn ook relatief klein. **Persoonlijk vind ik het zelf gewoon heel lastig dat wanneer de horizon van een investering langer dan 5 tot 8 jaar wordt, en de investeringen worden dan toch groot, dan vind ik het beste risicovol worden**. Dan denk ik 'ja, ik doe nu A en daar ga ik meer aan uitgeven, maar dan is er over 5 jaar weer iets heel anders. Maar ja, als je dat altijd maar blijft zeggen...

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I01: Oké! Dan het laatste onderwerp. Wat zijn denk je jouw belangrijkste stakeholders?

A01: **Energy & Material flow**. **Should, sustainability**. En vanuit de overheid ben ik verplicht qua energie transitie om wat maatregelen te treffen. Ik heb door onlangs ook controle op gehad. Daar komen dan dingen uit die we kunnen en ook moeten aanpakken. Die zijn ook relatief klein. **Persoonlijk vind ik het zelf gewoon heel lastig dat wanneer de horizon van een investering langer dan 5 tot 8 jaar wordt, en de investeringen worden dan toch groot, dan vind ik het beste risicovol worden**. Dan denk ik 'ja, ik doe nu A en daar ga ik meer aan uitgeven, maar dan is er over 5 jaar weer iets heel anders. Maar ja, als je dat altijd maar blijft zeggen...

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jou belangrijk?

A02: **Wat ik belangrijk zou vinden is dan mensen met plezier bij Strik werken**. **Social**

I02: En dan vooral je personeel?

A02: **Ja, het personeel** maar wij zelf ook.

Maar ook de uitdaging vind ik leuk, de **work** groei vind ik leuk binnen het bedrijf. **Social**

Maar we hebben in de afgelopen **Want try** jaren ook gezien dat we te groot **to become** kunnen worden. Van Geenen en ik zijn allebei microondernemers en geen macroondernemers. **De helikoptervisie** **Should**, hebben wij eigenlijk niet. Dus wij denken **structure**, altijd wanneer er iets verkeerd gaat **!Dat lossen we zelf op**. **CEO mindset**

I02: Oké!

A02: **En dat gaat niet meer als je te groot wordt**. **Want try to become too big**

I02: En wat denk je dat jullie onderscheidend markten opzichte van de competitie hier in Nijmegen?

CEO mindset
A02: **Dat we altijd toch willen presteren**. **Dat we altijd wanneer een klant iets vraagt ja zeggen en het willen doen**. We zeggen eerst altijd dat het mogelijk is pas als het echt onmogelijk is zeggen we nee maar dat is eigenlijk nooit het geval. **Dus klanten kunnen eigenlijk altijd bij ons terecht**. **Must identity**

I02: En denk je dat dat iets goeds is?

A02: Ja dat denk ik wel.

I02: Altijd?

A02: Niet altijd... op een gegeven moment gaat dat ook weer tegen je

A01: Wat zijn stakeholders? Ambassadeurs of?

I01: Nee, dat is iedereen die betrokken is bij je bedrijf. Dus je klanten, je personeel, maar ook de gemeente dus iedereen die er iets mee te maken heeft.

A01: Pfoe, ik denk zeker de klanten en het **Stakeholders personeel**. Ik heb wel gezien... Wij hebben dat soms niet in de gaten. Maar wanneer je dan zo 'n winkel sluit. Hoe je het ook wend en keert, het levert toch veel reacties op. We merken dan toch dat veel klanten van die andere vestigingen te komen. We zien een **Material** behoorlijke omzet toename. Dat is iets waar ik van te voren echt geen rekening mee had gehouden. En ook met de Jssalon, dat we daarin investeren om dat leuk te maken dat ook echt de buurt van groot belang is. En ik denk dat we daar, zeker het afgelopen jaar, behoorlijk op hebben gescord. Daardoor is de betrokkenheid en ook de feel-good factor, en 'met name de guntfactor naar Strik die is behoorlijk toegenomen. Het verhaal naar de buitenkant is natuurlijk ook erg leuk. Kinderen komen in de zaak etc.

I01: Super! En de laatste vraag. Wat is de toekomst van Strik?

A01: De toekomst van Strik... Kijk, de kernwaarde van Strik blijven naar mijn idee onderscheidende ambacht in volume en ik denk dat wanneer wij juist aan de organisatielkant en de structuur kant, om dat beter te organiseren, om daar goede vestigingen te maken en op dat punt investeren en ook zorgen dat dat beter geregeld is, dat Strik juist daardoor een hele goede toekomst heeft. Ik denk overigens niet dat, met het type bedrijf dat Strik nu is, het zich leent om naar een filiaal vorming van 10 filialen of een verdubbeling van de omzet te gaan. **Dat leent zich daar minder voor**. **Dan word je toch een ander type bedrijf**. **Het kan, maar de combinatie van patisserie niveau wat wij nu hebben en dan op deze schaalgrootte**. Dat gaat niet.

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werken. Vooral in het begin van Strik hebben we ook heel veel gemaakt voor horeca en dan maakte we bijvoorbeeld, uhm... 10 kleitsoppen ofzo. **Nou daar zit dan natuurlijk heel weinig marge op maar aan de andere kant zijn we hierdoor wel gegroeid want daardoor wisten mensen wel dat ze altijd bij ons konden aankloppen**. Maar ja, op een gegeven moment ging dat niet meer want op 10 kleitsoppen verdien je natuurlijk helemaal niks. Maar aan de andere kant, de klanten kwamen ook met iets anders dan.

I02: Oké. En als jij de doelgroep van Strik zou moeten omschrijven, wie denk jij dan dat jouw klanten zijn?

A02: **De wat oudere mensen, die veel te besfeden hebben en die ook graag wat meer betalen voor echt iets lekkers**. **Must, target group**

I02: Echt kwaliteit dus?

A02: Ja, kwaliteit ja. **Must, target group**

I02: Oké, en is dat ook de gewenste doelgroep? Of zouden jullie liever andere klanten in je winkel zien?

A02: Uhm... **Dat is een gewenste doelgroep**. Alhoewel, op een gegeven moment gaan alle oudere mensen dood dus we moeten ons ook blijven focussen op het jongere volk, de jongere klanten zodat ook ze straks naar onze winkel komen. En dat is volgens mij in de banketbakkerij altijd een beetje problematisch.

I02: EN hoe proberen jullie dan toch die andere klanten naar je winkel te trekken?

A02: **Door toch je producten te blijven vernieuwen** maar ik moet wel zeggen, **Must, identity**

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Wont, go too far

we moeten wel schoenmaker blijven bij de eigen leest. Ofwel, wij moeten niet jong, hip en happening willen zijn want daar staan wij niet voor en dat kunnen we ook niet. Wij hoeven niet zoals andere jonge, hippe ondernemers te zijn. Wij moeten maken waar we heel goed in zijn. Maar we moeten wel wat vernieuwing laten zien, dat wel ja. **Should, innovatie**

I02: En hebben jullie meer business to business klanten, dus horeca enz, of meer klanten in de winkel?

A02: **We hebben meer klanten in de winkel.** **Company Ecosystem**

I02: Qua omzet ook?

A02: **Ja Revenue model**

I02: En is dat ook gewenst?

A02: **Ja! Want** daar hebben we natuurlijk veel meer marge op als het derde kanaal, want aan hun moet je veel meer korting geven. **Should grow in existing stores**

I02: En wat zijn vooral de kanalen waarop jullie je producten verkopen?

A02: Het grootste kanaal zijn natuurlijk onze **eigen winkels**, dan natuurlijk de **derde kanalen**, dus dat betekend de horeca, universiteiten, ziekenhuizen enz, en dan hebben we nog de **webshop**. En de webshop is groeiende. **Company Ecosystem, channel**

I02: Zouden jullie daar nog wel meer in willen groeien?

Should, trend

A02: **Jazeker, ja! Nee dat is echt we iets waar we nog echt ver in kunnen groeien**, in de winkels houdt het op een gegeven moment natuurlijk ook wel op, ja er kan bijvoorbeeld een keer iets nieuws worden

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gebouwd maar verder houdt het op een gegeven moment wel op die groei. De Webshop daarentegen heeft natuurlijk wel nog een **enorme groeicapaciteit** en ik denk dat wij ons daar heel erg in kunnen verbeteren. We hebben een goeie webshop maar die hebben we laten maken en ik denk dat die eigenlijk nog veel beter en mooier zou kunnen. Maar je ziet ook wel dat dit in de loop van de jaren we echt groeiende is, dus dat is wel leuk en je hebt er ook vrij weinig werk aan.

I02: Ja precies. En als je zou moeten omschrijven waar de Strik klanten voor naar jullie winkel kopen, qua producten. Verschildt dit dan op het moment van de dag? Dus dat ze smorgens andere producten meenemen dan in de middag?

Target group

A02: Ja, zeker. **Vroeger** hadden we geen brood en toen kwamen de meeste klanten pas later op de dag. Toen wij überhaupt begonnen was onze straat waar we in **gevestigd zaten meer een boodschappen straat**, mensen kwamen echt hun boodschappen doen in Ziekerstraat. Daar had je een bakker, en een slager, en een groenteboer...

I02: Een andere bakker?

A02: Een andere bakker ja. En er zat ook een visboer. En wij zaten er dan als banketbakker. En mensen stonden dan wel echt al om 09:00 op de stoep en dan gingen ze echt boodschappen doen. **Maar langzaam maar zeker verdwenen al die winkels in de stad en toen veranderde de stad gewoon en daardoor veranderde onze cliënteel ook.** En dan meikte je gewoon dat in plaats van dat de klanten om 08:00/09:00 's morgens, ze toen pas rond 10:00/11:00 zijn met producten ontwikkelen die ver af liggen van jullie huidige producten? Dus echt iets totaal anders?

Wont, too far

A02: Nee, maar ik denk ook niet dat we dat moeten willen. Ik denk dat onze kracht juist is dat we datgene maken waar we goed in zijn. Wij moeten de producten die traditioneel zijn, die moeten wij vernieuwen en in een nieuwe jasje steken. **Brand identity**

I02: Dus nieuwe markten zou je ook niet per se op gaan zoeken?

Wont, new markets

A02: Ja, nou dat hebben we eigenlijk wel gedaan. **We hebben ijs nu. We hadden natuurlijk alleen de banketbakkerij, toen hebben we de lunchroom erbij gedaan, toen hebben we brood erbij gedaan, toen hebben we ijs erbij gedaan en nu hebben we ook nog chocolaterie apart getrokken.**

I02: Maar wel allemaal redelijk in het straatje waar jullie bekend mee zijn.

Wont, new markets

A02: **Ja! Dat wel. We gaan geen schoenen opeens verkopen.**

I02: Nee precies. Dat is ook wel logisch. En als je zou moeten kiezen, meer uitbreiden in de B2C kant, dus de consumenten kant, of de B2B kant?

A02: Zeker de consumenten kant.

I02: En hoe zie jij de toekomst van Strik voor je?

A02: De toekomst van Strik zie ik groeien in jullie handen, dus in de handen van de kinderen. Als dat niet zo is dan zou ik hopen dat we een goede koper zouden kunnen krijgen.

een keer kwamen. Dan hadden we wel dezelfde omzettingen maar in een veel kortere tijdsperiode. Toen hebben we het weer opgegooid. **Toen stopte de bakker bij ons in de straat en toen zijn we ook begonnen met brood en daardoor hebben we nu ook 's morgens klanten voor het brood die ook gebak meenemen, daarna komen de mensen voor het gebak die ook weer wat brood meenemen en daarbij zijn we een lunchroom begonnen, dus in de tussentijd zijn er ook nog klanten die koffie komen drinken en die nog van alles meenemen in de winkel, tenminste, dat is dan de bedoeling.** **Revenue model**

I02: En is dat in de Heyendaal, de Ziekerstraat en in Wijchen allemaal hetzelfde?

Should, store

A02: Nee, in elke winkel is het anders. De Ziekerstraat is echt een stadswinkel waarin mensen dus inderdaad veel later komen en waar ze geen boodschappen doen en daar draait het echt om de 'experience'. De Heyendaal is juist echt een soort dorpswinkel en Wijchen ook. Heyendaal is alleen een hele drukke dorpswinkel en daar hebben we nog het voordeel dat daar allerlei ziekenhuizen en universiteiten rondom heen liggen. Dus het is een dorpswinkel binnen de stad, daarom hebben we daar ook heel veel traffic. En in Wijchen is het echt dorp waardoor je ook echt ziet dat op er op maandag, dinsdag, woensdag rustigere tijden zijn en dus ook minder omzet. **Should, store**

I02: Oké! Duidelijk. Als je Strik zou moeten omschrijven in 3 woorden, wat zouden deze woorden dan zijn?

A02: **Kwaliteit, uhm..., hart voor de zaak en hard werken.** **Brand identity**

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I02: Haha, hard werken is wel iets dat vaak terugkomt. Oké! Dat was het eerste deel. Dan zou ik nu graag overgaan naar het deel over personeelszaken. Hoe veel mensen hebben jullie in dienst?

A02: **Een stuk of 60.** **Social**

I02: En hoe vind jij dat jullie omgaan met jullie personeelszaken?

A02: **Daar kunnen we nog veel over leren.** **Social**

I02: Ja?

A02: Ja.

I02: En als je jouw personeel zou moeten omschrijven qua leefstijlen, achtergronden, opleidingen enz.

A02: **Alles door elkaar. Van jong, 15 jaar, tot oud, in de 70. Qua opleiding zijn ze niet heel erg hoogopgeleid, meer arbeiders.** **Social**

I02: Maar wel allemaal hart voor de zaak, zoals je al zei toch?

A02: Ja, als er iets is... **Het zijn soms zeurders** maar als er iets is dan staat iedereen achter de zaak. **Social Employees**

I02: En hebben jullie per vesting ook een aparte manager?

A02: Nee.

I02: Hoe is dat dan geregeld?

A02: **Van Geenen en ik zijn de managers.** **Ecosystem**

I02: Oké! Dit was het gedeelte over het personeelszaken. Dan gaan we het over de groei binnen Strik hebben. Proberen jullie met Strik nog steeds te groeien? En

zo ja, hoe dan?

Must, profit

A02: Qua omzet, hm.. **Ja weef je, er moet ieder jaar natuurlijk wel wat omzet bij, dat sowieso.** En de laatste jaren is er wel weer heel wat veranderd. Eigenlijk hadden we het idee dat we het wel zouden willen afstoten en daardoor zijn we ook wel wat kleiner gegaan. Maar inmiddels zijn er weer andere ontwikkelingen binnen Strik sinds Roos en Feilme hier ook zijn komen te werken en daarom zijn we nu ook weer aan het groeien en komt er weer een heel nieuw eland binnen de zaak.

I02: En als je kijkt naar jullie innovatie, vind je dat jullie daar veel aan doen?

A02: Nou, in de loop va de jaren hebben we natuurlijk in veel nieuwe dingen geïnvesteerd

I02: In?

Not or subconsciouslly innovative

A02: **Eigenlijk vooral in machines. Maar om dan echt te spreken over innovatie, dat vind ik moeilijk.**

I02: Dus je vindt dat je eigenlijk alleen in jullie machines vernieuwend bent. Ik neem aan dat jullie ook in nieuwe producten innoveren.

A02: Ja, dat natuurlijk ook. Maar dat zijn meer kleine innovaties. Maar als je zo ernaar kijkt dan wel ja. We hadden trouwens eerst ook geen tearoom in onze winkels, we hadden eerst alleen de winkel met gebakjes en dat was het, dus als je daarnaar kijkt hebben we wel **geïnnoveerd**. Brood hebben we erbij gekregen, lunchroom, nieuwe winkels. **Maar als ik aan innovatie denk dan denk ik meer aan machines enz.** **Not or subconsciouslly innovative**

I02: Denk je dat jullie ook veel bezig

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een stapje voor zijn. Offer something different

I02: Oké! Dan het onderwerp duurzaamheid. Hoe belangrijk is duurzaamheid voor jou persoonlijk?

A02: Nou je merkt wel dat het steeds belangrijker wordt voor iedereen binnen de maatschappij dus ook voor ons wordt het steeds belangrijker en ook **Should, sustainability**

I02: En hoe belangrijk is dat voor jou? **Should, sustainability**

A02: Nee, ik denk dat de hele Nederlandse bevolking er wel steeds meer mee bezig is alleen de ene doet het veel meer als de andere dus als je dat vanuit je bedrijf wilt organiseren dan zul je dan wel goed moeten communiceren en regelen. **Employee communication**

I02: Je ziet niet dat ze hier heel veel eigen initiatief in nemen?

A02: **Nee, niet echt, wel eens een enkele maar nee, niet echt.** **Social**

I02: Oké! En wat doen jullie nu al aan duurzaamheid binnen het bedrijf?

A02: Uhm... even denken. Eigenlijk vrij weinig denk ik...

I02: Nou, het is meer dan je denkt.

A02: Ja, misschien ook wel. Verlichting in ieder geval.

I02: En jullie scheidde je afval natuurlijk.

A02: Ja dat ook.

I02: Oke! Wat zijn julle belangrijkste stakeholders? Weet je wat stakeholders zijn?

A02: Nee?

I02: Dat is iedereen die belangrijk is voor je bedrijf, zoals je personeel, je klanten, je leveranciers, de gemeente etc. Dus iedereen die iets met jouw bedrijf te maken heeft.

A02: En wie dan de belangrijkste daarin zijn?

I02: Ja!

Stakeholders

A02: Personeel. Social

I02: Belangrijker dan je klanten?

A02: Ja, want als mijn personeel slecht is dan komen mijn klanten niet. Dus het personeel is het belangrijkste.

I02: En denk je dat dat ook altijd op 1 moet komen te staan?

A02: Ja, dat zou wel moeten maar dat vergeet je wel vaak. Social

I02: En hoe werk jij nu vooral samen met jouw stakeholders? Heb je een goede relatie met hun? En hoe onderhoud je deze relatie?

A02: Opzich hebben we wel een goede relatie maar dat kan ook wel heel erg verbeterd worden. We zijn wat betreft leveranciers niet heel erg... Social

I02: Trouw?

Ecosystem

A02: Jawel, dat wel. We hebben gewoon een aantal hele grote toeleveranciers en dat kan al bijna niet anders als banketbakkerij want je kunt wel zeggen 'Dan ga ik weg' maar er zijn er eigenlijk maar twee dus als je niet bij de ene tevreden bent dan moet je wel naar de andere. Maar we zijn altijd wel zoekende naar goede nieuwe leveranciers, kleine leveranciers die ons, naast alles wat we zelf maken, kunnen helpen met verbeteren.

I02: En denk je dat zij ook veel invloed uitoefenen op je bedrijf?

A02: Nou, toeleveranciers denk ik niet zo.

I02: Wie dan wel?

A02: Ja, je personeel wel. En je klanten ook zeker. Social

I02: Ja, dat zijn wel de belangrijkste he. Die zorgen of je bedrijf staat of niet. Nou dit was het interview. Hartelijk dank voor alle antwoorden!

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Observation – Diary 1															
Day	Store Bakkerij														
11-09-2019	<table border="1"> <thead> <tr> <th colspan="2">Quotes</th> </tr> </thead> <tbody> <tr> <td>Employee B01</td> <td>Time of employment: Owner</td> </tr> <tr> <td>Background information</td> <td>Education: All locations</td> </tr> <tr> <td>Quote</td> <td> <ul style="list-style-type: none"> Ongeveer 2/3 van dagelijkse delivery's zijn B2B Ongeveer 75% verschillende bestellingen per dag </td> </tr> <tr> <td>Employee B02</td> <td>Time of employment: 9 years</td> </tr> <tr> <td>Background information</td> <td>Location of employment: Mladén</td> </tr> <tr> <td>Quote</td> <td> <p>Iedere bakker heeft zijn eigen lijst met dingen die die dag moeten worden afgemaakt. We beginnen met de bestellingen en zodra die af zijn gaan we werken aan dingen voor de productie.</p> </td> </tr> </tbody> </table> <p> <ul style="list-style-type: none"> Bakkers beginnen om 05:00 2 afdelingen (banket & bak) CEO werkt zelf ook mee in bakkerij & CEO 2 werkt mee met logistiek Alles voor de winkels wordt in kratten gedaan en per winkel neergezet Iedere bakker werkt aan zijn eigen lijst met bestellingen (fruit afdeling, slagroom afdeling, kapsel taarten, diversen) Veel B-2-B-klanten Bestellingen worden niet digitaal, maar middels papieren orders verzameld. Beka (ingrediënten) komt om 11:30 2 pallets brengen Veel van de voedsel resten worden bij elkaar gegooid Alle plastic en papier en etenresten worden in dezelfde vuilnisbakken gegooid. Verschillende partijen komen de hele dag binnen lopen (leveranciers, afspraken CEO (marketing team, gemeente, klanten) suppliers Administratief medewerker komt om 12:15 binnen lopen Om 12:40 wordt er een pallet van Havelaar binnen gebracht. De macaron doosjes zijn niet meegeleverd. Hierdoor kunnen de producten nu weer een week niet worden ingepakt → blijkt dat alles telefonisch wordt doorgebeeld/besteld i.p.v. digitaal bestellen. efficiënter Om 13:10 komt er nog een lading van Beka binnen. Koerier plaatst alles zelf af op de schappen (komt dus met regelmaat? Kent de weg?) Alles draait de hele dag om bestellingen op de juiste manier de deur uit te krijgen. Veel focus op huidige bestellingen, niet super veel focus op toekomstige bestellingen over het algemeen. Short term planning Een geschiedenis 7-8% van het brood wordt weggegooid. Cijfers EM flow nachecken, maar zal er niet ver vanaf zitten. Gedeelte opgehaald door boerderij zowel in bakkerij als heyendaal winkel. </p>	Quotes		Employee B01	Time of employment: Owner	Background information	Education: All locations	Quote	<ul style="list-style-type: none"> Ongeveer 2/3 van dagelijkse delivery's zijn B2B Ongeveer 75% verschillende bestellingen per dag 	Employee B02	Time of employment: 9 years	Background information	Location of employment: Mladén	Quote	<p>Iedere bakker heeft zijn eigen lijst met dingen die die dag moeten worden afgemaakt. We beginnen met de bestellingen en zodra die af zijn gaan we werken aan dingen voor de productie.</p>
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Forgotten episodes	n.v.t.
Ideas and notes for further information use	<ul style="list-style-type: none"> Wat doen ze met alle resten afval? Wordt er veel hergebruikt in de bakkerij? Hou oud zijn alle machines in de bakkerij? Hoe vaak worden de prullenbakken geleegd? Waar worden ingrediënten gekocht? Lokaal? Hoe vaak worden ingrediënten geleverd? Hoe vaak komt administratief medewerker p/w? Wie zijn de leveranciers en wat leveren ze? Wie zijn nog meer belangrijke B2B klanten?
Personal impressions and feelings	<ul style="list-style-type: none"> Kunnen ze niet beter order digitaal hebben sochtend? Minder errors? Meer structuur door dingen te standaardiseren? Kan CEO niet beter focussen op managementtaken? B2B klanten zijn zeer belangrijk voor STRIK. Worden niet alleen met veel aandacht behandeld, maar maken ook groot deel uit van dagelijkse orders klanten, personeel en leveranciers spelen grote rol in dagelijkse gang van zaken bij STRIK. Grote organisatie, hele dag dingen te doen. Veel crisismanagement CEO's nemen veel taken op zich, eigenlijk alles. Zijn zeer onmisbaar in het bedrijf. Enerzijds kweitsbaar, maar anderzijds juist ook niet. Ze kunnen alle lege plekken opvangen. Duidelijk dat het bedrijf nu te groot is geworden voor de huidige activiteiten. Ooit begonnen als kleine zaak. Dit is jarenlang 'opgeschaald'. Nu doen ze dezelfde handelingen maar dan voor 4 winkels. Wordt te veel. Wellicht op zoek naar meer efficiëntie, betere processen of nieuwere technologieën.
Methodological notes	<ul style="list-style-type: none"> Voedselverspilling Energie → alle vriezers & koelingen Uitstoot ovens Verbruik meten van machines Winstmodel voor nieuwe producten Hoofdingrediënten die in productie worden gebruikt Verpakkingshoeveelheden en typen (+ waarom?) Patisserie college

B: ETHNOGRAPHIC OBSERVATION DIARIES

1. General company observations

- Code category: 'implementation criteria'
- Code category: 'Company ecosystem'
- Code category: 'Social activities'
- Code category: 'Energy & Material Flow'

Observation - Diary 2	
Day	Store
12-09-2019	Ziekerstraat & Heyendaal
Quotes	
Employee	S01 (Hee)
Background information	Age: 60+ Location of employment: Heyendaal
Quote	<ul style="list-style-type: none"> • Zeer vee loyale klanten → 'de bakker' van de wijk. Must, loyal customers • Doelgroep is de wat 'rijkere' oudere & jonge families. Target group • 's ochtends voor brood, 's middags voor patisserie. EM flow • Vooral zaterdag, veel jonge ouders. Komen echt als 'uifje' met kinderen samen. Ook veel vaders met kinderen. Target group
Employee	S02 (J)
Background information	Age: 50+ Location of employment: Heyendaal
Quote	<ul style="list-style-type: none"> • Soms slechte communicatie → leidt tot chaos Should, work environment • Gevoel van zelfstandigheid in winkels • Al maanden verzoek voor nieuwe vriezer, geen gehoor. Must, inlets employees • Ochtend voornamelijk brood, middag is gebak & stukwerk. Should, store • Klanten zijn vrij loyaal. Veel vaste bestellingen. Must, Loyal customers
Employee	S03 (Ha)
Background information	Age: 40+ Location of employment: Ziekerstraat
Quote	<ul style="list-style-type: none"> • Goede structuur binnen de winkel doordat je altijd met mensen staat die er al lange tijd werken. We hebben echt onze manier van werken gevonden. Social • Soms moet je lang ergens om vragen voordat het ook echt gebeurt.
Employee	S04 (M)
Background information	Age: 30+ Location of employment: Heyendaal
Quote	<ul style="list-style-type: none"> • Gevarieerd werk. Leuke sfeer. Good work environment • Altijd druk en wat te doen. Hard werken! Anders dan bij mijn vorige baan. Hard work
Customer	C01
Quote	Strik is voornamelijk heel lekker! Maar alles ziet er ook zo mooi uit. De nougatine taartjes van strik zijn ongekend. Must, brand identity
Customer	C02
Quote	Alles smaakt even heerlijk. Ze maken de mooiste dingen en alles is altijd heerlijk vers. Must, brand identity

Day	Store	Quotes
12-09-2019	Ziekerstraat & Heyendaal	Observation - Diary 3
	Employee	S05 (S)
	Background information	Age: 40+ Location of employment: Ziekerstraat
	Quote	<ul style="list-style-type: none"> • Niet altijd blij met manier van werken bij strik. Weinig structuur & communicatie. Geen idee van acties, nieuwwifes etc. Should, work environment • Vooral wat oudere mensen, maar ook veel gezinnen. Should, structure • Gezinnen komen ook voornamelijk voor 'speciale' taartjes voor kinderen (verjaardag, geboorte etc.). Target group
	Employee	S06 (I)
	Background information	Age: 40+ Location of employment: Ziekerstraat
	Quote	<ul style="list-style-type: none"> • Manier van werken niet altijd even fijn. Veel chaos, vaak stress. Should, work environment • Er wordt niet altijd geluisterd. Should, structure • Bestellingen komen soms zo laat dan we mensen moeten laten nr & mrs. van Geenen werken zelf ook heel hard. Social lack of communication • Liever werken op Ziekerstraat /ligt aan personeel bij Heyendaal. Work environment
	Customer	C04
	Quote	Vertrouwde winkel. Al 25 jaar trouwe klant. Lekker brood en heerlijk gebak. Neemt altijd iets mee voor de koffie en als iemand jarig is, altijd taart van Strik. Brand image Loyal customers
	Customer	C05
	Quote	Ik kom hier elke donderdag en vrijdag middag om in de pauze van mijn werk een lekker broodje te eten. Het is echt een vaste prik. Loyal customers

Forgotten episodes	<ul style="list-style-type: none"> • Lijst met gevraagde producten voor in de winkels wordt vaak als laatste & snel gedaan. (krijgen de winkels daarom vaak niet geleverd wat ze vragen?)
Ideas and notes for further information use	<p>Uitgaven klanten Ziekerstraat:</p> <ul style="list-style-type: none"> - C01 → €19,65 (saucijzen, waistenbroodjes en brood) (11:07) - C02 → €16,30 (saucijzenbroodjes, gebakjes & brood) (11:13) - C03 → €5,80 (croissant & harde broodjes) (11:16) - C04 → €24,75 (taart & appelflappen) (11:29) - C05 → €68,90 (luxe taart) (11:29) - C06 → €14,60 (pakje koekjes, marsepein) (11:36) - C07 → €18,20 (koffie + gebak & zoutjes) (11:48) - C08 → €6,96 (pakje herfst chocolaatjes) (10) - C08 → €79,80 (3x taart + 2x pak koekjes + doosje bombons) (10:59) - Veelal klachten vanuit personeel omtrent personeelszaken: <ul style="list-style-type: none"> - vakantie regelingen/ dagen vrij/ vaste pauze tijden/ over uren/ slechte communicatie - Andere frustraties vanuit personeel: <ul style="list-style-type: none"> - weinig werk ruimte/ geen extra vriezer/geen stofzuiger/veel rotzooi etc - 08:00 – 09:00 → veelal brood verkoop - 09:00 – 10:00 → brood & gebak - 10:00 – 11:00 → gebak & koek - 11:00 – 12:00 → klein brood & stukwerk (saucijs/appelflap/waistenbrood) - 12:00 – 13:00 → stukwerk & taart - 13:00 – 14:00 → gebak - 14:00 – 15:00 → erg rustig! Verschillende producten - 15:00 – 16:00 → chocolade + taart - 16:00 – 17:00 → gebak & koek - Idee dat personeel zich niet begrepen voelt door management - Klanten bestellen vaak snel (bekende order?) → weten wat ze willen. - Loyale, trouwe klanten. Houden van vast ritme en bekende bestellingen, maar ook bekende gezichten achter de toonbank. - Expertise van werknemers is hoog. Wordt deze optimaal gebruikt? Moet deze niet gestandaardiseerde. De ene werknemer weet meer dan de andere en werkt anders. - Werknemer tevredenheid - Loyale klanten + doelgroep analyse. Wie zijn deze klanten en wat willen ze graag (ook buiten STRIK om). - Brand identity, wie is strik, hoe zien de klanten strik? - Trends in de branche - Product overzicht. Door welke fasen gaan producten, wat is hun levenscyclus?
Personal impressions and feelings	
Methodological notes	

2. Specific department observations

"CWZ is the only one with other sorted pastries. They get more luxurious and bigger pastries."
 "Well than just drive to them first and return for the other orders after..."
 "If there is not space in the storage closets, just put it on the ground!"
 "Sanadome HAS! to be delivered the right way and in time."

quotations

DATE: 17-09	PROJECT NAME: <i>Graduation Project</i>	TYPE OF RESEARCH
TIME 06:00-18:00	RESEARCHER NAME: <i>Felvie Hunink</i>	<i>Bakery logistics</i>

ACTIVITIES	ENVIRONMENTS	INTERACTIONS	OBJECTS	USERS
<p>Preparing orders for distribution</p>	<ul style="list-style-type: none"> - Bakery in Malden, logistics department. - Early in the morning between 06:00 and 12:00. - Inside - Crowded - Under time pressure - Physically heavy work carrying trays and crates and bending over a lot 	<p>One CEO leads logistics, other leads bakery. First orders from evening before after 17:00 are processed and printed for bakers and logistics. Then, orders that need to be delivered earliest are packaged and prepared for distribution. There are usually 2 rounds of orders, an 'early' and 'late' round. Within the orders are B2B, B2C and the stores. The first courier drives off at 07:45. One courier drives to the city centre, the other does the outbound route (leaving around 10-11). The CEO always drives some orders. Usually those in Malden (close to the bakery), but also in case of special needs or mistakes. Orders are sorted per store in storage closets and B2C webshop or B2B orders are placed here as well based on address. First the biggest B2B orders are prepared and delivered. Usually orders for Sanadome, CWZ, Raboud and Sodexo. Not all orders are delivered in time, either due to delay in the bakery (production</p>	<ul style="list-style-type: none"> - Storage closets - packaging material - delivery vehicles - phone - computer - order overview printed 	<ul style="list-style-type: none"> - Logistics manager (CEO) - Logistics help - Bakers - Couriers - Customers <p>Couriers are dependent on the logistics employees. However, these are dependent on the bakers' work. If products are not produced in time, logistics cannot prepare the orders and couriers cannot deliver them, which goes at the expense of the customers.</p> <p>Logistics are leading, even though they depend on the work from the bakers. Logistics can demand quicker production or ask for other products sooner just because that order needs to be delivered first. Bakers produce based on delivery moment, but also quantity. They will not make 1 cheese-cake first and 2 hours later a second one even though the 2 orders are for 09:00 and 11:00. They will make both at the same time.</p>
<p>Processing orders for the next day</p>	<ul style="list-style-type: none"> - Bakery in Malden, office - During the day between 13:00 and 17:00 - Inside - Calm/relaxes, not many people around - High concentration necessary 	<p>Employee processing orders starts by processing all e-mail orders. These are about 30 each day, amongst which both B2C, B2B and web-shop orders. This takes up to 2 hours in total. Then, around the clock of 16:00 the stores are called for the store orders and a fixed list of B2B customers are called to ask for their orders. Most B2B order via email, using their own type of templates. Some do this with excel, some simply type a list in the e-mail. After all orders are processed, the phone is forwarded to the voicemail. From this point</p>	<ul style="list-style-type: none"> - Computer - Paper - Phone - Printer 	<p>Employee processing orders. This employee works alone, but does contact store employees and customers to ask for list of orders.</p>

"Why are you so late? Did you deliver everything?"
 "Why are you still here? You should have left 10 minutes ago! Hurry up, the customers are waiting!"
 "Where do I need to go first? I don't know where that address is..."
 "How many boxes can I put on top of each other?"

quotations

"First you drive to Sanadome, then you'll go to the Heyendaal store and then finish the city round starting with New Dutch and Fika and then the Ziekerstraat store and Karel cafe!"

DATE: 18-09	PROJECT NAME: <i>Graduation Project</i>	TYPE OF RESEARCH
TIME 07:00-12:00	RESEARCHER NAME: <i>Felvie Hunink</i>	<i>Distribution</i>

ACTIVITIES	ENVIRONMENTS	INTERACTIONS	OBJECTS	USERS
<p>Collecting and delivering the orders</p>	<ul style="list-style-type: none"> - Bakery in Malden, logistics department. - Early in the morning around 07:00 - Inside collecting, outside sorting in vehicles - Crowded - Under time pressure - Physically heavy work carrying trays and crates and bending over a lot 	<p>The first round of orders is processed by the logistics team, after which orders are sorted in the storage closets. The first courier picks up the order for CWZ, which is the first order to deliver. This is delivered in crates and every day the same delivery, the same delivery time. In the mean time, the other courier arrives for the first city round of orders. Orders are loaded in the vehicles based on addresses and delivery times. The couriers are told which routes to drive and which orders to deliver first. The stores are stocked during the first round, otherwise the stores cannot open at 08:00. The couriers take back the garbage and empty crates once they've stocked the stores. The city courier visits the stores at least twice per day, so forgetting an order is not a big deal. However, the outbound courier only visits the Wijchen store once, so everything needs to be delivered. Couriers do not drive a calculated optimized route but drive the route they think is suitable and most logical for the orders of that day. This means that new couriers have a hard time getting familiar with the job.</p>	<ul style="list-style-type: none"> - Storage closets - delivery vehicles - phone 	<ul style="list-style-type: none"> - Logistics manager (CEO) - Couriers - Customers <p>Couriers need to serve the customers and are held responsible by the customers for their orders. The logistics manager needs to guide and help the couriers, as the couriers are fully dependent on the logistics manager for their daily activities.</p>
		<p>The pressure is high, there is often a lot of chaos and there is always a lack of time for a to-do-list that's too long. This means that the couriers cannot deliver everything themselves and some tasks are forwarded to the next day. New addresses are difficult to deliver to, sometimes couriers cannot find the right door to enter. Moreover, deliveries to hospitals always demand a lot of time, because of all of the different departments that are always so difficult to find. One of the couriers has a self-made list where he writes down what he delivered, at what time and how many km he drove. The other couriers do not do this. It is not mandatory by the CEO's, but couriers often get asked about why it took so long and whether they did actually deliver the order in time and on the right address. For this reason one of the couriers made his own checklist. Wedding cakes are always difficult to deliver, as they do not fit in a box. Couriers need to be extra careful with such orders. This brings extra stress to the job. Couriers experience the job as quite stressful and chaotic.</p>		

quotations

"Is the courier here yet? Will he be on time today, we are waiting for him!"
 "If there are too many customers in the store, we write down the orders so we can process them at the end of the day"

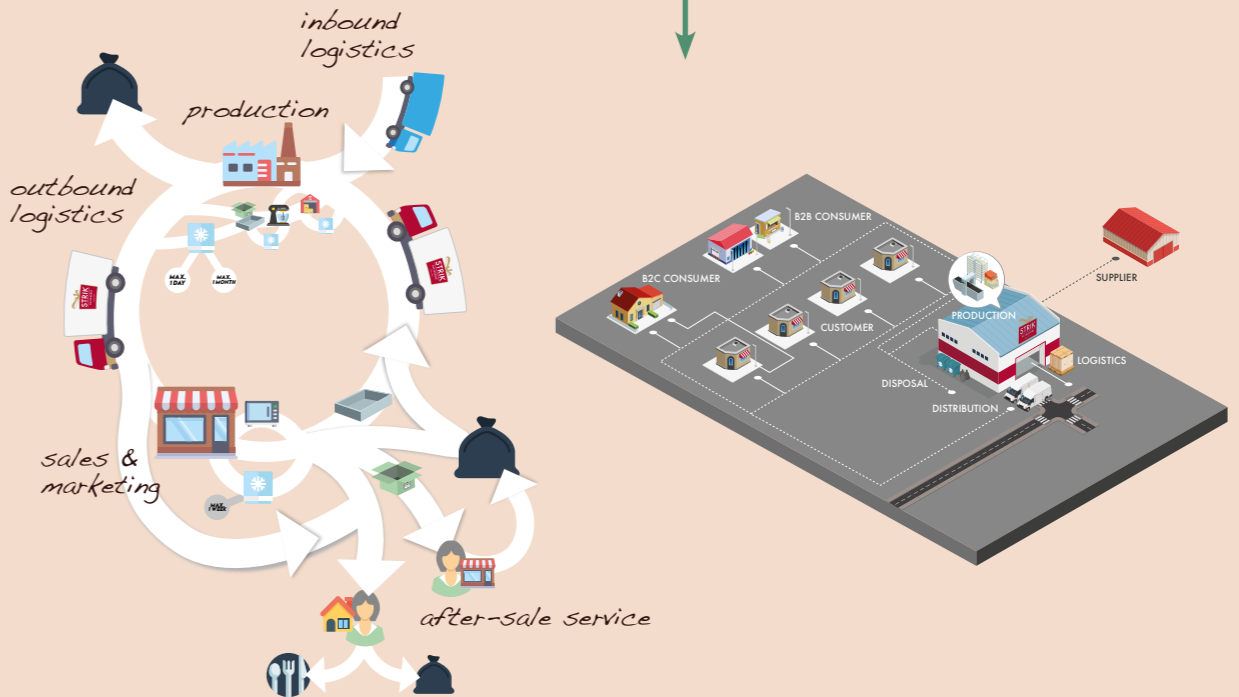
"When the store is filled with customers, our team takes on their own set of tasks. One does the tea-room, another does the dishes and another does the serving of customers"
 "We maintain a good relationship with our customers. It's nice to know what they're up to as we see them often in our stores"

"Call the bakery to ask where this delivery is. We did not receive it and the customer is here..."

DATE: 18-09	PROJECT NAME: Graduation Project	TYPE OF RESEARCH
TIME 07:30-17:00	RESEARCHER NAME: Felice Hunink	Store activities

ACTIVITIES	ENVIRONMENTS	INTERACTIONS	OBJECTS	USERS
<p>Opening the store and preparing orders</p> <ul style="list-style-type: none"> - In-store - Morning, starting at 07:30 - Filling the stocks - Preparing orders 	<p>The employees have a key to the store and start with turning on the machinery and lights. They get the bread directly from the suppliers, so they can start with stocking the bread shelves. When the first courier has delivered the products, all of the other shelves are stocked as well. In case there are some 'french' products from the day before, these are used to stock as well, preferably placed so that these are sold first. Then, the cash-register system is turned on and all of the other products are stocked (packaging, napkins, et cetera).</p>	<p>The tables and chairs are put in place and the door is opened. The couriers have also delivered the orders that get picked up by customers in-store. These need to be sorted by the store employees so that they can find them quickly when the customer comes to collect. If necessary, the orders are placed in the refrigerator until the customer has arrived. At the Heyendaal store (which sells the most bread) the bread products that does not get delivered by the supplier in the morning get taken from the freezer and heated up in the oven. older employees and the older customers. At the Ziekerstraat store, a lot of customers come to drink a coffee and have lunch or a snack. These need to be served by the employees. All employees have different ways of working. In terms of coffee making, sandwich preparing, but also price determination and order processing. There is a lack of structure and standardization here and all employees do their work activities just because they are used to doing this. A lot of customers want their products heated. Other products require refrigeration. Some products still need to be packaged in either boxes or bags. There is always a lot of packaging to do for the employees. Usually so much that they cannot finish this and it gets forwarded to the next day. Before 16:00 they need to have processed all orders in the system.</p>	<ul style="list-style-type: none"> - Refrigerator - Oven - Crates - Cash-register system - Store 	<ul style="list-style-type: none"> - Store employees - Suppliers - Couriers <p>The store employees cannot finish opening up the store if the courier and suppliers did not arrive in time. Even though they always have some products from the day before or stored in the freezer, they need the fresh products to open the store. Moreover, a lot of customers collect their orders before 09:00, so the courier needs to deliver these.</p>
<p>Serving the customers</p> <ul style="list-style-type: none"> - In-store - Starting at 08:00, ending at 17:00 	<p>A lot of loyal customers come to the store early. Either to pick up orders or to purchase products. Most purchases in the morning are bread-related. This shifts during the day towards pastries. However, orders are usually birthday cakes or other cakes. These are also picked up in the morning. Store employees need to deal with customer complaints and customer ordering. They use the cash-register system to process the orders, as this is directly connected to the order processing system in the bakery (where the logistics employee processes the order in the afternoon). A lot of customers have a member card on which they save points for discounts. Many customers are loyal and returning, so store employees chat with the customers about their day-to-day lives and other stuff. The bond between employees and customers is quite good. Customers trust in the expertise of employees, especially the</p>	<p>Employees need to own-handedly manage the stocks. Not only from the food products, but also from packaging, decoration, tea-room necessities, et cetera. They do this either directly with the suppliers</p>	<ul style="list-style-type: none"> - Refrigerator - Oven - Cash-register system - Store - Money - Packaging material 	<ul style="list-style-type: none"> - Store employees - Customers <p>The store employees maintain a good relationship with customers. Customers are often loyal and returning, so they recognize store employees.</p>
<p>Stocking and ordering</p> <ul style="list-style-type: none"> - In-store - All day 	<p>or to the CEO. Ordering is done throughout the day by phone. However, food stock ordering has to be done before 16:00 in STRIK's ordering system.</p>	<p>The store employees take initiative in contacting the CEO and suppliers for maintaining the stocks.</p>	<ul style="list-style-type: none"> - Phone - Cash-register system 	<ul style="list-style-type: none"> - Store employees - Customers <p>The store employees maintain a good relationship with customers. Customers are often loyal and returning, so they recognize store employees.</p>

3: Product journey mapping



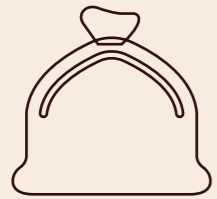
What can be concluded from the insights is that the product starts as either a raw ingredient or an end product at the supplier, ordered by the logistics department of the company. Then, it gets distributed to the bakery where it is either stored first (cooled or frozen) or directly used within the production. Then, the manufacturing of the products begins, resulting in an end-product that is baked first, or produced without baking. This product is again either stored first (cooled or frozen), or directly moved to the next logistics section. Here, the products are packaged or simply sorted after which they will again be either stores (cooled or frozen) or directly be prepared for distribution. All products are

distributed across the STRIK stores, directly to B2C customers or directly to B2B customers. Then, products are sold at the store, after some of the products are again first stored (frozen or cooled). After consumption, customers directly consume at location or take their bought products home and consume it there. After usage, consumers dispose their products. Waste coming from the stores is picked up by the delivery vans again, taking it back to the bakery where it gets disposed together with all other waste coming from production or logistics. Part of the disposed food gets reused for the manufacturing of new products, bringing it back into the journey.

4. Garbage analysis

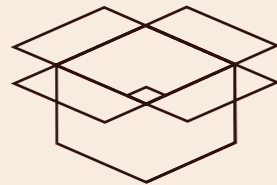
Ethnographic observations from garbage disposal, combining data from all stores and the bakery

GENERAL WASTE

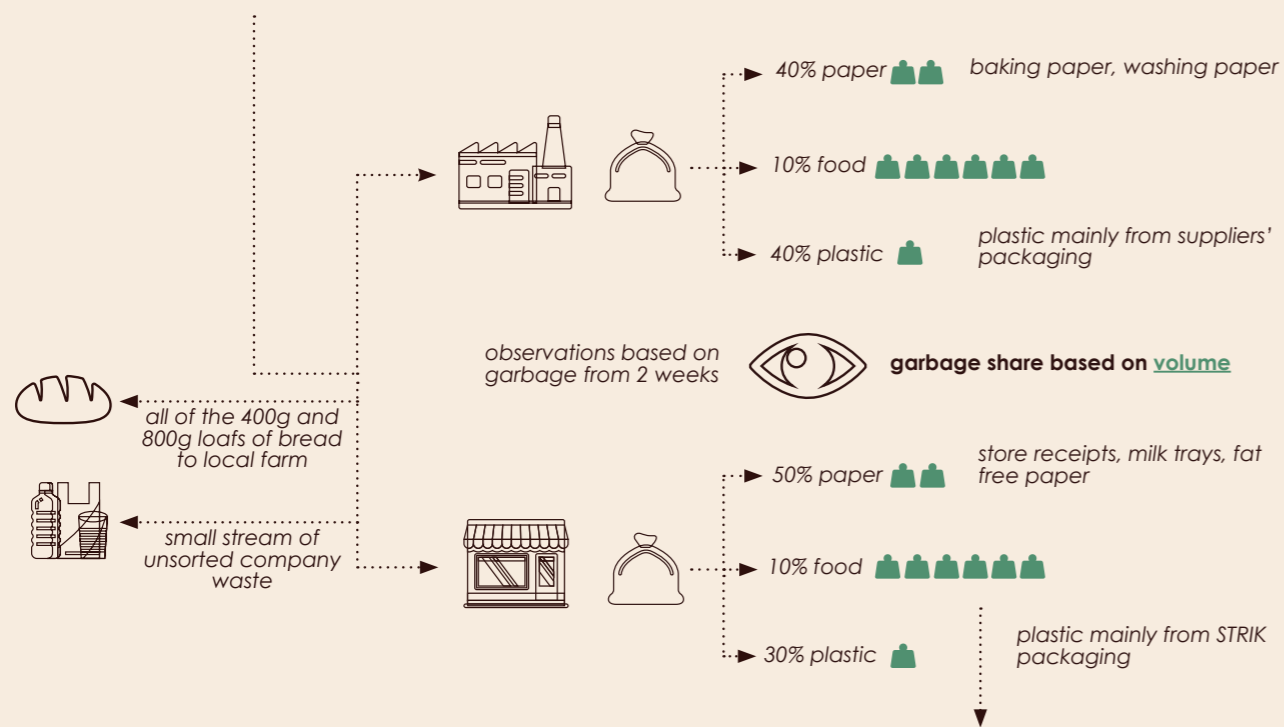


mainly suppliers' shipping material

23.176 kg/yr



7.311 kg/yr



Average weight per m3 (stimular.nl, 2019)

Paper/cardboard	120 g/m3
GFT	400 g/m3
General plastics	50 g/m3
Unsorted company waste	150 g/m3

!! Weight of food is much higher than of other waste

30% food
40% paper
20% plastic
10% other waste
calculated from volume percentage x weight per m3



FOOD WASTE

Ziekerstraat: Total collected food waste in 1 week: 5.6 kg + 7 filled crates of about 3kg shipped back to the bakery. Mostly filled with bossche bollen, vlaaien and cakes. According to employees an average disposal of around 3 entire loafs of bread per day.

Heyendaal: Total collected food waste in 1 week: 5.4 kg + 4 filled crates of about 3kg shipped back to the bakery. About 4 entire loafs per day of bread waste on average.

Wijchen: Total collected food waste in 1 week: 6.2 kg + 5 filled crates of about 3kg shipped back to the bakery. About 4 entire loafs per day of bread waste on average.

Bakery: Total collected food waste in bins: 31 kg (excluding waste from stores). Mainly because of heavy materials (dough, cream, et cetera).

CONCLUSION: the numbers show that each store throws away about 40-50 kg of food waste per week of. This is in line with the 12.000 kg food waste calculated in the energy and material flow of analysis 5 (considering these numbers are from 4 stores and 1 bakery). Specific waste depends per day and per season as well (the latter especially in the bakery).




APPENDIX 2

supporting the implementation criteria

A: ADDITIONAL FACEBOOK QUESTIONNAIRE OUTPUT - BRAND IDENTITY

Strik Patisserie
Published by Maurits van Geenen · 2 October ·

Waar denken jullie aan als je aan STRIK denkt? 🍩 Laat het ons weten in de comments, we zijn erg benieuwd!!!



3,434 People reached **396** Engagements [Boost Post](#)

38 76 comments 3 shares

[Like](#) [Comment](#) [Share](#)

- Dan moet ik denken aan vroeger, mijn Oma, Opa en tante kochten altijd het gebak bij Strik, bij welke gelegenheid dan ook, het gebak van Strik stond altijd klaar.
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Strik Patisserie** Wat leuk om te lezen Anja!! Dankje voor het delen van jouw herinnering aan Strik 🍩
[Like](#) · [Reply](#) · Commented on by Feline Hunink · 6w · 1
- Lekkere bananensoes.. Maar ze hebben ook een verjaardag verpest met een taart die er niet uitzag..en erg duur
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Strik Patisserie** Jammer om te horen Renata! We hopen dat ooit recht te kunnen zetten met een taart die wel naar wens is 🍩
[Like](#) · [Reply](#) · Commented on by Feline Hunink · 6w · 1
- [View 1 more reply](#)
- Dat jullie elke zaterdag of laatste openingsdag voor de feestdagen de winkelvoorraad kwamen brengen voor ons bekende dinchbuffet heerlijk snoepen was dat 🍩🍩🍩 Dan hadden jullie alles weer vers als jullie weer open gingen
[Like](#) · [Reply](#) · [Message](#) · 6w · Edited · 1
- Dan denk ik aan onze bruidstaart die jullie 12,5 jaar gelden voor ons hebben gemaakt. Nog nooit zo een lekkere taart gegeten. 🍩🍩
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Strik Patisserie** Leuk om te horen Angelique!! 🍩 (en gefeliciteerd met jullie 12,5 jarig huwelijk nemen we aan)
[Like](#) · [Reply](#) · Commented on by Feline Hunink · 6w · 1
- [View 1 more reply](#)
- Aan het heerlijke gebak!! Echt alles super lekker met een heerlijk kopje koffie.
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- De aller aller aller lekkerste tompouce van Nederland 🍩🍩🍩
[Like](#) · [Reply](#) · [Message](#) · 6w · 2
- Aan mijn schoonvader. Die zocht altijd wel een reden om gebak bij Strik te kopen.
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Ik denk dan aan al dat heerlijke gebak wat ze hebben en hoe mooi ze eruit zien toppie 🍩
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Aan de heerlijke chocolade puntjes die niet meer in het assortiment zitten/ gemaakt worden 🍩
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Strik Patisserie** Wie weet komen ze ooit nog terug Rianne!! We nemen het mee in de assortiment vergaderingen 🍩
[Like](#) · [Reply](#) · Commented on by Feline Hunink · 6w · 1

nostalgic memory
F01
pastries together

F02
tasty

nostalgia
F03

nostalgia
F04

tasty
F05
pastries

F06
tasty

nostalgia
F07
together

F08
pastries

F09
tasty

- Aan een echte marsepeintaart van goede kwaliteit
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Aan de lekkere taartjes in het CWZ.
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Kwaliteit, vers, duurzame ingrediënten, klantvriendelijk
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Top fan** Het lekkere, aparte gebak en taarten, zo lekker.
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Heerlijke gebakjes, taarten, petit four en niet te versmaden de truffels
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Ik denk bij strik aan vroeg opstaan 🍩
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Altijd feest als je bij #STRIK bent geweest Met de hele bende lekker smullen.
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Heerlijk gespoten chocolade letters 🍩
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Een puddingbroodje onderweg tijdens de vierdaagse 🍩
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Jullie heerlijke gebakjes 🍩
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Aan de appelkanjers en de nougatine schuimtaart.
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- DE bakker van Nijmegen 🍩
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Aan die lekker schuimgebakjes mmmmmmmmmmm dat is smullen 🍩
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- De heerlijkste bosche bollen
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Gebak als er iemand jarig was toen ik in de stad werkte
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Top fan** Ons heeeeerlijke, met marsepein beklede, bruidstaart 🍩
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Aan mijn gezin en familie 🍩 (zie mijn achternaam)
[Like](#) · [Reply](#) · [Message](#) · 6w · 2
- Top fan** De lekkerste banketbakker van Nijmegen 🍩
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Nougatine taart hmm
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Het water loopt me al in de mond als ik aan Strik Patisserie denk 🍩
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Aardbeienslof 🍩🍩🍩🍩🍩🍩
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Aan de puddingbroodjes... elke vrijdag neem ik ze mee om weekend in te luiden ... 🍩
[Like](#) · [Reply](#) · [Message](#) · 6w

F11
quality

F12
pastries tasty

F13
quality

F14
pastries

F15
pastries

nostalgia
F17
together

F16
tasty

nostalgia
F19

F20
pastries

F23
tasty

F24
tasty

nostalgic memory
F25
pastries

nostalgic memory
F26
tasty

F28
pastries

F29
tasty

F30
tasty

nostalgia
F32

- Lekker lekker (en soms nog aan 200 amandelstaven) 🍩
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Boterkoek met gember! 🍩
[Like](#) · [Reply](#) · [Message](#) · 6w · 2
- [View 1 reply](#)
- Onder andere aan de lekkerste en niet zo zoete speculaas plakken!
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Mijn broer 🍩
[Like](#) · [Reply](#) · [Message](#) · 6w
- Aan de overheerlijke 🍩
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Altijd de moeite waard 🍩
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- De heerlijke tompouce 🍩
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Caramelslof 🍩🍩🍩
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Macarons en hazelnoot schuim taartje 🍩
[Like](#) · [Reply](#) · [Message](#) · 6w · 2
- Appelkanjers 🍩🍩
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Aan onze visites bij en Silvia Ariaans 🍩 in Wijchen. Altijd lekker gebak van Strik in huis.
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Nougatine taartje 🍩
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Lekkerste gebak van Nijmegen
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Nou, aan alleen maar lekkers!!!!
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Chipolata taart en de lekkerste slagroom truffels mmmmm
[Like](#) · [Reply](#) · [Message](#) · 6w · Edited · 1
- Schuimtaartje!
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Hazelnoot bollen natuurlijk 🍩
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Smaakexplosie!! 🍩
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Sowieso jullie musli koeken 🍩
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Puddingbroodjes.
[Like](#) · [Reply](#) · [Message](#) · 6w · 1
- Aan Piet 🍩
[Like](#) · [Reply](#) · [Message](#) · 6w

F33
tasty

F34
pastries

F35
tasty

F36
together

F37
pastries

F39
pastries

F40
pastries

F41
pastries

nostalgia
F43
together

F45
pastries

F46
tasty

F47
tasty

F50
tasty

B: TARGET GROUP RESEARCH, INCLUDING REPRESENTING PERSONAS

'WEALTHIER' ELDERLY

According to the RTL Nieuws (2017), based on numbers from the Central Bureau of Statistics, "the elderly are wealthier than ever". And not only wealthier, but also healthier (in 't Veld, 2018). Women tend to live another 21 years as from 65 years old, and men another 19 on average (ibid.). This is one the reasons we have almost 3.2 million 65+ elderly living in the Netherlands, 779.000 of which are even over 80 years old (Volksgezondheidszorg, 2018 - based on statistics from the Centraal Bureau Statistiek). The group of 65+ elderly have increased from 6% in the 19th century to 18% in the 20th century (ibid). Even though not all of the elderly experience this 'becoming wealthier' development, as those closer to 79 experience a much worse financial position coping with insurance costs and low retirement incomes (Skipr, 2017; Van der Meer, 2016). This means that the financial position within the elderly group differs significantly, with 35% having no savings at all, but 20% having over 30.000€ of savings (Nibud, 2018). Those between 65 and 70 have on average most to spend (Nibud, 2016), especially the coupled elderly closer to 65 that own the property they live in seem to be able to spend more and experience a wealthier and richer living situation (Nibud, 2018). This means that the 'baby boomers' under the elderly (65-73 years

old) are considered the 'wealthiest' group within the group of elderly. Baby boomers are those people born between 1946 and 1964. This generation is known for their characteristics that they value a good price-quality ratio and have on average more time to do their shopping (Markteffect.nl, 2018). They are very price-conscious and are sensitive to honest and transparent information. They do less often groceries and prefer trustworthy brand because they value product quality (ibid). And for these trustworthy brands they have created a loyalty that makes it hard for competing brands to win them over (Neijland, 2017). The relationship is very important to these baby boomers, and they are very much willing to pay a little bit extra money for a good product and comfortable service (ibid). Personal attention is key to winning them over and with the right kind of attention stores can attract customers for life with these baby boomers. The activity becomes, the older they get, subordinate to the social activity (Neijland, 2017). Combining this with insights from the field observations and interviews (Appendix 1-A, interview A01&A02; Appendix 2-A, general observations, diary 2), a persona is created to represent the 'elderly' target group of STRIK. The persona is shown on the following page.

Esther (67) & Jaap (69)

picture: unsplash



PERSONA, based on:

Field observations (Appendix 1-B, general observation diary 2) and personal impressions based on these.

Backed up by secondary data

Esther and Jaap have been together since 1967. They met each other through high school in Nijmegen and stayed together every since. Jaap studied for real estate and Esther was a elementary school teacher. Esther started working less when they had their two children. Jaap retired at the age of 66 and Ingrid retired 2 years ago. Together they have a monthly spendable income of 3200 Euros. In a few years they will have paid off the mortgage on their house and have some savings left to spend on extras and their grandchildren. **They love taking their grandchildren out to do fun things and spoil them whenever they can.** At Saturday they always do their **routine shopping**, going to their usual flower market, bakery and butcher every week. They still enjoy a nice store experience, talking to store employees and having a chat with other customers. They still cook about 4 times per week, but also enjoy going out for dinner or simply getting take-out at that Chinese restaurant around the corner. **They love to spend time together and enjoying their retirement.** They often go for a long walk through the park to get some exercise and fresh air, followed by a nice cup of coffee and tasty snack.



€3200,- / mnth



enjoy life



routine shopping with in-store experience



exercise through out-door walks



spoiling grand children



YOUNG FAMILIES

According to numbers from the Centraal Bureau voor de Statistiek (2018b) there are 1.2 couples with younger children in the Netherlands. The biggest group amongst these are those of which one of the partners works full-time and the other works part-time (59.7%). These 'dual earners' with children have a spendable monthly income of €3420. And with that, women are adding more and more to the couples' monthly income (Centraal Bureau voor de Statistiek, 2017; 2018a). In 2016, 34% of the monthly income from dual earners with children came from the working women, which is 5% more than in 2006 (ibid). Dual earning couples with children spend about 48.000€ on yearly basis (Centraal Bureau voor de Statistiek, 2018b). Because of the lower fixed costs, dual earning couples spend more on food and recreational stuff (ibid). These couples with younger children fall within generation Y (born between 1980 and 2000). According to Sov.nl (n.d.), generation Y is known as the 'foodies' of which 80% wants to know where his food comes from and how its produced and 75% wants to try new food trends. 51% even avoids fast-food. Now that they have a job and children, they are looking for the most efficient shopping experience, as this generation lives a busy life with barely any time for groceries or other shopping habits (Markteffect.nl, 2018). Despite this, this generation does find himself regularly at specialty stores and often makes in-store purchases for direct consumption (Markteffect.nl, 2018). Manager of Marketing and Communication at the Dutch Bakery Centre (NBC) stated in Bakkersinbedrijf

(2018): "there exists a growing group of consumers, mainly those young families with children of which both parents are working. For them, food is more than just filling a stomach. It has become a lifestyle for them, and they are willing to pay a price for that!". So despite their busy working lives, Millennials are compensating by searching for shopping experiences, especially for food. In-store field observations and employee conversations supports these findings (Appendix 1-B, general observation, diary 2, employee S01). The work-life blend of these Millennials is very much encouraged by their 'family', their network of friends and family.

In contrary to baby boomers, this generation is not very brand loyal, simply because they know what else is 'out there' (Neijland, 2017). The city is like a magnet to them, because everything is within reach, just the way they like it (ibid). They also prefer a somewhat healthier lifestyle, and according to research from the FleishmanHillard Fishburn (FHF), as mentioned by Duurzaamnieuws (2018): "93% of the millennials want to buy from companies that are target-focused, sustainable and environmentally conscious". Maybe even more shocking, this same research emphasized that 56% of the millennials scrap companies of their list that are not operating in a sustainable way. Aside from this, millennials are creative, better informed, higher educated, entrepreneurial and more critical than previous generations (Kidsenjongeren.nl, 2016).

All of the latter is combined into a representing persona on the next page.



Eva (34)

Eva (34) is mom of Kae (2) and Levi (3 months). She works part-time as Social Media Marketeer at a company in Nijmegen. Her fiancé, Robbert, works full-time as sales expert for Adecco. They met each other through mutual friends and decided to live together after a relationship of 3 years. Together they bring about €3500 to the table, of which part goes to the mortgage and other fixed costs, and part gets saved for later. Eva likes to do fitness in her spare time. **She prefers a healthy lifestyle, but also wants to enjoy herself once a while, preferably in the surroundings of friends and family.** She is often busy with work or with the kids, so she usually does her usual weekly grocery shopping right after going to the gym in the city centre at the nearest place possible. In the weekends she prefers going to the Eko plaza for her groceries, after which she sometimes makes a stop at the local bakery for some afternoon snacks, whenever friends and family are coming over. Eva always takes Kae and Levi to do her groceries, and likes to treat them once in a while. Not too much, because she wishes a healthy lifestyle for her kids as well. During the weekends Eva and Robbert often go to have lunch or cook a nice new recipe themselves at home. Eva prefers a **healthy balance between her work and her personal life**, so doing things together with Robbert or her friends is a must. She likes the independency of her own income, but also likes to spend it on **things that give her joy**. Lastly, **sustainability** plays an important role for Eva. She prefers taking the bike to her work or the city centre and invests her time in online shopping at sustainable brands.

picture: unsplash

PERSONA, based on:

Field observations (Appendix 1-B, general observations diary 2) and personal impressions based on these.

Backed up by secondary data



€3500,- / mnth



work-life balance



experience shopping at specialty store with best product range



healthy lifestyle



surrounded by 'family'

C: BRANCHE TREND ANALYSIS ACCORDING TO DEPEST

A trend analysis could be interesting for STRIK to understand which trends to focus on in terms of innovation and growth, especially within the bakery industry. To create structure in discovering and presenting interesting trends, the DEPEST analysis tool is used as guidance (Van Boeijen et al., 2014) in addition to a set of product- and packaging related trends within the bakery industry. Figure 12 represents the collection of relevant filtered-out trends for STRIK. Such trends could be used to combine with innovative circularity initiatives in order to create a more attractive and viable recommendation as the environmental value gets in-creased.

From the thorough research, the trends that kept returning was 'healthy food', and especially 'enjoying a healthy moment' (Marktdata.nl, 2017; Dekker, 2017, Gommans, 2018; van der Werff, 2019). That means less sugar, less salt, more multigrain breads and more biological ingredients used in products. According to one of STRIK's co-owners (Appendix 1-A, interview A02) the purchase behaviour towards sugar-free products did change over the past years, with not only a visible in-crease of sold sugar-free products, but also an increased demand of such healthy products. However, STRIK does not believe that the biggest group of customers will continue coming to STRIK to enjoy a tasteful product despite its calories or salt-level. It is important to consider healthy products and offer customers the choice, but healthy products will never become STRIK's main focus and main selling product, according to STRIK's co-owner. "I do not think we should be wanting to go too far away from our core strengths and products"

(Appendix 1-A, interview A02). This implies that more interesting trends for STRIK could be that of creating an 'experience', treating food as a life-style and not a practicality and trends like going back to the base by emphasizing the craftsmanship behind the products and being transparent about production processes and used ingredients (Martkdata.nl, 2017; Bakkersinbedrijf, 2018; Van os, 2018; Paardekoper.nl, 2018; Lindner & Maes, 2018; Schaap, 2019; Ordermentum Insights, 2019).

Next to healthier products, trends are shifting towards sustainable products as well. And not only in terms of using less packaging, but also through diminishing food waste and making more use of local products (Marktdata.nl, 2017; van de Werff, 2019). Other trendwatchers mentioned the importance of closely managing the younger consumer groups. Demographics are changing and with that consumer groups are becoming more and more specific and difficult to target even though these

consumers are willing to spend money on the food-related products they purchase (Sonneveld.com, 2019; Bakkersinbedrijf, 2018; Retailinsiders.nl, 2019; fsin.nl, 2017). To conclude, there exist many interesting trends within the bakery industry that could be interesting for innovation and company growth. This overview will be used throughout the idea generation phase to make circularity implementations more desirable, feasible, viable and possibly more financially attractive.

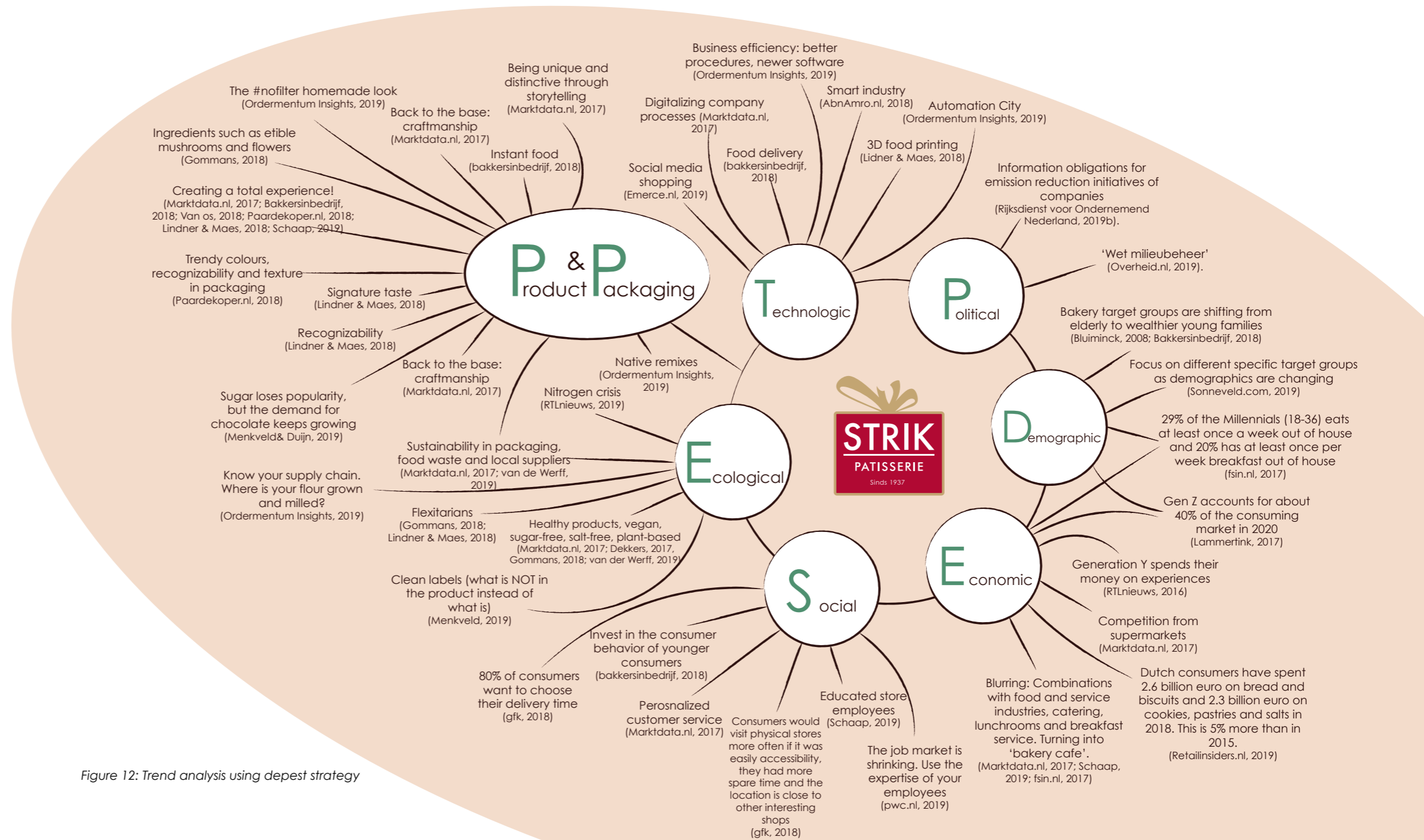


Figure 12: Trend analysis using depest strategy

APPENDIX 3

supporting the triple layered business model canvas

A: THE ECONOMIC LAYER

PARTNERS

The key partners for STRIK mainly consist of suppliers. It is the common buyer-supplier partnership that assures that you have a reliable source of supplies (Anastasia, 2015). These suppliers are not only the most obvious suppliers that deliver ingredients on a weekly basis, such as Beko, Havelaar, Van Eldijk or 't Kraayennest, but also the important supplier of the software system (Marti Orbak), the supplier of chocolate products (Van Nunen, Zingg & Dragee), the window decorator (Decora), the interior designer (Koning), the waste processor (M&M), the graphic designer (Studio Voorhuis), the printing studio (DM Prints), the refrigeration supplier (Berns) and the overall product, ingredient and service supplier Hanos.

However, aside from the supplier partnerships, they also have very important partnerships with bakeries located all around the country through a collaborative association of bakers called 'Patisserie College'. They purchase collaboratively to get good prices, but more importantly they share know-how and expertise and help each other grow and improve with their bakeries. Moreover, another key partner are the local news papers. For every STRIK store there is a local newspaper that weekly or monthly mentions the store offers and reaches local customers. These partners are important to STRIK, as their sales partly rely on them.

ACTIVITIES

STRIK falls under the archetype of production and sales according to the archetypes from Anastasia (2015). This means that there are certain key activities that are equal for each archetype. For production for example, this includes the product development, quality assessment and distribution, while for sales this includes for example the customer service, handling problems and assisting in sales. The concluding main activities include:

- Production
- Inbound logistics
- Outbound logistics
- Sales & Marketing
- Human Resources

RESOURCES

According to Anastasia (2015), key resources are "the main input that a company uses to create the value proposition, service its customer segment and deliver the product to the customer". The four types of resources are physical resources (e.g. equipment, inventory, building, manufacturing plans), intellectual resources (e.g. brand, customer knowledge, copyrights, partnerships), human resources (e.g. employees) and financial resources (e.g. cash, credit). STRIK could benefit from using more of their intellectual resources of employee expertise while focusing on establishing suitable partnerships that benefit them in terms of time and effort release.

VALUE PROPOSITION

The value proposition is derived based on the value positioning from the company analysis (page 23). It includes a combination of what STRIK wants to offer their customers and for what reason the customers go to STRIK. The value propositioning is as follows:

"For wealthy elderly and wealthy young families, STRIK offers unique, craft pastries that are tasty and of high-quality, and give people a feeling of celebrating life to free themselves from their busy day-to-day life together with friends and family".

RELATIONS

Relations focus on how to maintain the relationships with various customer segments (Anastasia, 2015). STRIK maintains these relationships in various ways. The bigger B2B customers are very important to STRIK. They clearly have found ways to maintain these relationship through for example customization, personal relationships, specific packaging rules, certain contracts, et cetera. However, they also try to make their B2C customer more loyal by providing for example customization in products, loyalty programmes and investing in personal relationships of employees. Usually, the relations are depending on 3 motivations: acquisition, retention or up-selling (Anastasia, 2015).

CHANNELS

According to Anastasia (2015), channels can be categorised into marketing, sales and distribution channels. Strik mainly uses the common channels for marketing and sales, such as social media, phone, website and in-store. However, there is another channel through which STRIK reaches their customers, which is through STRIK-brand retailers. These are B2B customers that re-sell STRIK products under the name of STRIK. The opposite type of B2B customers are own-brand customers, who sell STRIK products under their own name. These customers are not a channel of STRIK, as customers are not reached through them.

CUSTOMER SEGMENTS

STRIK's customers can be divided into three main segments. The first is STRIK's regular business to customer (B2C) groups. These are the private customers that order via web-shop or in-store. The target group of this customer segment is wealthier elderly and wealthier young families (appendix 1-B).

Then, the other big group of customers are the business to business customers. These customers purchase STRIK products to resell, either under their own brand name or under the brand name of STRIK.

All of these customer segments fall under the same value proposition, as B2C customers want a tasty, high-quality product to celebrate and enjoy, while B2B customers want that their customers experience this as well as they buy the products.

COSTS

STRIK does not closely manage the specifics of their costs, but does closely manage the overall cashflow. The CEO manages all costs and operates from a profit-driven mindset (Appendix 1-A, interview A01). However, while manufacturing, inbound logistics, product design and product packaging are closely managed within the product cost-price, outbound logistics and marketig are not closely managed (Personal impressions from the general ethnographic research, appendix 1-B, diary 1 & 2). And these costs are very important to consider as they can have a

great impact on the eventual profits. An example: a B2C customer ordered a cake of 25€ with the 'standard delivery costs' through the website. STRIK had to personally deliver it, because the location was not on route, resulting in a special delivery for an order of only 25€ (Appendix 1-B, specific observations, template 2). These observations imply that STRIK closely manages their fixed and direct product-related costs, but should also focus more on the variable and indirect costs.

REVENUES

The CEO has a profit-driven mindset (Appendix 1-A, interview A01), which means that revenues are very important. There are usually two categories of revenue streams, the transaction revenue and the recurring revenue (Anastasia, 2015). STRIK has a transaction revenue model with fixed pricing as

customers have a one-time payment for the product. Prices are fixed, but do change based on volume, customer sergment and product feature. To increase revenues, STRIK mainly focuses on increasing the sales in-store as these provide the highest margins.

Appendix 3-A provides the data on which this layer's insights and conclusions were build.

B: THE ENVIRONMENTAL LAYER

SUPPLIES AND OUTSOURCING

Supplies and outsourcing refers to “all the other various material and production activities that are necessary for the functional value but not considered ‘core’ to the organization” (Joyce & Paquin, 2016). One of these is for example **packaging**. It is key to getting the product from production to the end-consumer, but it not necessary in order to consume the functional value (the product itself). Other important materials are **water, gas and electricity**. These are necessary to make the functional value, but not core in using or consuming the functional value. Based on the insights, together with the overview of materials, the use phase, the end-of-life and production, a material & energy flow was analysed.

ENERGY & MATERIAL FLOW
PACKAGING, WATER, GAS, ELECTRICITY, INGREDIENTS

PRODUCTION

For STRIK, production is a main element in their supply chain. Most of STRIK’s functional value is produced by themselves and part by suppliers. All of STRIK’s production from raw material to higher value products happens in the central bakery. According to Joyce & Paquin (2016) it is important to consider those production activities that are key to the company and have a big environmental impact. In the case of STRIK, the key activities are **machinery usage, stationary combustion and refrigeration**.

Based on the insights, together with the overview of materials, the use phase, the end-of-life and supplies and outsourcing, a material & energy flow was analysed.

MATERIALS

According to Joyce & Paquin (2016), “materials refer to the biophysical stocks used to render the functional value”. They mention that introducing all materials into the canvas is not relevant, as the main aim is to select only the key materials to the organization and determine their environmental impact (Joyce & Paquin, 2016). Considering the functional value, the key materials are the products’ ingredients. It is important to consider which ingredients are most used within the production. The total numbers from suppliers show the key raw materials of **dairy, flower, sugar, fruit and meat**. These are only the ingredients STRIK processes into new products itself, so these do not include the ingredients used in end-products they purchase from suppliers. Based on these insights, together with the overview of production, the use phase, the end-of-life and supplies and outsourcing, a material & energy flow was analysed.

FUNCTIONAL VALUE

According to Joyce & Paquin (2016) the functional value describes the “focal outputs of a service”. This includes all of the sold goods to customers. However, for STRIK this is extremely difficult to calculate because of several different factors. First, the specific sales are not registered correctly. They do have a cash register system, but there are no overviews of total sold products per year. The total can only be calculated by manually adding every sold product per year. Still, this would not portray a realistic overview, as some products are not correctly registered, but registered under ‘open product’. Moreover, this

overview does not take into account the B2B sales. For this, it is necessary to look into the production system. This is the system in which the orders are processed every day. However, these are combined with the store orders. Moreover, not everything is put into this system, as there are many exceptions. And finally, some products registered under an entire cake in the production system, while they are sold as several unique ‘pieces’ in the cash register system. To conclude, it is very difficult to get a specific number of sold goods for STRIK. Estimations for resources and key materials necessary will be calculated based on suppliers’ data.

END-OF-LIFE

According to Joyce & Paquin (2016): “End-of-life is when the client chooses to end the consumption of the functional value and often entails issues of material reuse such as re-manufacturing, re-purposing, recycling, disassembly, incineration or disposal of a product”. In the case of STRIK, there is little to no effort in trying to recycle, reduce or reuse products. A stream of waste that does get reused is part of the food waste. This became clear from the product journey analysis (Appendix 1-B, ethnographic observations, product journey mapping). Aside from this, most of STRIK’s functional value quickly reaches their end-of-life stage, which is most of the time immediate consumption, otherwise transportation to the **landfills**. Based on these insights, together with the overview of materials, production and supplies and outsourcing, a material & energy flow was analysed.

DISTRIBUTION

According to Joyce & Paquin (2016), distribution involves the transportation of goods. However, this can be from company-owned vehicles (outbound logistics) as well as third party distribution (inbound logistics). Currently the third-party distribution from the most important suppliers are scheduled on a specific day in the week. This means that STRIK is already efficiently building their orders up to a specific point of delivery. Because **company-owned vehicle transportation** is easier to control, focus will be on this category only.

ENERGY & MATERIAL FLOW
WASTE, REFRIGERATION,
TRANSPORTATION

USE-PHASE

According to Joyce & Paquin (2016), the use phase focuses on “the impact of the client’s partaking in the organization’s functional value, or core service and/or product”. This not only includes direct product usage such as refrigerating, toasting or heating, but also indirect usage, such as the packaging, ingredient usage, disposal or energy and water usage from production (Joyce & Paquin, 2016). It is important to distinguish different usage stages and calculate their impact in order to understand how a new circular business model could benefit the company. The product journey and company ecosystem from the previous layer were used to distinguish key use phases. From this can be concluded that production, storage (refrigeration), disposal, preparation, packaging and transportation are key use phases. However, production, preparation and transportation are already considered in other steps as these include the usage of gas, water, electricity and distribution. A remarkable use phase that keeps retuning in every part of the ecosystem is storing the food, and specifically freezing and cooling. For this reason, **refrigeration** is considered a key use phase. In order to further calculate the impact of this usage, the distribution, environmental impact and environmental benefits, the emission inventory is calculated.

Appendix 3-A together with company data provides the foundation for this layer’s insights and conclusions

ENVIRONMENTAL IMPACTS

“The environmental impacts component addresses the ecological costs of the organization’s actions” (Joyce & Paquin, 2016). While Joyce & Paquin (2016) recommend using the LCA method within their canvas, this project focuses on the carbon footprint, as was mentioned before. This means that the ecological costs in terms of human health, ecosystem

impact, waster usage, resource depletion, et cetera, will not be taken into account. The environmental impacts will merely focus on estimating the CO₂ equivalent per category. Moreover, because it is difficult to obtain data, each category is specific in what is and what is not taken into account. The next pages describe the CO₂ calculations per category in detail.

CARBON FOOTPRINT

EXPLAINED
CARBON
FOOTPRINT
ANALYSIS PER
CATEGORY

ENVIRONMENTAL BENEFITS

“Environmental benefits extends the concept of value creation beyond purely financial value” (Joyce & Paquin, 2016). Currently, STRIK is already using 100% green electricity generated through hydro-power according to energy provider Berndsen. Moreover, they are reusing part of their waste into new products of Kruidcakes. However, the energy and material flow together with the carbon footprint analysis revealed many more areas in which STRIK

could gain environmental benefits in terms of decreasing their carbon footprint from a business model. From the analyses per potential category can be assumed that ‘food waste’ is not only an unnecessary and controllable category for STRIK. It also overlaps with all other categories, as when food is wasted, transportation, gas, storing, packaging and ingredient are wasted as well.

Explanation per category

INGREDIENTS

It is commonly known that meat, and especially beef, is one of the largest polluters of our environment (milieucentraal.nl, 2019a). Contact with STRIK's meat supplier Aarnoutse explained an average order of 13,5 kg half-and-half minced meat per week. This means that on a yearly basis, STRIK orders about 702kg of minced meat. Company data collected about the total sold goods per store reveal that STRIK produces 18.779 saucijzenbroodjes and risolles (saucijzenbroodje with cheese) per year. This product is the main cause of the 702kg of meat purchase, as with a usage of 25g meat per piece this product accounts for 67% of the total meat purchases. However, it is important to mention that this does not take into account the processed meat in purchased end-products, as it only focuses on those product that STRIK produces itself. The purchased HAH minced meat is made of 50% minced beef and 50% minced pork. According to numbers from Blank consultants (Rev.com, 2019), the CO₂ equivalent emission factor for minced beef is on average 23,6 and that of minced pork 7,8 CO₂eq/kg meat. With this, an average 15,7 CO₂ equivalent for HAH minced meet was used, resulting in a total fresh meat emission of 11.021 kg CO₂. Another commonly known impactful ingredient is dairy (milieucentraal.nl, 2019a).

Numbers from supplier Beko revealed that there are several dairy-using products that STRIK often orders. Milk & cream is one of the largest, with a yearly purchase of about 20.482 kg, not even including the milk & cream that is already processed in other end-products ordered. Moreover, STRIK yearly purchases about 8.660 kg of butter. Both of these dairy products have an emission factor of 2,0 (milk) and 11,4 (butter) kg CO₂eq/kg (Blank consultants, 2019). Other ingredients that seem to be key for STRIK's production are egg, sugar and wheat/flour, with emission factors of 3,6 (egg), 0,48 (sugar) and 2,3 (wheat) kg CO₂eq/kg product (van Goor den Held, 2018; Rajaniemi et al., 2011).

A final important supplier is Van Eldijk, which delivers fresh fruit almost every day. Yearly numbers from van Eldijk revealed a total of 2.278 kg fresh fruit ordered yearly, with a rather low emission factor of 0,5kg CO₂eq/kg fruit according to Blank consultants (2019). With all of this data, an overview of emission per key ingredient can be calculated (figure 13). It is important to mention that the emission factors were determined based on a cradle-to-retail approach. This, because these ingredients are further processed by STRIK into new end-products, so including the emission from consumption of these ingredients would not be realistic.

Type	weight (kg)	emission (kg CO ₂)	emission factor	costs	
Ingredient usage (only fresh, raw ingredients that still need processing by STRIK)	Milk & cream	63.532	40.964	2,00	€ 111.735
	Butter	48.270	98.724	11,40	€ 63.465
	Sugar	12.931	8.537	0,48	€ 12.757
	Wheat	19.654	64.261	2,30	€ 20.967
	Eggs	22.190	25.423	3,60	€ 22.190
	Fruit	2.278	1.139	0,50	€ 10.204
	Meat	702	11.021	15,70	€ 3.335

Figure 13: Key ingredients compared based on weight, emission, emission factor and costs

REFRIGERANTS

The most crucial part of the 'storing' section includes the refrigerating and freezing of products. According to Climate smart (2014) "refrigerant emissions vary greatly and can account for up to 90% of emissions for some businesses". That is why the refrigerant category is often an area where businesses can make a real difference in reducing not only their power bill savings, but also their greenhouse gas emission (ibid.). Both the direct emissions, those related to refrigerant leakage, and the indirect emissions, resulting from primary energy consumption, have a significant impact on the environment (Abdelaziz et al, 2012). Each refrigerant-using machine differs in terms of used gasses, charge rate, leaking percentage, et cetera in a way that the manufacturing process, the leakage over the operational life of the equipment, and the disposal at the end of the useful life of the equipment determines the HFC and PFC emissions (Greenhousegas protocol, 2005). And these gases have 100-year Global Warming Potentials (GWP), which are 140 to 11,700 times that of CO₂ according to the Greenhouse gas Protocol. In other words, their potential impact on climate change can be so significant that any reduction of these gases can have a large potential benefit (Greenhousegas Protocol, 2005).

Contact with STRIK's own refrigerant supplier mr. Berns, from Berns Machines b.v. expert in cooling- and freezing systems, explained the current situation in the Netherlands about refrigerants. According to him, "every refrigerant has its own input to the CO₂ effects and thus global warming". Moreover, Berns explained that the most

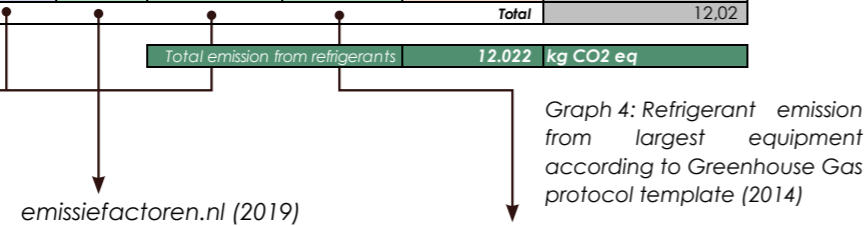
important numbers for determining the impact are the GWP values, depending on the type of refrigerant used, and the amount of charge necessary. "If you multiple the GWP value by the refrigerant charge, you will get the 'nominal refrigerant refill'". This value determines how often the machine needs to be checked and if they need to be checked. According to Stek (2017), the lower boundary for yearly check is 5tonnes of CO₂ equivalent. If the CO₂ equivalent exceeds this number, the system or machine needs to be checked every year. If the CO₂ equivalent exceeds 50tonnes, it needs to be checked twice per year and if it exceeds 500 tonnes, it needs to be checked 4 times per year. If the system has a leakage detection system, the number for checking can be halved (Stek, 2017). In order to understand the impact the machinery and cooling systems of STRIK are having, a complete list of refrigerant-using systems was made per store, calculating the CO₂ equivalent. Of those that are significantly high enough to be needing yearly checks, the data is provided by the supplier in order to determine the actual emission of the refrigerants. The calculation list of the biggest using relevant equipment and their emission is shown in graph 4. This table gives an overview of types of refrigerant using equipment, their GWP values and the matching leakage values, all guided by a template from the Greenhouse Gas Protocol (2015a). This template however gives leakage percentages per type of equipment in a very wide range. Based on information from expert Berns about service checks

and detected leaks, for each equipment is determined whether leakage is high, mediate or low, as can be seen in graph 5. The most accurate GWP values are derived from Co2emissiefactoren.nl (2018). Contrary to the original template, calculations within this project are mainly focusing on operational aspects. Disposal

and assembly are not included due to a lack of reliable information. Moreover, this overview is merely an indication of the effects of refrigerants used, so including only operational aspects will fulfil the purpose. A total emission of 12.022kg CO₂ equivalent on a yearly base can be concluded from these calculations.

Refrigeration/Air-Conditioner Equipment Name	Number of Units	Type of Refrigerant	GWP of Refrigerant	Refrigerant Charge (kilograms)	Annual Leakage Rate (%)	Conversion Factor (tonnes/kilograms)	Operation Emissions (tonnes of CO ₂ equivalent/yr)
BAKERY							
Koelcel inpakken	1	R134.A	1.430	4	5%	0,001	0,29
Vriescel inpakken	1	R22	1.810	5,5	5%	0,001	0,50
Koeling zevendubbel	1	R22	1.810	5	5%	0,001	0,45
Vriezer zevendubbel achter (komakast)	1	R404.A	3.922	5	10%	0,001	1,96
Vriescel groot achter deel 1	1	R404.A	3.922	7,5	15%	0,001	4,41
Vriescel groot achter deel 2	1	R404.A	3.922	7,5	15%	0,001	4,41
ZIEKERSTRAAT							
Vriescel groot	1	R404.A	3.922	2,9	5%	0,001	0,57
HEYENDAAL							
Vriezer 5 deurs achter	1	R404.A	3.922	3,65	10%	0,001	1,43
Total							12,02

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Last dated checks for largest refrigerants by Berns Koeltechniek				
Store	Type	Check date	Service	Assumed leakage
Dukenburg	0,7 Kg R 449a ; koelkast	09-08-19	verdampers gesoldeerd	High
Wijchen	0,25 kg R404a ; winkelvriezer	24-05-18	geen lek gevonden	Low
Malden	0,55 kg R134a ; koelcel expeditieruimte	28-08-17	vervangen verdampers	High
Malden	4,3 kg R 404a ; 7-deurs komakast	17-10-17	gescheurde meetleiding	High
Malden	0,45 kg R 134a ; koelcel expeditieruimte	03-06-16	verdampers gesoldeerd	High
Malden	5,2 kg R 404a ; vriescel groot achter 2	25-08-16	gescheurde trillingsdemper	Med
Dukenburg	0,35 kg R 404a ; gebakkoeling	29-04-16	geen lek gevonden	Low
Dukenburg	0,3 kg R 404a ; vriezer	15-07-16	afsluiter lek	High
Ziekerstraat	2,9 kg R404a ; vriescel	25-09-16	compressor vervangen	Med
Malden	0,15 kg R134a ; saladiere	03-02-15	geen lek gevonden	Low
Dukenburg	0,3 kg R404a ; koelkast magazijn	03-07-15	verdampers gesoldeerd	High
Ziekerstraat	0,85 kg R 404a ; winkelvriezer I	28-09-15	compressor vervangen	Med
Heyendaal	3,65 kg R 404a ; vriezer 5-deurs achter	29-10-15	lekkend expantieventiel opnieuw gesoldeerd	High

Graph 5: Refrigerant yearly checks and detected leakages to determine assumed leakage percentage for emission calculation

WASTE

From the company ecosystem analysis (layer 1 of the TLBMC) can be concluded that all waste gets transported back to the bakery where it gets combined and collected. Part goes to waste collector M&M, part gets picked up by the local animal farm keeper and part is reused for producing new food products. M&M waste processor Rutten mentioned "Strik has two waste streams that we process, one of which is 'general waste' and the other is 'paper waste'". According to numbers provided by M&M, STRIK disposes about 23.176kg of general waste and 7.311 kg of cardboard waste each year for a total price of €4356,60. The garbage analysis ethnographic observations imply that the general waste of 23.176 kg consists of 40% paper, 20% plastic, 10% other waste and a big 30% food, mainly due to the large weight of food waste compared to cardboard and plastic. All of this waste gets transported to the landfills and burned. According to waste processor Rutten, over 90% of the collected landfill-waste goes directly to the ARN in Weurt. Waste emissions can be calculated in various ways. It can be done with the 'supplier-specific method', the 'waste-type-specific method' or the 'average-data method' (Greenhouse Gas Protocol, 2015b). However, the actual emissions coming from the waste management depends greatly on the company that processes the waste (Vroonhof & Croezen, 2006). As was mentioned, almost all of STRIK's general waste goes to the ARN in Weurt. Contact with the ARN Weurt revealed

a total CO₂ emission of **22.540 kg CO₂eq** for the yearly 23k kg of general waste from STRIK, as the emission factor according to the ARN Weurt is 0.98 kg CO₂ per kg waste. Since this emission calculation does not take into account that all of these wasted products were at some point processed, transported and used, the following sub-section will use a waste-type-specific-method to understand the emission from wasted products per category.

1: Cardboard & paper waste

The cardboard waste consists almost entirely of cardboard waste from suppliers' packaging in the form of shipping boxes (Ethnographic observations garbage analysis, Appendix 1-B). According to M&M waste processor Rutten, the cardboard waste stream of STRIK is very clean, as it never gets disapproved by the cardboard processing company M&M delivers it to. However, Rutten also mentioned that it is unsure whether 100% of the paper waste is actually used to produce new paper products, which is in line with Marsh & Bugusu (2007) mentioning that even though recycling is indeed one way to reduce the carbon footprint of used paper-products, "in order to make recycling economically feasible, recycled products and materials must have a market".

The garbage analysis revealed that there is barely any cardboard waste from STRIK's own packaging in the cardboard waste stream, neither is there in the general waste stream. This implies that mainly the consumers are accountable for the disposal of STRIK's food packaging. However, that does not mean that STRIK is held unaccountable for the emission due to packaging usage.

Packaging is considered an important part of the supplies & outsource section from layer 2 of the BMC. The following section will dive deeper into the packaging usage of STRIK.

Moreover, both in the bakery as well as in the stores the paper waste share in terms of volume within the general waste stream is significantly high. It consists mainly of fat-free sheet paper, baking paper and cleaning paper coming from the bakery, but also some milk trays, printed paper (which are eco labelled) and napkins coming from the stores. Many of these paper types are not suitable for recycling, as they have been exposed to foods and beverages (Milieucentraal.nl, 2019b), but some types can be recycled.

In order to calculate the emission from disposed paper and cardboard waste, an estimation was made based on the types of paper and their share within the waste stream. The emission factors were determined based on the milieubarometer.nl (2016). These numbers show an emission factor of 1.21 for regular paper and 0.0060 for eco-labelled paper. According to the packaging information from the paper types, only print and poster paper have an eco-label, while all of the others can be categorized under the 1.21 emission factor. With this, a total emission of **8.975 kg CO₂ eq** was concluded (graph 6) for the paper waste within the

general waste stream, taking into account all life cycle stages from production to usage (Milieubarometer.nl, 2016).

2: Plastic waste

The plastic waste from the stores are mainly coming from STRIK's own plastic packaging while the plastic waste from the bakery is mainly from suppliers' packaging (ethnographic observations, garbage analysis, Appendix 1-B). This implies that a generalized emission factor for specifically plastic packaging from Sevenster (2007) could be used as the waste stream merely consists of packaging plastics. This emission factor takes into account every stage from the cultivation of raw materials to manufacturing and producing and eventually the waste processing. The total CO₂ emission is calculated in graph 7 and concludes a total emission of **16.005 kg CO₂ eq** for plastic waste within the general waste stream. Even though this emission factor includes that part of the plastic gets recycled, even though STRIK does not recycle its plastic, and moreover numbers are from over a decade ago, it does give an indication of the CO₂ waste from plastic usage.

PAPER					
Paper waste total (kg) - 40% of general waste				Emission factor	Emission factor eco
9,270				1,21	0,0060
Baking-, cleaning- and fat-free paper - 50%	Printing paper & posters (eco paper) - 20%	Check-out receipts, napkins, milk trays - 10%	Other - 20%	kg CO ₂ eq emission	8,975

Graph 6: The emission from the paper waste within the general waste stream

PLASTIC		
Plastic waste (kg) - 20% of general waste		Emission factor
4,635		3,453
kg CO ₂ eq emission	16,005	
STRIK packaging - 50%	Supplier packaging - 50%	
2,318	2,318	

Graph 7: The emission from the plastic waste within the general waste stream

3: Food waste

As mentioned before, food waste accounts for 30% of the total general waste stream. This is mainly due to the heavy weight of food waste compared to cardboard or plastic (ethnographic observations, garbage analysis, Appendix 1-B). From these numbers can be concluded that 6.953kg of food waste is burned at the landfills (30% of 23.176kg general waste). However, the food waste stream of STRIK consists of more than simply the part that gets disposed with the general waste. Waste is usually a large emission source for food businesses, not only due to the internal waste the company generates, but also because of the indirect (unnecessary) organic waste that gets disposed by the customers at home (Climate smart, 2014). Moreover, a third stream of food waste gets reused by STRIK itself for making 'kruidcakes'. A kruidcake is a cake made especially from wasted food products. Company data concluded a total yearly production of ±3.200 kruidcakes. The kruidcake recipe (according to STRIK's bakers), uses 67% wasted pastry products. With the given that a kruidcake weighs about 480 gram, one can conclude a total reuse of 1.030kg food waste. Part of the reason not all food is reused for kruidcakes is because some products cannot be used, such as products made from whipped cream or custard (ethnographic observations, garbage analysis, Appendix 1-B). On the other hand, some store employees are more dedicated to shipping back unusable products for reusing than others who easily throw away products that could still be useful in a way (ethnographic observations, garbage analysis, Appendix 1-B). Finally, most of the bread loafs wasted get donated to local animal farms, as was

mentioned before.

All of this means that STRIK has 4 main waste streams:

- the part that gets disposed by STRIK itself
- the part that gets disposed by consumers at home
- the part that gets reused in products
- the part that gets donated to local farms

According to the Dutch Central Bureau of the Environment, as mentioned before, the top 3 products that have the biggest impact on the environment if disposed are meat, dairy and bread (Milieucentraal, 2017). These three product categories count for 30% of the total environmental impact of waste (ibid.). Even though dairy and meat are included in the 'ingredients' section, they will not be included in the waste emission calculation, simply because of the lack of data available about the share of ingredients within the waste. In the case of bread, however, there is more data available on usage and waste. **Therefore, the 'food waste' section includes 1) the entire end-of-life emission for STRIK's wasted bread; 2) the emission from burning consumers' estimated bread waste; and 3) the emission from burning part of STRIK's own 'other' food waste. Overall, only those sectors will be included that are considered unnecessary and controllable by STRIK.**

1) the entire end-of-life emission for STRIK's wasted bread

According to STRIK's CEO, STRIK throws away about 7% of all the bread they buy and produce (Appendix 1-B, general observations, diary 1). From the company data on yearly bread purchase numbers and order processing numbers can be concluded that STRIK processed almost 75.000 kg of bread into their ordering system.

Considering the internal disposal rate of 7%, a total waste of **5.200kg bread** on a yearly basis can be assumed. Most of this bread waste gets picked up by local animal farm keepers, as was mentioned before. When trying to calculate the impact STRIK has with their bread waste, it is important that the entire life cycle, from raw ingredient to end-of-life treatment is included. Espinoza-Orias et al. (2011) is one of the few who calculated the entire greenhouse gas emission from a loaf of bread, concluding a CO₂ equivalent between 1,057 and 1,100 kg CO₂ per 800 gram loaf of bread. Within this calculation, every stage is taken into account, from raw material cultivation to waste management. This also means that the study takes into account the greenhouse gas emission of ingredients such as wheat, yeast and salt. To add, the study includes processes such as transportation, a 10% consumer waste rate, the emission due to the plastic packaging, freezing and cooling of the bread and even consumer toasting, all according to numbers about existing consumer behaviour and manufacturing processes (Espinoza-Orias et al., 2011). Figure 14 represents the study's findings per section and the share of each stage within the life cycle of bread. As can be seen, the exact carbon footprint depends strongly on the type of bread, being white, brown or wholemeal. These emission factors were used in order to calculate the emission from STRIK's bread waste. However, some adjustments were made to the waste management number. While Espinoza-Orias et al. (2011) considers a 10% consumer waste, for

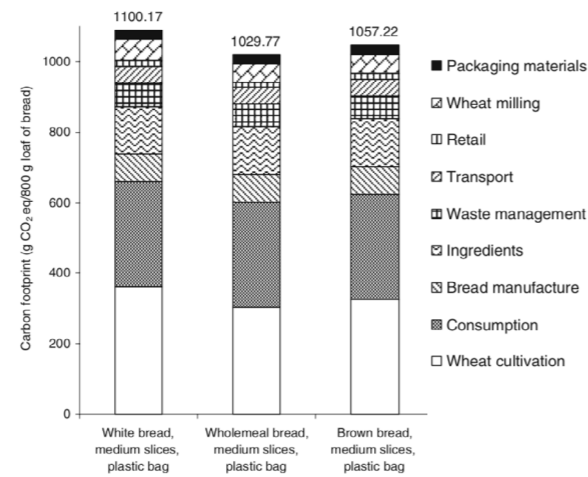


Figure 14: Carbon footprints of white, wholemeal and brown bread produced according to Espinoza-Orias et al., 2011.

STRIK's disposed breads a 100% disposal rate can be assumed. This, because the entire loafs of bread are disposed as they are not sold to customers. This does however not mean that the consumption stage can be neglected, because STRIK employees also freeze and heat up bread sometimes, especially when bread tends to not get sold (Appendix 1-B, ethnographic observations, garbage analysis), so this stage will still be included even though the customer does not get to use the product. Moreover, as almost all of the loafs of bread currently get donated, adjustments were made so that the waste management is neglected in this section.

STRIK sells more than only loafs of bread, but these products do dominate the bread product range. Therefore, only the loafs of 800g or 400g bread were included and per loaf was determined whether it is white, wholemeal or brown bread. It is however too short-minded to simply divide the emission factor in half for the 400g loafs of bread, because factors like transportation, retail and manufacturing remain the same whether it is a 400 or

800gr loaf of bread. Those sectors that are cut in half are that of ingredients, consumption, wheat cultivation, waste management and packaging, and the others remain the same as for the 800gr loafs. Finally, only those breads of which STRIK either produces or purchased more than 100 pieces per year are considered. This way the emission factor from Espinoza-Orias et al. (2011) is more accurate as the similarity between the breads calculated by the study and the breads used within this calculation increases.

Graph 8 shows the total of loafs taken into account, with each specific calculation, leading to a total emission of **5.368 kg CO₂ eq** for STRIK's disposed bread.

2) emission from burning consumers' estimated bread waste

When looking at the numbers, it appears as though Dutch people waste 9.2 kg of bread per person per year, resulting in a total yearly wastage of 159 million kg of bread which is equal to 544.520 loafs of bread per day (Nederlandvoedselland.nl, 2019). In percentages, this means that we throw away about 20% of our bread, as mentioned by Verburgh (2019), owner of HVCatering, in an interview with the Rabobank. According to several studies, the main reason for bread wastage is the perception of the bread not being fresh (Østergaard & Hanssen, 2018; Göbel et al., 2015; Svanes et al., 2019). Despite the findings about how the environmental impact of the packaging of bread is significantly low compared to the impact of the bread itself (Østergaard & Hanssen, 2018; Williams & Wikström 2011;

Silvenius et al., 2014), the packaging does seem to be able to influence the bread-wasting behavior of consumers (Svanes et al, 2019). The study from Østergaard & Hanssen (2018) amongst ±1000 Norwegian respondents revealed that a significantly high 97% of consumers reported to change the original packaging of the purchased bread, with the majority replacing the original packaging with a plastic bag, or using both the plastic bag and the original packaging to protect the bread. This same research concluded that 42.1% of the high-wasters would pay over 20 cents extra per loaf of bread for packaging that increases the freshness of the bread at home (Østergaard & Hanssen, 2018).

Considering the latter, it is thus suggested that 20% of the bread purchased by consumers gets disposed. According to Milieucentraal (2019), only 50% of this food waste gets disposed with the organic waste stream, resulting in 50% that gets transported to the landfills. With a 7% disposal rate of STRIK's bread, 93% of the bread does get sold to consumers. Following the same procedure as the previous calculation, but now exclusively focusing on the emission from 50% burned food waste with an emission factor of 0.98 kg CO₂ eq/kg food waste, a total emission of **6.129 kg CO₂ eq** from consumers' burned read waste can be concluded. Graph 9 presents the calculation including all of the bread products with their weights, type and specific emission factor.

OWN PRODUCED BREAD							
bread type	produced / yr	Disposed by STRIK (7% rate)	weight	weight per loaf (g)	total weight (g)	emission factor local farm (50%)	emission per disposed bread type, local farm
Speltbrood	5.930	415	400	166,04	984617,2	565	234.532
Vitalisbrood	814	57	800	45,584	37105,376	960	54.688
Bucheron	801	56	400	22,428	17964,828	565	31.680
Tarwe rond/knip	244	17	400	6,832	1667,008	565	9.650
Tarwe honing brood	154	11	400	4,312	664,048	595	6.414
Maisbrood	129	9	400	3,612	465,948	615	5.553
Cranberry brood	49	3	400	1,372	67,228	565	1.938

PURCHASED BREAD							
bread type	produced / yr	Disposed by STRIK	weight	total weight		emission factor local farm (50%)	emission per disposed bread type
Waldkornbrood	8.606	602	800	481,936	6884800	987	594.721
Fijn volkoren	8.153	571	800	456,568	6522400	960	547.750
Tarwe brood	8.115	568	800	454,44	6492000	960	545.197
Topfit Meergranen (Vikorn)	7.572	530	800	424,032	6057600	960	508.716
Melkbrood	7.035	492	800	393,96	5628000	960	472.639
Grof volkoren	5.475	383	800	306,6	4380000	960	367.832
Het beste brood	4.652	326	800	260,512	3721600	960	312.540
Molenbrood	3.949	276	800	221,144	3159200	960	265.309
Melkcasino vierkant	2.023	142	800	113,288	1618400	1.030	145.882
Dubbel Donker Brood	1.778	124	800	99,568	1422400	987	122.869
Melkvloer tijger	1.732	121	800	96,992	1385600	1.030	124.898
Grof volkoren met sesamzaad	1.725	121	800	96,6	1380000	960	115.892
Zweeds landbrood	1.661	116	800	93,016	1328800	987	114.784
Multivolkoren brood	1.650	116	800	92,4	1320000	960	110.853
Melkcasino rond	1.069	75	800	59,864	855200	1.030	77.088
Brood met 16% Koolhydraten	967	68	800	54,152	773600	987	66.825
Tarwevloer tijger	905	63	800	50,68	724000	960	60.801
Abdijbol	745	52	800	41,72	596000	1.030	53.723
Melkvloer	672	47	800	37,632	537600	1.030	48.459
Waldkornnotenbrood	655	46	400	18,34	262000	565	25.905
Zonnebloem pittenbrood bus	649	45	800	36,344	519200	960	43.602
Tarwecasino vierkant	628	44	800	35,168	502400	960	42.191
Tarwe knip	477	33	800	26,712	381600	960	32.047
Tarwecasino rond	456	32	800	25,536	364800	960	30.636
Tarwevloer	436	31	800	24,416	348800	960	29.292
Melkvloer met sesamzaad	417	29	800	23,352	333600	1.030	30.071
Melkbrood knip	390	27	800	21,84	312000	1.030	28.124
Tarwevloer met maanzaad	323	23	800	18,088	258400	960	21.700
Volkorenvloer	286	20	800	16,016	228800	960	19.215
Maisbrood	278	19	800	15,568	222400	1.030	20.047
Melkvloer met maanzaad	211	15	800	11,816	168800	1.030	15.216
Tarwe zoutarm (N.A.)	163	11	400	4,55	65000	995	11.316
Gelders volkoren	150	11	800	8,4	120000	960	10.078
Volkoren busbrood zonnepit	113	8	800	6,328	90400	960	7.592
total loafs of bread disposed by STRIK per year	4.739			4378			

TOTAL

Emission from disposed breads to local farm (kg CO2 eq) 5.368

Emission factors (g CO2 eq)		
800 gr loaf		waste share (10%)
white bread medium slice	1100,17	70
wholemeal bread, medium slice	1029,77	
brown bread medium slice	1057,22	

400 gr loaf	
white bread medium slices	650
wholemeal bread medium slice	600
brown bread medium slices	630

Graph 8: Emission calculation of STRIK's bread disposal behavior (7%)

OWN PRODUCED BREAD - sold							
bread type	produced / yr	sold	loaf weight (g)	total weight (g)	type	Emission from consumer bread waste	emission per loaf from waste
Speltbrood	5.930	5.515	400	2372	wholemeal	78,4	464.912
Vitalisbrood	814	757	800	651,2	wholemeal	156,8	127.635
Bucheron	801	745	400	320,4	wholemeal	78,4	62.798
Tarwe rond/knip	244	227	400	97,6	wholemeal	78,4	19.130
Tarwe honing brood	154	143	400	61,6	brown	78,4	12.074
Maisbrood	129	120	400	51,6	white	78,4	10.114
Cranberry brood	49	46	400	19,6	wholemeal	78,4	3.842

PURCHASED BREAD sold							
bread type	produced / yr	sold (93%)	loaf weight (g)	total weight (g)	type	Emission from consumer bread waste	emission per loaf from waste
Waldkornbrood	8.606	8.004	800	6884,8	brown	156,8	1.349.421
Fijn volkoren	8.153	7.582	800	6522,4	wholemeal	156,8	1.278.390
Tarwe brood	8.115	7.547	800	6492	wholemeal	156,8	1.272.432
Topfit Meergranen (Vikorn)	7.572	7.042	800	6057,6	wholemeal	156,8	1.187.290
Melkbrood	7.035	6.543	800	5628	white	156,8	1.103.088
Grof volkoren	5.475	5.092	800	4380	wholemeal	156,8	858.480
Het beste brood	4.652	4.326	800	3721,6	wholemeal	156,8	729.434
Molenbrood	3.949	3.673	800	3159,2	wholemeal	156,8	619.203
Melkcasino vierkant	2.023	1.881	800	1618,4	white	156,8	317.206
Dubbel Donker Brood	1.778	1.654	800	1422,4	brown	156,8	278.790
Melkvloer tijger	1.732	1.611	800	1385,6	white	156,8	271.578
Grof volkoren met sesamzaad	1.725	1.604	800	1380	wholemeal	156,8	270.480
Zweeds landbrood	1.661	1.545	800	1328,8	brown	156,8	260.445
Multivolkoren brood	1.650	1.535	800	1320	wholemeal	156,8	258.720
Melkcasino rond	1.069	994	800	855,2	white	156,8	167.619
Brood met 16% Koolhydraten	967	899	800	773,6	brown	156,8	151.626
Tarwevloer tijger	905	842	800	724	wholemeal	156,8	141.904
Abdijbol	745	693	800	596	white	156,8	116.816
Melkvloer	672	625	800	537,6	white	156,8	105.370
Waldkornnotenbrood	655	609	400	262	brown	78,4	51.352
Zonnebloem pittenbrood bus	649	604	800	519,2	wholemeal	156,8	101.763
Tarwecasino vierkant	628	584	800	502,4	wholemeal	156,8	98.470
Tarwe knip	477	444	800	381,6	wholemeal	156,8	74.794
Tarwecasino rond	456	424	800	364,8	wholemeal	156,8	71.501
Tarwevloer	436	405	800	348,8	wholemeal	156,8	68.365
Melkvloer met sesamzaad	417	388	800	333,6	white	156,8	65.386
Melkbrood knip	390	363	800	312	white	156,8	61.152
Tarwevloer met maanzaad	323	300	800	258,4	wholemeal	156,8	50.646
Volkorenvloer	286	266	800	228,8	wholemeal	156,8	44.845
Maisbrood	278	259	800	222,4	white	156,8	43.590
Melkvloer met maanzaad	211	196	800	168,8	white	156,8	33.085
Tarwe zoutarm (N.A.)	163	151	400	65	wholemeal	78,4	12.740
Gelders volkoren	150	140	800	120	wholemeal	156,8	23.520
Volkoren busbrood zonnepit	113	105	800	90,4	wholemeal	156,8	17.718
total loafs of bread sold per year	76.480						

Landfilled food waste emission (50%) 6.129

Landfill emission factor (kg CO2 / kg waste)	0,98
Landfill waste emission per 800 loaf of bread	784

Product sold	93%
Products disposed by STRIK	7%

Graph 9: Emission calculation of consumers' 20% bread disposal behavior

3) the emission from burning part of STRIK's own 'other' food waste

The emission calculation from burning STRIK's food waste not only focuses on bread. However, it does not take into account the production, ingredients and usage of the non-bread food products either due to lack of available data. Therefore, only the emission from burning the food waste is included. In order to do this correctly, the total of 6.953kg non-bread food waste is considered with an emission rate of 0.98 kg CO₂ eq/kg food, leading to a total burning emission of **6.814 kg CO₂ eq.**

To conclude

Adding the 6.814 kg CO₂eq of the emission from STRIK's burned food waste to the 6.129 kg CO₂eq of the emission from consumers' bread waste and the 5.368 kg CO₂ eq from STRIK's own bread waste, concludes a total emission of **18.311 kg CO₂ eq.** Even though this number does

not include the full life cycle of the non-bread food products, meaning the number is in reality far over 20k (±40k), it does give insights to the magnitude of the environmental impact of food waste, considering bread waste takes up about 35% of the entire food waste share as a total food waste of **12.361 kg** is concluded based on the 6.953 kg food within the general waste stream, the 5.200 kg food going to local animal farms and the 1.030kg food getting re-manufactured into kruidcakes.

To add, as 7% of the bread gets wasted by STRIK, the yearly revenues from the bread suppliers show that STRIK throws away over €10.000,- each year from purchased bread products only. Adding this to the waste processing costs (30% of 4.356,60), a total cost of at least **€11.307,16** derives from this unnecessary food waste. **Unnecessary food waste is thus a large emission source for STRIK** as well, just as Climate smart (2014) stated about food companies.

TRANSPORTATION

As concluded from the usage phase, as well as from the distribution step within the BMC, transportation plays an important part considering the environmental impact of STRIK. According to Chapman (2017), "transport accounts for 26% of global CO₂ emissions and is one of the few industrial sectors where emissions are still growing". Oil is still the dominant fuel source for transportation and road transport accounts for more than 80% of the total energy usage by the transport sector (Chapman, 2017). Because of this dependency on fossil fuel, road transportation remains a major contributor

of greenhouse gases. Even though an inclusive distribution emission calculation would include all of the emission from the distribution of suppliers, to even that of employees and customers. However, the focus is on company-owned vehicles first, as this is something STRIK can more easily control compared to the other categories.

According to department specific observations from the ethnographic research in appendix 1-B, STRIK owns 4 company vans, two light to medium duty transporters and two light duty passenger vans. The transporters are used to deliver

orders between 07:00 and 12:00, 6 days per week. The passenger vans are used by STRIK's management to drive from store to store. According to the mileage numbers per vehicle provided by the supplier for STRIK's vehicles, both passenger vans drive between 20.000 and 25.000 km per year.

The transporters, however, always drive their own route and return about 2-3 times to reload in the bakery. One of them drives the 'city route' and the other the 'outskirts route'. According to Company Data about the vehicles mileage, the transporter that drives the outskirts route drives about 30.000km per year, and the other transporter about 20.000km per year. Personal impressions from the ethnographic research (Appendix 1-B, department specific observations) have indicated that the efficiency of the routes is very low. At times couriers drive over 50km simply to deliver one order. In addition, the route planning is done

entirely manually by the CEO, without any technological help in efficient route calculations.

The environmental impact of transport is not limited to vehicle emissions only, known as "tank to wheel" (TTW). In fact, the production and distribution of fuel from oil, known as 'wheels to tank' (WTT), contributes its own share of greenhouse gases (Weiss et al., 2000; Mizsey & Newson, 2001; Johansson, 2003). Both approaches result in a total and inclusive 'well to wheel' (WTW) greenhouse gas emission (Chapman, 2017). Calculations are shown in graph 10. These numbers show an emission of **20.365 kg CO₂eq** per year. The emission factor for TTW is vehicle-specific and derived from autoweek.nl (2019). The emission factor from WTT is derived from co2emissiefactoren.nl (2018), and is dependent on the type of gas and the amount of liters used per year. Within this table, the emission factor of Dutch diesel is used (ANWB.nl, 2019).

Vehicle	Kenteken	Build year	mileage per okt 2019	mileage last recorded	km/year	Eco Label	kg CO ₂ /km	kg CO ₂ (TTW)	litre diesel/year	L/100km	kg CO ₂ /unit (WTT)	kg CO ₂ (WTT)	kg CO ₂ (WTW)
Renault Trafic	VR-737-T	okt 2015	122688	0 per buildyear	30.672	D	0,17	5.214	2.147	7	0,624	1.340	6.554
Renault Trafic	1-VSJ-87	aug 2011	174577	0 per buildyear	21.377	G	0,198	4.233	1.603	7,5	0,624	1.000	5.233
Dacia Dokker	VF-508-L	2013	93376	40488 per aug 2017	24.410	F	0,118	2.880	1.269	5,2	0,624	792	3.672
Volkswagen Caddy	47-VFV-6	2007	251876	157500 per aug 2015	22.650	G	0	3.986	1.472	6,5	0,624	919	4.905
total					99.109			16.314	6.492			4.051	20.365

Graph 10: Emission calculation of transportation

PACKAGING

According to several authors, the paper- and cardboard industry is often an underestimated category when considering CO₂ emission. Correspondent author Klein Lankhorst (2019) mentions: "the paper industry emits more CO₂ than the aviation industry". In fact, this industry

is the third largest emitter of greenhouse gases that contribute to global warming (NRDC, 2006). Once a piece of paper is produced, used and finally disposed to rot away at the landfills, toxic gas methane (CH₄) gets emitted, which is four times as harmful as CO₂ (van Dis, 2018).

Company data from packaging supplier Havelaar have showed that the yearly amount of packaging purchased by STRIK is **848.928 unique items** (Graph 11). Per item is concluded whether it is fully made of cardboard or fully made of plastic or whether the packaging is part plastic and part cardboard, such as cake boxes with a plastic window. These numbers are converted into the total cardboard and plastic weight share by determining the amount of material through product dimensions and calculating this by the specific density per used material. From this, one can conclude that 84% is made from cardboard and 16% is made from plastic which concludes a total of **3.691 kg** cardboard and **727 kg plastic** ordered on a yearly basis. Research from Sevenster (2007) concluded cardboard emission factors derived from emission calculation throughout all production stages. They make distinctions per type of cardboard, amongst which food & beverage cardboard is one of them. This type of cardboard is treated and coated so that the packaging consists of PE in addition to the cardboard pulp itself (Sevenster, 2007). STRIK's cardboard boxes are all treated and coated as well. Moreover, according to contact with Havelaar, none of the packaging consist of any eco labels such as the FSC label or EU-label, which means that a reduction of both the environmental- as well as the social impact of the cardboard is not considered. Even though there could always exist differences compared to reality, the concluded food & beverage cardboard emission factor of **1,18 kg CO₂**

eq per kg cardboard is used for STRIK's packaging, resulting in a total cardboard emission of **4.364 kg CO₂eq**. Then, as for the plastic share, it is important to consider each type of plastic used. Even though Sevenster (2007) concluded a generalized emission factor of **3,453 kg CO₂ eq.** per kg plastic, the calculations are based on the emission from each unique product with its own type of plastic as can be seen in graph 11. This results in a total emission of **2.904 kg CO₂ eq** on a yearly basis. Even though many authors have emphasized that the beneficial function of packaging in terms of reducing food waste outnumbers the actual environmental impact of the packaging itself (Østergaard & Hanssen, 2018; Williams & Wikström 2011; Silvenius et al., 2014; Sevenster, 2007), that does not mean the emission of the packaging material should be neglected. Packaging is used to protect food from bacteria and damage but also to provide consumers with nutritional information (Coles 2003; Marsh & Bugusu, 2007). That means that packaging cannot be as easily reduced since it fulfills such an important function. On the other hand, the right packaging can help make consumers behave in a way that they reduce less of their food, aside from the regular food containing function the packaging holds, according to Østergaard & Hanssen (2018). It is important for STRIK to consider not only its own packaging usage, but also the effects of packaging usage and possible improvements of packaging in order to slow the packaged foods' life cycle.

Yearly Havelaar orders						
Stuks	Prijs na korting	stuks per doos	aantal dozen besfeld	cm3 plastic per stuk	plastic weight per piece (g)	cardboard weight per piece (g)
848.928	€ 85.645,41		784		727,68	3.691,80
						Emission from plastic
						2.903,65
					factor CO2 eq	1,182

Graph 11: Emission calculation of packaging
 *This representing graph only includes part of entire calculation. All specific products and material share calculations are left out.

Type of packaging	Emission factors
100% plastic	2,34
cardboard with plastic venster (calculated by Lx8 minus 4x4 cm, as screen is often about 2cm from the edge)	4,6218
cardboard	3,4784

Density values (RVO.nl)	Emission factors
LDPE 0,93	2,34
PP (ook OPP) 0,915	4,6218
HDPE 0,965	3,4784
PS & ABS 1,05	4,895
PET 1,35	3,8719
PC 1,2	3,4

total gebakdozen
 boxes that have a top and bottom plane, so calculate double values!

1 mjr
 divide by 1000 for mm



Gas

The Dutch Government has stated that by 2050, all Dutch households need to be free from gas. Even though this does not necessarily concern the bigger organizations yet, it is inevitable that laws against using gas in industrial usage will follow as well. The reason the government wants to be gas-free is because, as according to the US Environmental Protection Agency (EPA), combustion of fuels in stationary (non-transport) combustion sources results in the emission of the greenhouse gases carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O). And as mentioned before, these GHG's are very harmful to the environment considering their addition to global warmth. That means that in order to establish viable CO₂ reduction implementations, it is important to consider (partly) diminishing the biggest gas users.

In order to calculate the gas usage, the electricity provider Main Energie provided the monthly gas bills of one store and the bakery. However, from the other stores the specific gas usage is unknown because the lot owner combines the usage within the rent bill. The gas usage from the stores in Dukenburg and Wijchen should be about half of that in Ziekerstraat and Heyendaal, whereas Heyendaal and Ziekerstraat use somewhat the same amount of gas each month. With this, *graph 12* gives the total CO₂ equivalent emission coming from gas usage, based on company data, concluding a total emission of **43.122 kg**

CO₂ eq based on a yearly gas usage of **22.816 Nm3**. The emission numbers are based on an emission factor for natural gas of 1.89 kg CO₂ per Nm3 gas derived from co2emissiefactoren.nl (2018).

Water

As for water usage, this is an essential element of the material flow. The water usage can be found through the monthly water bills from the water provider. Even though the water itself does no harm, it is merely the processes to clean and rinse the water that have the biggest impact on the environment (van Breda, 2018). However, according to Milieucentraal (2019a), "winning, cleaning and transporting water does cost energy, but water companies already use relatively sustainable sources of energy". They mention that, even though it is always good to consider your unnecessary water usage, in many cases cold tap water is the most sustainable solution compared to bottled water or warm water (Milieucentraal, 2019a). All of the latter is the case whenever taking a carbon footprint approach. LCA approaches for example do consider water an important source of impact. However, as this project is taking the carbon footprint approach, the water usage is included in the material flow, but excluded from the greenhouse gas emission calculation due to the low environmental impact. From the monthly water bills, a total water usage of 1.649 Nm3 is assumed.

Electricity

As for electricity, Climate smart (2014) pointed out that "electricity, while being a relatively small emission source for businesses in the food industry due to the low emission intensity of BC's power grid, often corresponds to one of the highest operating costs". That is why focusing on this area offers some easy and obvious opportunities for cost savings (ibid.). Not to mention that STRIK is already using 100% green energy, according to Main Energy employee Berndsen stating "*as for your electricity, this is currently fully green as it is generated through hydropower*". This means the actual emission from electricity usage is significantly low, while the costs are quite high. However, contact with Government representative Wijnakker revealed that the fact that the government's desire is to be gas-free, "puts a lot of extra weight on the electricity providers, as gas-users will be replaced by electricity users". According to Wijnakker, the government wants households and companies to eventually use as much resources as they can generate with their zero-waste policy,

so there is a balance between what we sustainably generate and use. However, currently the electricity demand is rising because of electrical replacements for gas-users, such as electrical cars, electrical ovens and electrical boilers. We are in need of reducing our electricity usage because providers simply cannot handle it anymore if we keep going, which will be a lot more harming to the environment than the generation of 'non-sustainable' electricity itself, as they need bigger processors, bigger cables and more central electricity points according to government representative Wijnakker. To conclude, electricity usage does need to be included in the energy and material flow, but can be excluded from the greenhouse gas emission calculations as the actual emission from STRIK's 'green' electricity usage is close to zero ([co2emissiefactoren](http://co2emissiefactoren.nl), 2018). Electricity bills from energy supplier Main Elektra concluded a total usage of 451.701 kWh energy per year, with a total cost of €50.503,56.

	GAS (in m3)						Emission factor
	Ziekerstraat	Heyendaal	Dukenburg	Wijchen	Bakkerij	Total Nm3/yr	
Total per year	1.458	1.500	750	750	18.358	22.816	1,89
Average/month	122	125	63	63	1.530	1.901	
Emission CO2 (kg)	2.756	2.835	1.418	1.418	34.697	43.122	
Costs (incl taxes)	€ 707,44	€ 727,82	€ 363,91	€ 363,91	€ 8.907,49	€ 11.070,55	

Graph 12: Emission calculation of gas usage

C: THE SOCIAL LAYER

LOCAL COMMUNITIES

STRIK does take action in terms of local communities. Most of their suppliers (Fruit, bread and meat) are local, small enterprises. Moreover, STRIK donates most of their bread waste to local animal farms. Aside from this, STRIK invests quite some time and effort in local charities, such as charity events or charity foundations. They are always open to people with charity initiatives wanting to work together with STRIK, either by sponsoring or giving price reductions. Moreover, STRIK sponsors local sport clubs and always stimulates activities and communities in the neighbourhoods of their stores. They actively try to be part of these neighbourhoods and offer the local people something they like or even something special (through neighbourhood product offers in the local papers). To conclude, STRIK is very active in terms of local communities and most of the time without a financial incentive.

GOVERNANCE

According to Joyce & Paquin (2016), "the governance component captures the organizational structure and decision-making policies of an organization". Within STRIK all decisions are made by the CEO. Employees are barely included in decision-making (layer 1). STRIK does not actively emphasize their transparency, but employees are aloud to ask and know whatever they want about the company. This leads to most of the time a lack of communication about decisions or changes made that employees only find out by actively taking initiatives.

EMPLOYEES

This section considers the role of employees as a core organizational stakeholder (Joyce & Paquin, 2016). For STRIK, employees are core to the organizations. However, unfortunately STRIK does not actively invest in employee trainings or education. This could lead to less employee loyalty, more absence, lower employee satisfaction rate and this way less long-term viability (Joyce & Paquin, 2016). Most of STRIK's current employees are low to averagely educated with an average age of 45 (Appendix 1-B, general company ethnographic observations, diary 2). Over 50% of STRIK employees are customer-facing. This means that profits highly depend on employees' performance. STRIK could benefit significantly from investing more time in their employees' satisfaction, performance and know-how.

SOCIAL VALUE

According to Joyce & Paquin (2016), "social value speaks to the aspect of an organization's mission which focuses on creating benefit for its stakeholders and society more broadly". From this can be concluded that STRIK actively works on providing quality and craftsmanship to customers in order to improve the satisfaction and experience, but even more importantly: to **include the communities and neighbourhoods surrounding their stores.**

SOCIETAL CULTURE

According to Joyce & Paquin (2016), "the societal culture component recognizes the potential impact of an organization on society as a whole". STRIK values a culture of socialism, in which people come to enjoy STRIK's products together with family, friends or simply neighbourhood acquaintances. STRIK stimulates this culture in their products, stores and advertisements, as well as through their employees investing time in customer relationships.

SCALE OF OUTREACH

According to Joyce & Paquin (2016), "the scale of the outreach describes the depth and breadth of the relationships an organization builds with its stakeholders through its actions over time". STRIK actively builds on expanding the breadth of their relationships as they are currently one of the biggest pastry suppliers to most Food, Service and Catering companies throughout Nijmegen. Through email notifications, physical aquisition and custom-made folders they build on increasing the depth of these relationships.

END-USER

According to Joyce & Paquin (2016), "the end-user is the person who 'consumes' the value proposition". For STRIK, the elderly are a big customer group. STRIK tries to adjust their products to this target group, by for example making products not too hard to chew on or not too large or heavy on the stomach. Moreover, STRIK acknowledged the increasing need for healthier products, so they are looking into providing lactose-free and gluten-free products and are considering expanding this product range to more of such. Furthermore, STRIK builds on the social media relationship with their customers by providing many different posts each day. This, in order to increase customer involvement and customer loyalty.

Appendix 3-A provides the data on which this layer's insights and conclusions were build.

SOCIAL IMPACTS

According to Joyce & Paquin (2016), "the social impacts component addresses the social costs of an organization". A frequent discussed social impact of the bakery sector is obviously the threat of obesity amongst consumers and the health problems from such baked products (Wageningen University &

Research, 2019). Furthermore, STRIK holds part of the responsibility for the winning of ingredients or traditional farming techniques. With their use of dairy, sugar, fruit and wheat (amongst others), they are partly responsible for how these ingredients were cultivated and produced.

SOCIAL BENEFITS

According to Joyce & Paquin (2016), "the social benefits are the positive social value creating aspects of the organization's action". As mentioned before, **STRIK actively invests in community development.** Moreover, with their considerate location choices they invest in the infrastructure development within these neighbourhoods but also in the creation of employment. Currently,

STRIK is already using cacao from a supplier that works with certified cacao beans. These beans are ethically cultivated and the farmers are paid fairly (Callebaut, 2019a; Callebaut, 2019b). Moreover, STRIK supports 'Bake For Life', an organizations that educates people from third world countries within the bakery sector. Aside from this, STRIK mentions to only use natural ingredients in their almond pastes.

B: CONCEPT PLACEMENT IN THE SELECTION MATRIX

As mentioned, the brainstorm session and analogy thinking revealed a wide range of potential concepts. These concepts were classified on impact and achievability in the concept selection worksheet from the Circular Design Guide (2019), based on the method from the MacArthur Foundation (2016). In order to do so, first a session for achievability was held with one of STRIK's store managers. Then, the impact was determined using the strategy hierarchy ladder (Konietzko et al, 2020) and the emission calculations from chapter 2.3, layer 2. The following section includes the note-taking from both sessions.

Classification of achievability

Date: 06-12-19

Participants: STRIK Store Manager

Duration: 60min

Communicate how to keep products longer fresh

Possibly easy to achieve, as STRIK has wide range of loyal customers and many Facebook followers.

Discount on almost-expired products

Moderately easy to achieve. Requires effort from employees, so find out whether they have the time and opportunity to do so.

Adjust products for better servings

More difficult to achieve. Recipes are usually not so easy to change, especially not for bread as this is purchased at a supplier. Moreover, STRIK does still want to stimulate purchase obviously.

New product line with wasted left-overs

Moderately easy to achieve. STRIK is already doing something like this with the Kruidcakes, so adding some more products would be not that difficult.

Educational campaign about the impact of food waste

Probably easy to achieve, as STRIK has wide range of loyal customers and many Facebook followers. Only in need of expertise about food waste and understanding what is it people want to see.

Facebook challenge to reduce waste

Easy to achieve, as STRIK has many Facebook followers.

Sealing of products to delay expiry date

Moderately easy to achieve. Would require investing in some machinery for sealing and some adjustments in terms of storing, stock-keeping, distribution and ordering. However, these would not be that difficult as there is not one clear way STRIK does all of this now anyway.

Anaerobic digestion/composting partnership

Easy to achieve. Garbage needs to be separated and employees stimulated to separate correctly.

Provide recipes to consumers with expired or left-over products

Easy to achieve, especially when using the expertise of bakers. Possibly look at other programmes that do this as well (Robert van Beckhoven, 24 Kitchen, etc). Stick to format. That will probably require more effort. Overall easy to achieve, depending on the way you do this.

Too good to go

Easy to achieve. Important to guide employees in what to put in the box and what not (we do not want unnecessary 'giving away' of products).

STRIK's own mystery box

Easy to achieve with wide range of customers and social media followers.

Stimulate employees to use products longer by providing exact expiry date information per product

Easy to achieve. Mainly necessary to get all employees on the same level of knowledge.

Stimulate good disposal behaviour of employees

Easy to achieve. Employees want to be involved and with the right education they will help wherever they can.

Vegetarian replacements for products

Easy to achieve. Saucijzenbroodjes are biggest group of meat-using products at STRIK. They would simply require replacing the sausage with a vegetarian one. Would not demand that much effort.

Replace most impactful ingredients in best-selling products

More difficult to achieve. Would require selecting products, evaluating impact per ingredients, finding replacement, testing flavours and behaviour during production and changing recipes in systems as well. A lot of steps to take.

Collect and re-purpose food waste together with Patisserie College members

Difficult to achieve. Even though Patisserie College is accessible and easy to reach, it is difficult to initiate something as everyone is always busy and has their own schedule.

Partner up with company that reuses bread waste for new products

Easy to achieve. Basically already doing this, but now with companies that pick up the bread for their animals or charity. Would need to find suitable partner, the rest is rather simple.

Own Anaerobic digestion/composting at location

Difficult to achieve. Would require quite an investment and finding partners to donate compost to as well as someone that manages these processes. This is quite far away from STRIK's current operations and expertise.

Appoint short-lasting products to be finished in-store

Investment and finding partners to donate compost to as well as someone that manages these processes.

Subscription model for bread products

Difficult to achieve as customers are not used to this way of ordering. Moreover a lot of customers are elderly, who are not very willing to change their habits. Also ordering system would change and it requires a marketing strategy to make people familiar with it.

Smart systems to decrease spillage

Difficult to achieve. Implementing technology is always difficult for companies with so many activities, departments and locations. Moreover, most employees are not familiar with modern technology. It requires behavioural change and expertise that STRIK does not have yet.

Automatic stock checking and ordering based on stock

See smart systems.

Packaging that keeps products longer fresh

Difficult to achieve. As STRIK works closely with Patisserie College for their packaging, it is difficult to change this. Not only will it be expensive, but also dependent on the suppliers' capabilities. Preferably packaging is purchased within the Patisserie College assortment.

Decrease product range

Moderately easy to achieve. Products need to be evaluated.

Packaging per serve

Difficult to achieve and very time consuming. A lot of products come from suppliers, so they would need a lot of handling to pack per serve. Moreover, mass production is much more attractive, so making smaller portions costs more money and time.

Arrange perfect circumstances for product storage

Difficult to achieve as all equipment needs to be adjusted for each product. Time consuming and large investments needed.

Use longer-lasting window decoration

Easy to achieve. One time investment in long-lasting products. These can be reused over and over again.

Classification of impact

Communicate how to keep products longer fresh

Reduces food waste by extending product life. Impact is high, but only if enough consumers are reached and willing to participate.

Discount on almost-expired products

Reduces food waste internally, but one could suggest that there is still some food waste from the product externally as consumers buy it at their latest 'freshness' state. This means that the impact is moderate to low.

Adjust products for better servings

Optimises the usage of natural resources as it uses less resources in production while possibly decreasing consumers' disposal because the servings are better. Especially a high impact for bread.

New product line with wasted left-overs

Re-manufactures wasted left-overs into new products. Re-manufacturing usually has a lower impact than for example optimising resources and 'using less', because it requires additional resources during the re-manufacturing. Moreover, not it very much depends on the type of food waste. However, on the other hand, it could provide a solution for a large part of the food waste stream, increasing the overall impact because of quantity. The impact is thus considered low, but with the possibility to be high.

Educational campaign about the impact of food waste

The impact could be high, reducing consumers' food waste, but only if enough customers are reached.

Facebook challenge to reduce waste

The impact is relatively low as it involves a short-term solution from a one-time innovation. Moreover, consumers must be reached and willing to participate.

Sealing of products to delay expiry date

This would only have an impact if the stocking systems are changed as well. If that is the case, food waste is reduced by simply stocking based on demand. However, this would only be effective for a selection of products, therefore the impact is considered moderate to low.

Anaerobic digestion/composting partnership

Even though the impact is usually not that high for the recycling of food waste into compost, for STRIK the impact could possibly be large as they currently burn most of their food waste. However, in terms of impact this would be the final destination after trying to make the food waste stream circular in other ways (reducing, reusing, re-manufacturing).

Provide recipes to consumers with expired or left-over products

The impact could be moderately high, making consumers reuse their left-overs, but only if enough customers are reached.

Too good to go

Reduces food waste internally, but one could suggest that there is still some food waste from the product externally as consumers buy it at their latest 'freshness' state and the likeliness of consumers wanting all products in the box is low. This means that the impact is moderate to low.

STRIK's own mystery box

See to good to go.

Stimulate employees to use products longer by providing exact expiry date information per product

As this possibly reduces the food waste of STRIK, the impact could be high. However, as it only concerns part of the product range from STRIK, it is suggested that the impact will never be very high.

Stimulate good disposal behaviour of employees

Easy to achieve. Employees want to be involved and with the right education they will help wherever they can.

Vegetarian replacements for products

As this option optimises the usage of natural resources the impact could be high. However, STRIK does not use that much meat, only for a few products, so the overall impact for STRIK would be low.

Replace most impactful ingredients in best-selling products

As this option optimises the usage of natural resources, the impact could be very high. Especially when looking at the best-selling products.

Collect and re-purpose food waste together with Patisserie College members

While usually the impact of repurposing or recycling waste is not as high as other strategies, due to the large quantity from the Patisserie College members, the impact could be very high.

Partner up with company that reuses bread waste for new products

Usually the impact of recycling or re-manufacturing is not as high as other strategies. However, since bread is such an important part of STRIK's food waste, the quantity can increase the impact.

Own Anaerobic digestion/composting at location

Even though the impact is usually not that high for the recycling of food waste into compost, for STRIK the impact could possibly be large as they currently burn most of their food waste. However, in terms of impact this would be the final destination after trying to make the food waste stream circular in other ways (reducing, reusing, re-manufacturing).

Appoint short-lasting products to be finished in-store

This would reduce the food waste as it extends products life-cycle. However, as it only concerns part of STRIK's product range, the impact is considered moderate to low.

Subscription model for bread products

This would reduce STRIK's food waste as they have better insights in how much to order. However, there will always remain a selection of customers that desire in-store purchases, so the impact is considered moderate to low as it does not solve the bread waste problem entirely.

Smart systems to decrease spillage

As this option optimises the usage of natural resources the impact could be high.

Automatic stock checking and ordering based on stock

This option optimises the usage of natural resources by ordering and producing only the necessary. Therefore the impact could be high.

Packaging that keeps products longer fresh

This option reduces food waste by extending the product life-cycle. However, in some ways STRIK is already using packaging to keep products longer fresh. Optimized packaging for other product categories could have a high impact.

Decrease product range

On the one hand decreasing the product range could have a high impact, because of production benefits. However, on the other it does not decrease sales, so waste will still appear. This would only have a large impact if the product range is decreased to a selection of products that can be re-manufactured or have a longer expiry date.

Packaging per serve

Even though it does on one hand decrease the food waste both internally as well as externally, it is questionable whether the efforts and additional resources needed weigh out the food waste. Therefore the impact is considered moderate to low.

Arrange perfect circumstances for product storage

Even though food waste could be reduced by extending the product life-cycle, it is questionable whether the added resources for creating these perfect circumstances weigh out the food waste. Therefore the impact is considered low.

Use longer-lasting window decoration

This option optimises the usage of natural resources by extending the life-cycle of such decoration products. However, as this only concerns such a small range of products, the impact is considered low.

APPENDIX 5

Supporting the MVP testing



Educational web-page

A: MVP 1

MEASURE

f Reach: 515
Engagement: 6.4%
CTR (click-through-rate): 5.4%

unbounce 0% subscription rate

hotjar

- 12% CTR for storing tips
- 16% CTR for recipes
- 0% CTR for expiry date information
- 0% CTR for weekly product offer
- 50% reached end of the web-page

ASSUMPTIONS

The first concept for building towards a circular food waste stream is the creation of an educational web-page for consumers, this way focusing on reducing **external food disposal**. This web-page would be implemented into the existing web-shop of STRIK, hopefully creating traffic and possibly increasing STRIK's online sales. Even though previous analyses suggest this could be an interesting concept, it is important to learn whether STRIK customers find it

interesting as well and whether it actually leads to increased web-shop sales, testing the **desirability** and **viability** of the concept. The corresponding hypothesis are HA1 and HA2.

- HA1** "More than 10% of STRIK's customers would be interested in information from STRIK about how to reduce food waste"
- HA2** "More than 10% of STRIK's customers visiting the food waste web-page is interested in STRIK's online offers as well"

BUILD

A commonly used approach for testing an MVP website is a landing page (Bank, 2014 in Design & Dev.). This page should explore whether potential customers are interested and what it is they are interested in. The respondents for testing the landing page are reached through STRIK's Facebook page. The landing page is built using Unbounce and measurements are done using Hotjar, Facebook and Unbounce. The landing page is kept free from design and based on a simplified wire-frame. It includes a fact related to money savings (Graham-Rowe et al., 2014; Brook Lyndhurst, 2007), a 'call-to-action' section with a

subscription button, a 'specific interest' section including recipes, storing tips and expiration date information and a section including an online offer directing respondents to STRIK's webshop through a 'buy button as a call-to-action. figure 15 shows the landing page design and figure 17 shows the hotjar performance.

collect **f** 7,835 followers (per Dec. 2019)

build **unbounce**

measure **hotjar** **f** **unbounce**

call-to-action **BUY**

LEARN

With a 0% subscription rate and a 0% 'click-through-rate' from the landing page to STRIK's web-shop, the outcomes suggest that there is little desirability or viability for a food-waste web-page. However, the results did show a 16% conversion rate of the 'more information' button for recipes. Even though the key metrics were supposed to be tested using the pre-determined methods (email subscription and CTR to STRIK's webshop), in reality it is too short-minded to assume no desirability simply based

on one measurement. Especially when it comes to web-pages, as there are many different aspects that affect a website's conversion rate, amongst which the design, content placement, use of images, and many more (Fernandez, 2019; Parravano, 2018). Therefore these results ask for some further experimenting in order to see whether there actually is no desirability, or that the web-page or the Facebook post is just not presented in a desirable way.

ADDITIONAL TESTING

BUILD ROUND 2

First, all of the statistics from the Facebook posts of the last 4 months were summarized in order to make conclusions about the Facebook post performance directing to the landing page. From these, conclusions were drawn about average performance and best performing posts. Then, a **first additional measurement** is done checking the average click-through-rate (CTR) of STRIK's Facebook posts including link-posts. In the case of the landing page post, 28 out of 515 people (5,4%) who could have seen the Facebook post had clicked on the link going to the landing page. To see

whether this is high or low, two other 'link-clicking' posts were compared. The first link-clicking post taken into account is one with a link to a news article about a new STRIK store. The second link-clicking post taken into account is one directing followers to the online web-shop through a link. Then, as a **second additional measurement**, two additional posts about food waste were compared to the original landing page post on their 'call-to-action' conversion rate. This, because from the facebook statistics could be concluded that visual posts usually get

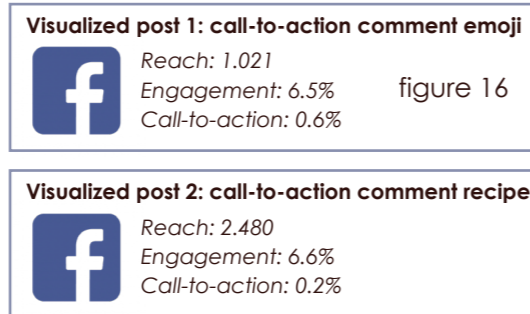
"An 'MVP' website isn't meticulously developed until it is perceived to be perfect; it is developed with the intention of seeing how people interact with it so that it can be changed".

- Segapixel Founder Olivo (2019)

a higher reach and engagement. If the call-to-action conversion rate of such visual posts is higher than the call-to-action conversion rate from the original landing page post, one could assume that visuals might play an important role in customer desirability.



MEASURE ROUND 2



LEARN ROUND 2

The additional tests show that the CTR for the food-waste landing page is higher than the average CTR of other link-clicking Facebook pages. However, the interest based on a 'call-to-action' remains very low, also when posts are presented more visually. Followers might show a little interest in information about food waste, but seem to lack enough interest to actually put effort into it. While the reach of the visual presentations is higher, the engagement rate remains the same for all posts containing food-waste information. This rate is somewhere between 6.4 and 6.6%, which is slightly higher than the average engagement rate of 5.3% from all Strik Facebook posts

in the last 4 months (N=64). However, the most interesting assumption can be made based on the web-shop post. With a low reach and the lowest CTR and engagement, it is suggested that Facebook followers are not that interested in the web-shop yet. This means that, even though followers might enjoy information about food-waste once in a while, without having to put too much effort into it, it is likely that the viability of such educational concepts is low. Customers are not yet interested enough in STRIK's online web-shop to gain financial benefits from the combination of an educational page guiding customers to the web-shop.



Figure 15: Landing page basic design



Figure 16: Additional visual post 1 with call-to-action

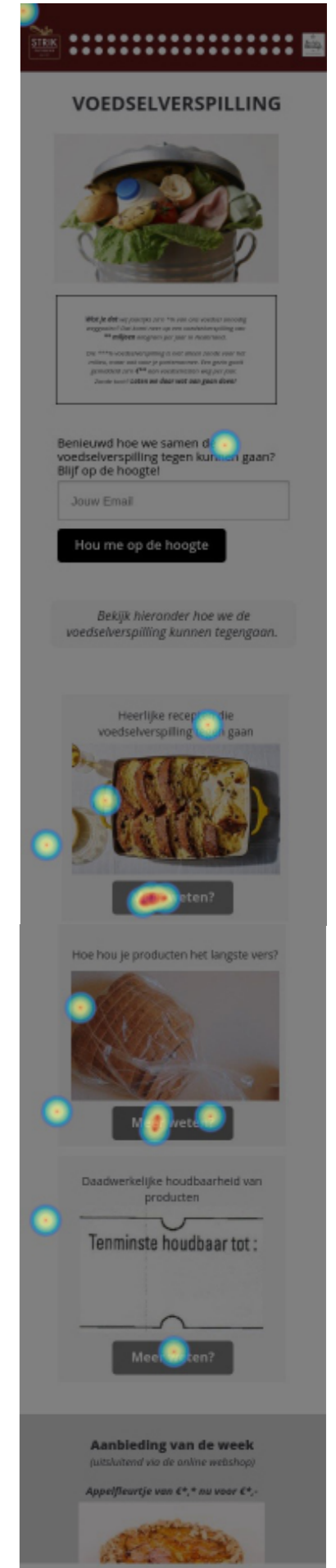


Figure 17: Hotjar results

B:MVP 2

New product line made from wasted parts and products

SAMEN tegen VOEDSEL VERSPILLING



ASSUMPTIONS

The second MVP is the physical concept including a new product line made from wasted products and product parts. Even though there are several successful stories about companies bringing a product made from waste or left-overs to the market (Verspillingsverrukkelijk.nl, 2019), it is important to test whether STRIK's customers are ready for such products as well. And just as important, whether customers are willing to buy the

product for a certain price, despite their level of interest. To test the concept on desirability and viability, hypothesis HB1 and HB2 are constructed in order to test these key metrics.

HB1

"At least 10% of STRIK's customers is interested in a product line made from wasted products"



HB2

"Sales of a product made from food waste get increased with at least 15% if the story behind the product is explained and promoted through the product packaging"



BUILD

To test the desirability of the concept, a physical in-store test was done using prototypes (figure 20). In each of the STRIK stores three possibilities for products within this new product line were presented, from which customers could take a 10% discount card for products from the new product line.

Then, to test the viability of the concept, the existing Kruidcake product was adjusted in order to check whether sales increased if the story behind the product was promoted more. This is done by adjusting the existing packaging of the kruidcake for one that tells the circular story behind it.

While packaging is an important factor in the decision-making (Estiri et al., 2010; Ansari et al., 2019), the prototype was designed by combining existing (successful) concepts (Verspillingsfabriek lecture, 2019 - figure 18) together with STRIK's branding (figure 19).



MEASURE

Ziekerstraat:	Wijchen:	Heyendaal:
2019: 4 kruidcakes 2020: 7 kruidcakes	2019: 2 kruidcakes 2020: 5 kruidcakes	2019: 3 kruidcakes 2020: 6 kruidcakes
Ziekerstraat:	Wijchen:	Heyendaal:
148 customers 16 cards taken (11%)	98 customers 12 cards taken (12%)	203 customers 17 cards (8%)

LEARN

From the results can be assumed that both the desirability as well as the viability is high. **Hypothesis B1 and B2 can be accepted** as on average more than 10% is interested in the new product line (N=449) and more than 15% of sales increased when the product was provided with packaging explaining the circular story behind it in each STRIK store. However, despite the positive outcomes from the tests, simply focusing on two measurements to conclude a desirable and viable product can be too short-

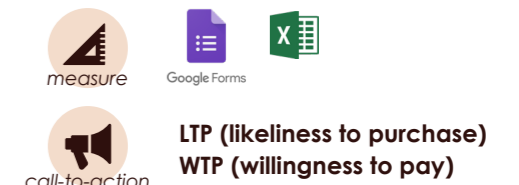
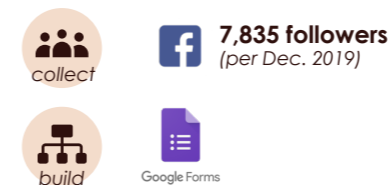
minded. Not only because part of the sales increase could be due to drawing any type of attention to the product, but also because the tests were done at a specific moment instead of throughout the year. Additional testing was done to collect more insights about the desirability and viability of the concept. A second additional test measures quantitatively the interest through an online survey. A third additional test measures qualitatively whether people in-store would purchase the product.

ADDITIONAL TESTING 1

BUILD ROUND 2

As additional research to gain more insights about the desirability and viability of the concept, first an online quantitative survey was distributed through social media and email. This survey exist of two versions, one of which includes a bag of bread crisps without marketing while the other includes a bag of bread crisps with information about the circularity and sustainability behind it. The bag of bread crisps were inspired by an existing product from 'Say Yes to No Bread

Chips' (Volkskrant, 2016). This marketing included a quote ('waste is delicious'), information about what the product is made of (high quality left-overs of bread) and a stimulant (together against food waste), see figure 21. Respondents were asked to rank the product based on likeliness to purchase (5-point Likert scale, Saunders (2007)) and the willingness to pay a certain price. The questionnaire design can be found in figure 21.



Survey A (regular product):

84 respondents
 Avg. likeliness to purchase: 2.6/5
 Avg. price willing to pay: €1,47
 25% would likely purchase
 45% would likely not purchase

Survey B (promoted product):

77 respondents
 Avg. likeliness to purchase: 3.2/5
 Avg. price willing to pay: €1,66
 47% would likely purchase
 30% would likely not purchase

LEARN ROUND 2

The results from the online survey suggest that people are more likely to purchase a product if the (sustainable) story behind it is communicated. Moreover, with almost 50% of a total number of 77 respondents answered that it is likely they will purchase the product made from bread left-overs. Interesting is that people are probably not willing to pay much more for a product of which the sustainable story behind it is communicated. On the other hand, they are also not willing to pay less, which can be interesting for STRIK. It is likely that people would pay a 'regular STRIK price' for a product made from recycled parts, ingredients or products, increasing the

viability of the concept. Moreover, the likeliness of purchase increases with more than 15% for the promoted product. Even though this survey only focuses on one specific type of product, in which personal taste, impulse purchasing and other factors are not taken into account, and the results are not tested on significance and reliability, together with the measurements of round 1 it **does indicate that there is a desirability for the concept.** A final round of tests will qualitatively research whether there is a desirability for the product line through in-store conversations with customers.

ADDITIONAL TESTING 2

BUILD ROUND 3

Additional qualitative research was done in-store with STRIK customers (N=10). A brief semi-structured interview guide was prepared asking customers about the willingness to purchase a product from the new circular line and their willingness to pay extra. Questions were kept as open-ended and neutral as possible so that customers were left free to give their unbiased opinion about the product line (Holbrook et al, 2003). To make the questions more tangible, the mock-up of

the new packaging for Kruidcake was used as an example. Interviews were held in all three STRIK stores. The interview diaries can be found in figure 22.



See figure 22 for full respondent diary

- 7/10** positive towards concept
- 6/10** familiar with Kruidcake
- 6/10** would pay more or the same for new concept

"The product would probably draw more attention with the adjusted packaging"
 - participant 5

"I think it is smart that STRIK is investing in such initiatives. We need more of such initiatives, especially in Nijmegen"
 - participant 6

"I do see the product being part of STRIK's product range as society is changing towards wanting more of such products from their local shops"
 - participant 3

"What exactly happens to the food left-overs? How is the product made exactly?"
 - participant 7

"I would like to see even more information on the packaging about how it's been made"
 - participant 5

"I am not sure about the concept. I do not like Kruidcakes at all..."
 - participant 4

LEARN ROUND 3

From the additional qualitative research can be implied that STRIK customers possess a high desirability for the concept. With a 7 out of 10 positive reaction towards the concept it is likely that current customers are ready for a new circular product line. Not only were respondents positive, they were also willing to pay the same price or even a higher price for such products compared to regular (unsustainable) products. The results suggest that STRIK should remain transparent in the circularity behind the product to inform the more critical customers. Moreover, as the adjusted packaging could draw more attention it

could be interesting to create a separate section of such products that will catch customers' eye in-store. However, even though questions were asked as neutral as possible, there still exists the possibility that respondents experienced the acquiescence response bias and simply consenting with any statement (Holbrooke, 2003). Therefore this testing session will not be considered lonesome, but in combination with the results from the others MVP tests as well. All of these tests' results together imply a high desirability and viability for the new concept.

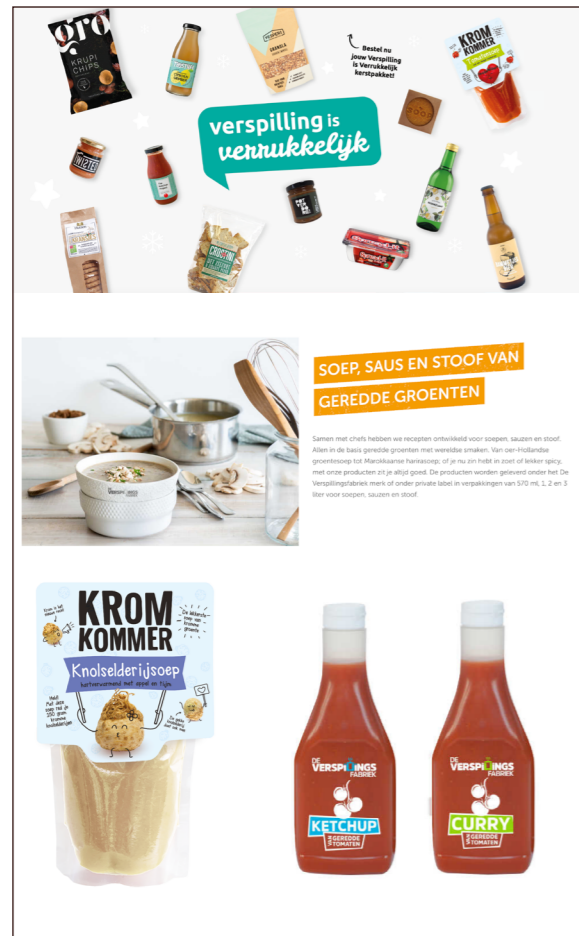


Figure 18: Inspiration from the Verspillingsfabriek (2019) and Verspillingsverrukkelijk.nl (2019)

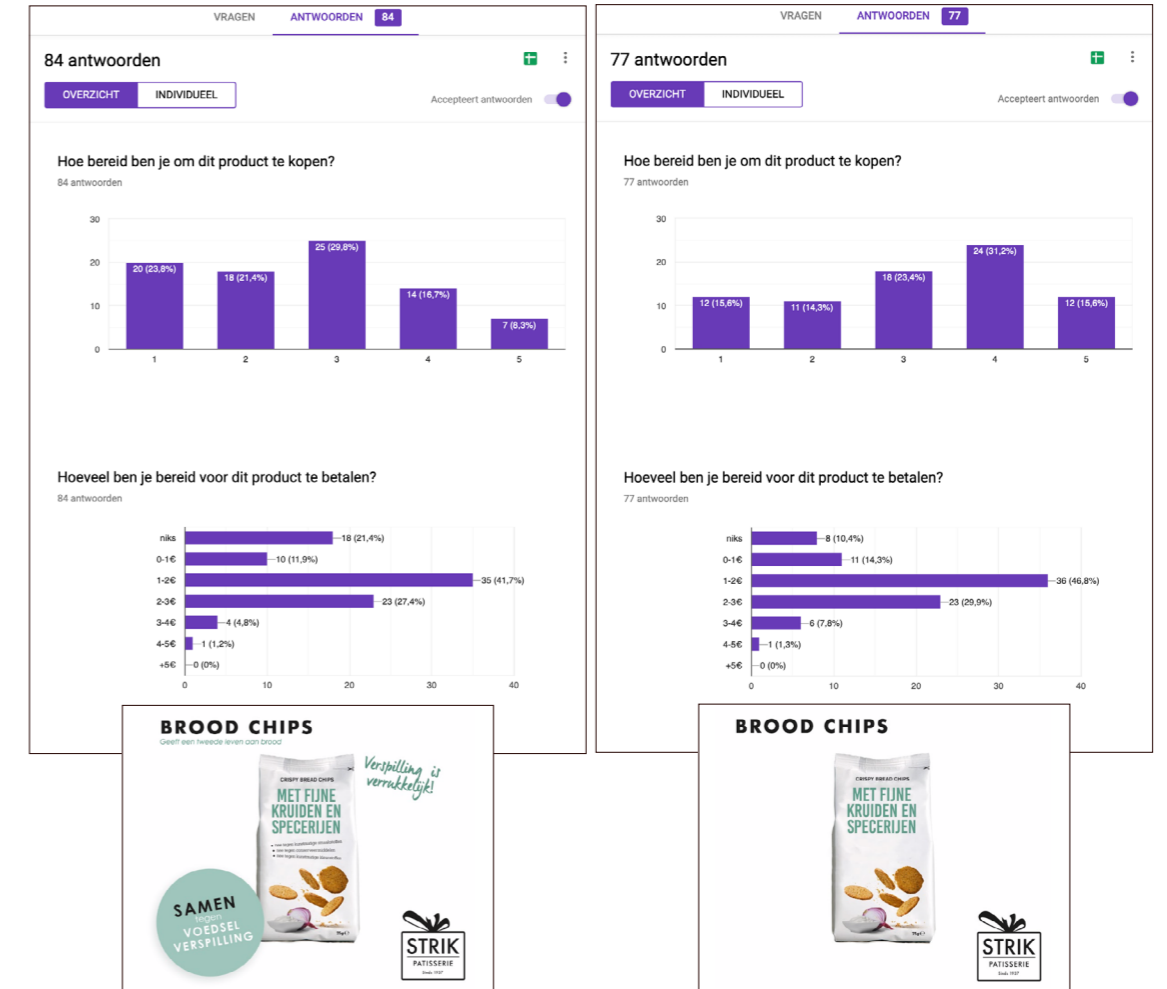


Figure 20: Prototype design



Figure 19: Inspiration from STRIK's current branding

Figure 21: Online questionnaire design and results (Dutch): Likelihood of purchase versus willingness to pay for promoted product (left) and non-promoted product (right)



	Date / Time	Store	Age	Familiar with Kruidcake?	Insights
Participant 1	04-01-2020 11:00	Heyendaal	32	yes	Very positive towards new concept of the new product line. No remarks about products being made of 'left-overs' in negative way. Would pay more for product now that information is provided. Thinks such products fit STRIK's product range.
Participant 2	04-01-2020 11:10	Heyendaal	71	yes	Positive towards concept, but dislike for specific product (Kruidcake), so negative towards this specific type of product. Probably not likely to buy such products, but stands behind initiative and idea of sustainability.
Participant 3	04-01-2020 11:30	Heyendaal	56	yes	Positive towards new concept of the new product line. "I like how STRIK is also investing time in such initiatives" (direct quote participant). Does see the product being part of STRIK as society is changing towards wanting more of such products. However, would not pay more for such a product. Would pay the same price as it was.
Participant 4	04-01-2020 11:50	Heyendaal	62	no	Neutral towards concept. Didn't really understand it even after explanation about concept. Too focused on specific Kruidcake product, which according to respondent "she had never bought before". After tasting product respondent reacted positive about taste. However, would not buy it quicker with adjusted packaging.
Participant 5	04-01-2020 13:10	Ziekerstraat	28	yes	Positive about concept. Has heard before that companies do such things to work on their waste streams. Would definitely pay more for sustainable product. Would like to see even more information on the packaging about how it's been made. Product had never caught respondent's eye in store, despite weekly visit to the store and familiarity with the product. Maybe with new packaging it draws more attention...?
Participant 6	04-01-2020 13:30	Ziekerstraat	35	no	Very enthusiastic about the concept. Would like to see more products like this. Explains how she knew beer brewing company that uses old bread as well. "We need more of such initiatives, especially in Nijmegen". Would definitely not pay less and maybe even more for concept. Likes taste of Kruidcake. Does not come often to store, but would purchase Kruidcake. Especially knowing story behind it.
Participant 7	04-01-2020 13:45	Ziekerstraat	31	no	Critical towards concept. Asking questions about what exactly happens with the food waste and why not just sell the previous product "if it is still fresh"? Positive towards sustainable initiatives, but critical about trustworthiness. Did like taste of Kruidcake. Would pay more for sustainable initiative.
Participant 8	04-01-2020 14:10	Ziekerstraat	34	yes	Woman with kids. Explained she does groceries across street at Ekoplaza as well, so concept like this interests her. If product line comes in combination with gluten or lactose free products it would be even better. Price does not really matter for her. Definitely not pay less. Knew kruidcake before, but never really caught her eye
Participant 9	04-01-2020 15:15	Wijchen	70	no	Critical towards product. Had never seen this 'Kruidcake' before in the store. Difficult to imagine other products. Questions about what is in there. Did mention that if price is lower she would probably buy it.
Participant 10	04-01-2020 15:35	Wijchen	53	yes	Knew Kruidcake from loyalty program. Had bought it before using her saved up STRIK points. Likes concept of sustainable marketing behind it. Would not pay more, but would buy it quicker with adjusted packaging for same price or lower price.

Figure 22: Qualitative research in-store about desirability of new product line (N=10)

**C: MVP3,
THE FINAL
DESTINATION**



Anaerobic digestion/
composting through
partnership

ASSUMPTIONS

The third concept is considered a 'final destination' for the inevitable resulting stream of food waste as this concept will probably not deliver any financial value even though it does add environmental value. The food waste stream gets regenerated into compost, green gas or green electricity using a partnership for anaerobic digestion/composting. It is important that first all other measures are taken in order to decrease the food waste stream going to the waste processor. For the concept to assure full circularity of STRIK's food waste stream, the partner should be able to recycle 100% of the food waste. Moreover, it

will only work if employees are willing to separate the food waste correctly. This demands for some additional effort from the employees, as packaging needs to be separated from the food in order to assure a clean food-waste stream. All of the latter will be tested according to hypothesis HC1 and HC2. Moreover, it is important that the *financial aspect* is considered as well to assure no major investments are necessary.

HC1 "Partners can assure 100% recycling of the food waste stream"

HC2 "Employees are capable of correctly separating the food waste from the general waste, creating a clean food waste stream"

BUILD HC1

In order to test the hypothesis, two methods were used. A first is conducting two qualitative interviews with potential partners able to provide anaerobic digestion/composting for STRIK's food waste, known by waste processors as 'organic waste'. Amongst the partners chosen are the market leader in terms of sustainable waste processing, Renewi, and a smaller local waste processor, Milieu Service. Both companies were invited for an orientational conversation. To keep the conversation as open-ended and natural as possible, no interview guide was used. However, three questions were

prepared in order to get the necessary answers for accepting or rejecting the hypothesis. The questions included information about what happens to the organic waste. Moreover, about whether the organic waste is 100% recycled into green resources. Third, what the prices are for processing organic waste with them. The interview was transcribed and translated on the spot by a second interviewer to assure reliability. The most important insights from the interviews can be found in the measurement section.



MEASURE HC1



	What happens to the organic waste	Can 100% recyclability be assured?	What can STRIK do to assure 100% recyclability?	What are the costs?
Renewi	During the processing of digestion and composting, energy or compost is regenerated. These are collected at location of the client through SWILL bins. These bins can be filled up to the max, independent of weight because you pay per bin.	Renewi can process all kinds of prepared and unprepared food 100%. Renewi does not partner up with anyone else and is main market leader.	Make sure the stream is as clean as possible. There are red, orange and green labels on products. Red means they definitely should not be in the SWILL bin, orange mean you should try to keep them out but Renewi will still filter part of them and green means these can be disposed in the SWILL bins.	A swill bin costs 17,50 per container per month. You can fill this up with maximum weight, as you pay per container. They will be collected at location. STRIK can save costs from the current garbage processor as they would reduce the garbage weight while separating the 'heavy' food waste from the general waste.
Milieu Centraal	Our partner for organic waste is Suez. They digest everything into green gas and green electricity. They collect the organic waste every week (or different if preferred) through SWILL bins.	Suez can assure 100% recyclability and has its own separation program to separate some left over parts that should not be in the stream	Make sure the stream is as clean as possible. Suez has a list of what can and cannot be thrown away in the SWILL bins.	The SWILL container costs 54,06€ per month per container, excluding the 30% discount provided by milieu centraal

LEARN HC1

From the qualitative interviews and corresponding e-mail information send afterwards (see measurements) can be learned that potential partners do assure that 100% of the organic waste gets recycled. Moreover, in terms of costs, it does not have to be expensive to recycle organic food waste for regenerating green resources or compost. In fact it could save a lot of effort for STRIK as processors can pick up the waste at store

locations. In most cases the organic waste is processed into compost, otherwise in green gas or green electricity. There are no requirements for the food waste stream, just that the stream is clean and free from packaging and other non-food products. Based on these insights, **hypothesis 1 can be accepted**. Partners can assure recycling 100% of the organic waste stream.

BUILD HC2

In order to test the hypothesis HC2, the disposal behaviour of organic waste was observed during one week. A special bin was placed in each STRIK store with a poster mentioning "dispose all food waste here". Moreover, employees were briefly instructed about that they should separate the food waste from all other waste. During the collection a diary was kept. Within this diary some note taking

about the quality of the organic waste streams was taken each two days. Moreover, additional conversations about employee experiences with separating the food waste was noted as well. The insights from the diaries can be found in the measurement section.



Ziekerstraat:

- Stream = clean, except for some packaging and paper
- Still some food waste in general waste stream (coffee & tea left-overs, crumbles, whipped cream, liquids and left-overs from the food-service section)
- Employees are willing to help and positive about sustainability
- Lack of knowledge about what to throw away where

Heyendaal:

- Stream = clean, except for some packaging and paper
- Not so much food waste in general waste stream
- Employees are willing to help and positive about sustainability, but also have critical attitude about what happens to it and whether it will take too much effort from them
- Lack of knowledge about what to throw away where and what happens to the food waste stream
- When store is busy, employees might not want to separate correctly or spend time on it

Wijchen:

- Stream = clean, except for some packaging and paper
- Still some food waste in general waste stream (coffee & tea left-overs, crumbles, whipped cream, liquids and left-overs from the food-service section)
- Employees are very willing to help and positive about sustainability, especially when talking to them about it
- Lack of knowledge about what to throw away where and why

LEARN HC2

What we learned is that employees are very much dedicated to separating the food waste correctly. However, there might be a lack of understanding which types of waste are in fact organic and which not. Moreover, it is possible that employees do not experience a strong need to separate some of the packaging from the food in times of stress or chaos. It is assumed that is employees would

be educated better about the types of food waste and how important it is that the stream is clean, it is likely that they put more effort into separating correctly. The third hypothesis HC3 is added.

HC3

"If employees are educated about the types of organic waste and the necessity to create a clean waste stream, the organic waste stream of STRIK becomes at least 95% clean".

BUILD HC3

In order to test hypothesis HC3, additional information was provided to each of the employees through informative posters. These posters included information about STRIK's incentive, but also practical information about what can and cannot be thrown away provided by the organic waste processing partner

(Figure 23). These posters were laminated and placed above the food waste bins. Moreover, this was communicated to each employee as well. Again the bins were collected during one week each two days and additional conversations were held.

- Stream in all stores is estimated to be >95% clean
- Employees were positive about provided information
- Employees put effort into helping

LEARN HC3

What can be implied from the waste separation analysis is that employees are very willing to separate correctly, but they need to be educated and guided. As mentioned before, employees want and need to be included in decisions. After they were personally approached about separating the food, the results showed that not only was the food waste stream cleaner, but also were the food left-overs remaining in the general waste stream minimal. This implies that when employees are closely involved and given a sense of responsibility, they will act on it. Provide some missing and

additional knowledge, and employees become a major key player in terms of circularity for STRIK. The latter not only means that **HC2 and HC3 can both be accepted**, it also implies that STRIK could benefit from using a similar approach in other areas as well. Including employees, giving them a certain amount of responsibility while providing them with the necessary knowledge could make employees key players in trying to reach certain organisational goals. The third concept acting as a final destination plan for the inevitable remaining stream if food waste should be **persevered**.

Figure 23: Provided additional information for garbage separation