

# Healthy Breakfast Delivery Service for sustainable dietary improvements



## Fresh 'n Friendly

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JULY 2021

## Abstract

Healthy nutritional habits are an important contributor for maintaining a healthy lifestyle. Eating a breakfast contributes to study focus, and is most of the times made individually by students. Therefore, the mission of this project is to empower HBO/University students to make a sustainable or long lasting dietary improvement in their breakfasts. The most important factors of not eating a healthy breakfast are lack of time, money and motivation. The state of the art either lack to implement a fun factor while being instructive, lack to save time of students, or are too expensive for them. During a brainstorm session with different student personas such as the "stubborn student", a healthy breakfast delivery service was proposed. Because of low investment costs and the collaboration of Ecocentrum Emma, a test week could be run. Using the organic food products of Ecocentrum Emma, every day a different breakfast was created and delivered for 2.00 euro each. Ten participants for this test week were recruited non-randomly. 50% of the subjects did order all 5 days. The outcomes of the test week are that the service does empower students for a dietary improvement and that 90% of the students are likely to order again. The taste and the healthiness of the service were the most important factors why the students are likely to order again, and the cards and the looks were the least important. This could be too positive results because of the non-randomly recruited students, or the results show a lot of support for such a service. In addition, the service was not profitable on this small scale. Therefore, it is proposed to try out expanding the company by the use of among others: more Instagram marketing, implementing some choice of menu, and buying ingredients in bulk packages.

## Acknowledgement

First of all, I want to sincerely thank dr. A.M. Schaafstal for being my supervisor and client during this project, and for all her suggestions for improvement and mental support. Secondly, I want to sincerely thank dr. D.B.W. Postma, my critical observer, for all the help he gave me with all the critical questions he asked. Thirdly, I want to thank Susanne Groten, boss of Ecocentrum Emma, for being supportive in the project and for making the kitchen of Ecocentrum Emma available for the service. Furthermore, I want to thank fellow Creative Technology student Ainé van den Aakster for the creation of the beautiful and self explanatory Logo of the company, which is on the front page of this bachelor thesis. A special thanks is for fellow Creative Technology student Eva Lahuis, for recording the process video, and peer-reviewing my thesis. In addition, I would love to thank all my friends and family who have supported me throughout the project for attending my presentation and supporting me with the possibility to talk about the project. And finally, I want to thank the graduation support group, Sophie Gaastra, Nathalie Kamp, and Eva Lahuis for being of support for my project. Also thanks to the initiators, T.H. de Kluijver and dr. K. Zalewska, who did do a good job creating the support group and helping the support group in the process of their bachelor projects.

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## Abbreviations and Translations

BCT	Behaviour Change Technique
FV	fruits and vegetables
Health ET	Health Empowerment Theory
RQ	research question
Schijf van Vijf	Wheel of Five
SDG	Sustainable Development Goal
UT	University of Twente
WGs	whole grains



# 1 Introduction

In this chapter there is written about the background, the author’s vision, the target group, the project’s mission statement, the challenges and the relevance for society building towards the Research Questions in the end.

## 1.1 Background

Healthy nutritional habits are an important contributor for maintaining a healthy lifestyle and living a long lasting, healthy life. The Health Empowerment Theory (Health ET) is an important and well grounded framework for sustainable healthy behavioural changes (Joseph, 2020). Health empowerment is giving the social or personal means to someone to improve in health-related lifestyle. In this project, with the use of the Health ET, and the determinants of students’ dietary choices, a healthy breakfast delivery service (Fresh ’n Friendly) is chosen in Section 3 Ideation to realise and evaluate. This solution should aim to use this Health ET in such a way that people consider the actions for dietary improvement as inherently positive, because otherwise the proposed actions will not be accepted.

Lifestyle could be (if needed) improved in various fields, such as physical activity and sleeping patterns, but in this bachelor thesis the focus lies on dietary behaviour. Because of the author’s interest in food (he loves cooking, and he studied a Food Technology minor at Wageningen University) and because other fields like physical activity and healthy sleeping patterns are not so much in his interest, he chose to aim for the promotion of a sustainable healthy diet. A healthy diet is an important issue to promote, because only 25% of the population eats according to the guidelines of the Schijf van Vijf (From now on being referred to as the Wheel of Five) (RIVM, 2016; Dutch Nutrition Centre, 2016). The Wheel of Five is a Dutch guideline for the proportions of healthy food groups that should be consumed. Only when the healthy food groups are consumed regularly, the health benefits of this dietary improvement will be gained, which are pointed out in Section 1.7 Relevancy. As a consequence the empowerment of a *sustainable* dietary improvement is needed.

One of the major problems is that people do eat not enough fruits and vegetables (FV) on a day (2 portions of each fruits and vegetables is recommended)(RIVM, 2016), while a lot of research states that Fruits and Vegetables do improve people’s health (Aggarwal, Verma, Ghai & Nagarajan, 2021; Albuquerque, Nunes, Bessada, Costa & Oliveira, 2020; Bursać Kovačević et al., 2020).

This shortage in the recommended healthy food groups calls for a solution to empower people improving their health by eating more of these healthy food groups. In the author’s experience, breakfast is a meal that is most of the time prepared individually. For example, the breakfasts the author prepares individually do contain whole grains (WG), fruits, seeds and pits, and a dairy product (kefir) (all kinds of foods the author finds healthy and even tasty, but most people surrounding him do think else about that or have unfortunately not tried it yet). Just like him, everyone can choose individually to change their breakfasts for dietary improvements. Fortunately, especially fruits are easy to put in. Because of that, breakfast is the focus point of this bachelor thesis.

## 1.2 Vision Statement

The author’s vision is that the world population can manage to live with high well-being in symbiose with nature, without destroying the earth, if and only if, people will do the right maintenance on earth. One aspect of the right maintenance on earth is in my opinion increasing health and well-being for all life on earth. I am interested in high quality, nutritious food, because I believe that



Figure 1: The Sustainable Development Goals of the United Nations (2015) used for the author's vision

the right food choices can give rise to human health and well-being. A good illustration of the importance of the right food choices is written by Hippocrates two thousand years ago (translated by Dr. Goodfood team (2018)):

“I will apply dietetic and lifestyle measures to help the sick to my best ability and judgment; I will protect them from harm and injustice.”

So if Hippocrates mentioned dietetic measures to help the sick and protect the people from harm already two thousand years ago, this must be an important factor in prevention of illnesses.

Sustainability is the major goal of the United Nations, described in the 17 sustainable development goals (SDGs) (United Nations, 2015). SDG 3: good health and well-being is the goal the author wants to contribute to in this project, but also SDG 12: responsible consumption and production, SDG 13: climate action, and SDG 15: Life on land, for example by countering deforestation and increase the biodiversity (See Figure 1).

One problem is that at the time being, there is not so much research that determines how much products really cost for ecosystems (Carpenter et al., 2006). So, while the costs of products do not incorporate the cost for nature, people will keep consuming because of their comfort and low costs of products. The price, however, is that ecosystems will be destroyed. Regarding food also the costs of products are lower than that it costs for nature, which results in bigger problems. The low prices give rise to food waste, because the food is not considered valuable enough. Risen food waste means more food is needed to be produced and transported. Increased transport of food makes it a major player in emissions, which put more greenhouse gases in the air and result in an increase in temperature (Kibert, Thiele, Peterson & Monroe, n.d.). And increased temperature has the potential to negatively affect human well-being: more violent storms, rising sea levels, change in food supplies and reducing biodiversity (Kibert et al., n.d.). So in this project it would be good to

contribute to an increase in consumption of food that is produced local for reduction of transport emissions (in favour of SDG 13). Next to that, it would be favourable to reduce food waste (in favour of SDG 13). A positive result of an increase in local produce consumed, is an increase of biodiversity. This is because on different geographic areas different plants and species are able to grow. To illustrate this with an example, if no global trade takes place, in the Netherlands a mango would just not be consumed, and in Africa, apples would be not consumed.

Turning now to why the author is in favour of organic foods. This is because SDG 12, which states about responsible consumption, and since organic food production contains less toxic chemicals, this is more responsible for people's health. Furthermore, several literature reviews suggest that organic food consumption can lead to increase of health (so in favour of SDG 3) compared to non-organic food consumption (Mie et al., 2017; Vigar et al., 2020). A quote from a video from Zembla shows an indication of what organic food does to our health. In this video a scientific conclusion was uncovered, which was unfortunately kept silence because of economic reasons (Zembla, 2020):

“Chickens were compared and some were getting organic feed and others were getting regular feed. By testing the immune system, the chickens fed with the organic feed responded faster and rehabilitated quicker.”

The fact that the chickens fed with the organic feed responded faster and rehabilitated quicker than the chickens that were fed with the non-organic feed is an indication that organic feed enhances the immune system of chickens. This indicates that it could work the same for people and that it enhances immune systems of people as well, which prevents illnesses and therefore increases human well-being.

The vision of the author is that this bachelor thesis should promote the right food choices (according to the Wheel of Five) and contribute to the SDGs 3, 12, 13 and 15 of the United Nations while being in favour of promoting the consumption of local, organic produce.

### 1.3 Mission Statement

The mission of this project is to design/shape/create a solution that empowers students to make a sustainable or long lasting dietary improvement in their breakfasts. One way to do this would be to catch interest of the students by the solution, so the solution could for example be inspirational and educative, ideally in a fun way. In addition, the way the solution is implemented should be sustainable because of the Sustainable Development Goals, as stated in Section 1.2 Vision Statement, and make it such that it will improve the environment. In other words the solution should be less environmentally damaging than if the solution did not exist.

### 1.4 Target Group

The target group is University/HBO students<sup>1</sup>, because their diet is low in FV (Bernardo et al., 2018; Larson, Laska, Story & Neumark-Sztainer, 2012; Yeh et al., 2010) and they have little health awareness (Hartman, Wadsworth, Penny, van Assema & Page, 2013).

Because of this little health awareness they are more likely to choose their foods based on taste and not based on nutritional value (Bernardo et al., 2018; Larson et al., 2012). Their taste makes them tend to choose for foods that are high in fats, salt and sugar, such as snacks and sodas

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<sup>1</sup>Mainly students from University or HBO are targeted, because they are more in my contact range than other students. However, the project could be in the interest of other (student) groups as well.

(Bernardo et al., 2018; Larson et al., 2012). This is worrisome, because then FV are not consumed often and they miss out on the health benefits of FV.

Next to taste, a major determinant of students to not consume FV is that in general they have no strong habits in consuming FV (Stroebele-Benschop, Dieze & Hilzendegen, 2018). Additionally, fact is that in general students are low in self-efficacy (Hartman et al., 2013), meaning that they find themselves not able to prepare FV or not have the confidence that they can do so. Because they are not really able to cook or prepare, they are more likely to order food. Conveniently for them, there is a lot of possibility for that (takeaway, uber foods, deliveroo, pizza restaurant delivery, etc., etc.). However, the foods that are offered are also low in FV or other foods recommended by the Wheel of Five, and because of taste the ones that are high in FV are less attractive. These statements adds up to the reasons to design a solution for students.

Next to these issues, 3 out of 10 students do never consume breakfast (from a questionnaire of UMC Groningen with 2000 respondents) (Onderzoeksredactie, 2018). Wise is otherwise, the article about this research states, because not eating breakfast enlarges the chance on unhealthy snacking (Onderzoeksredactie, 2018). More important for students, consumption of breakfast even enhances cognitive performance (study performance) (Hoyland, Lawton & Dye, 2008). For students, breakfast is a meal that is made individually, and therefore the food choices are made individually. Therefore, breakfast can be considered a well suited meal to improve on for students.

Because of the difficulty for students to consume the recommended foods based on the Wheel of Five and breakfast is the right meal to improve on every day, the goal of this project is to empower University/HBO students for the improvement of dietary choices in their breakfasts.

## 1.5 Collaboration with Ecocentrum Emma

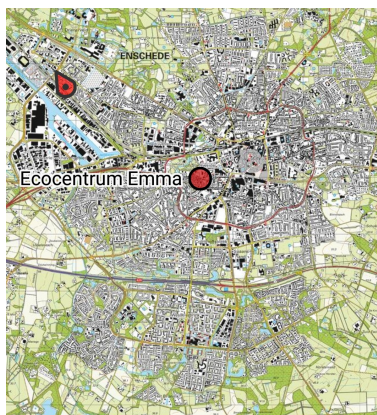


Figure 2: Location of Ecocentrum Emma in Enschede

During the project, because of the idea of Fresh 'n Friendly, a healthy breakfast delivery service (see Section 5), a collaboration was started with Ecocentrum Emma. They are located in the geographical centre of Enschede (see Figure 2). Part of this company's mission is the same as the mission this bachelor project: they want to empower/give the means to people for making the right food choices for healthy people and a healthy planet. To reach their mission, Ecocentrum Emma has an organic store, an organic catering service (including a professional kitchen), and an organic plant shop in one building. They are very supportive for solutions/start-ups like the healthy breakfast delivery service in this project. Therefore, collaboration with this company was a well headed step forward. More reasons to start collaborating were the facilities and the location: they

have a professional kitchen and they are located in the middle of Enschede, which is both ideal for a delivery service. The address details of Ecocentrum Emma are in Appendix A.1 Contact Details of Ecocentrum Emma.

## 1.6 Challenges

The problem is that it is difficult to make a sustainable change in someone's not-so-healthy lifestyle to a more healthy one. Nowadays there are many programs and interventions which intend to help with dietary choices. Examples are apps from the Dutch Nutrition Centre, "Eetmeter" (food intake meter)<sup>2</sup> and "Kies ik gezond?" (Do I choose healthy)<sup>3</sup> and common food lessons for children about healthy food choices (Voedingscentrum, n.d.), and a video about the Wheel of Five<sup>4</sup>. Unfortunately, the success they achieve is limited for students because they do not help overcome some challenges students have.

One important challenge that these apps all not do overcome is that students are not strongly inner-motivated to eat healthy. One important part of the Wheel of Five is the food group FV. Literature suggest that it is challenging for students to become inner motivated to eat FV because of their little health awareness (Hartman et al., 2013), lack of self-efficacy (Hartman et al., 2013), not motivated to put time and effort in (Hartman et al., 2013), but also because of a bad self-identity (Jung & Bice, 2019) and budget living (Hilger, Loerbroks & Diehl, 2017).

Inner motivation to improve dietary habits could be sparked by fun or convenience, and also by the improvement of self-identity in combination with an increase in health awareness. This project takes on the challenge by implementing Behaviour Change Techniques (BCTs) for the dietary improvement of students in their breakfasts.

Nowadays, Hello Fresh<sup>5</sup> (see more in section 2.5 State of the Art) is rapidly becoming a key instrument in improving dietary behaviour, because it empowers people to always cook fresh food with a lot of vegetables without being in need to put the effort and time into the groceries. However, this service is available from 3.70 euro per person per dinner, which is unfortunately outside of student's budget for self-cooked dinner.

Regarding students, one more challenge is to persuade students to consume raw FV. If also processed options are available, unprocessed foods are not chosen as frequently by students as processed and ultra-processed foods, mainly because of their taste as stated earlier (Bernardo et al., 2018; Larson et al., 2012). Unfortunately, Albuquerque et al. (2020) state that raw FV do contain more of these healthy compounds, because more processing (heating) cause them to become more nonfunctional (Prochaska, Nguyen, Donat & Piekutowski, 2000). Because students tend to choose more easily for processed foods, it is a challenge to invent a way to make raw FV more easily available to students compared to processed FV.

So the challenge of this project is to get the students inner-motivated by an intervention which empowers people, being innovative and targeting HBO/University students with the right BCTs.

As explained earlier, a side challenge of this project is that this solution should be not more environmentally damaging than if the solution would not exist.

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<sup>2</sup><https://mijn.voedingscentrum.nl/nl/eetmeter/>

<sup>3</sup><https://www.voedingscentrum.nl/nl/thema/apps-en-tools-voedingscentrum/kies-ik-gezond-.aspx>

<sup>4</sup><https://www.youtube.com/watch?v=yex64.w5jSY>

<sup>5</sup><https://www.hellofresh.nl/>



Figure 3: Some of the Fruits and Vegetables for Inflammatory Conditions (Figure 2 of Aggarwal et al. (2021))

## 1.7 Relevance

Let us now consider the relevance for society of this project. As discussed above, while FV are not adequately consumed by students (Bernardo et al., 2018; Larson et al., 2012; Yeh et al., 2010), Literature suggest that it would be good for their health to increase consumption of FV (Aggarwal et al., 2021; Albuquerque et al., 2020; Bursać Kovačević et al., 2020). Research has shown that FV contain anti-inflammatory agents, which prevent inflammatory conditions like arthritis, allergy, atherosclerosis and cancer (Aggarwal et al., 2021). In Figure 3, shows some examples of FV that contain anti-inflammatory agents. However, to have the benefits of these anti-inflammatory compounds, and other healthy compounds of FV, the foods should be as fresh as possible (Albuquerque et al., 2020). Additionally, apples (which are the fourth most consumed fruit worldwide) have been shown to have a beneficial effect on blood pressure, vascular function, lipid status, high blood sugar and inflammatory processes (Bursać Kovačević et al., 2020). Because of that, apples increase health immediately.

In summary, the relevance for society of this project is the fact that improving of dietary habits in terms of FV would decrease the illness burden for society on short- and long-term.

## 1.8 Research Questions

The Research Questions (RQs) are divided into a main RQ and RQs for each Chapter of the thesis, as described in the Preview at the end of this chapter.

### 1.8.1 Main RQ

Because the mission is to empower students to improve their dietary habits, especially in FV consumption and to improve on their breakfasts, the main question of this bachelor thesis is:

“To what extent can a chosen solution empower University/HBO students for a sustainable dietary improvement in their breakfasts?”

### 1.8.2 RQs Background Research

- What is the health empowerment theory and how can this theory help to solve the problem?
- What is the importance of breakfast (for students)?
- What are the guidelines for a healthy breakfast?
- What determines student’s breakfast choices?
- What Behaviour Change Techniques do fit these determinants found in the previous RQ?
- What is the state of the art of dietary/breakfast improvement interventions/services/applications?
- What can be learned from existing solutions?
- What are the requirements for the solution?

## 1.9 Preview

In this thesis, Section 2 Background Research describes all research conducted to come to the requirements for possible solutions. Followed by Section 3 Ideation, in which the requirements are used to come up with possible solutions to improve dietary habits of students in their breakfasts. After that, in section 4 Specification, the proposed solution(s) is/are specified to plan the realisation and evaluation phase. In Section 5 Realisation, the specified solution(s) is/are realised according to the specifications to evaluate the idea. Turning now to Section 6 Evaluation, which describes how this solution performed to reach the mission of the project. Subsequently, section 7 Conclusion, gives answer on the main RQ. Afterwards Section 8 Discussion discusses the outcomes of the conclusion. Finally, in Section 9 Future work gives the recommendations for future work based on the conclusions.

## 2 Background Research

In the background research, the research conducted build towards requirements for possible solutions. First, there is elaborated on the Health Empowerment Theory. Second, the importance of breakfast and a framework for a healthy breakfast are created. Third, using literature research and a questionnaire student's barriers and needs are discovered. Lastly, suitable solutions that are already on the market are discussed to get a feel of what works and what does not. This is all done to build towards the requirements for possible solutions, which the last part of this section is about.

### 2.1 Health Empowerment Theory

As explained in the introduction, it is clear that the Health Empowerment Theory could contribute to find a solution to the project problem. The fundamental principle of empowerment throughout all fields of studies is people that represent themselves (Joseph, 2020), so that is also the case in Health Empowerment Theory (ET). Besides, the overall effectiveness of the health empowerment theory is grounded in data found around the whole globe (Joseph, 2020). Health empowerment means to increase health by a combination of personal resources and social resources. A personal resource is for example the self-efficacy in food preparation. Social resources are the people or social services surrounding people to bring motivation and health care awareness. Empowerment in this case is a dynamic process in which one wants to change himself and the environment, recognising unhealthy patterns, as such that one is self-motivated to do so. The extent of health empowerment by the strength of the social and personal resources given to a person to show that one can actively choose and participate in his own health-related decisions. To summarize using an online dictionary, being empowered is being given the means, confidence, knowledge, or ability to do the desired thing or make decisions for oneself.

Turning now to application of this knowledge, the solution should give the means, knowledge or confidence to do the desired behaviour. However, according to two UT researchers who were interviewed (See Appendix B), there are several conditions for giving the means for people to do the desired behaviour. The empowerment should be convenient, not forceful, and it would be important to make clear to students what they gain from the proposed solution.

The health ET helps to measure the proposed solution's empowerment strength and to get an estimation in how helpful the proposed solution could be.

### 2.2 Importance of Breakfast (for Students)

As stated in the introduction, the consumption of breakfast before doing study/work is associated with an increase in cognitive performance (Hoyland et al., 2008). In this research on 32 participants from 18 to 22 years was found that breakfast gives less decline in cognitive performance and mood after breakfast compared to not eating breakfast. The Dutch Nutrition Centre underlines the positive impact of breakfast consumption, since they state that it brings new energy and stimulates digesting. Additionally, Mansouri et al. (2021) state that frequently consumption of breakfast reduces the chance to get primary headaches with 26%. For these reasons, it is in favour of students to consume breakfast.

### 2.3 Guidelines for a Healthy breakfast

As described in section Background, only 25% of the Dutch population does consume food all recommended food groups in the Wheel of Five (RIVM, 2016). The proportion of food groups





Figure 4: The Wheel of Five (2016)

illustrated by the Wheel of Five (see Figure 4 (Dutch Nutrition Centre, 2016)) is considered healthy by the Dutch Nutrition Centre. They state if one eats according to the Wheel of Five, one takes enough products that enhances health, and all nourishment to stay healthy throughout the day. The food groups in the wheel of five (See Figure 5 for the legend) are (1) lots of FV, (2) Especially WG products, such as whole-grain bread, whole-grain pasta and couscous, and brown rice, (3) soft bread spreads and vegetable oils (4) Sufficient dairy products such as milk, yogurt and cheese, and a handful of unsalted nuts, and meat and eggs, and (5) sufficient amount of fluid, such as tap water, tea and coffee. Before proceeding to examine what a healthy breakfast is, there is looked for dietary guidelines especially for breakfast. However, for dietary choices there are no specific guidelines found, but only advises. According to the Dutch Nutrition Centre, a healthy breakfast consist of choices inside the Wheel of Five and has a caloric value around 300 - 400 kilocalories. Additionally, Delly & Brunner (2019) advise to consider the breakfast as part of a balancing diet

The general recommendations regarding foods in the Wheel of Five are as follows:








-  Lots of fruit and vegetables
-  Especially whole grain products, such as whole-grain bread, whole-grain pasta and couscous, and brown rice
-  Less meat and more plant-based food. Vary the diet, switch between fish, pulses, nuts, eggs and vegetarian products
-  Sufficient dairy products such as milk, yogurt and cheese
-  A handful of unsalted nuts
-  Soft or liquid spreadable fats and cooking fats
-  Sufficient amounts of fluid, such as tap water, tea and coffee

Figure 5: Legend of the Wheel of Five (2016)

throughout all meals on a day or in a week. They state the reason that for giving not one or more specific breakfast recipes to people, is that people clearly have too many different food preferences and too much strong breakfast habits (Delley & Brunner, 2019). In an interview with an University of Twente (UT) researcher (See Appendix B) adds on this by saying that the energy intake depends on what people do on a day, and what is healthy depends on what is consumed in the remainder of the day.

As stated in the introduction to be the case for FV, the more fresh FV are, the more healthy they are. Fresher ingredients are higher in vitamins and other healthy components, like endogenous enzymes ((Prochaska et al., 2000; Albuquerque et al., 2020)). This is because they are destroyed in processing (heating). So, a healthy breakfast should contain of FV, which are as fresh as possible.

In addition, another type of dependent on health is the eating pace of the consumer, especially for processed foods. During an interview, an UT researchers (See Appendix B) argued that if people eat too fast, they will eat easily too much because the satisfaction is only felt after approximately twenty minutes. Eating too fast, too much food is mainly seen in processed food consumption, because recognition of satisfaction is less easy in that case compared to raw foods (for example a liter of grape juice is easier to drink than a liter of grapes would be to eat). This is a problem because too high energy intake is associated with the development of obesity (Swinburn et al., 2011). Because of that, stimulating people to take time for eating breakfast will be beneficial for health. However, this is mainly an issue for processed foods which are not planned to be promoted.

To conclude, a healthy breakfast is a breakfast that meets several criteria. First, it must contribute to a balancing diet throughout the day or week (according the proportions of food groups of the Wheel of Five). Second, it consists rather of fresh ingredients (especially for FV). Third, it must meet the personal energy needs, with an approximation of the Dutch Nutrition Centre of 300-400 kilo calories. And lastly it is a breakfast that is consumed at a moderate eating pace to ensure that people do not take in too much energy and possibly develop obesity.

## **2.4 Determinants Breakfast Choices of Students**

To come up with requirements for a solution to improve students' dietary habits, one logical step is to find out what the determinants are for students' breakfast choices or choices of healthy food. This is done because this is needed to find a fitting solution for students. First, the determinants found in literature are described. However, previous work typically only investigated the determinants of FV consumption, which is an important part of the whole image needed. Because of this investigation gap and because the fact that present and local research could be very valuable, there is a questionnaire send out to focus more on why students make certain breakfast choices.

### **2.4.1 Literature**

As stated in the introduction, a major group of university students does not have sufficient FV intake (Larson et al., 2012; Yeh et al., 2010). In addition, Yeh et al. (2010) state that the transition from high school to university is associated with a decrease in diet quality. Experts of the UT (See Appendix B) add to this by stating that students that just moved to the dorm are likely to have low diet quality because they are likely to do everything that their parents forbid them to do before, like for many not eating FV. They add that the lack of priority and peer pressure (for example to eat what others prepare for them) are important factors of which food is consumed in general.

Turning now to the determinants for FV consumption in literature. Before writing, the distinction is made between determinants that are directly modifiable and less directly modifiable by technology. This way, it is visible what determinants to focus on in this project.

First, the by technology directly modifiable determinants for low FV consumption found are explained. The two the most important determinants would be habit strength (Stroebele-Benschop et al., 2018; Hartman et al., 2013) and lack of time (Hartman et al., 2013; Hilger et al., 2017). Additionally, the availability of healthy foods in the campus canteen is also mentioned (Hilger et al., 2017). Other determinants found are little health awareness (Hartman et al., 2013), little self efficacy (Hartman et al., 2013), and bad self-identity (Jung & Bice, 2019). Habit strength has been found a significant determinant, which would require a solution that forms a habit. Yet this is another reason to search for a solution that improves dietary habits for a longer time (sustainable). Because of this, the solution is required to be evaluated on the potential of habit formation. Students have a lack of time because of studying. After a busy day, and becoming tired, they tend to make a quick meal without vegetables (Hartman et al., 2013). The availability of healthy foods in the canteens was also mentioned by Stroebele et al. (2018). So when students want to eat healthily but the food is not available for them easily, it is obvious that they do not easily eat healthily. Another, also important but less found in literature is health awareness. Health awareness is defined as the level of knowledge to distinguish whether a product is healthy or not. If students know that they consume unhealthy food while knowing more healthy and palatable alternatives for these foods, they are more likely to increase their dietary quality. Furthermore, low self-efficacy is not unimportant to incorporate into the project. This is the feeling of being competent to do a certain task. In this case, it is about being competent in cooking or preparing. If students know how to cook certain vegetables, they are more likely to cook them. In addition, self-identity for students is that that they see themselves drink and eat pizza all the time (author's experience and also found in Appendix B). Self-identity is about the way an individual sees himself, closely related to self-esteem and self-image. If an individual sees himself as valuable, he is more likely to eat healthily. However, as pointed out above, the average student does not see himself as valuable enough to eat healthily and is generally more into pizza. These determinants are potentially modifiable by technology or a proposed solution. One example is that Virtual Reality has the potential to change the viewpoints of people (for example the body image of eating disorder patients (De Carvalho, De Santana Dias, Duchesne, Nardi & Appolinario, 2017; Irvine et al., 2020)). To summarize, people first need to know the (direct) consequences of their food choices, and second, they need to find themselves worthy enough (high enough self-identity) to eat healthy - and to find the priority and time for that. In other words, they need to recognize that the body functions better - for this self-esteem is needed - if you put the right nutrition into it and consequently start to build the new desired habits. Maybe they should see themselves just like a car. It functions better with the right fuel put into it.

Second, the less directly modifiable determinants for the low consumption of FV found are explained. These include the perceived high prices of FV (Hilger et al., 2017) and taste (Larson et al., 2012; Stewart & Tinsley, 1995). University students tend to perceive FV or other healthy food to be more expensive as processed, less healthy choices. Therefore, they tend to buy less FV as well. Students' taste is also a determinant for buying unhealthy foods: in general students like the taste of fats, salt, and sugar. Because of that students make more unhealthy food choices like crisps and sweets (Larson et al., 2012; Stewart & Tinsley, 1995). Besides, UT researchers (See Appendix B) state that if students try something new, little steps are doable. They also point out that Eetwissel is, therefore, a good initiative (See Section 2.5.7 Eetwissel). As stated above, these determinants are less modifiable by technology because they are more personal. For clarity, the author thought about adjusting the perceived prices by researching and presenting the reasons behind the prices. However, this is not easy, since healthy meals are at present (if looked at the price per kilocalorie) more expensive than unhealthy meals (Rao, Afshin, Singh & Mozaffarian, 2013). Additionally, the author sees the potential to change the taste of breakfasts with FV to more palatable for students,

by just letting them try new ones. Leading from these determinants on the consumption of FV, it can be explained why the diet of students is low in FV. The solution in this project should aim to overcome one or more of these hurdles. However, because the project also aims to improve dietary habits in breakfasts, a questionnaire about breakfast habits is made.

## 2.4.2 Questionnaire on Breakfast Choices

Turning now to the experimental evidence about the determinants of students to eat healthy. For this project, the reasoning behind breakfast choices and the actual breakfast habits amongst students are also important. Leading from the fact that breakfast was a topic with limited attention in found literature, a questionnaire about breakfast habits is sent out.

**2.4.2.1 Method** A short questionnaire (See Appendix C for the questionnaire including information brochure and consent form) was sent made with Google forms. The condition to fill the questionnaire in was made clear first: it was only for students. Several questions were included to get insight in the breakfast habits and the possible desired breakfast changes of students. First, there was asked how often they ate breakfast. If a student would not eat breakfast, the second section would be skipped for that person. The second section contained three questions: (1) there was asked what they did just before breakfast and (2) what products they had for breakfast, and (3) why they had that for breakfast. The following question was why they did or did not eat breakfast, and subsequently they were asked if they wanted to change their breakfast and why they would like to change that. The last question was about the demographics, asking about their home situation to know whether the results are more applicable for students living in the dorms or students living at their parents house. The questionnaire was sent out to both university and HBO students on April 8, 2021.

**2.4.2.2 Results** On April 10, 55 students responded. All graphs and code used for the creation of the pie chart are in Appendix C.2.

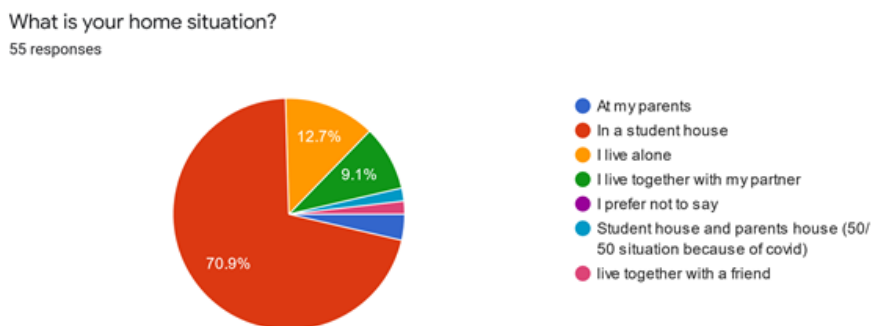


Figure 6: The home situations of the respondents

**2.4.2.3 Home Situation** 70.9% of the respondents lived in a student house, 12.7% lived alone, and 9.1 % was living with their partners. Remaining 7.3% lived at their parents, with a friend or lived in a student house and in parents' house alternately. See Figure 6.

1. How often do you eat breakfast?  
55 responses

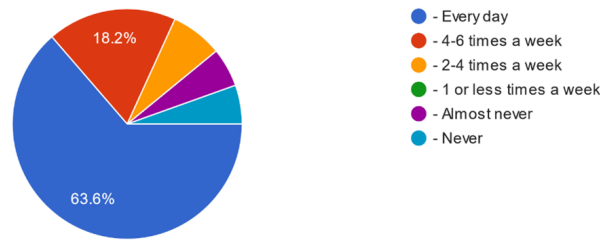


Figure 7: the Breakfast regularity of students

**2.4.2.4 Breakfast Regularity** Of the 55 respondents only three did never eat breakfast, while another three respondents seldom and 63.6 % of them did eat breakfast everyday (See Figure 7. The remaining students ate breakfast between 2 and 6 times a week. One of the respondents that never ate breakfast did prefer to eat a later breakfast every day and that was perceived as healthy. The breakfast regularity of students are more adequate than expected (compared to the 3 out of 10 students that did never eat breakfast), however, this could also be because the questionnaire was sent non-randomly to students, but specific student groups.

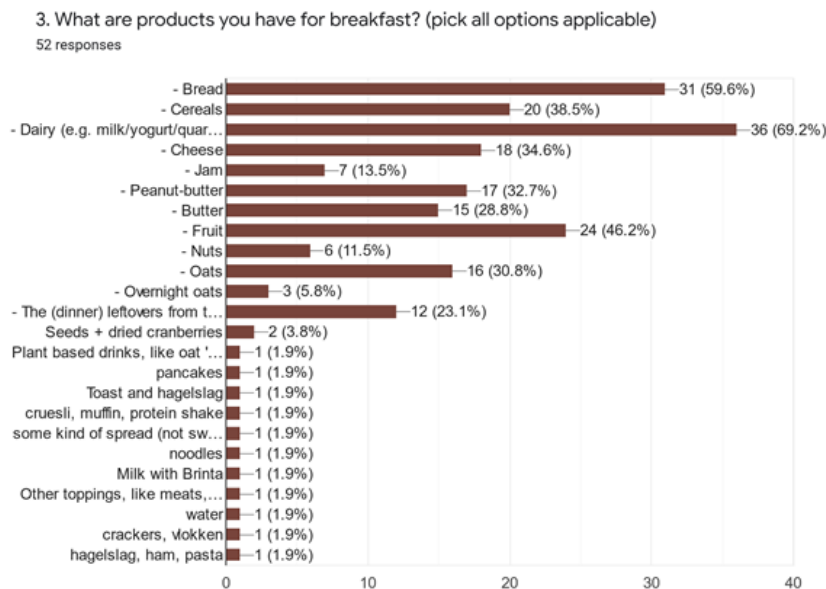


Figure 8: Breakfast choices

**2.4.2.5 Breakfast Choices** Most of the students did choose for dairy products (e.g. milk and yogurt) (72.3%), bread (55.3%), and cereals (38.3%) (see Figure 8). Also 44.7% of them eat regularly fruit for breakfast and 34% oatmeal. Nuts were consumed by 12.8% of the respondents.

10% did eat their dinner leftovers of last night. These (rather small) percentages of dairy, fruit, oatmeal and nuts show some intake of healthy food groups according to the Wheel of Five.

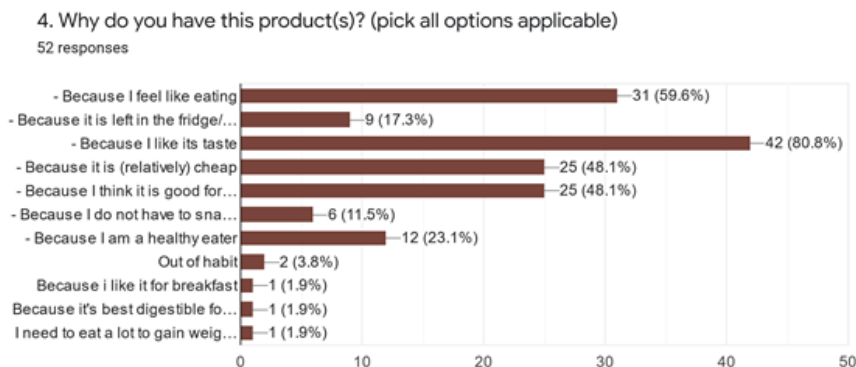


Figure 9: Reasons for choosing foods for breakfast

**2.4.2.6 Determinants of Breakfast Choices** [h!] Most people choose their breakfast ingredients because of the taste and most people do not eat breakfast when they have a lack of time (See Figure 9. 38 out of 55 responses choose their breakfast ingredients because they liked the taste and, of course overlapping, 28 because they felt like eating. Additionally, 23 respondents checked the box of “Because it is relatively cheap”. Another 23, which could be among the same people, checked the box of “I think it is good for my health”. Six respondents also ticked the box for “Because I do not have to snack for the remainder of the morning”. To sum up the most important reasons for not having breakfast, most people were not having breakfast because a lack of time (58.8%) and because they did not feel like eating (47.1%) (See Figure 10.

**2.4.2.7 Activities before having breakfast** One question asked what activity most people are doing just before breakfast (i.e. when they can be reminded of desired breakfast habits). They could fill out all options applicable, so students choose more than 1 option. The results (See Figure 11 say that 94.2% were getting out of bed before eating breakfast. This is because most students sleep at night and they filled in everything they did in the morning – not having read the word “just”. The other 5%, which could be expected, did read that *just* before breakfast was meant, so that they only filled in 1 thing instead of all activities they did before breakfast. As a result of not understanding the *just* before breakfast statements 94.2% of the 52 responses on this question also filled in that they got out of bed with another activity. One in four did talk to their housemates (25%) and 19.2% did brush their teeth. Other things were personal care related activities, activities related to the dishes of last night, listening to music, and being on the phone. Most people can be reminded for breakfast just after coming out of bed, or either when talking to their housemates or when brushing their teeth.

**2.4.2.8 Do students want to change?** There was asked if the respondents were willing to change their breakfast habits. The results are shown in the pie chart in Figure . Just above half of them said no to a change in breakfast. Some of them gave the reason that they found it acceptable what they had for breakfast. Although it was asked, unfortunately others did not give a reason. Around 40% of them wanted to change to more healthy considered breakfast habits: more varied,

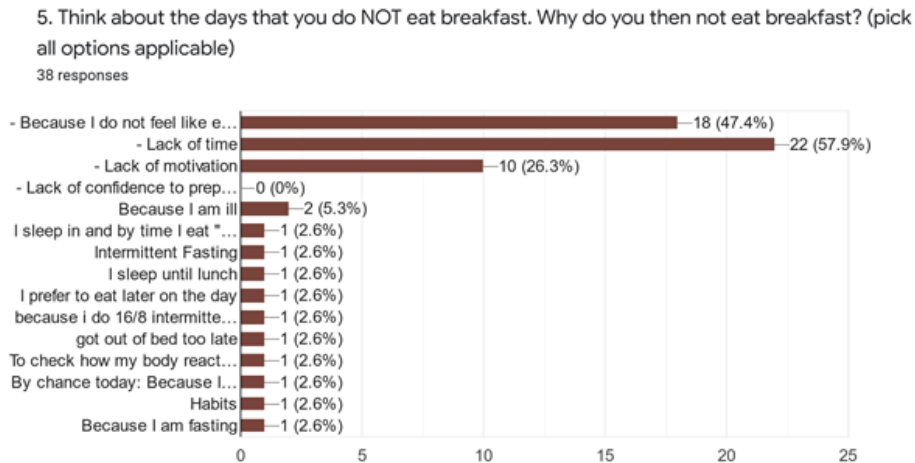


Figure 10: Reasons for not having breakfast

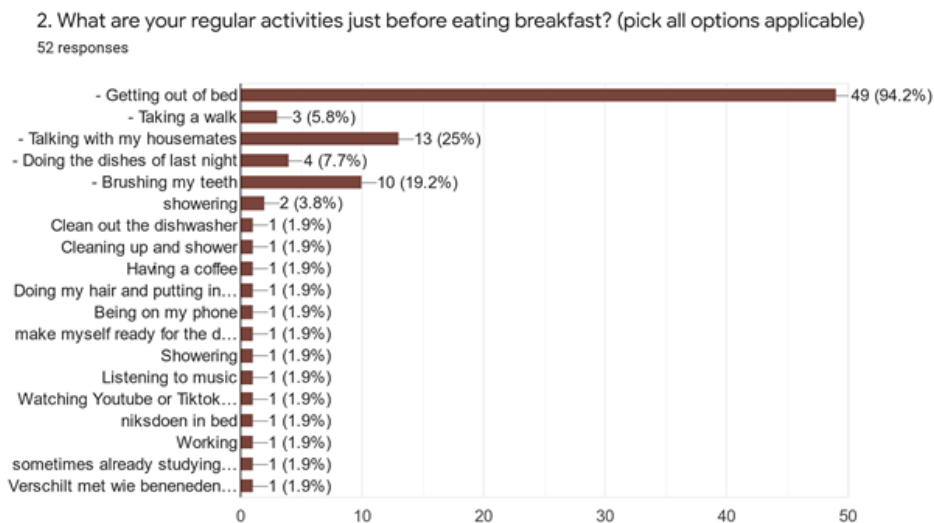


Figure 11: The activities before having breakfast of students

less sugar and less fats, improved breakfast pattern, more berries and lastly, taking more time for breakfast. For having more berries it was mentioned that the price was a barrier. Also for other considered more healthy ingredients price was mentioned as a barrier. In addition, one individual mentioned that he/she did not know enough alternatives to eat varied more often. In conclusion, there is a desired change amongst students, however there are different kinds of desired changes.

**2.4.2.9 Summary** The results of this questionnaire are rather a suggestion than evidence, since the questionnaire was spread non-randomly. The results of this short questionnaire suggest that most students eat breakfast regularly. Additionally, they suggest that students eat rather

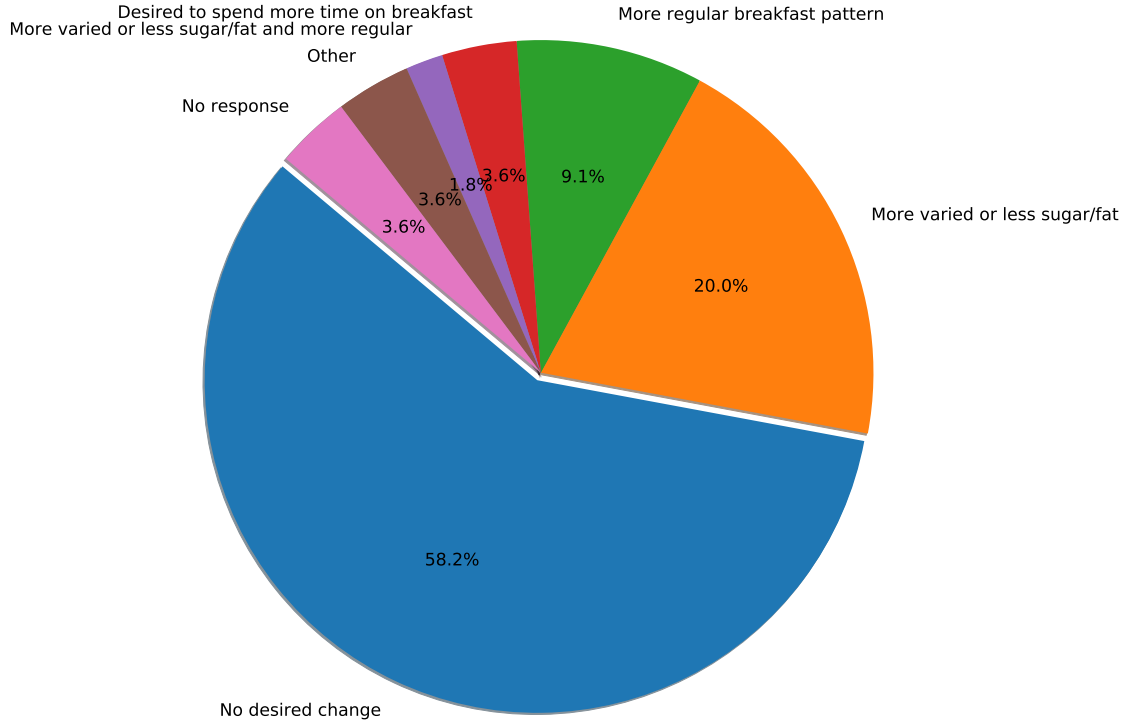


Figure 12: The desired change in breakfast habits

non-healthy breakfasts compared to a healthy one.

The results of the questionnaire for the determinants of choosing healthy food groups were in general in line with the results from the literature and the discussions with the UT researchers. The outcome of the questionnaire suggested that the determinants were appetite, taste, and perceived high prices.

Fortunately but unexpected, also 23 out 55 respondents said that they choose their breakfast because it was good for their health. Additionally, fruits and oatmeal (a WG) are consumed regularly by some students. However, most students do not incorporate this regularly. Furthermore, the worst decision, not eating breakfast was mostly made because of lack of time or appetite.

The moments the students could be reminded of breakfast are (1) when coming out of bed, (2) when brushing their teeth, and (3) when they talk to their housemates. Students who desired a change desired (1) to eat a more varied breakfast, (2) to know more healthy alternatives/ingredient, and (3) having breakfast more regularly. In all, almost half of the people has the desire to change towards, but in different ways, more healthy breakfast habits.

### 2.4.3 Conclusion

The general breakfast needs of students points towards a breakfast of which they would like the taste (not too far away from what they eat currently), and which costs minimal money-, effort- and time-investment. However, when the three determinants health awareness, self-efficacy and self-identity (that students find themselves worthy enough) could be improved somehow, the money-, effort- and time-investment could become less of an issue. In addition, mostly a more varied breakfast is desired. And the author considers that because variety is the spice of life, eating a more varied breakfast will result in (besides obviously the knowledge of more alternatives) having breakfast more regularly.



#### 2.4.4 Discussion

Very little was found in the literature on the question of what determines the breakfast choices of students. Instead, coming from literature determinants for students regarding FV are used. This indicates what makes a (healthy or unhealthy) breakfast choice for students. Using a questionnaire information about breakfast habits is collected. One limitation is that the questionnaire was spread non-randomly. Another limitation of the results is that they are not applicable on all students. Since it is not known what age, study or why they filled in the questionnaire, the results of the questionnaire are less applicable on this project compared to what it should be.

### 2.5 State of the Art

This section is about the state of the art of this project, or in other words the current arts, technologies or interventions that attempt improving sustainable dietary behaviour. To begin with, the state of the art of this project should attempt to improve dietary behaviour (for breakfasts, throughout your whole day and for dinner). So it is focused on arts like services, games, apps, dietitians and courses that to a certain extent empower people to eat more healthful. The criteria on which the arts are commented on are the following:

- How empowering they are; do they look at people as a whole? Does the art intend to empower using personal resources (self-efficacy)? Or/and does the art intend to empower using social resources (community, health care for friends, competition). Is it empowering students to improve dietary behaviour?
- How much they cost in terms of money, effort and time, because students need low costs of that.
- How much they increase health awareness, self-efficacy and/or self-identity.
- To what extent the arts focus on giving inner-motivation; to what extent is the interest sparked by students?

#### 2.5.1 Hello Fresh

Hello Fresh<sup>6</sup> empowers people to save time by delivering meal boxes with fresh ingredients along with a recipe to create a tasty meal from them (see Figure 13 ). However, students do cook for a cheaper price, more in the range of 1.50 euro up to 3.50 euro per person (the price comes from the experience of the author). This is less than 3.70 euro, which is the starting price of Hello Fresh. Cooking for others is cheaper and is also low in effort and time because other days others cook for you. But for people who do not know what to cook it could increase self-efficacy, because of the cooking directions delivered along. Although it could be used for student houses, it is most of the time unknown beforehand how many people eat at a certain evening. Since it is needed to know beforehand how many people do eat along for a Hello Fresh order, it lacks the flexibility needed for students. The website promotes the healthy food with good looking photos of healthy ingredients, which is good looking, but not fun or sparking interest. Additionally, it points out how the service helps people; so it is clear what people gain from using it. So strong points are that it could increase self-efficacy while being a supporter of student's hurdles like effort and time. However, weaker points are the high price and lack of flexibility.

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<sup>6</sup>[www.hellofresh.nl](http://www.hellofresh.nl)



Figure 13: Hello Fresh meal box

### 2.5.2 Debs Food For Souls

Debsfood4soul.nl<sup>7</sup> is a take away of vegetarian meals and offers a course (costs: 995 Euro) in which you can learn how to cook vegetarian recipes (see the website in Figure 14). These recipes are also as much as possible organic and from local produce, because this company works together with Ecocentrum Emma which sells the organic and local produce in their shop to debsfood4soul. These foods would be good to try for students to increase health awareness, but they are currently 8.50 per meal and will become more expensive. The motto of this starting business in Enschede is “From cooking because you have to, to cooking because it nurtures you”. Debby, the owner, says that this nurturing healthy foods can also be very tasteful and not so hard to make. Next to the courses she also offers a 3-day video training to give you a start in cooking vegetarian nutritious meals. Strong points are that this company offers a course to increase self-efficacy and also a take-away of tasty, and healthy meals, which decreases effort and time - however time investment depends on how far the students live from the location (Robsonstraat 10, 7513 DA, Enschede). Another strong point is that this company tries to increase inner-motivation by the motto (do it because it nurtures you, not because you have to). Weaker points are that the price (8.50) or for the cooking course (995.00) might be too high for students for the fact that it is both in general new to try out.

### 2.5.3 Dietitians

To begin with, there are professional dietitians or family doctors available for advise. For employees of the U, Marike ten Oever<sup>8</sup> can give you nutritional advise. This is based on a weight analysis, lifestyle and eating patterns, and previous and current eating habits. In addition, the advise is based on a measure of blood pressure and body fat percentage. Besides, she also provides more information about nutrients, vitamins, and minerals. Nutritionists are empowering, because they try to look at the personal situations, and give credible resources – in this case advise and information - that increase ability to improve. Unfortunately, they do focus on a persons behaviour

<sup>7</sup>[www.debsfood4soul.nl/](http://www.debsfood4soul.nl/)

<sup>8</sup>[www.dietist-tenoever.nl/](http://www.dietist-tenoever.nl/)



Figure 14: The Website of "Debs food for Souls"

and not on fun or inner motivations. However, if students would go there, the health awareness of food would increase because of the credible sources. Despite that, another barrier is that it would cost probably too much money and effort to go to a nutritionist. Second, there are online dietitians. For example, [Jouwfoodplan.nl](http://Jouwfoodplan.nl)<sup>9</sup>, See Figure ???. In terms of effort and time an online dietitian would be more easily approachable for students. Jouwfoodplan bases their advises not on measures, but the individual goals of people. The individual goals of people are not proven to be advisable, and therefore it could be easily not increasing well-being. This makes the advise given less holistic compared to the practices of professional dietitians. So, strong points of professional dietitians are that they build personal resources to empower people and give credible advise. However, weak points are that students do not easily approach these nutritionists because of time and money constraints - and in addition because it is not made attractive or fun to go there. While the online dietitians are more approachable, they may have bad advise. In all, professional dietitians could be credible sources for raising the health awareness, however because of the investments of effort and time, and the low fun factor, students tend not to go there. There are many more online food coaches available, but they all approximately have the same lack for students: high investments in effort and time and a low fun factor.

#### 2.5.4 Cooking Simulator and Comparable Applications

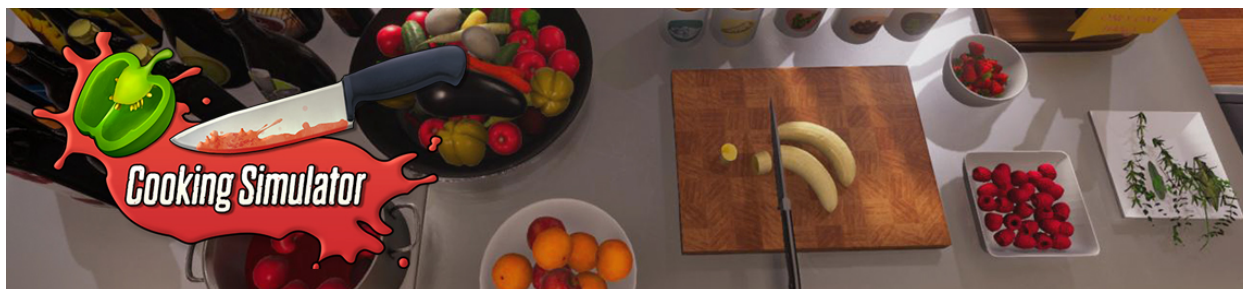


Figure 15: Cooking Simulator

<sup>9</sup>[www.jouwfoodplan.nl](http://www.jouwfoodplan.nl)

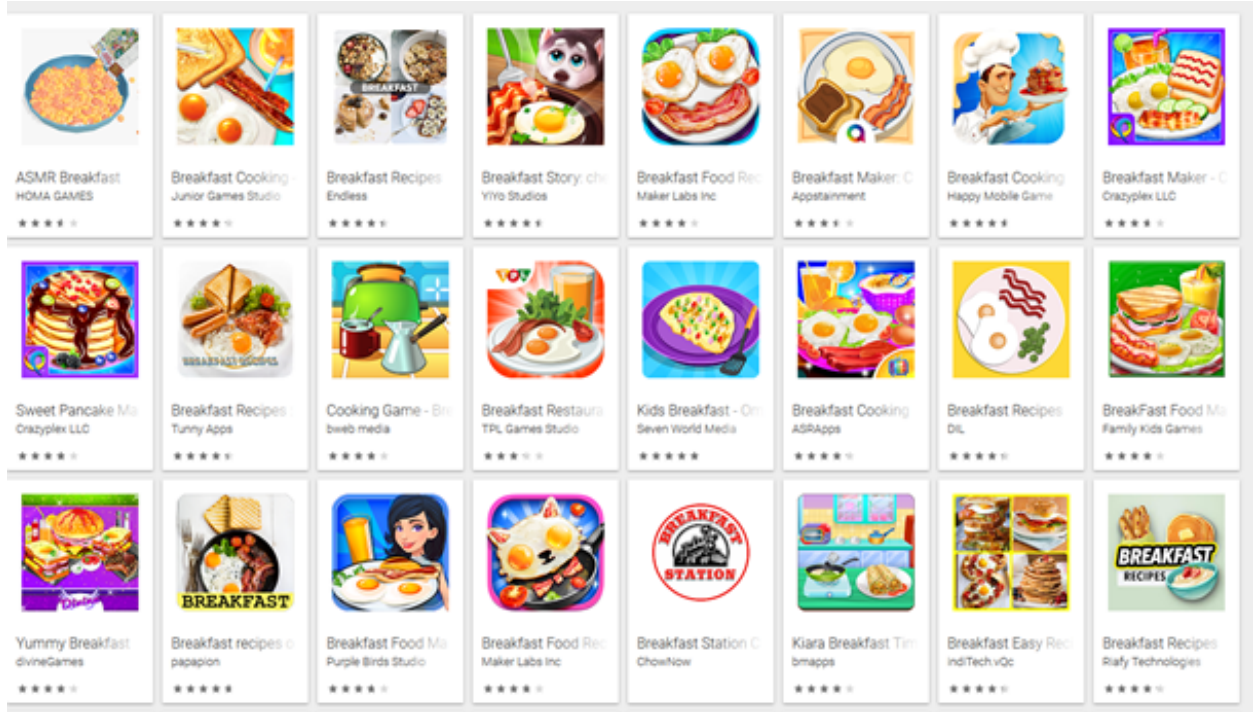


Figure 16: Apps similar to cooking simulator but which focus on breakfast: Breakfast Creator apps

Cooking simulator<sup>10</sup> (see Figure 15, and comparable apps (See Figure 16 are built to make people realize the fun and pleasure of cooking or preparing breakfast. The price of Cooking Simulator is 16.79 euro, which is not expensive in comparison to a cooking course. However, the apps are of course less expensive. Although it is a time-investment to play, playing is also a fun experience. Therefore, inner-motivation is raised to keep cooking and learning skills in the games. Another fun factor is that people can not create a mess in a game. However, because of that, it is not reflecting real life completely and therefore people might not be able to easily implement the skills learned in real-life. Cooking Simulator will become available in VR soon, which gives the game a more hands-on approach. That could increase the reflection of real-life, and therefore the ability to implement the learned skills in real life. Because of this lack of realism, it is questionable if people become empowered in real-life. Besides, the game does not focus on a dietary improvement in terms of WG, FV, or other healthy food groups, so it does not certainly empower for a dietary improvement. A strong point of cooking simulator is the fun way to learn cooking skills. More importantly, a weak point is that people playing this game are not certainly empowered for a dietary improvement in real-life.

### 2.5.5 Smart Cutlery

HapiFork<sup>11</sup> (Motto: Eat slowly, lose weight, feel great!) is a connected smart fork which helps people adopting healthful eating habits by reducing or help people to keep the right eating pace. Real time haptic (vibrations) are given when the user eats too fast, and speed statistics are kept in a connected application. The website promises even that it improves eating timing, but it is not clear how exactly this is done. The (by Bluetooth) connected application makes it a connected smart

<sup>10</sup>[www.store.steampowered.com/app/641320/Cooking\\_Simulator/](http://www.store.steampowered.com/app/641320/Cooking_Simulator/)

<sup>11</sup>[www.hapilabs.com/product/hapifork](http://www.hapilabs.com/product/hapifork)





Figure 17: Slow Control Smart Fork

fork, meaning that others can see how a person is doing in terms of eating pace. Besides, the app even offers a eating habits coaching program. In terms of money, this smart fork is an investment compared to a normal fork. However, it is currently (13/07/2021) unavailable. One other smart fork is available for 39.99<sup>12</sup>, The Slow Control Smart Fork Discovery pack, see a promoting image in Figure 17, which is very expensive for a fork that could help for eating pace. The fork focuses more on eating pace, which is an aspect of healthy eating, but not a dietary improvement. In terms of fun, smart forks in general do not have a fun factor, because there is not more than haptic feedback involved, which could be disturbing for the conversation when people eat with others. A strong point of this fork is the motivation that comes if it is used with more people. Despite that, a weak point is that as far as the website tells, still everyone in your surrounding also would need to buy one of these to participate and motivate each other. Other weak point is that it is a higher money investment compared to a normal fork and that it is not convenient to use when eating with others. And smart forks are not focusing on dietary improvement, but on eating pace, which could be promoted by the solution to be proposed, but is not the main goal of the solution.

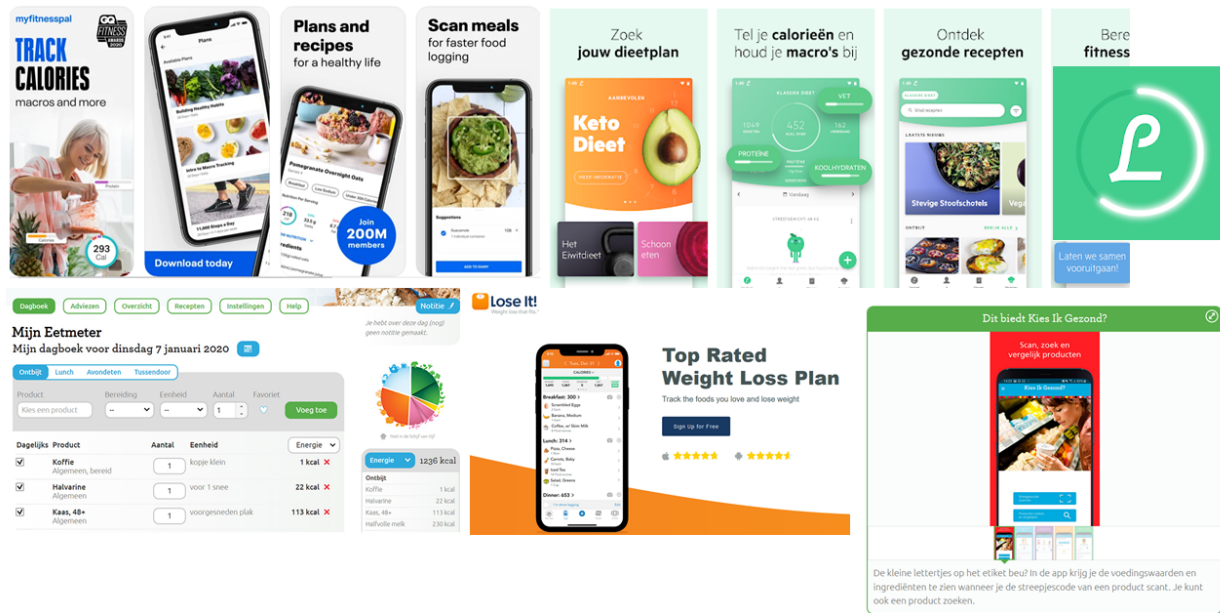


Figure 18: Left up: myfitnesspal, right up: Lifesum Dieetplanner, left down: Eetmeter, middle: LoseIt!, right down: Kies ik gezond?

## 2.5.6 Mobile Applications

Many mobile applications on the market attempt for improving peoples' diets. Examples are MyFitnessPall<sup>13</sup>, Eetmeter<sup>14</sup>, Kies ik gezond?<sup>15</sup>, Lifesum Dieetplanner<sup>16</sup>, and LoseIt!<sup>17</sup>. See all apps in Figure 18. They all have their specific goal, like myfitnesspall to track what you eat, and kies ik gezond? to make it easier to determine healthier choices. These apps could work for students in terms of money, but the time and effort would be high, which makes them weak for empowering students. Besides, the apps do not contain any fun factor, which does not help to inner-motivate people. When students would be interested in the components or health of their diet, these apps could be helpful. But, as stated earlier in section 2.4 Determinants Breakfast Choices of Students, in general students are not so interested in their health, so these apps are not empowering students for a dietary improvement.

## 2.5.7 Eetwissel

Eetwissel<sup>18</sup> is a recent initiative of the Dutch Nutrition Centre (2019) (See Figure 19) It helps to make small changes in taste, effort and sustainability to improve dietary habits. This is a strong initiative that helps by incorporating small steps. UT researchers (See Appendix B) also point out

<sup>12</sup>[www.slowcontrol.com/en-us](http://www.slowcontrol.com/en-us)

<sup>13</sup>[www.myfitnesspal.com/](http://www.myfitnesspal.com/)

<sup>14</sup><https://mijn.voedingscentrum.nl/nl/eetmeter/>

<sup>15</sup>[www.voedingscentrum.nl/nl/thema/apps-en-tools-voedingscentrum/kies-ik-gezond-.aspx](http://www.voedingscentrum.nl/nl/thema/apps-en-tools-voedingscentrum/kies-ik-gezond-.aspx)

<sup>16</sup>[www.lifesum.com/nl/](http://www.lifesum.com/nl/)

<sup>17</sup>[www.loseit.com/](http://www.loseit.com/)

<sup>18</sup>[www.voedingscentrum.nl/nl/thema/eetwissel.aspx](http://www.voedingscentrum.nl/nl/thema/eetwissel.aspx)

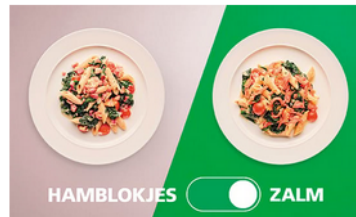
## Eetwissel jouw favoriete recept

Maak jouw favoriete recept gezonder en duurzamer met een Eetwissel! Bekijk hier onze voorbeeldrecepten. Met het **Geheugensteuntje** ontdek je welke Eetwissels je nog meer kunt maken.



### Bloemkoolcurry

Eetwissel het vlees in dit recept eens voor kikkererwten. Of kies in plaats van witte rijst voor zilvertviesrijst.



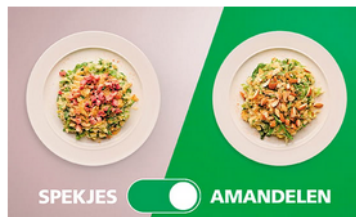
### Penne met romige spinazie

Vervang de hamblokjes door duurzame zalm. Of probeer een keer light zuivelspread in plaats van room.



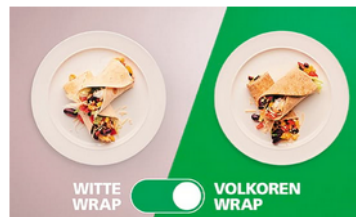
### Spaghetti bolognese

Eetwissels hier zijn: van kant-en-klare naar verse tomatensaus, van 48+ naar 30+ kaas, of van witte naar volkoren spaghetti.



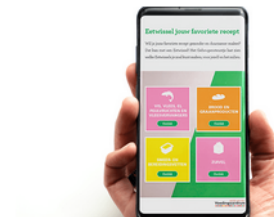
### Stampapot andijvie

Vervang spekjes in de stampot eens door noten, zoals amandelen.



### Wrap met kidneybonen

Ga eens voor volkoren wraps in plaats van witte. Of vul de wraps



### Geheugensteuntje

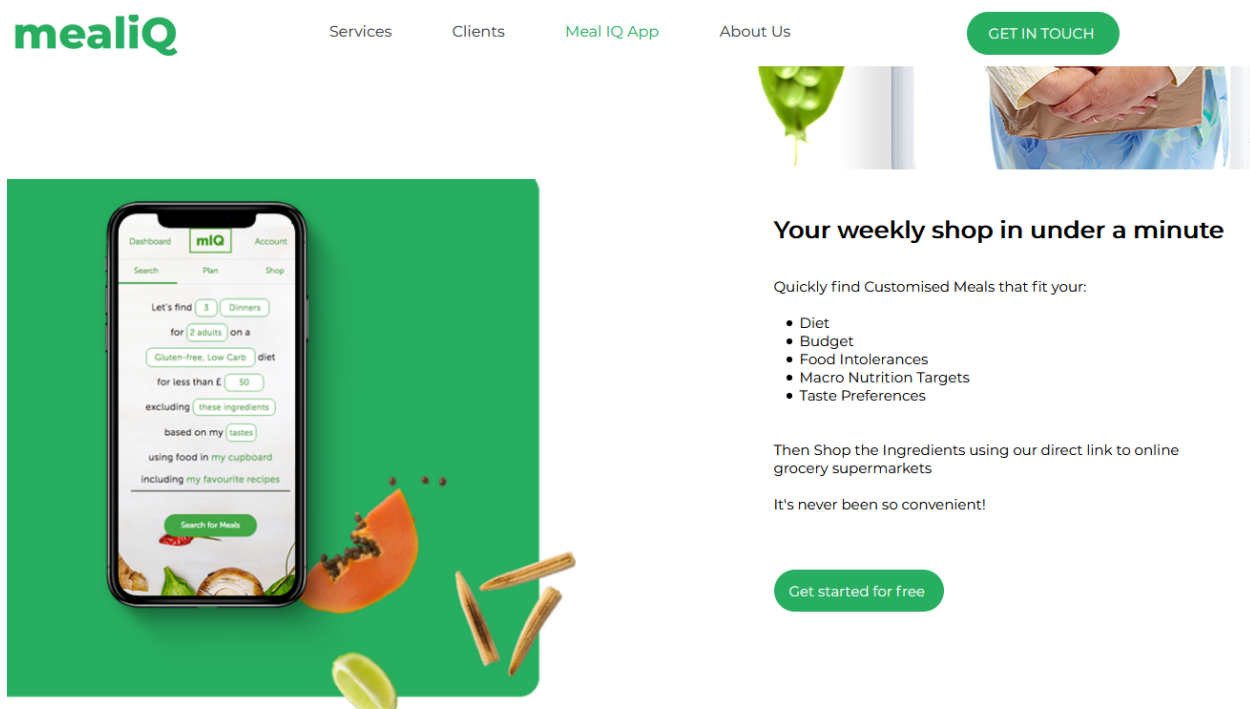
Welke Eetwissels kun je maken in een recept? Bekijk de voorbeelden

Figure 19: Eetwissel

that small changes of taste are doable for students compared to big steps. This way, this information could be very empowering for students. However, they must find the website and therefore only students with a specific interest in healthy eating will find this. Furthermore, the website does not incorporate fun, which is a weak point of this initiative. However, it costs no money, in terms of usefulness it is questionable, because not everyone has the ingredients at home when they look at it, and no options for planning are incorporated. Planning for the inspired change is to be done by students themselves, which is an extra effort. In all, it is a good initiative and it could be empowering, but it lacks fun and planning possibilities.

### 2.5.8 Meal IQ

A growing company is Meal IQ (See Figure 20, which makes it easy to get meals for all circumstances; it can incorporate all kinds of diets and choose the perfect meals for the customer. After that, it seems that shopping is included, but how is not clear on the website to me. Their mission is: “Our mission is to make it easy for everyone in the world to eat healthily.” For students, this app could be useful as well, however it is not clear if it is free yet. Besides, this app should empower



## Meal IQ makes planning and shopping painless

Figure 20: Meal IQ

for dietary improvement, but if people do not want to eat healthy, they maybe could also order less healthy meals on this platform. They should be more clear about how to use their app to write a better discussion. Strong points are that it empowers for doing healthy groceries easily, and planning meals for all circumstances. Weaker point is their clarity, how does it work exactly (how much money, time and effort does it cost) and if for example the app is free of charge.

### 2.5.9 Conclusion

The state of the art has shown what is already on the market and pointed out the current market gaps. Hello Fresh is a good example of empowering for dietary improvement using a service (lowers time-and effort-investment), but lacks a fun factor, flexibility and is relatively expensive for students. Courses for cooking with Fruits and Vegetables are considered too expensive for students, and dietitians are too much effort to go to (might also be too expensive but no data for that has been found, in any case it is not free). Games have a fun factor, but it is questionable if the skills learned in these games are representative for real-life situations. In addition, there are a lot of apps on the market, which are low in empowerment due to no or little fun factor, while effort is needed to be put in to use them. The smart forks are inconvenient for eating together, and do more focus on eating pace instead of dietary improvement and do also miss a fun factor. Eetwissel is a good initiative, but it lacks planning possibilities and also a fun factor. And lastly, Meal IQ, which could be an empowering app by including dinner choices and shopping, but could be more clear what costs are in terms of money, time and effort. In all, in what is on the market, a serious attempt is done for dietary improvement, but a fun and sparking factor is missing, and most of it is too expensive, and



too much time, effort - consuming for students compared to old habits. While games include this fun factor, it is often not focused on a dietary improvement. So the existing arts mostly lack a fun factor while making a dietary improvement.

## 2.6 Requirements

Having defined what is needed for students to improve dietary habits, the following requirements for a solution are listed.

- The first and most important requirement is that the solution should empower students for a long-term (sustainable) dietary improvement, meaning that (1) it gives the personal or social resources to get self-motivation to improve dietary habits, or (2) that it gives the personal or social resources to participate in own health-related decisions.
- The solution should not be inconvenient or forceful in any way.
- The solution should be motivating to improve dietary habits, for example by including a fun factor.
- The intervention should empower students to eat breakfasts that contribute to a healthy diet, meaning a breakfast which consist of ingredients from the wheel of five and that the breakfast meets their energy needs together with the foods they eat throughout the week or day - or to start with the guidelines of the Dutch Nutrition Centre: around 300-400 kilocalories of energy value.
- The intervention should have a positive impact on one or more of the following determinants found in literature and the questionnaire to increase the habit strength of a healthy diet: (1) decrease money investment needed for healthy dietary choices (2) decrease time investment or effort for preparing breakfast, (3) increase self-efficacy in preparing (e.g. to improve the taste and time investment), or (4) increase health awareness, or (5) enlarging the availability of healthy foods close to students;
- The solution should empower students to eat more varied breakfasts throughout the week.
- The solution should include little steps of improvement to keep the taste changes appreciated by students.

## 3 Ideation

In this chapter the Ideation phase of the thesis is described. In the ideation the requirements at the end of the Background Research are used to come up with (a) fitting solution(s). For clarity, in the start of this phase there was no collaboration yet with Ecocentrum Emma. Only later, as the idea was more shaped, the fitting solution of a healthy breakfast delivery service was only feasible when a collaboration was started with Ecocentrum Emma or another professional kitchen.

### 3.1 Methods

In Brainstorm Session 1, online brainstorming together with one student is done using Miro to put the ideas on post-its. In Brainstorm Session 2, a brainstorm session with three other students using four student types. After that a description is made of the two best ideas coming from this brainstorm sessions. Behaviour Change Techniques (BCTs) are used to come up with possible features to add to improve the proposed solution. The BCTs used are from Michie (2013) and put in a table with descriptions from this hierarchy of Michie and how they are applied in the project in Appendix D. Consequently, the MoSCoW method is used to determine the most suitable idea. The requirements are split into must haves, should haves, could haves and won't haves and listed in a table. After that, the ideas were assessed on how much of these criteria they met. Afterwards, specific state of the art for the idea is searched for and listed to make sure the idea has added value. To finish the assessment, the feasibility in terms of investment and location of the proposed ideas is discussed. Finally, there is decided which idea is going to be specified, realised and evaluated.

### 3.2 Brainstorm Session 1

In brainstorm session 1 was brainstormed together with one other Creative Technology student using questions coming from the requirements of chapter 2. The questions used in this brainstorm session were:

- What kind of solution would work for students to pay attention to?
- What would help students to eat more varied?
- What would increase self-efficacy?
- What would reduce time constraints?
- What would increase health awareness?

From this brainstorm session, a lot of ideas came up. Miro collaborative whiteboard was used for the collaboration and post-its were pasted in a grid to make an overview of ideas. The overview of ideas is shown in Figure 21.

#### 3.2.1 Ideas in Brainstorm Session 1

The ideas that came up in brainstorm session 1 are assessed on the requirements for whether they suit the project well.

The following ideas are found to be a too inconvenient, and/or obtrusive and probably too hard to measure the data needed to function properly, if not too privacy sensitive (the purple-its): the plant that grows and shrinks according to dietary behaviour, the ideas including serious games and gamification, the breakfast app giving healthy alternatives, an interactive fridge LCD, a kitchen

Breakfast app which gives healthy alternatives	Spotlight in store cupboard which points out the healthy ingredients for breakfast	Turning wheel with breakfast options	Waking up with the smell of a delicious breakfast	Alarm clock that suggests breakfast options	The housemate deal: in turn healthy breakfasts are made for each other.
Podcast about healthy breakfast	Competitive serious game	breakfast machine in public space	Breakfast case that tells the users what's on the menu for the coming days	A plant that grows if the user eats healthy breakfast and shrinks and dies if the user does not	
Interactive fridge LCD	Motivating and inspiring quotes that the user associates with healthy breakfast	Breakfast machine with turning wheel for a random cheaper option	Breakfast preparing machine for in household	Guid for overnight oats for breakfast	Alarm that is also a game and points you to breakfast
A fresh breakfast delivery service	A timer that ends if the user needs to start eating breakfast, which starts after your alarm goes off	Breakfast machine: smoothie tap Oatmeal tap yoghurt tap	Kitchen tool that gives haptic feedback on breakfast behaviour	A cage that contains breakfast ingredients that only can be opened between 7 and 10 in the morning.	Breakfast recipes for dummies
Breakfast app that combines ingredients in the store cupboard into a healthy and tasty breakfast	Game that informs people how to make a nutritious breakfast	Breakfast corner for picking-up breakfast	A serious game that challenges the user to try new combinations	gamification; make use of a reward system	

miro

Figure 21: Ideas that came up in Brainstorm Session 1

tool that gives haptic feedback on breakfast behaviour, an alarm that ends when someone starts eating breakfast, a breakfast app that combines ingredients in the storage cupboard into a healthy breakfast. Because of one of these above stated reasons, these ideas have been rejected for this project.

Some other ideas are assessed not convenient, because students would still have to make effort and time that healthy breakfast which costs in general more time than the easy unhealthy option (the orange post-its): an alarm clock suggesting breakfast options at waking up, waking up with the smell of a delicious breakfast, a turning wheel for breakfast options, spotlight in store cupboard, a podcast about healthy breakfasts, a game that informs people how to make healthy breakfasts, motivating inspiring quotes about healthy breakfasts, guide for how to make overnight oats for breakfast, breakfast recipes for dummies, and a breakfast case that tells people what is on the menu. The smell of a delicious breakfast could be a feature of an automatic breakfast machine. All

options with home breakfast machines (the light blue post-its) would reduce effort investment, but still time to do the groceries. That is why they are not considered as the best idea.

As regards a breakfast preparing machine or breakfast machine in public space (ideas on the dark blue post-its), the problem can be that the right ingredients needs to be in stock. Someone needs to facilitate these ingredients and the ingredients in the public space need to be monitored and supplied. They need to be monitored both in terms of if they are expired or not and in terms of stock. Problems that can arise are that the availability might cease at some point or that the users might eat expired products. The problem of expired products is that, especially with fresh products, it can taste bad or can cause foodborne illnesses or infections (Adams, Moss & McClure, 2018).

Regarding the cage that contains breakfast ingredients (the black post-it) which only can be opened between a certain time in the morning, it is assessed that the solutions might support attention to healthy breakfast, but that this solution does not have a high guarantee of behaviour change. This is because this solution can be ignored and not used because of different reasons, of which one is that the user might feel forced to eat between the appointed times, and then puts his breakfast ingredients on another place.

A breakfast in turns in a household (the yellow post-it) is considered a functional idea, but there is no way thought of to facilitate or encourage that.

On the contrary, the fresh healthy breakfast delivery service and a breakfast pick-up corner (the green post-its) are assessed to be functional ideas. They will decrease the time-and effort investment for students and they will probably empower them for a long-term dietary improvement, because the service or pick-up point will probably be used more often because of this decrease in time-and effort investment.

### **3.2.2 Conclusion of Brainstorm Session 1**

In conclusion the best ideas from this brainstorm session are:

- A fresh breakfast delivery service;
- Breakfast corner for picking-up a healthy breakfast.

## **3.3 Brainstorm Session 2**

The second brainstorm session was done together with three fellow Creative Technology students. Each of them received a pair of glasses along with a post-it with description of personas pasted on it. The glasses with the post-its are shown In Figure 22. The personas used were based on the outcomes of the questionnaire as described in 2.4.2.9 Summary.

### **3.3.1 Personas**

The following types were identified: the students who already consumed a healthy breakfast (oat-meal, fruit, nuts) (healthy breakfast eater), the students who did eat an unhealthy breakfast (sugar fillings with white bread) and had the desire to change (non-healthy breakfast eater), students who eat an unhealthy breakfast and did not have the desire to change (stubborn student), and the students who did not eat breakfast because of lack of time or appetite (non-breakfast eater). They all had specific behaviours and desires assigned, which are described in the paragraphs below.



Figure 22: Glasses used for the persona distribution in brainstorm session 2

**3.3.1.1 Healthy Breakfast Eater** The healthy breakfast eater is a student who eats healthy breakfasts in terms of ingredients. In his breakfast is at least oatmeal (WG), fruit and nuts. However, he wants to eat a more varied breakfast throughout the week. The problem of this student is that he misses the know-how for implementing more varied breakfasts.

**3.3.1.2 Non-healthy Breakfast Eater** The non-healthy breakfast eater is a student who eats non-healthy in terms of ingredients. In his breakfast is found white bread with sugar fillings. He does not eat products in the Wheel of Five for breakfast. This student is having the same hurdles as more students, such as lack of time and motivation for changing, but also having no idea for how to change. The non-healthy breakfast eater does want to eat more healthy, but does not know how he could do that.

**3.3.1.3 Stubborn Student** The stubborn student is a student who does not eat healthy food for breakfast. He does not eat fruit, nuts, WGs, or other food in the Wheel of Five. However, he eats breakfast because he feels like eating in the morning. He eats everything that he likes in the morning and does not feel like a change. Besides, his fellow students also do not eat healthy food and they are also not dead, so why bother becoming a more healthy eater?

**3.3.1.4 Non-breakfast Eater** The non-breakfast eater is a student who does not eat breakfast. He does not feel like eating in the morning and does not get out of bed earlier than needed for study or work. For this student there is no time left in the morning to eat breakfast, also because the evenings are full of partying, drinking, and other aspects of student life. He does not feel like changing towards eating breakfast more often, because he feels like it is not necessary nor important to eat a breakfast regularly.

### 3.3.2 Group Brainstorm

After the roles being assigned, the fellow students were asked to think like their role and about the following question:

What would convince you to eat a healthy breakfast? And if you already do, what would support you to change your habits towards the desired habits assigned to you?

The stubborn student would only be convinced if the new option tastes better compared to the unhealthy options such as Nutella. The Nutella must not be taken away, but something similar to the old habit would be helpful. The stubborn student does not want to feel forced and needs positive reinforcement (e.g. hearing a "Well done" if they have eaten more healthy). In addition, fancy recipes will not help because they are often not what is desired by this students or cost a lot of time and effort. In addition, if other students around are eating healthier, it would also help.

The Non-breakfast eater thinks that breakfast at 11-12 is also healthy and does not see a reason to change structurally. The main reason for eating breakfast at 11-12 is the lack of time before the start of official events like studying. A list of recipes would be helpful to easily know what to make and therefore spent less time. A suggestion is to score the recipes on time and effort. Also is added that students do not really have the space to store many products, and therefore they have to go more often to the supermarket. Also, fresh and healthy products expire often and therefore become less attractive to buy. Next to that, healthy products should be less expensive. The non-breakfast eater concludes with the question: "is coffee also breakfast?" because that is fast enough to eat at the beginning of the day.

The non-healthy breakfast eater who wants to eat a more healthful breakfast would need to have the right products at home in the morning. But before that, it is important to know what to buy in the supermarket. Next to that, if the social surrounding is eating something unhealthy it can be of influence. It would be nice if there was time for preparing breakfast or ideally breakfast will be prepared for you. The healthy breakfast eater already eats healthy, but might improve on ingredients by acquiring knowledge or good alternatives. A cheaper alternative would be a good idea.

These four types of students would be convinced if the price of the new diet is the same or less compared to the now consumed diet and the time to invest is less. However, the taste needs to be the same or better than the old options; for example: Nutella. Similar to what came from brainstorm session one, the ideas of a healthy breakfast delivery service and a pick-up point for healthy breakfast were mentioned. On the ordering page, the food services should have options to choose from, but they should not give too many. If too many options are available, it would cost students too much time to think about what they want to choose. Regarding the delivery service, it was proposed to do this only on campus, since it would be more realistic to deliver the breakfasts in terms of time.

Furthermore, from this brainstorm session, the idea emerged of a recipe list with scores for time and effort. This would help students to pick a healthy recipe that fits the amount of time and (motivation to put in effort) they have in the morning.

### **3.3.3 Conclusion Brainstorm Session 2**

The best ideas that came up from brainstorm session 2 are:

- A healthy breakfast delivery service on campus;
- A healthy breakfast pick-up point;
- A list of healthy breakfast recipes.

As regards the first two, they both are considered an idea to further specify with multiple aspects. The list of healthy recipes must be created for the first two and in both ideas this list could be shared in some way. Moreover, in both ideas a list of recipes could be the basis of the ordering list. Furthermore, the first two ideas are much more interesting to work out (because healthy

breakfast recipes are omnipresent online already<sup>19</sup>). In conclusion, one of the first two ideas should be specified and worked out further.

### 3.4 Description of the Two Best Ideas

#### 3.4.1 Idea 1: A Healthy Breakfast Delivery Service from the Home Kitchen, on Campus

**3.4.1.1 description** A healthy breakfast delivery service would be convenient for students on campus of the UT in terms of time and effort. If the ingredients of the breakfasts can be bought and stored at the home kitchen of the cook in rather big batches, the price of these ingredients can be relatively low. Because of these relative low prices, students would be more convinced to try it at least once. Students can just choose their preferred healthy option and portion size on an app or website and then get their option delivered the day after before a specific time. The students will be informed using scientific evidence and about the health benefits of the breakfasts and the ingredients they order. This is because students are always questioning why certain statements are true. After ordering, in the morning, someone prepares the breakfast in a home kitchen and brings it to the students on campus at their doorstep before a specific time. This way, the students can order before they go to sleep and eat a breakfast before they go studying or working without investing much time and effort.

The delivery service is planned to be based on campus, because it is meant that students gain health awareness and experiences with healthy breakfasts before they go live off-campus. And what about the students that do not live on campus? It would be very well to include students outside the campus, but the delivery area will become too big in that case and therefore the delivering time. For this reason the idea is that the delivery service will be only on campus. This idea includes some behaviour change techniques, which give evidence that this idea will help to change behaviour. BCT 1.4: action planning gives evidence that this idea will help to change behaviour, because students have to plan the action of eating breakfast when they order. In addition, if the breakfast is tried and liked by students, they are more likely to order once more, because of BCT 7.2 cue signalling reward, in which then the cue is the memory of the delicious food that is tried before. Next to the intrinsically reward of the food, BCT 10.2: material reward gives evidence that this idea will help to change behaviour, because of the relative cheap prices. Students can not afford much, so cheap prices will probably work for students specifically. Additionally, BCT 9.1: credible sources gives evidence that this will help to change behaviour. This is because in the promotion of the service it is explained scientifically why the ingredients in the breakfasts are healthy and therefore the health awareness of students would be raised.

#### 3.4.1.2 Interesting Features to Add

- A list of healthy recipes on the application of the service to help students practicing in creating healthy breakfasts and showing alternatives. This would add BCT 4.1: Instruction on how to perform the behaviour. And then it could be added that at this list of recipes, for each recipe there is a “try out” button to order the specific recipe.
- A card with a precise recipe/description of the breakfast ordered, ideas to include on the card are nutritional values, preparation time, directions, and scores on effort and taste. This would add BCT 4.1: Instruction on how to perform the behaviour.

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<sup>19</sup>[www.bbcgoodfood.com/recipes/collection/healthy-breakfast-recipes](http://www.bbcgoodfood.com/recipes/collection/healthy-breakfast-recipes)

- This recipe/description card can be a game card for collection, for example they can be designed on normal playing cards. If the cards become valuable for students, for example as a collection item, this would strengthen BCT 10.2 material reward.
- Discount for ordering for a whole week to give material reward for repeating the behaviour. This would include BCT 8.3: Habit formation and strengthen BCT 10.2: material reward.
- A notification at a time that can be set by students before the deadline of ordering to choose their breakfasts. This would add BCT 7.1: Prompt/cue.
- For ordering healthy breakfast a couple of times in a row students receive a medal, either a virtual or a material one, is received. This would motivate to repeat the behaviour. This would add BCT 8.3: Habit formation and BCT 10.3: Non-specific reward.
- A discount when students order together in the same student house or same student area, for example at the same address or same street. This would strengthen BCT 10.2: material reward. In addition this would add BCT 6.3: information about other's approval, because all students that are going to order do approve the behaviour together. This would also decrease time per order for the courier, because more orders can be delivered in the same street.

### **3.4.2 Idea 2: Healthy Breakfast Pick-up Point, on Campus**

**3.4.2.1 Description** This idea came from that students are often on their way on campus to the campus buildings. At the breakfast pick-up point, they can easily come by and pick-up their breakfast. This can be done either by ordering their choice and portion size online in advance and then picking it up or ordering at the pick-up point itself. This would be convenient because students can choose at any time to go and pick-up a healthy breakfast. In principle, the price could be low because the ingredients could be bought in bulk packages. However, because an investment must be made of the interior of the location and the rent, heating and cooling costs, the costs are higher and therefore the prices can become significantly higher than a home kitchen delivery service. On the ordering page and in the breakfast pick-up point, students will be informed using scientific evidence and scientific explanations about the health benefits of consuming breakfasts and the ingredients. Regarding opening times, this breakfast pick-up point should be open in the first hours of the day, because then breakfast should be consumed. The breakfast can be consumed somewhere on campus, inside the halls of the campus, or in places where you may bring your own food. On the University of Twente, however, it is generally not allowed to eat in a lecture room. This can counteract the pick-up breakfast because students can have difficulties to come on time and need to go to lectures first. In that case they did not have breakfast before they started to study. This idea could be convenient, but without added interesting features, there are no strong BCTs applicable. The idea does not include relatively low prices and only short time before picking up, action planning is needed, which not counts. However, when scientific information is shared on the ordering page and in the breakfast pick-up point, BCT 9.1: credible sources is applicable. And if the breakfast is tried and liked by students, they are more likely to come by and pick-up a breakfast once more, because of BCT 7.2 cue signalling reward.

#### **3.4.2.2 Interesting Features to Add**

- A list of healthy recipes on the application of the service to help students practicing in creating healthy breakfasts and showing alternatives. This would add BCT 4.1: Instruction on how



to perform the behaviour. And then it could be added that at this list of recipes, for each recipe there is a “try out” button to order the specific recipe.

- When the students begin to make use of this service, they can tell what they already eat. Based on that, the options could be shaped to be little steps from what they already eat. In that way the advice of experts and the principle of “Eetwissel” is included in the idea: little steps make the behaviour change more achievable.
- A card with a precise recipe/description of the breakfast ordered, ideas to include on the card are nutritional values, preparation time, directions, and scores on effort and taste. This would add BCT 4.1: Instruction on how to perform the behaviour.
- This recipe/description card can be a game card for collection, for example they can be designed on normal playing cards. If the cards become valuable for students, for example as a collection item, this would strengthen BCT 10.2 material reward.
- A notification at a time that can be set by students before closing of the pick-up point to choose their breakfasts. This would add BCT 7.1: Prompt/cue.
- For ordering healthy breakfast a couple of times in a row students receive a medal, either a virtual or a material one, is received. This would motivate to repeat the behaviour. This would add BCT 8.3: Habit formation and BCT 10.3: Non-specific reward.

### 3.5 MoSCoW method

Both ideas, the healthy breakfast delivery service and the healthy breakfast pick-up point, have the potential to empower students to eat a healthy breakfast. Although, it can be seen that in itself the delivery service has more strong BCTs than the pick-up point. Also, the delivery service has the potential to help students to eat their breakfast before going to study, similar to the initial goal of breakfasts, defined as a meal before doing study or work. The pick-up point, however, has less potential for this, as students can run late and therefore have no time to pick-up their breakfast and eat their breakfast after their first lecture. And if the students do not have to go on campus and stay at home for a day, they are less likely to pick-up a breakfast. In that case they would be more likely to look into a list of recipes or to stick to their old, probably less healthy, breakfast habits. Next to this reasoning, the MoSCoW method is used to structure the requirements (see section below 3.5.1). Based from the requirements, a more systematic assessment of both ideas is made, see Table 1. The numbers and letters in the table are the same as the numbers used in section the section below: MoSCoW Methods Applied on the Requirements. This way, the differences can be easily seen.

Table 1 shows that both basic ideas meet almost the same requirements. The difference is that the healthy breakfast delivery service does support more for a sustainable dietary and breakfast improvement in comparison to the pick-up points, because students are more likely to order one or more times when they will get a breakfast delivered. This is because they have to put in less effort.

#### 3.5.1 MoSCoW Methods Applied on the Requirements

##### Must haves:

1. The solution must empower students for a long-term (sustainable) dietary improvement, meaning that:

Idea	Requirements met	Could be added by possible features
1 Healthy breakfast delivery service, on campus	M:1a,1b,2a,2b. S:1,2,3,4,5,6b,6c,6d,6e. C:	Would only become more helpful and persuasive with added features
2 Healthy breakfast pick-up point, on campus	M:1a,1b,2a,2b. S:2,6b,6c,6d,6e,C:	Would only become more helpful and persuasive with added features

Table 1: Assessment of the ideas based on the requirements

- (a) it gives the personal or social resources to get self-motivation to improve dietary habits, or:
- (b) it gives the personal or social resources to participate in own health-related decisions;
- 2. The solution must empower students to eat a breakfast that:
  - (a) Contributes to a healthy diet, meaning it consist of ingredients from the wheel of five, and/or:
  - (b) Fits the individual energy needs (or the standard of 300-400 kilocalories from the Dutch Nutrition Centre).

**Should haves:**

- 1. The solution should not be inconvenient;
- 2. The solution should not be forceful;
- 3. The solution should include a fun factor;
- 4. The solution should be motivating to engage with;
- 5. The solution should empower students to eat more varied breakfasts throughout the week;
- 6. The intervention should have a positive impact on one or more of the following determinants:
  - (a) Decrease money investment needed for healthy dietary choices;
  - (b) Decrease time investment or effort for preparing breakfast;
  - (c) Increase self-efficacy in preparing (e.g. to improve the taste and timeinvestment);
  - (d) Increase the health awareness of students regarding food;
  - (e) Inlarging the availability of healthy foods close to students.

**Could haves:**

1. It could be made sure that small changes in diet are promoted. These small changes make the dietary changes more achievable for a more varied group of students. This could be done because students have personal dietary starting points.

No **won't** **haves** are included in this list, because it is about the things they have got, not the things they will not have.

### 3.6 Added Value of the Proposed Solutions

In this section, there is looked at the added value of the proposed solution in comparison to existing solutions trying to do the same.

#### 3.6.1 Just Eat (in Dutch: "Thuisbezorgd")

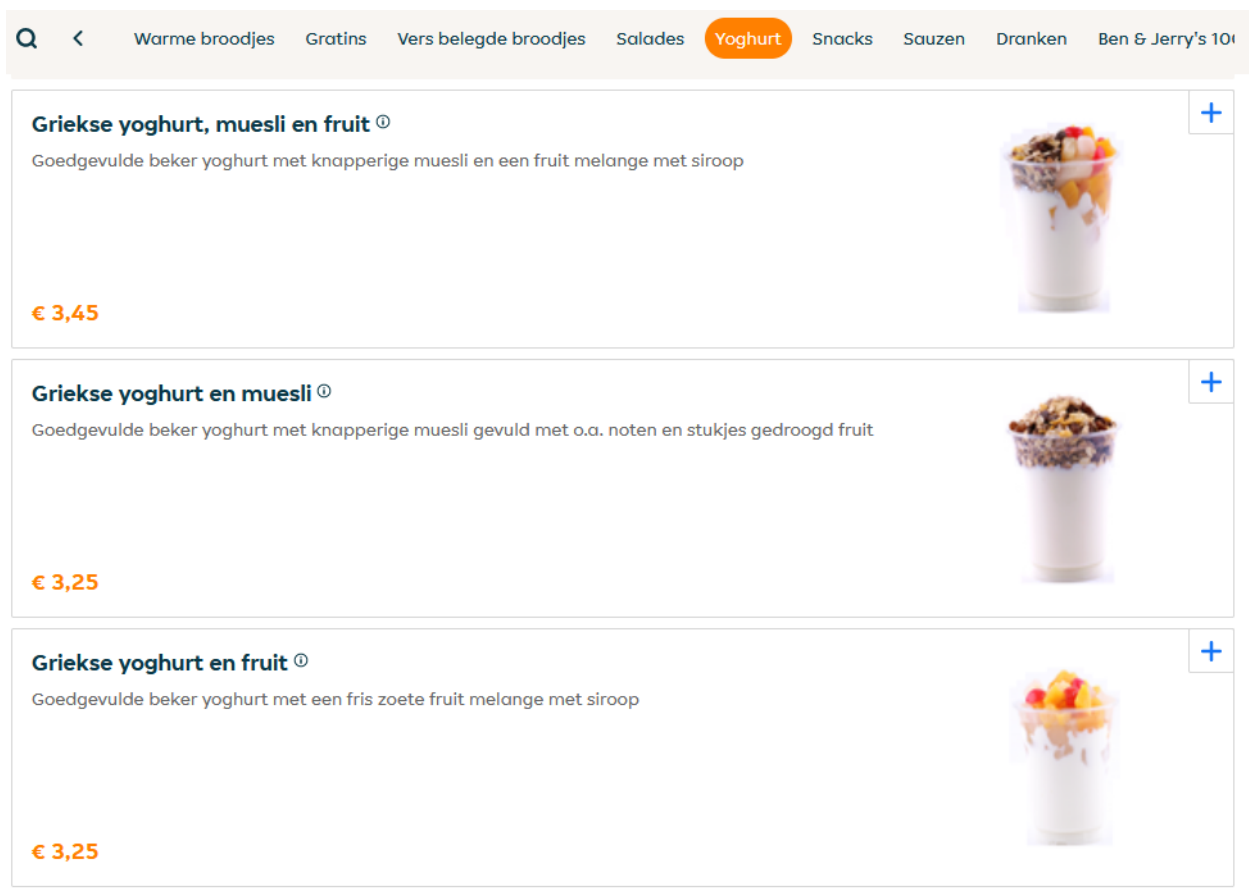


Figure 23: The "healthy" options from Broodje Nu on the Dutch website of Just Eat

If looked at Just Eat (Thuisbezorgd ), a lot of snacks/foods high in fat, sugar and salt are available. It is even the case that Domino's Pizza and Famly (Snacks, Burgers, "Kapsalon") are sponsored and therefore get a higher rank in the list of options. There are not only fruits, not only vegetables, no specific whole grain products, or a combination of this on this frequently used market. If looked at the Dutch website of Just Eat<sup>20</sup> they have yogurt and muesli (which is a plus

<sup>20</sup><https://www.thuisbezorgd.nl/menu/broodje-nu#categorie-yoghurt>

because muesli is a WG, but this is always with too little fruit added for a daily recommended amount (see Figure 23). Then you have all kind of nice looking sandwiches, of which none seems to be full whole wheat bread. The added value for the healthy breakfast delivery service would be that actual choices in the Wheel of Five can be ordered for delivery.

### 3.6.2 Starbucks on UT Campus

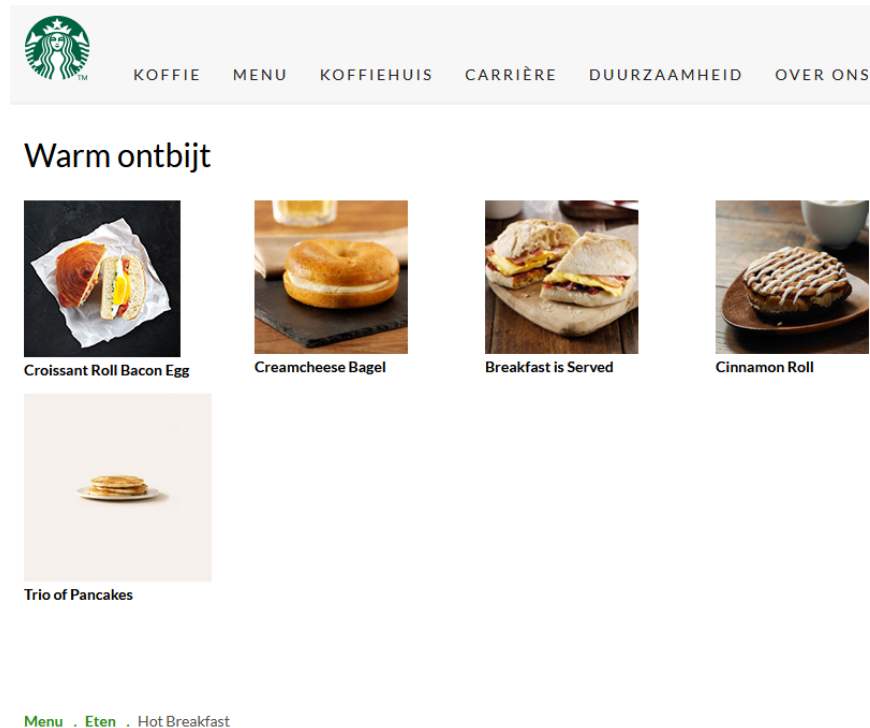


Figure 24: Warm breakfast from Starbucks on the Campus of the University of Twente

The Starbucks on the campus of the University of Twente sells no products in the Wheel of Five (no fruits, nuts, or whole wheats), but tasty looking and warm breakfasts<sup>21</sup> (See Figure 24). For both ideas to offer more attractive breakfast, it should look as tasty as this. The added value would be that the proposed ideas would include products in the Wheel of Five.

### 3.6.3 Coop Vandaag on UT Campus

In the COOP Vandaag on the campus of the University of Twente, they sell healthy and easy foods for breakfast. For example Boer'n yoghurt breakfasts<sup>22</sup>, see Figure 25. Also bread, bread fillings, fruits, oats and milk are available at this local store. Students can already easily pick-up a breakfast at the campus at this local supermarket, which suggests that the pick-up point has no potential to overcome competition. The prices of the Coop are not so high, up to 1.29 EURO for 170 g. However, the portion sizes are not so big and although they have different tastes, they are not alternating types of muesli and do not contain much fruit (up to around 7% percent for strawberry, and the same for forest fruits). Besides, there is 12% of hidden sugars in the one called

<sup>21</sup>[www.starbucks.nl/menu/food-list/hot-breakfast](http://www.starbucks.nl/menu/food-list/hot-breakfast)

<sup>22</sup><https://www.coop.nl/zoeken/ontbijt%20yogurt>

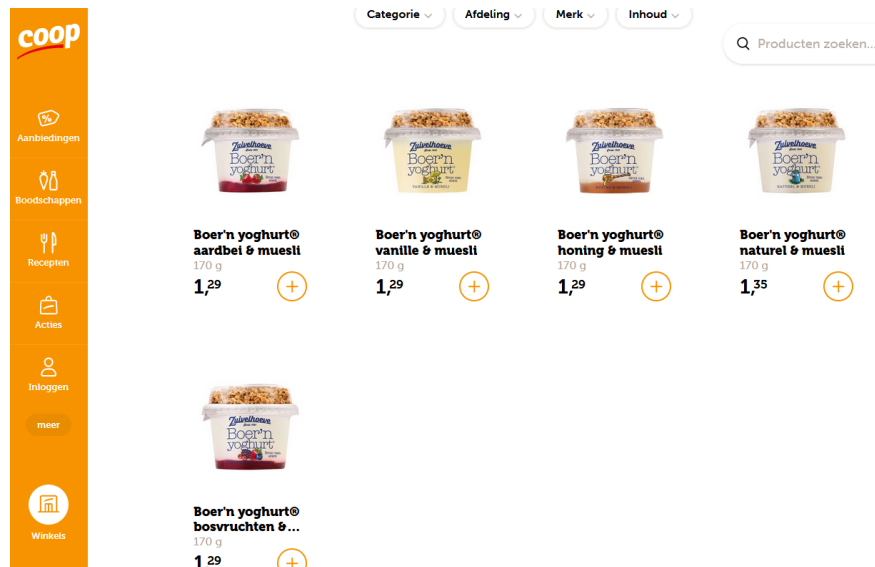


Figure 25: COOP Vandaag yoghurt Muesli Breakfast options

strawberry & muesli. The service would have added value when the portion size is increased, and more fruit and less sugars will be included, as guided by the Wheel of Five. Include Figure

### 3.6.4 Breakfast Delivery Services



Figure 26: The cheapest breakfast of "Ontbijt Service Twente"

There are also delivery services on the market in Twente, of which the cheapest service found is Ontbijt Service Twente. The cheapest breakfast is called breakfast packet to go<sup>23</sup>. For 7,95 euro, two buns, one white with ham and one brown with cheese, 33 cl of orange juice and one apple will be delivered (see Figure 26). They show the apple big, and because of the apple it is a healthy choice. The added value of the healthy breakfast delivery service would be that the price could be lower than this one and that the breakfasts should be more filling. Include screenshot.

<sup>23</sup><https://ontbijtservicetwente.nl/product/ontbijtpakket-2-go-a/>

### **3.6.5 Conclusion of State of the Art of the Proposed Solutions**

There is some offering of breakfast on the campus, but it is limited in terms of health (products according to the wheel of five) or when it is a delivery service it is pretty expensive. There is not much available in the healthy side for an affordable price. Delivery services existing are too expensive, and what can be ordered is easily made for oneself. Therefore, a healthy breakfast delivered for an affordable price could work for students and has no competitors.

### **3.6.6 Feasibility of the Ideas**

The healthy breakfast delivery service would be easier to start compared to the healthy breakfast pick-up point. The healthy breakfast delivery service only needs a person with a home kitchen to prepare in and a bike to deliver the healthy breakfasts. These materials are easy to get and do not need any investment, like for the breakfast pick-up point. Because the recipes are adjustable, these can be made based on what kind of kitchen the home-cook has. The investments for the pick-up point are to rent a place and buy kitchen materials. This investment could be risky because if the pick-up point fails, losses are made. Next to that, for this delivery service to set-up, there only need to be some student(s) that love to prepare breakfasts for others and maybe earn a bit of money on the side. The student who prepares can higher his self-efficacy and make easily contact to other students. Afterwards, this student can search for a next student and give this student instructions. As a last benefit, this could be an idea to easily implement in all student cities around the world, because it is easy to set-up and adjust to the needs and taste of students in other geographical areas. Throughout the project, it was made clear by the ethical committee that the home-kitchen is a more tricky place for hygiene cooking and therefore not a very palatable place. This is true because of the need for a restaurant to certain certificates to serve food .

Regarding money-investment the healthy breakfast delivery service on Campus delivering cooked breakfasts in a home-kitchen would more feasible than the healthy breakfast pick-up point on the campus. However, for a real-life test week it would not have a go of the ethical committee, because of food safety reasons. Fortunately, since the collaboration with Ecocentrum Emma, it will be possible to cook in a professional kitchen with a restaurant permit (in Appendix A.2 Declaration of the professional kitchen of Ecocentrum Emma is an email from Susanne Groten proving this) and to use the store as a possible breakfast pick-up point. The costs for this location are very low because Ecocentrum is very open for new food selling businesses. One condition is that the company sells food products from their organic food store. This is no problem, since organic foods contain no synthetic pesticides and are most of the time of high quality. Another reason to use their food is that the store sells as much as possible local produce, which reduces emissions for transport.

In the morning, in Ecocentrum Emma is plenty of space of breakfast cooking. In addition, they also can provide reusable meal prep boxes. Although both a pick-up point and a healthy breakfast delivery service are possible at Ecocentrum Emma, the delivery service can be more persuasive for students in terms of time and effort saving, and the timing of delivery of the breakfasts (just after getting up and before they are going to study/work).

## **3.7 Conclusion of the Ideation Phase**

From the brainstorm sessions two main ideas came up: the healthy breakfast delivery service on campus from a home kitchen and the healthy breakfast pick-up point. The side idea of a healthy breakfast list can be included in both ideas. The delivery service is in general better in lowering time, effort and price than the healthy breakfast pick-up point. Furthermore, the healthy breakfast

delivery service can be set-up with less investment, as only a student with a home kitchen needs to be available in the morning. And in this project even a professional kitchen in Ecocentrum Emma with all facilities needed to set the breakfast delivery service or pick-up point (or even both) up. However, because the delivery of breakfasts is more persuasive for students, in conclusion, the healthy breakfast delivery service will be chosen as the idea to specify, realize and evaluate.

## 4 Specification

As outcome of the ideation phase there is chosen to specify a healthy breakfast delivery service. In this chapter, the idea will be specified further such that it points towards the mission as stated in 1.3 Mission Statement in the Introduction of this thesis. To prioritize the specifics, the MoSCoW method is used to directly put the idea specifications in must haves, should haves, could haves, and won't haves. After that, an explanation and elaboration has been added about each specification component to show what will be realized.

### 4.1 Specification using MoSCoW method

Must haves:

1. To become health empowering:
  - (a) Improving dietary behaviour;
  - (b) Inspirational and educational (for a self-motivating dietary improvement);
2. An online ordering system;
3. Sustainable;
4. Provide a tasty menu;
5. Materials:
  - (a) Food supplies;
  - (b) Cooking materials;
  - (c) A kitchen;
  - (d) A way of packing the breakfasts;
  - (e) A means for delivery.
6. Tasks:
  - (a) Creating recipes
  - (b) Grocery shopping;
  - (c) Cooking;
  - (d) Delivering;
  - (e) Cleaning;
7. A genuine healthy service;
8. Marketing & public relations

Should haves:

1. Reusing materials;
2. Reducing food waste;
3. Reducing transport emissions;



4. An interesting designed recipe card;
5. A notification when the students need to order;
6. Empower students to eat more varied breakfasts throughout the day or week;
7. A professional looking (web) application;
8. Menu choices.

Could have:

1. Offer discounts for multiple orderings or ordering together at the same address;
2. Professionally designed recipe cards.

No won't have are included in this list, because it is about the things they have got, not the things they will not have.

## **4.2 Elaboration on Specifications**

### **4.2.1 Health Empowerment**

The service must be health empowering. It must give the social or the personal means to improve health in a way that students become strongly inspired to improve their dietary behaviour and get to know an interesting way to do that. This way, students should be able to choose and participate in their own health-related decisions (in this case about food). This will be done by making healthful foods available for students without taking much of their money, time and effort. So the service should give the means to students to easily access healthy breakfasts. Turning now to convenience, which was also a requirement in the background research. It could be specified that convenience would be needed for the time of delivery, the choice of ingredients and the choice of menu. However, because breakfast is defined as a meal before breakfast, and the menu is going to be based on the healthy food groups and what the author already makes for breakfast, this factor is not included to be very important to reach the goal of the project.

### **4.2.2 Sustainability**

The service must be sustainable. The environment must not be damaged more by this service than if the service did not exist and the customers would already buy these kind of healthful ingredients themselves. Since food is a main component of the service, the focus will be on reusing kitchen materials, reducing food waste and reducing transportation emissions. The service should reuse materials like kitchen materials (all tools, and also the meal boxes to transport the food in). The service should reduce food waste compared to if the service did not exist. For example using products that would not be sold anymore in markets, supermarkets or other stores, but that could be used immediately and are still nutritious and palatable enough to be consumed. In addition, the service should reduce transportation emissions. Emissions of transportation of the foods from place of origin to the store before buying and also transportation of the food to the customer must be minimized. In the evaluation phase must be discussed if the service does more environmental damage compared to when people would buy healthy foods for themselves. If the service is not eco-friendly in this way, the service must not be implemented.

### **4.2.3 Providing a Tasty Menu**

The breakfasts must be tasty and liked by students, because otherwise they will not be ordered or eaten. Therefore, ingredients that make the taste must be fitting the taste of students and the expected taste for breakfast.

### **4.2.4 Online Ordering System**

The students must be able to order beforehand. Therefore there will be an online ordering system implemented, because the students should be able to do this on a time that suits them, and not necessarily in a time that a person of the service is available to be in direct contact with them. This must be simple and not taking too much time or effort, see the determinants in section 2.4 Determinants of breakfast choices. The deadline for ordering should be on a convenient time for students and for the cook to know how many portions he should make. The students could get a notification at a certain set time as a reminder to order breakfast. This time can be set by students on a time before the deadline of ordering they want.

### **4.2.5 Materials**

The service must have a food supply source. This food source could be the market, supermarket or another store. For sustainability, it will ideally be a source with local produce or products that are otherwise thrown away. And for health and taste, it will ideally be a source of as much as possible fresh produce, no chemical additives and as much as possible natural products. The service must have a place to cook, including kitchen tools. A kitchen or a restaurant kitchen will suit best. Since the hygiene is best in a restaurant kitchen compared to a home-kitchen, a restaurant kitchen is needed for this service. The service must have a way of packaging the delivery. Ideally, for sustainability and price, this would be reusable package material.

### **4.2.6 Marketing & Public Relations**

The service must be marketed to reach possible users. This will be done using an Instagram account, because in general students do use that often. In addition, this will also be done through word of mouth and personal messages sent by the researcher involved.

### **4.2.7 Tasks**

The tasks of the service are creating the recipe, grocery shopping, cooking, delivering and cleaning. The recipes should be created in a such a way that it is a genuine healthy breakfast service.

### **4.2.8 A Genuine Healthy Breakfast Service**

The service must be a genuine healthy service. The ingredients of the recipes will be chosen based on what is healthy according to relevant scientific sources. In the basis, ingredients in the Wheel of Five (Dutch Nutrition Centre, 2016) will be used as described in section 2.3 Guidelines for a Healthy breakfast.

### **4.2.9 Inspirational & educational**

The service must be inspirational and educational for students. One part of the inspiration will be implemented through the experience. But to get a feel of what they did experience, the breakfast

ingredients need to be listed online or can be listed on a card alongside the delivery. This will be done in the expectation or hope that students get educated by the service and will make these kind of breakfasts themselves in the future.

#### **4.2.10 Interesting Recipe Cards**

The service should deliver an interesting (for example a collectable) recipe card with scores on time, taste and easiness, and price. The reason to give the students this is to support them to make the same or similar recipes in the future for themselves, if they both have time and are eager to do so. After living on campus, this recipe cards might still be kept and used for preparing breakfast. A professional collectable recipe card would be perfect, but since this could cost too much time to design it is a could to make this and only done if time will allow this during the project. The recipe cards that for sure should be realized is a non-professional hand made, hand written, collectable recipe card with scores on time, taste, easiness and price to test this idea.

#### **4.2.11 Discounts**

The service could give discount if students order multiple times in a row or order at the same address together. This is to increase the number of healthy breakfast ordered in series and to increase promotion via the word of mouth of the service. If housemates have to work together to get a discount, they are more likely to share the service with other housemates to get the discount. Furthermore, if more housemates make use of it, it seems to be an approved service by peers and therefore it will become more interesting for students to try the service.

#### **4.2.12 Choice of Menu**

The service should have the possibility for the students to order what they want on a certain day. This is because specific diets should be taken into account to reach more people and students should have the freedom of choice for their diets.

#### **4.2.13 (Web) Application**

The service should have a professional looking web application, web shop or mobile phone app. This is because this would give a more professional look, a professional looking ordering system, and the service will be easier to find online. If this (web) app is realized, this also allows for the creation of notifications to remind students to order.

## 5 Realisation

For the realisation of the healthy breakfast delivery service, the specification is followed and realised as much as possible. As the realisation took place, the author, Jarl Witt, has done the Instagram promotion and all the tasks needed to be fulfilled in the test week. The logo and motto were outsourced to an acquaintance who was very interested in the project.

### 5.1 MoSCoW method

From the specification phase, the MoSCoW table is used to make an overview of what is realised (see Table 2). The requirements are marked in the table with 'Yes' (fulfilled), 'Yes, but' (partially fulfilled), 'No, but' (not fulfilled with an annotation), or 'No' (not fulfilled).

Table 2: The fulfilled parts using the MoSCoW methods

MoSCoW	#	Requirement	Fulfilled
Must haves	1	Improving dietary behaviour	Yes
	2	Inspirational and educational (for a self-motivated dietary improvement)	Yes, but
	3	An online ordering system	Yes
	4	Sustainable	Yes
	5	Provide a tasty menu	Yes
	6	Materials: Food supplies, cooking materials, a kitchen, a way of packing the breakfasts and a means for delivery.	Yes
	7	Tasks: Creating recipes, grocery shopping, cooking, delivering, cleaning.	Yes
	8	A genuine healthy service.	Yes
	9	Marketing & public relations.	Yes, but
Should haves	1	Reusing materials.	Yes
	2	Reducing food waste.	Yes
	3	Reducing transport emissions.	Yes
	4	An interesting designed recipe card.	Yes, but
	5	A notification when the students need to order.	No
	6	Empower students to eat more varied throughout the week.	Yes, but
	7	A professional looking (web) application.	No
	8	Menu choices.	No
Could haves	1	Offer discounts for multiple orderings or ordering together at the same address.	Yes
	2	Professionally designed recipe cards.	No
Won't haves	1	No won't haves defined beforehand.	

## 5.2 Collaboration with Ecocentrum Emma

As stated in the introduction, during this project a collaboration with Ecocentrum Emma was started. The collaboration was just in time, as the project's realisation phase recently started when Ecocentrum Emma and the author became business partners. A lot of the project could be realised thanks to this centre. They have supported the project because their mission is in agreement with the project's mission. They also want to distribute healthy and organic food to people. Therefore, they offered their professional kitchen for use in morning hours, food supplies with a 15% discount from their organic store, and an electric three-wheeler tuk-tuk for the deliveries. In addition, reusable meal prep boxes could be used with a deposit of 2.50 euro. Because of this, there were a lot of puzzle pieces solved for the healthy breakfast delivery service to set-up.

## 5.3 Preparation of the test week

### 5.3.1 Marketing & Recruitment of participants

In order to recruit participants for the test week, the project was promoted. For branding and promotion purposes, the name of the service became Fresh 'n Friendly, because it aims to deliver fresh and tasty food, while being friendly by promoting people's health and friendly to the environment.



Figure 27: One of the posts of healthy ingredients to spark interest of students



Figure 28: The Logo of Fresh 'n Friendly, made by Ainé van den Aakster

Instagram was used for promotion (see Appendix E) and to spark interest among students. The timeline of the promotions is in Table 3. Strategies of promotion were to post often (before breakfast (8 AM) was preferred to spark interest at breakfast times), spark interest with amazing pictures of healthy ingredients (see Figure 27), and to use an logo for the company, well-designed by Ainé van der Aakster (see Figure 28). The motto came also from Ainé, saying: "Break Fresh, break Friendly!". In the promotion, it was not mentioned if people could choose their menu or not. However, when the participants were recruited, they could click on a link to a Google Form (See Appendix F), where they could subscribe. In this Google Form was explained how the service works for students. The explanation mentioned in step 1: In the weekly plan you order for the whole week in once, and you may choose from many options for each day. This "many options" was a mistake, because as the project was realised, it became clear that it would be better to not have menu choices, to make it easier to reduce food waste by using products that otherwise would spoil.

Table 3: List of all Instagram posts of Fresh 'n Friendly

Date	Post type	Post
Wed 19-05-2021	Feed	Call for action to give packaging material. This post is deleted after realizing that first other posts are needed, like introducing myself.
Mo 24-05, around 10:00	Feed	Introducing myself with a picture on the market of Van Heek Plein
Tue 25-05, around 12:00	Feed	Introducing the logo and explaining the name of the service: Fresh 'n Friendly
Wed 26-05, 10:30	Feed	Introducing Fresh nuts as a healthy ingredient.
Thu 27-05, 9:15	Feed	Create a new life for your used food boxes!
Fri 28-05	Feed	Recruitment of participants for the evaluation week for random recruitment.
Tue June 1	Feed	Introducing oatmeal as a long energy giver with minerals.
Fri June 4	Feed video	The process video of Fresh 'n Friendly.
Sun June 6	Archive created	Because of partnership with Ecocentrum Emma: The food boxes are not asked for anymore.
Mon June 7	Short stories	Sharing of new partnership, explaining the update.
Tue June 8	Feed video	Video of me in the electric three wheeler tuc-tuc of Ecocentrum Emma
Thu June 10	Feed	Joke: ever having trouble in the kitchen? -> order at Fresh 'n Friendly
Fri June 11	Feed	Sharing new partnership with Ecocentrum Emma with a picture of the outside sign of the centre + a self made flag using a Fresh 'n Friendly sticker and a just found on the street bike spike.
Sat June 12	Feed	Sharing the ingredients put on a table of Ecocentrum Emma in the shape of a smiling face.
Sat June 19	Feed	Advertisement for the test week with the bike bags of DHL and a little sticker of Fresh 'n Friendly, but and advertisement for who?
Mon June 21	Feed	Review message from @meneerboeddha on Facebook, reposted on Instagram.
Tue June 22	Feed	Breakfast Tuesday: Post of what I made on Tuesday and a talk of advertisement.
Wed June 23	Feed	Picture of what I delivered on Wednesday (Avocado) with an ingredient list.
Fri June 25	Feed	Carrot cake breakfast. Only picture and name.
Thu July 15	Archive created	The post of the carrot cake breakfast was archived, because the evaluation someone told that the ingredients do not look tasty enough. The carrot cake breakfast looked worst, so I deleted that one.

### 5.3.2 Healthy Breakfast Recipe Guidelines & Recipe Creation

The author uses food groups for his breakfast that are healthy based on scientific consensus. These food groups are based on The Wheel of Five Fact sheet (Netherlands Nutrition Centre, 2017) and in this project the Wheel of Five is also used as a framework for the ingredients and proportions for the creation of a healthy breakfast recipe in the service. All nutritional specifications in the section about oatmeal come from either food labels or NEVO-Online (NEVO-Online, 2019), an

accessible food specification data-base of the ministry of public health, welfare and sport. The food component's health benefits are rather authorized by the European commission of health claims (European commission, n.d.), otherwise claims of health are unauthorized and non-truthful. However, since a lack of time and because this register is quite complex – it has registered not the foods itself, but the food components – the health benefits cannot scientifically be claimed health of components of the ingredients used.

One addition to the Wheel of Five are the spices used, because the food needs to be tasty to sell the food more often. Although they are not explicitly mentioned in the Wheel of Five, spices and herbs are in principle vegetables or root vegetables, so spices seem to fit in the Wheel of Five. Just as FV, they have possible health benefits as described by Jiang (Jiang, 2019).

Another addition to the wheel of five is the fact that the products I use must be vegan because (1) this is estimated to be easily achievable within delicious recipes and (2) this will make the service cheaper and therefore more attractive by students, since water is cheaper than milk. This is not proven to be better other than the price, but more a choice that is made beforehand. A beautiful point in the vision of the researcher involved is that this could show that oatmeal (or other WG) porridge can be vegan and tasty using the right spices.

At last, the recipes will be based on porridge made of oatmeal or other WG, because of their large proportion in the wheel of five. The other ingredients need to combine with oatmeal and rather be recognizable as a good combination for students in the Netherlands.

As stated above in section 5.3.1 Marketing & Recruitment of participants, with the recruitment it was communicated that students would have the option to choose between recipes. However, the recipes used have certain guidelines, as is as late communicated as in the Order Form (see Appendix G). The guidelines are:

To begin with:

- All recipes will be ready to eat.

Every day a certain basis was used:

- Oatmeal or 7 WGs (a pre-bought mix from Ecocentrum Emma).

Variation between the days:

- Types of nuts;
- Types of dried fruits;
- Types of fruits;
- Types of pits & seeds;
- Types of spices;

The recipe creation was done using these guidelines and a spreadsheet to calculate the prices for the portion sizes used. All together, a normal sized breakfast costed around 1 euro. Also, the portion sizes were calculated in the amount of tablespoons or teaspoons per portion, to become more efficient in the kitchen.

### 5.3.3 Tasks in Preparation of the Test Week

Two tasks needed to be fulfilled before the test week could start. First, a way of storing and easily using the dry ingredients was needed. Because the author already used IKEA pots<sup>24</sup> for his own dry and stable ingredients, it was chosen to buy a couple of them to put the dry ingredients (WGs, nuts, pits, seeds and spices) in. The IKEA pots used are in Table 4 and costed 25.87 euro in total. Second, a way to mark the first intended delivery boxes (ice packages and yogurt buckets) was

Table 4: IKEA pots used

Product	Amount	Price/product	Total value	Cost	€
Korken 1.8 L	4	€ 2.49	€ 9.96		
Korken 1 L	2	€ 1.99	€ 3.98	Subtotal	€ 22.88
Korken 0.5 L	5	€ 1.49	€ 7.45	delivery costs:	€ 2.99
spice jars 15cl	4	€ 0.37	€ 1.49	Total:	€ 25.87

needed and 500 stickers (500 stickers costed less than 250, which was also more than enough for the test week) of the logo were ordered for 24.33 euro at Budgetstickers.nl<sup>25</sup> (see Figure 29. This sticker is also used as profile picture of the Instagram page. After collaboration with Ecocentrum Emma, these stickers were used for marketing purposes (the flag on Instagram, and to give to people), marking the IKEA pots and to put on the rear side of the cards.



Figure 29: Stickers of Fresh 'n Friendly Logo with circle around it

<sup>24</sup><https://www.ikea.com/nl/nl/search/products/?q=korken>

<sup>25</sup><https://www.sticker.nl/budgetstickers>



### 5.3.4 Materials

The materials for this project are a food supply, a kitchen including materials, a way of packing the breakfasts and a means of delivery. For the food supply (the organic store with 15% discount) and a professional kitchen, Ecocentrum Emma had offered theirs and these were used. The meal prep boxes that were used were already in Ecocentrum Emma, but because the lids were not closing well enough it was planned to use rubber bands the author already had at home. The delivery could be done in the electric three wheeler tuc-tuc of Ecocentrum Emma, however, they have been done by bike. The kitchen materials that could be used every day after cleaning again were:

- A pan (a lid is optional, but more efficient);
- A whisker or something else to stir and distribute the portions over the meal boxes;
- A teaspoon and a small tablespoon for the measures;

### 5.3.5 Preparing Breakfasts & Time Estimation of the Tasks

Table 5: The time estimation and planning of the different tasks

Time	Actions
6:30 - 7:50	Preparing the breakfasts, doing the dishes, filling in the recipe cards if still needed, and cleaning the kitchen
7:50 – 9:05	Biking and delivering, picking up previous delivered boxes at the addresses previously ordered.
9:05 – 9:20	Picking up delivery boxes from addresses delivered previously but not in the near future
9:20 – 9:50	Doing the dishes of the picked-up delivery boxes and if not made it before, also the remaining dirty kitchen materials.
1 hour on the day before	Recipe creation
1 hour on the day before	Creating recipe cards
Total time:	6:30 – 9:50 (3:20) + 2 hours = 5:20 hours of work per day.

In Table 5 the tasks and time estimation for each task are shown, and the time planning for the first morning. The recipe creation was done by first seeing what fruit could only be used immediately or one or two days after when stored in the fridge. These fruits were combined with a type of WG porridge (oatmeal and 7 WGs were planned). After the recipe has been created, the recipe cards needed to be created. It was estimated to take 45 minutes for eight breakfast

cards. The time to cook was based on a test run at the home kitchen wherein eight breakfasts were made (and packaged) and the materials were cleaned, which took one hour. Because the kitchen of Ecocentrum Emma was new to me, to find all materials for cooking it could take a bit longer. So for cooking, packaging and cleaning 1:20 minutes was planned, if around eight people would order. For the delivery a test route was biked plus an estimated 3 minutes per delivery was calculated. The test route took 35 minutes (without traffic), and for eight deliveries, so one hour should be enough. However, because of no traffic at the time of the test route and to pick-up additional boxes at other addresses (at which was not ordered again), 1:30 hours was estimated. Therefore, in the order form (see Appendix G), the delivery option times were set between 8 o'clock and 9:15. Next, there was done some cleaning afterwards the boxes were picked-up, which was estimated to cost at most half an hour.

### 5.3.6 The Recipe Cards

The collectable recipe cards are designed by hand, with a playing card design. This is collectable because if 52 different cards are collected, a whole card game can be played. This collectable is an attempt to make sure that people find the service remarkable; to distinguish this service from other delivery services like Just Eat (Thuisbezorgd), and to inspire to prepare the same breakfast on a later moment. The front side is designed with a play card, which is unique for the first 52 cards, because one real deck was used to hold track of which cards were already delivered. The rear side had a sticker of Fresh 'n Friendly to make them all the same at this side for playing purposes. In Figure 30 a pre-made card is shown, on the rear side the sticker and on the front side the king of clover and a list of ingredients.



Figure 30: One pre-made recipe card

### 5.3.7 Meal Prep Boxes

The meal prep boxes of Ecocentrum Emma are relatively sustainable, compared to boxes that need to be thrown away. They are made from reusable and cleanable material, which does not interfere with food, so toxic free, alsos stated on the bol.com page were these kind of boxes are sold. The compound namely is polypropylene (PP), which a plastic relatively assessed as safe (Info@zonderbpa.nl, 2020). It is free of BPA and it is recognisable by figure 31. Polypropylene plastic is recognisable by this image, a recycle sign with the number 5. It is also used in yogurt buckets, ice containers and other packaging boxes for food. These could be an option to use, but the meal prep boxes of Ecocentrum Emma were more attractive to use, and more neutral in trademark (without a trademark even). Moreover, because Ecocentrum Emma did not approve trademarks that are non-organic, they will not be used in the test week working together with Ecocentrum Emma. The posts requesting for food boxes are therefore either edited or archived.



Figure 31: The sign of the material of the meal prep boxes: Polypropylene (PP)

### 5.3.8 Determining Prices

The price of the breakfast was determined based on the ingredient costs and a small profit margin. The ingredients of one breakfast cost around 1 euro. And the estimation is made that students would be willing to pay 2 euros for the service, so the price for the students was set on 2 euros.

### 5.3.9 Discounts & Present

The participants were promised a discount of 0.10 euro when there were more than one orders at their address. This was implemented to accomplish a word of mouth from housemate to housemate,

and to get the feeling that the service is approved by others when you are going to order together. The participants were also promised to get a present after the they participated with the test week.

### 5.3.10 Recruitment of Participants

The participants were not recruited via Instagram as was intended. However, they were recruited via personal messages of the author and via word of mouth because of the discount for housemates. If they would be recruited via Instagram a more random recruitment would have taken place, but the personal messages and word of mouth was the only thing that worked. This was probably because students did trust it more if they knew the author personally as well. Therefore, the recruitment of participants was based on people the author knew and non-randomly. The consequence of this in the evaluation phase is that the students might give more positive or socially more accepted answers. This is unfortunate, because the answers given in the evaluation phase are in this case not fully applicable.

## 5.4 Test Week Implementation

The test week (21 - 25 of June 2021) was implemented after the recruitment of the participants and after the ethical committee gave a green light to start the experimental week. Ten participants agreed to take part in the research. In total, for the subjects 37 deliveries were done and 50% of them did order for all 5 days in the week. Unfortunately, no revenue was (yet) made, as shown in Table 6. At the end of the week not all dry ingredients were used and a lot of it was left. All planned tasks were done on each day, starting on the Saturday before the Monday. How the days went is described in the following sections. The delivery was every day by bike, because it was doable for the amount of orders, and considered more sustainable than an electric powered vehicle. Not each breakfast had the same portion sizes for WG porridge, because the sizes were estimated to be quicker.

### 5.4.1 Ordering Frequency & Turnover

Table 6: Ordering frequency, turnover, and the (negative) revenue made

Participants:	Orders:						
#	Mo	Tue	Wed	Thu	Fri	Totals:	Cashback
1	1	1	1	1	1	5	€ 0.40
2	1	1	1	1	1	5	€ -
3	1	1	1	1	1	5	€ -
4	0	1	1	1	1	4	€ 0.40
5	1	0	1	0	0	2	€ -
6	0	1	0	0	0	1	€ -
7	0	0	1	0	0	1	€ -
8	1	1	1	1	1	5	€ 0.50
9	1	1	1	1	1	5	€ 0.50
10	1	0	1	1	1	4	€ -
<b>Income:</b>	<b>Mo</b>	<b>Tue</b>	<b>Wed</b>	<b>Thu</b>	<b>Fri</b>	<b>Totals:</b>	<b>Cashback:</b>
Total orders:	7	7	9	7	7	37	€ 1.80
Turnover (€)	€ 14.00	€ 14.00	€ 18.00	€ 14.00	€ 14.00	€ 74.00	€ 72.20
One time investments:	€ 50.20	Groceries	€ 77.68			€ 127.88	
Stickers	€ 24.33	Ecocentrum	€ 77.68				
IKEA pots	€ 25.87				Turnover	Investment	Revenue:
Total residue					€ 72.20	€ 127.88	-€ 72.20

An overview of the amount of orders and deliveries including the turnover made are in Table 6. In this overview, the one-time investments and grocery costs for the week are added, and there

is come for a negative revenue for this one week, and the break-even point is not accomplished in this week.

### 5.4.2 Day 1: Tropical Feast



Figure 32: Card and recipe made on day 1: Tropical Feast

**5.4.2.1 Recipe & Card** This day a breakfast with tropical fruits was made. The mango, pineapple, nectarine, and bananas were almost spoiled because of that they were used. Three students got a perfect recipe card (including all amounts) this day, and the other subjects got a list of ingredients on the cards (see Figure 32 for the recipe and card of this day).

### 5.4.3 Day 2: Apple Cinnamon



Figure 33: Card and recipe made on day 2: Apple Cinnamon

**5.4.3.1 Recipe & Card** This day a breakfast with apple, orange, and banana was made. The spice used was cinnamon, because that fits well with the apple. The recipe cards this time were to fill in for the participants. This was done for (1) that they needed to be mindful of what they ate so they could remember better for later and (2) that it costed the author less time to write the recipe cards as I was short in time (see Figure 33 for the recipe and card of this day).

### 5.4.4 Day 3: Green Avocado

**5.4.4.1 Recipe & Card** This day the breakfast was made with avocado, apricot and banana. Ginger was used to make the recipe more tasty. Not all cards did have an ingredient list, there were also cards with a text like "Please have a nice day", or "With pleasure" (see Figure 34 for the recipe and card of this day).

### 5.4.5 Day 4: Millet Time!

**5.4.5.1 Recipe & Card** On this day the breakfast was made with millet, which was no promised WG. This was an experiment to become even more varied in terms of WGs. This time a list of ingredients was put on the cards (see Figure 35 for the recipe and card of this day).



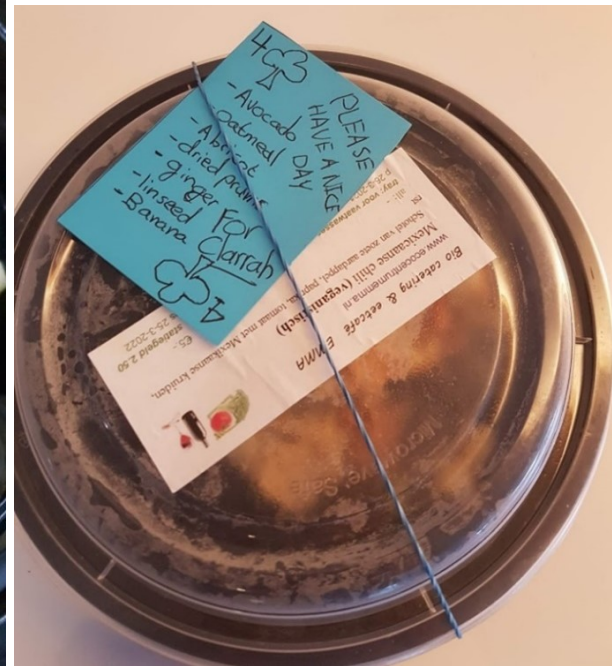


Figure 34: Card and recipe made on day 3: Green Avocado

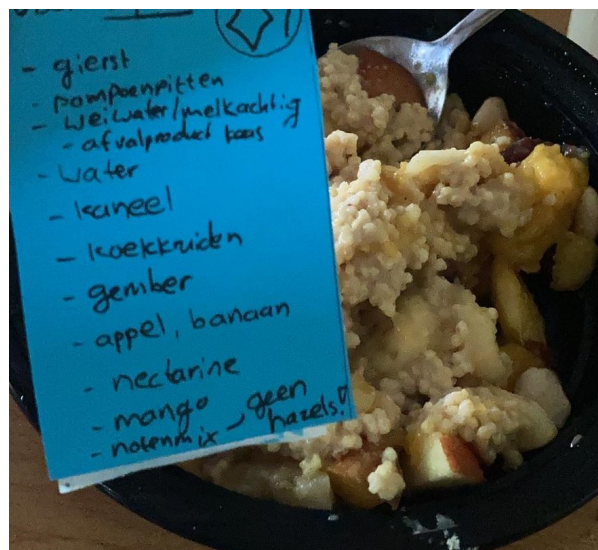


Figure 35: Card and recipe made on day 4: Millet time!





Figure 36: Recipe made on day 5: Carrot cake breakfast

#### **5.4.6 Day 5: Carrot Cake Breakfast**

**5.4.6.1 Recipe & Card** On this day the breakfast recipe was based on carrot cake. Some of the ingredients used were carrot, strawberries and pineapple. On the cards, only "Carrot cake breakfast" was put (see Figure 36 for the recipe). The present was also distributed to some participants who ordered this day, which were saté sticks with pineapple (from pot) and fresh strawberry.

### **5.5 Not Implemented**

The following specifications were not implemented in the Healthy Breakfast Delivery Service due to time constraints or being a restriction for another feature.

#### **5.5.1 Menu Choices**

There is not implemented that students had menu choices. The reason for this was to keep it easy to reduce food waste by not having promised to use certain ingredients. Moreover, the ingredients that were almost spoiled or very ripe and needed to be used immediately, were sometimes identified in the morning just before the start of the cooking process. This would not be possible when exact recipe promises were made, because then not all almost spoiled or very ripe products could be used.

#### **5.5.2 A (web) application**

Because of limited time, a (web) application is not implemented. Benefits of a (web) applications could be the professional look, the possibility to make a notification system and a public, easy to find, online ordering system.

#### **5.5.3 A notification when students need to order**

Because there was not a way to systematically and non-obtrusively notify the participants (for example in an app), a notification was not implemented. However, still there is thought that this would have added value, especially in a scenario that the service would run only a couple of random days a week.

#### **5.5.4 Professionally designed recipe cards**

The professionally designed recipe cards were not implemented, neither they were designed. This was not be implemented because of lack of time and because the author did not want to spend unnecessary money on the cards prototype. Additionally, it was not implemented because the high flexibility needed for the recipe cards (the recipes were mostly made on evenings before the breakfasts were delivered).

## 6 Evaluation

In this section, there is written about the analysis of the data collected to evaluate to what extent the one week realised healthy breakfast similar to the ones the service provided delivery service, Fresh 'n Friendly, was supported or desired by University/HBO students, helpful or empowering for them on the long-term, and finally to what extent the service is scalable to help more students. Consequently, this evaluation grounds the conclusion (section 7 Conclusion) of this bachelor thesis. The main question was: "To what extent can a chosen solution empower University/HBO students for a sustainable dietary improvement in their breakfasts?"

### 6.1 Methods

For the evaluation questionnaires and user interviews were implemented to answer the research question. The participants have been both users of the service and participants of the research and were allowed to order online via a google form for one week: the test week (21 - 25 of June 2021). In addition, the subjects needed to fill out two questionnaires, and they knew that they would be contacted if the author would like to interview them. Because of time constraints, only three out of ten participants were interviewed. The information brochures and consent forms of the questionnaires and interviews were approved by the ethical committee of the EEMCS department. They are in the appendices, see next section.

For this amount of participants, no demographics were asked. This is because there would be no significant difference between groups with this amount of participants.

The first questionnaire has been sent to- and answered by the participants before the test week to measure the eating behaviour of the subjects and their desired dietary goals of the test week beforehand. The answers for eating behaviour were used to compare with the answers of the second questionnaire.

The second questionnaire was sent after the test week to among others measure the participants' eating behaviour in the test week and if they reached their goals using the service. Because it was neglected to ask about how the participants heard of the service in the first questionnaire, in this questionnaire the way the participants were reached and their reasons to participate were asked. This was done to understand why people would use the service. The eating behaviours were measured to compare with the eating behaviour measured in the first questionnaire to get insight into the dietary improvement the service induced for all participants together. In addition, there was asked for their desire to use the service again if available, to measure the support or desire by students for the service. Furthermore, all made recipes were graded on a 1-10 scale by the participants to understand what important aspects of the service (e.g. healthiness, looks, taste, etc.) did (not) work. In chronologically order, of each recipe first, the photo was shown and after that, the different aspects were graded. In the final section of the questionnaire, the tops of the service and suggestions for improvement were requested. This is requested to indicate design flaws and future work, but also to indicate the features to keep in the service if it would run again.

Three user interviews were held to get a more in-depth understanding of the questions asked in the questionnaire after the test week. All three user interviews were held with one participant at the same time at the end of the test week (Thursday 24 and Friday 25 of June) and shortly after the test week (Monday, June 28). In the interviews, approximately the same questions were asked as in the questionnaire after the research, but more in-depth answers could be requested when needed: to extent, the depth of insight in what the users wanted, questions were probed to get a more extensive answer. The questions and answers were notated during the interview sessions, and no audio recordings were made. Because no probed questions were in the notations, the questions and

answers are described to the extent the user gave answers, including answers after the probing. For the reason that there was some uncertainty if the answers notated in the appendix made the right points, the worked-out appendix is sent for a check to the students interviewed before analysis. Two out of three did answer and the comments are already processed in the current questions and answers in the appendix.

## **6.2 Information Brochures and Consent Forms**

All information brochures and consent forms, one prior to the full research and one for both the two questionnaires and interviews were approved by the Ethical Committee of the EEMCS department. The information brochure and consent form prior to the full research is in Appendix H Information Brochure and Consent Form for full participation of the test week. Before the test week, the information brochures and consent form prior to the research was signed by all participants (see Appendix I Signed Consent by all 10 participants). The informed consent of the questionnaires are included in both Google Forms used (see Appendix J Questionnaire before the test week and K Questionnaire after the test week). The informed consent of the user interviews is in Appendix L User Interviews.

## **6.3 Recruitment of Participants**

In total, ten students agreed to participate in the test week. The characteristics of the participants were that they needed to be students and live in the area between the campus of the University of Twente and Ecocentrum Emma. As described in section 5 Realisation, the participants in the research and users of the service in the test week were recruited non-randomly using personal messages. Unfortunately, this was the only method functioning to get participants, but the consequence is that subjects might give more answers. In addition, ten participants were estimated to be manageable by one person, but more participants would have been welcomed as well.

The subjects who were interviewed were semi-randomly chosen and asked for an interview. Except for one, all participants were friends or acquaintances of the author before the test week started, so the author could estimate who probably would have time for an interview. The three subjects asked first were interviewed. The choice for the participants was made based on estimated availability, and this was little based on the extent of interest people had in the service. The subjects recruited for the interviews were therefore semi-randomly recruited and the consequence could be that the answers given are slightly more positive or socially more acceptable than reality.

## **6.4 Results of questionnaires**

All ten subjects did fill in both questionnaires. The analysis conducted in this section is based on answers of the questionnaire before and after the research (see Appendix J Questionnaire before the test week and K Questionnaire after the test week). The answers of the questionnaire before and after the research are in Appendix J.2 Results of the Questionnaire before the test week and K.2 Results of the Questionnaire after the test week. The participants also graded the different recipes in the questionnaire after research, of which the results are put in a separate table (see Appendix K.3 Grade table).

### **6.4.1 Way of Reaching Participants & Reasons for Participation**

The participants were mainly reached via personal messages. They were not, as intended, reached via Instagram. Five out of ten participants were reached via personal messages from Jarl (the

author), three out of ten heard about the service from a housemate, one from a group app message from Jarl, and one other via a common friend. For four out of ten participants, saving time

Table 7: The ways the participants were reached and their reasons to participate

Marketing	
Reached via:	Reason to participate
Personal message from Jarl;	Curiosity about the recipes, and easiness
Personal message from Jarl;	Variety in breakfast
Personal message from Jarl;	Good initiative
Via housemates;	Attractive deal, and not to worry about breakfast
Personal message from Jarl;	The need of a healthy breakfast
Via housemates;	Time saving
Group app message from Jarl	To help the researcher out
Personal message from Jarl;	Interested in the idea
Via housemates;	To try out, and time saving
Via a common friend	Interested in process and thought behind it

and/or effort was the reason to participate. Two other participants joined because they were being interested in the concept. Other reasons were the following: One subject found it a good initiative, one other subject wanted to increase variety in breakfast ingredients, and again another subject needed to have a healthy breakfast. In addition, one subject did participate to help the author out with the research.

#### 6.4.2 Dietary Improvement Goals

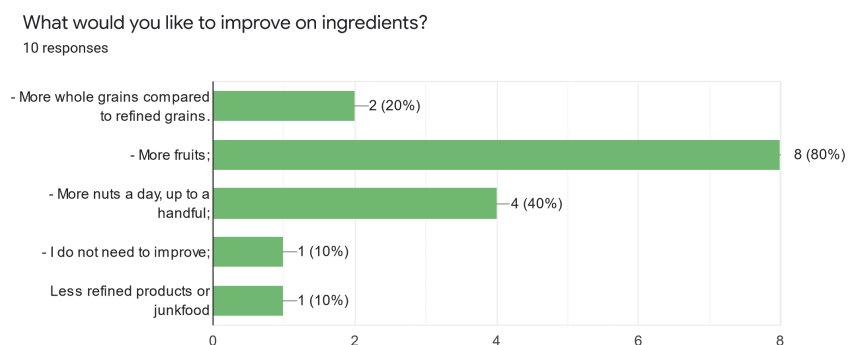


Figure 37: The goals set before the test week

Most students set one or more dietary improvement goal(s) before the test week (shown in Figure 37). Eight out of ten participants wanted to eat more fruit, four out of ten wanted to eat more nuts a day, up to a handful, and two out of ten wanted to eat more WGs compared to refined grains. In contrast, one participant did not need to improve. One other participant wanted to eat less refined products or junk food. In addition, 80% of the participants did want to eat more varied.

Using this service most dietary improvement goals set were reached. Eight out of ten subjects did reach their dietary goals, one did reach it halfway, and one did not reach it (see Figure 38).

Have you reached the goals you set this week because of the service?  
10 responses

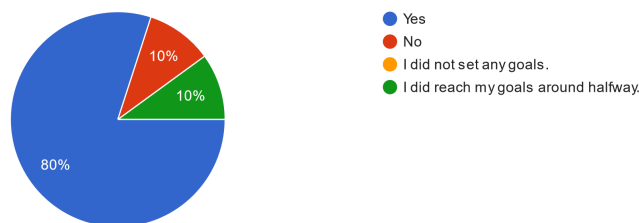


Figure 38: The proportions of participants that said to have reached their dietary goals

The one subject who did not reach the goals set mentioned that he/she did only order once that week and that if more times were ordered, the dietary goals would have been reached.

### 6.4.3 Keeping up with the Dietary Goals

Most dietary goals of participants have been reached, However, what is important to know is whether the participants were able to keep up with their dietary improvements after using the service. The follow-up question namely stated: “Do you think you are more motivated to keep up with your dietary goals because of the service? Why (not)?”. Three participants answered positively: “Yes, I want to be healthy.” and “yes, I should incorporate fruit and nuts into my breakfast more often! it was delicious and I felt good about myself afterwards.”, and “The recipes were very original and definitely inspire me to get more creative with my breakfast!”. One other participant did not think to be able to keep the variety without the service: “I do not think that I am able to keep up with eating more varied without using the breakfast delivery service. The three most important reasons are: 1 costs, 2 preparation time, 3 storage (expiring food)”. One subject was not motivated without the service: “Not really, as preparing a more elaborate breakfast takes up more time in the morning”. Moreover, one participant stated: “If the service kept on going I would keep on using it probably.”. Three participants did not answer this question.

### 6.4.4 Ordering more often

As stated above, to keep up with the set dietary improvement goals, one of the participants would keep on using the service if the service would continue. To answer to which extent the service will be supported for continuation, one question of the questionnaire was: “If this service becomes available in the future, would you make use of it more often? Why (not)?”. The answers were diverse. Three persons answered positively: “Yes, lack of time to do it by myself”, “Yes, I think when I have a job it would be very nice! I also do not like to eat my breakfast straight away when I wake up and these meals are very handy to take with you.”, and “yes! a few (2 or 3) days a week because I felt really good about myself knowing I ate good fuel for my body in the morning”. Two others said that they would order occasionally: “Probably only occasionally, but not a lot. It’s a bit expensive for me and usually I have a tight schedule in the morning between getting up and leaving.”, and “If cheaper sometimes”. One participant said maybe: “Maybe. It would mainly depend on how flexible the delivery is and whether I can choose my preferences. I think I would not like to get breakfast at the same time every day. And at some point I would have my favourite recipes, so I would prefer to eat the ones I like more (like a couple of 4 maybe).”. One

other subject would consider using the service more often: “I would consider it.” and one would maybe order after corona: “Not yet, maybe after corona is done”. On the contrary, there was one negative answer given: “Probably not, but that’s because my sleep pattern is too inconsistent to make use of the service properly.”.

#### 6.4.5 Inspiration to in general eat a healthy breakfast similar to the ones the service provided more often

Are you inspired to try more healthful breakfasts because of the breakfast service?

10 responses

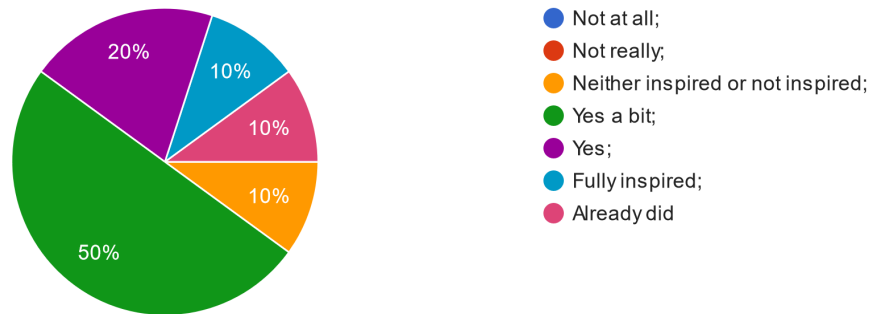


Figure 39: To what extent the subjects were inspired for eating more healthy breakfast similar to the ones the service provideds

In Figure 39 the extent the participants were inspired to eat more breakfasts is summarized. The question stated: “Are you inspired to try more healthful breakfasts because of the breakfast service?”. Five out of ten participants were a bit inspired, two out of ten were inspired, one was fully inspired. One of the participants did already eat a healthy breakfast. On the contrary, one subject was neither inspired nor not inspired. The follow-up question stated: “What makes you (not) inspired to try more healthy breakfasts?”. The subject who was “fully inspired” was this because: “I really enjoyed the fruits and nuts in my oatmeal, and it is easy to add these.”. The participants who said “yes”, answered differently: “I want to lose weight and have a healthy body.” and “It makes me more aware of eating healthy. Eating a healthy breakfast also gives you energy for the rest of the day.”. The participants who answered “yes a bit” on the previous question, had varied answers: “The fact that I found (most) of the breakfasts tasty while knowing it was healthy too.”, “It tasted good and feels healthy, however, it takes more time and money.”, “It is quite simple and healthier.”, “The amounts of variations you can do with oatmeal. They all tasted very different even though it started with the same base. I really noticed being more energetic after the fruits than with my normal breakfast.”, “It is healthy and it was nice.”. The subject who was neither inspired nor not inspired answered: “Not really worth it.”.

#### 6.4.6 Inspiration to prepare a healthy breakfast more often

In Figure 40 the extent the participants were inspired to prepare a healthy breakfast similar to the ones the service provided more often is summarized. On the one hand, two out of ten were fully

Are you inspired to prepare healthy breakfasts yourself, because of the breakfast service?

10 responses

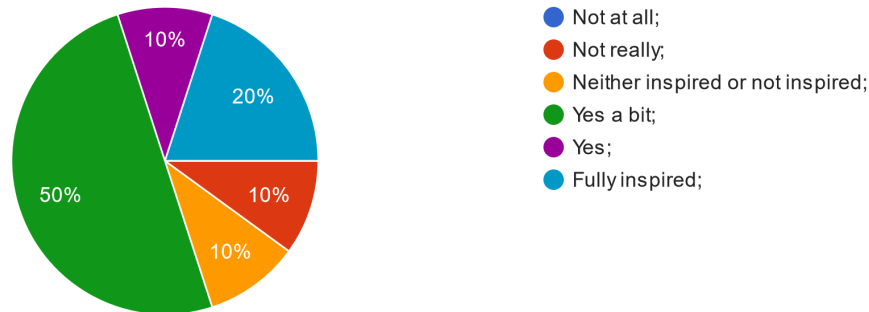


Figure 40: To what extent the subjects were inspired to prepare more healthy breakfast

inspired, five out of ten answered “yes a bit”, and one answered “yes”. On the other hand, one out of ten was “neither inspired nor not inspired” and one was not really inspired. The follow-up question was: “Why are you (not) inspired to prepare healthy breakfasts yourself?”. The ones who were fully inspired answered: “From the breakfast I received from Jarl, I recognized the healthiness, I used to eat anything” and “It seems easier than I thought it was, if you eat oatmeal, because the fruit can be a bit overripe or old!”. Furthermore, the participants who answered “yes a bit” on the previous question, answered: “Because it’s tasty. I already made a kind of healthy breakfast normally. But this inspires me to also try different types.”, “It is quite simple to make”, “As I said I could feel more energetic and full with the breakfast which was really nice. I felt healthy, which is also of course a bit placebo because of the idea that I’m eating healthier.”, “I already ate healthy before the service”. In addition, one said the Dutch translation of “variety is the spice of life” (Verandering van spijs doet eten). The one who was neither inspired nor not inspired said: “I try to spend as little as possible time on making food, as I don’t really get any enjoyment out of it”. Furthermore, the one who was not really inspired answered: “See my answer for the previous question: It tasted good and feels healthy, however, it takes more time and money”.

#### 6.4.7 Price of the Breakfasts

In Figure 41 is shown how the participants found 2.00 euro per breakfast delivery. Six out of ten students found the price reasonable. Three out ten found it cheap. The last participant found it too expensive. The first follow-up question was: “Why do you think that?”. The participants who found the breakfast cheap were reasoning: “It could be a little bit more, because of the service and all the different ingredients. Also, I am wondering whether you make profit with 2 euros a meal ;).”, “You seem like cheap labor :).”, “Delivery costs are very expensive usually, and if that’s not done by a volunteer it can’t be this cheap.”. The participants who found the breakfast reasonably priced, reasoned: “I think it’s kind of reasonable because I assume that the nuts and stuff are more expensive than a simple “boterham”. Still, I think it maybe could be less. At home I sometimes manage to make dinner for 2 euros per person, and I feel like breakfast should be cheaper than dinner. But I think most people would think 2 euros is a reasonable price.”, “On this scale it cannot be much cheaper, it’s probably a bit on the cheap side. However, more than €2,- for a breakfast is



How do you think about the 2 euros asked for one breakfast including delivery?  
10 responses

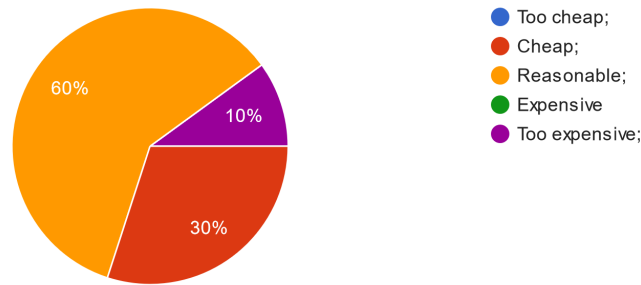


Figure 41: How the participants thought about the price

a bit much for me.”, “I think making it myself would be much cheaper but seeing that also a lot of time goes into preparing and delivering which is greatly appreciated as I don’t feel like doing it myself in the morning it is very reasonable.”, “With all the ingredients in the breakfast and delivery service, it was reasonable”, “Since the service is inclusive delivery it was fine. Without service it would be a little expensive for a breakfast (my own breakfast is around 1,50)”, and “Because you make it in big batches, so it can be cheap, but also, it is delivered to your door so 1 euro would be insane”. On the contrary, one subject found it too expensive and stated: “It is not affordable for students”. The price/quality ratio was rated with a 7.22 (see Figure 42). The price/quality ratio ratings ranged from 6.83 to 7.57 for the different average ratings of the recipes (see Figure 43)

#### 6.4.8 Healthiness

The healthiness of the recipes was most liked and rated with a 7.90. Probably, they found the breakfasts healthily because at the beginning of the questionnaire the Wheel of Five was explained again and asked what they recognised from the Wheel of Five. They all recognised products from the Wheel of Five in their breakfasts.

#### 6.4.9 Taste of the Recipes

The taste was perceived third most liked and scored 7.44 on average (see Figure 42). The average rating for taste users gave to recipes were different (ranging from 6.00 to 8.14 on average) (see Figure 43). What stands out in the table is that the taste was the least graded for the third recipe (6.00), the one with avocado and apricot (Green Avocado).

#### 6.4.10 Desired satisfaction

The desired satisfaction, how much the recipes filled, was rated second high with 7.59 (see Figure 42). The amount of the breakfast was sufficient.

#### 6.4.11 The looks

The looks were rated lowest and got a 6.53 out of 10. On the question if the breakfast would be liked to see beforehand, one participant commented that the pictures did not motivate to eat

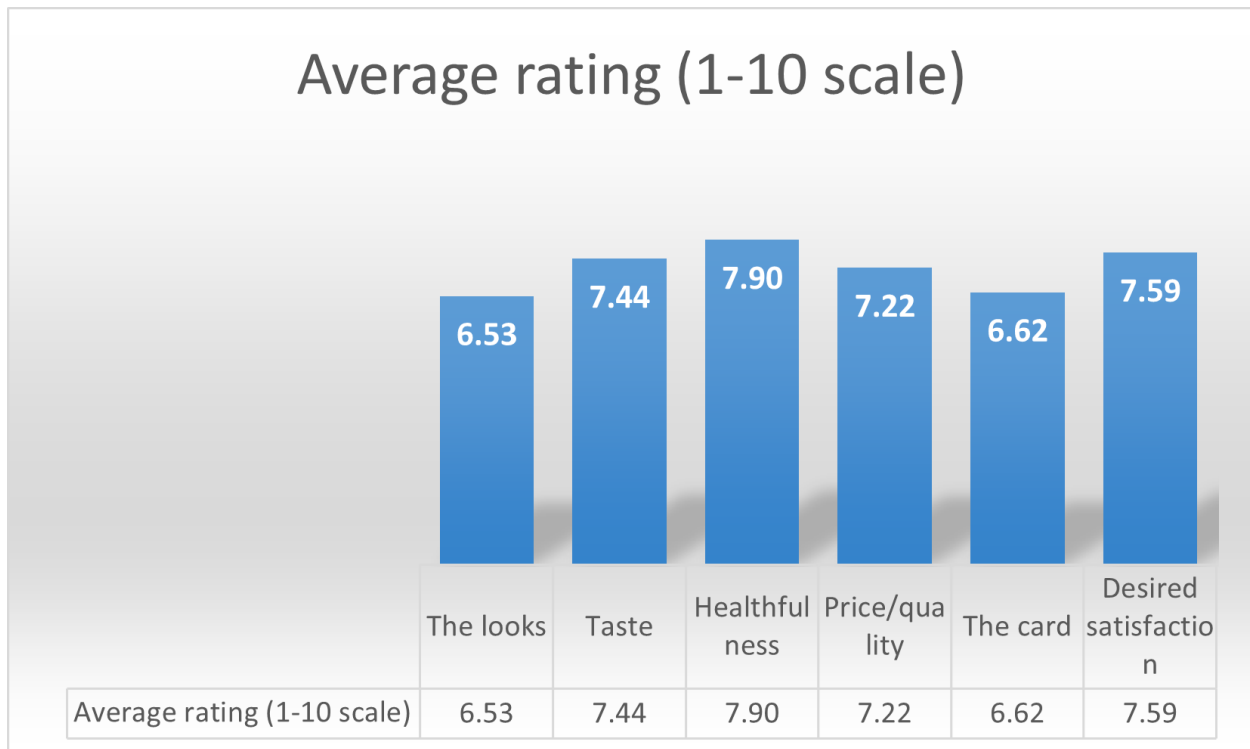


Figure 42: Average rating on a 1-10 scale of the aspects

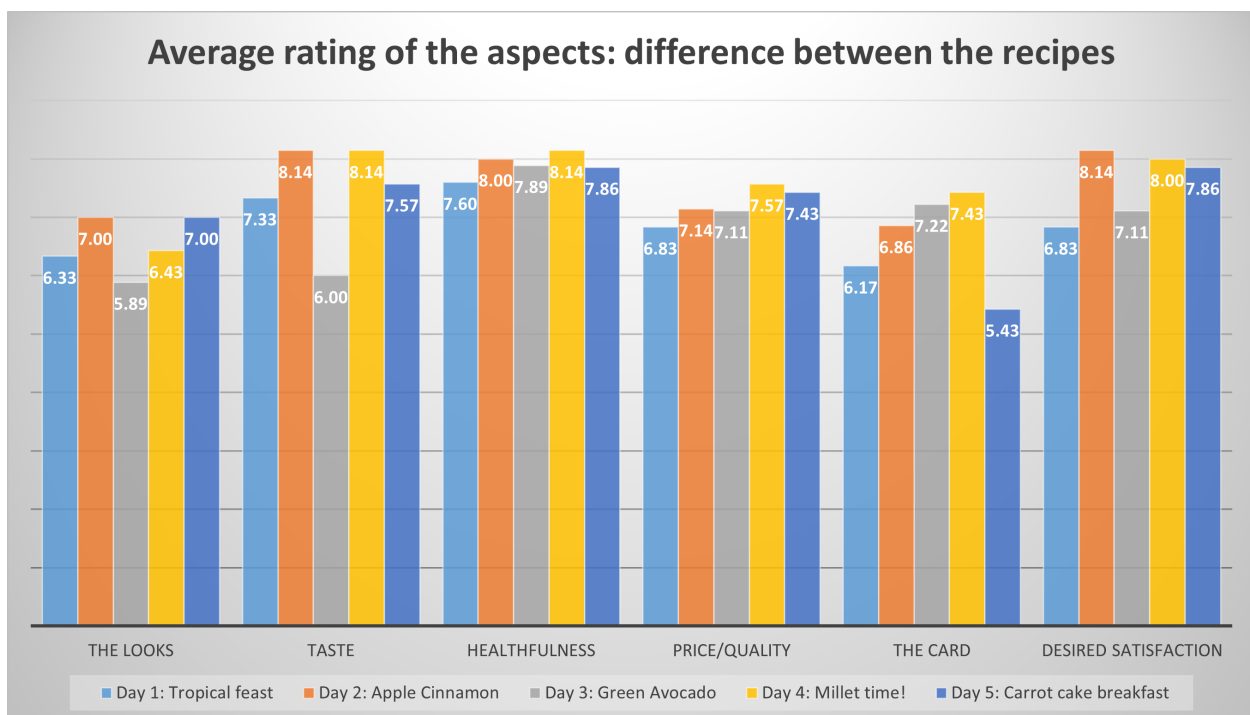


Figure 43: Average rating of the aspects: the difference between recipes

the breakfasts, because the breakfasts did not look super tasty. One other participant stated: “It

usually tasted better than it looks”. Two subjects indicated in the ideas for improvement that the looks should be improved on.

#### 6.4.12 Recipe cards

The recipe card was intended to be the fun, educative and inspiring factor of the service. The fun was intended to be in the collectable aspect, the educative and inspiring factor was intended to be the recipes written on the cards. Different cards can be evaluated using the questionnaire. The cards were not all recipe cards, as described in section 5.4.2 Day 1: Tropical Feast till 5.4.6 Day 5: Carrot Cake Breakfast. Only on day 1 were three full, including all measures of the ingredients, recipe cards distributed. On day 2 the participants needed to fill in the cards for themselves. On day 3 some subjects got a recipe list, and others got a card with a wish on it. On day 4 on all cards a list of ingredients and some of the cards also the name of the breakfast ”Millet time!” was put. Finally, on day 5 only the name of the recipe was put on the cards. In the questionnaire was asked how they liked the card on a 1-10 scale. In Figure 43 it is visible that the cards on days 3 and 4 were most liked (7.22 and 7.43 respectively). On day 3 the cards with wishes and a list of ingredients were distributed and on day 4 the cards with the ingredient list and name of the recipe “Millet Time!” was distributed. The second card, the one they needed to fill the ingredients themselves, was liked the third most with a rating of (6.43). , on the day that three subjects even received a full recipe, was not liked that much (5.50). The fifth card, with only the name, was liked the least (5.29). Furthermore, one of the participants suggested creating a digital version of the ingredient cards. There were no reasons asked for the low grades of the cards. However, in the general points for improvement one subject answered: “I don’t care at all about the cards, they do not excite me, so I would not want you to waste time and resources on them for me.”

#### 6.4.13 Choice of menu

If you could choose between seeing and not seeing beforehand what breakfast you will get, what would you do?

10 responses

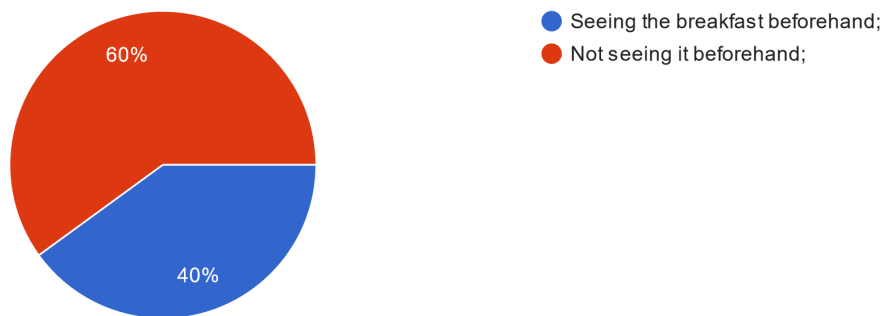


Figure 44: The subjects desires concerning seeing the breakfasts (not) beforehand.

The fact that the students could not choose what was on their menu, was called several times a ”surprise factor” in the surveys. In Figure 44 it is visible that more than half of the subjects would

choose for "not seeing the breakfasts beforehand" over "seeing the breakfast beforehand". In the follow-up question was asked why the participants would choose that. Reasons why the 60% of the subjects liked to not see what was coming beforehand were: "I think that the pictures would not motivate me to eat it. In general, I think that the breakfast does not look super tasty on the picture. I think I would rather have a list of ingredients and pictures of those ingredients separately. It's the taste of the meal that motivates me to eat it, not the picture.", "I liked the surprise effect, and usually it tasted better than it looked", "Then it is a surprise", "I liked the surprise factor. I am not a picky eater so I was pretty confident I would like them either way. Because of this it was fun getting up every day wondering what would be awaiting me", and "I like the surprise factor", "I like surprises and I eat everything". 40% of the subjects wanted to know what was coming. Reasons for that were: "Knowing that I will like it or not" and "I might not like all breakfasts, an option to choose would be nice.". One participant who did want to see the breakfast beforehand did not answer this question.

#### **6.4.14 General tops of the service**

Near the end of the questionnaire, the following question was asked: "Any general tops of the service you have not been able to mention or fill in yet?". The answers were: "I like it that the service is personal. Someone comes to bring it to your house.", "The delivery was always with a smile", "I'd like to thank you for the hard work every morning and am happy to have participated in the test", "Thank you for the meal and good luck with your thesis! :)", and "Great delivery service. (Although you were three quarters too early).".

#### **6.4.15 General Suggestions for Improvement**

One question of the questionnaire was: "Do you have any ideas about what improvements or changes would make it more attractive to order more often?". The answers were diverse: "You could do something with a discount for something. Dutch people love discounts or stuff that is free. That would be something to motivate them. To make it easier for yourself, you could say that the people who order at a set time (for example 9 o'clock on certain days of the week) would get a discount.", "Maybe a form of contactless delivery, like a meal that is delivered through your mailbox/on your doorstep some time before you wake.", "My tip would be to add the whole grains separately, because then they will stay more fresh", and "The oatmeal was a bit flavourless the first 2 breakfasts I had (it said 'anijs' and stuff, but I didn't taste anything). The raw carrot chunks were too big in the carrot cake oatmeal, but the oatmeal in that one was DELICIOUS with the cinnamon. no other changes because it was exactly as I'd imagined: dependable delivery, no hassle with cleaning the container, fruits and nuts and healthy stuff to start the day.". Two questions after that, the last but one question of the questionnaire: "Any general points of improvement of the service you have not been able to mention or fill in yet?" One of the participants made the following general suggestion: "I think it might be smarter to not have to pick up boxes from peoples houses if people do not order again. They pay a fee for the box, so you could do just like beer bottles: they have to bring them back in order to get their money back. You could work with a system where people can hand in the boxes somewhere on campus. If they forget, they don't get their money."

#### **6.4.16 Summary**

To begin with, most participants were reached via personal messages. There were no, as was intended, participants reached via Instagram. The most important reasons to participate were that

the service saved time and/or effort and that the initiative was liked. Eight out of ten subjects has reached their dietary improvement goals using the service. Three participants were inspired to keep up with their dietary goals, mainly because of the breakfasts' healthiness. Others were less inspired to keep up with their goals, because it took too much effort and time, and money (food expiring) to eat more varied for themselves. The students did like the service to help to keep up with their dietary goals, which is also answered positively by three out of ten participants who wanted to order more often. Reasons for that were lack of time and the good feeling the healthy action did give in itself. The reason that not everyone wanted to order more often, was the somewhat high price, and not always being able to open the door at the right time. In all, the service is liked to be used by the students to keep up with their dietary goals.

Furthermore, eight out of ten participants were inspired to eat more often a healthy breakfast, mainly because of the taste, healthiness and being more energetic after eating. The extent to which the participants were inspired to prepare a healthy breakfast was less, only six out of ten were planning to do that. Reasons for doing it were mainly that the easiness was recognized for making a *healthy* breakfast. Reasons to not plan for making such breakfasts themselves were mainly time and motivation restrictions.

About the price varied answers were given, but six out of ten found the price reasonable and three found the price too cheap. Reasons for this was the recognition that the labour costs were higher and that delivery costs are more expensive usually. The price/quality was rated with an average of 7.22.

The healthiness was rated a 7.90, desired satisfaction a 7.59, and the taste 7.44. This points out the qualities of the breakfast service. However, the looks (6.53) and cards (6.62) were scored lowest, which could be improved. The looks could be improved (and not shown beforehand if the breakfasts look like they did) and the cards could become digital instead of physical.

## **6.5 Results of the user interviews**

Three of the subjects were interviewed (see the question and answers in Appendix L.2 Questions and Answers). Participant (a) was interviewed on Thursday, June 24, (b) on Friday, June 25, and (c) on Monday, June 28.

### **6.5.1 Reaching the Participants & Reasons for Participation**

Participant (a) did participate because the author was so enthusiastic about it and because the subject is aware that a bad diet is bad for people. Participant (b) did participate because of the interest in the health aspect and because it was offered. Besides, participant (b) wanted to see if smoothies could be made with it (which was accomplished). Participant (c) did participate because it was something else than normal.

### **6.5.2 Dietary goals & Long-term Ordering Plans**

The dietary goals were to eat more fruits (a), to try it out, a *healthy* breakfast is fine (b) and (c) was already on track with a good healthy breakfast, but only more fibre would be fine. From the interviews, it was obtained that it could be inspiring for (b) for the input of breakfast choices, and it is planned by (a) to put more fruit in because it improves taste. However, when the service would become available again, the service would not be used too often by participant (a) because the price was too high. If it would become 1.30 (a) would order every day. For (b) it would be good to know what was expected, because some recipes were better than others. Especially when

the University is open and the lack of time in the morning increases, (c) would be more likely to order again.

### **6.5.3 Price of the Breakfasts**

Subject (a) did think 2.00 euros was a high price because it costed more than the average dinner made by this subject. The highest price that (a) wanted to spend on the service was 2.30 euros, but not for every day. Participant (b) did think that for the same price more oatmeal would be better because it was not filling enough. Participant (c) did not give a clear answer or was not asked properly.

### **6.5.4 Expectations**

Participant (a), who is a picky eater, was going to see if the breakfasts would be nice. The breakfasts were better than expected according to participant (a). Subject (b) did not know what to expect, but the breakfasts were different than (b) could have thought of. Participant (c) did expect that it was better visible what was in the breakfasts, which would be a less mixed breakfast. Also, the expectation was that (c) would know what was ordered beforehand. However, this participant missed the whole switch to not knowing beforehand what recipes were coming. The message did not come across, because the first form was taken for granted and the order form was not read.

### **6.5.5 Recipe Cards**

The cards were working for inspiration for participant (c). However, only when all the ingredients were on there. The author told participant (c) that there was Rhubarb in the last recipe and it could be the case that if the Rhubarb was written on the ingredients list, the last recipe carrot cake would not have been the favourite of participant (c). Participant (b) did not like the cards and was willing to give them back. Participant (c) did not keep the cards because of the collectable attribute, but because of the ingredients list.

### **6.5.6 Organic Food**

Only participant (a) was aware that the service did use ingredients of organic produce, and (b) was not. Participant (c) was probably not asked about it, because the author did forget it. Next to that, participant (a) stated that starting organic is tried more times, but found to be too expensive. Besides, (a) questions if mass production is not more energy efficient than organic production, and therefore the benefits of organic produce are less certain.

### **6.5.7 Menu choices**

Participant (b) did mention if one could choose what kind of breakfast was ordered, the breakfast service would be used more often. So (b) did not like the surprise factor. Unfortunately, there was not asked directly about this factor, but on the question of how they would find it to leave out products, (a) and (b) said that it was fine to have the option to leave out products. For (c) there was no clear answer on the question if (c) would like to have the possibility to leave out products.

### **6.5.8 Features to keep**

Participant (a) said that it was nice to eat such a breakfast first, before going to study. Participant (b) mentioned that it was more healthy than the regular breakfast eaten. Participant (c) said that

the overall service was nice.

### **6.5.9 Tips for Improvement**

For subject (b) often too little oatmeal was in the breakfast. Hence, more oatmeal added to the breakfasts would be nice. Participant (c) gave the tip to separate the ingredients more, so it is less mixed and does look more appropriate in the beginning. Also, it was expected by (c) that the breakfasts would be known beforehand. This could be better communicated. The millet was not found to be nice by two participants (a) and (b), and that could be solved by adding more menu options. In addition, more dairy products would be liked.

### **6.5.10 Summary**

What stands out in the reasons for participation is that one of them wanted to make smoothies for the breakfasts. This was also accomplished. Another reason was the health awareness one student had. Regarding the extent of inspiration, the service was overall inspiring for input in breakfast choices.

Furthermore, one answer was that if the price would become 1.30 the service would be used every day. The highest price acceptable would be 2.30.

The breakfast service was considered nice. However, one participant expected it to be less mixed and better looking, while also knowing what breakfast would come beforehand. This participant did not read the second ordering form for the latest information about the project. This could be communicated better if there are changes.

One participant was going to use the cards for inspiration. One other participant wanted to give them back since they were not needed.

The breakfasts were considered more healthy, and the delivery service was considered nice. However, more oatmeal could be added to the breakfasts and the looks could be improved. In addition, menu choices would be liked as well, especially when millet is on the standard menu since millet was not liked.

## **6.6 Marketing**

During the time of this project, the number of followers of the Instagram account used increased by 42, from 62 to 104, which shows that the service did spark interest amongst students. The Instagram used was an existing account, which made this process go faster because already 62 students were seeing this account. But also reaching out to people via group apps (e.g. Create Year 3) helped for an increase in followers. Looking back, the posts that worked best were the videos of the nuts on the market, the process video and the video that introduced the three-wheeler tuc-tuc (based on a quick look at the views and comments). Coming from table 7, the most important reasons to participate were the time- and effort saving aspects of the service, but also the healthiness. A focus point would be to mention the time- and effort saving aspect for the further promotion of the *healthy* breakfasts via Instagram and other channels. This would be done in a fun and attractive way, just like the three-wheeler tuc-tuc introduction.

## **6.7 Sustainability**

### **6.7.1 Reusing Materials**

Reusing the materials was the easiest part of sustainability. The materials were reused and cleaned in the kitchen and most boxes have come back, except for a couple of them (see Figure 8). One

box was lost and the other box was not picked up (yet) after the test week. All the other boxes (94.59%) were all picked up during the test week or afterwards.

Table 8: Reusing the meal prep boxes

Participants:	Boxes:		
#	Delivered	Picked up	Not back
1	6	6	0
2	5	5	0
3	5	5	0
4	4	4	0
5	2	1	1
6	1	1	0
7	1	1	0
8	5	5	0
9	5	5	0
10	3	2	1
Totals:	37	35	2
	Reusing:	94.59%	

### 6.7.2 Reducing Food Waste

In the service a lot of fruit was used that was not appropriate to sell anymore, but what still was nutritious if used immediately. However, the downside is that it costs more time compared to normal fruit. This is because in case of overripe or almost rotten fruit it is needed to check every fruit and cut away the bad parts before they can be prepared further.

### 6.7.3 Reducing Transport Emissions

Because the food came from the assortment of Ecocentrum Emma, the food used caused not that much transport emissions compared to products on the market or the supermarket. One important mission of Ecocentrum Emma is namely to reduce the transport emissions by buying as local as possible, which makes that they have products from places closer to Enschede than most other possible suppliers.

In addition, the deliveries were done by bike and not by the electric three-wheeler tuc-tuc. This reduced the transport emissions needed for delivery.

### 6.7.4 Conclusion

In this project, reusing materials and using food from responsible production sources as stated in the introduction in section 1.2 Vision Statement (like organic, and local) is achieved. Moreover, deliveries up to 25 breakfasts would be possible to be by bike, which makes the service's emissions marginally on small scale.



## 6.8 Finances

### 6.8.1 Turnover & ordering frequency

The turnover made was 72.20 euro, which was already shown in Table 6 in chapter Realisation in section 5.4.1 Ordering Frequency & Turnover. The table is repeated below in Table 9. In addition, as already explained, the order frequency was rather good, because 50% did order for the full week. This high order frequency and the fact that no participants did cancel orders made the service run well for 5 days, delivering for a daily average of 14.44 euros of turnover. On average, 7.4 orders were made for each day, and using that number, the turnover must have been 14.80 euros per day. However, because of the cashback, with a daily average of 0.36 euros, the turnover became 72.20 euros. Including all one time investments, the money generations are negative. However, this could be changed after a couple of weeks since the one-time investments are only made once and the groceries will be used fully.

Table 9: Ordering frequency, turnover, and the (negative) revenue made

Participants:		Orders:					Totals:	Cashback
#		Mo	Tue	Wed	Thu	Fri		
1		1	1	1	1	1	5	€ 0.40
2		1	1	1	1	1	5	€ -
3		1	1	1	1	1	5	€ -
4		0	1	1	1	1	4	€ 0.40
5		1	0	1	0	0	2	€ -
6		0	1	0	0	0	1	€ -
7		0	0	1	0	0	1	€ -
8		1	1	1	1	1	5	€ 0.50
9		1	1	1	1	1	5	€ 0.50
10		1	0	1	1	1	4	€ -
Income:		Mo	Tue	Wed	Thu	Fri	Totals:	Cashback:
Total orders:		7	7	9	7	7	37	€ 1.80
Turnover (€)		€ 14.00	€ 14.00	€ 18.00	€ 14.00	€ 14.00	€ 74.00	€ 72.20
One time investments:		€ 50.20	Groceries	€ 77.68			€ 127.88	
Stickers		€ 24.33	Ecocentrum	€ 77.68				
IKEA pots		€ 25.87				Turnover	Investment	Revenue:
Total residue						€ 72.20	€ 127.88	-€ 72.20

### 6.8.2 Online Ordering System & Delivery

There was an online ordering system using a Google Form (see Appendix G Fresh 'n Friendly Order Form (Google Form)). People could choose to order multiple times in a week for the upcoming day(s), or just once to plan the whole week. Each participant did fill out the order form once. In addition, in personal contact with me, one order was cancelled because of unexpectedly not being home, one order was shifted to another day, and one extra order was made. That everyone ordered only once using the order form could be because everyone was able to plan for the full week, but also because it was not clear that they could order again using the form. In addition, people could indicate there preferred time for delivery. The deliverer was using the preferred times to plan the routes for being

on time for the students. After the order form was used, the author did send a payment request. Doing this for 10 people was doable, but it costed time as well.

### **6.8.3 Tasks & Money**

In terms of time, the tasks costed approximately 5 hours per day (0:40 hours for the creation of recipe cards, 0:50 hours for the recipe creator, 1:20 hours for the cook, 1:30 hours for the deliveries and pick and 0:30 hours for cleaning and picking up boxes). This means that the working hours for the service are 25 hours per week for a total of 37 deliveries. Because the FV did not cost anything as a result of using the FV almost spoiled the profits per delivery are in hindsight estimated to be 1.40 euros, disregarding the other maintenance costs of the service (electricity, water, gas, bike maintenance, detergents, taxes, etc.). This would make 51.80 euros per week. This weekly profit is too low for normal hour wages (roughly speaking, it should be at least 25 times 10). Without the one time investments, the groceries costed 77.68 euros, which is higher than the turnover. However, this is also because not all groceries were used during the test week. Hence, some of the ingredients could be used afterwards by the author for daily use.

As a point of improvement, the service could reduce working hours by not picking up the boxes. In the questionnaire, it was suggested to not pick up the box if people only order once, and just let them bring the boxes back to get the deposit back they have paid. This could be helpful for the service to reduce the working hours for the tasks. However, if the boxes are not picked up, the cleaning must be done by the participant himself, which is once mentioned as a factor why the service is perfect.

### **6.8.4 Conclusion**

About the finances can be concluded that the service is not yet proven to be profit-making, as the working hours of the employees can not be paid yet. However, in a couple of weeks, the service could become a generative one, but still, the wages and all other maintenance costs could not be paid. Therefore, the service should be more up-scaled to make more profit to increase the deliveries made per hour invested. If that does not work, one other idea to get money for maintaining the service is the utility of sponsors. In the section below is discussed how the service could scale up.

## **6.9 Discussion on Scalability**

As stated in the introduction, the goal of the service is to improve the dietary habits of students. Because the research indicates that a lot of students do want to join the service, the question arises whether Fresh 'n Friendly is scalable or not to increase positive impact. Disregard that the service does not make profits as stated in the section above, the service would be able to scale up a bit using more than one person working and using the electric three-wheeler tuc-tuc for delivery purposes. If the three-wheeler tuc-tuc will be used, for some parts of the route on the Campus of the UT would not be possible to pass. Therefore, delivering with the tuc-tuc on the Campus is not certainly faster compared to biking. But for the delivery of more breakfasts, the tuc-tuc will be more efficient and become useful.

Regarding the working hours, when scaled, the service's work would increase and the service would need more personnel. While scaling, it could be that the hours spent will become less per delivery made, because the cooking can be not proportionally longer with bigger batches. In addition to the cooking, the number of deliveries in one delivery action can be upscaled (while hopefully, the time would stay the same). If this would be the case, this would allow higher wages

to be paid and the service should scale up. However, in the future, it must be tried to see how much the time per delivery will be lowered.

Other ideas to lower the costs per delivery are to cancel the failed features and to buy ingredients in bulk packages. The recipe cards could be stopped, which would reduce the time spent on the company. Buying ingredients in bulk packages could be achieved by buying for example the oatmeal and nuts in bulk packages for fewer euros per kilogram than before (including the 15% discount already received) via the suppliers of Ecocentrum Emma.

Besides, there is a limit on the number of products that are only immediately useful and would expire if not used. This is a restriction because if the service needs to buy all fruits for full prices, the profit will lower by around 40% (the average estimated price of the FV added). Hence, when scaling up there should also be found a way to enlarge the supply of almost wasted food, which could help to keep the price low and as a benefit even reduce more food waste. Ideas for this would be to make deals with other organic supermarkets like Ekoplaza Enschede.

Finally, there should be a better way to manage the payment requests for scaling up. When at small scale, it is doable to sent all payment requests to the people who ordered. However, on larger scale, this will take too much time, since the number requests would be too high. A website with payment possibilities or a link to click on (for example a tikkie), and fill in the ordered amount for themselves are both possible.

## 6.10 Conclusion

The aim of the evaluation phase was to determine the extent of support, empowerment for a long-term dietary improvement and to see if it would be scalable to help more students. Because the students did like the taste, the healthiness, and the satisfaction of the breakfasts of the service, there can be suggested that there is sufficient support for a healthy breakfast delivery service. In addition, the students were empowered for a dietary improvement while using the service and there was suggested that the service worked inspiring to eat more often a healthy breakfast. The service was a bit less inspiring for the plans of making such breakfasts as provided by the service for themselves. The main reasons for desiring to eat more healthy breakfasts in the future were, coming from the questionnaire, because of the taste, healthiness and being more energetic after eating. The following results are also coming from the questionnaire. The reasons for planning to make a healthy breakfast were the recognized easiness of preparing such a healthy breakfast as provided by the service. For not planning this the reasons were time and motivation restrictions. The looks of the service were disliked. Coming from the user interviews, the looks should be improved by mixing the ingredients less. Also, the cards of the service were disliked. Coming from the questionnaires, the cards should not be made or become digital. Regarding menu choices, the service should sometimes offer a choice between a product that is sometimes disliked and a product that is generally liked. The students did point out that sometimes the breakfasts were also not liked. Not knowing what is coming or choosing the right option which is eaten would be a pity. Regarding finances, the service is not a profit-making service yet. Future research should prove to see if running the service for longer or scaling up would work.

Regarding marketing, Instagram should be used more often, with the focus on fun and the time- and effort reduction while using a *healthy* service. Instagram failed to reach people for the test week at the moment. But it should be used for reaching future customers because Fresh 'n Friendly is a growing Instagram account.

In terms of sustainability, the service did well. It did reuse kitchen materials and meal prep boxes and reduce food waste and transport emissions. The cards seemed, coming from the questionnaire, not used. This points towards a less sustainable service.

The price of the service was mainly found reasonable because of the time- and effort saving attribute of the service. Coming from one user interview, it is derived that if the price would be around 1.30, more students would probably be ordering more often, and the highest price suggested was 2.30, which would be the maximum to order occasionally. Coming from the questionnaire, the price could be a bit higher because it was stated that the delivery service was a luxury.

## 6.11 Discussion

There are several points of improvement for the evaluation phase which, if implemented or achieved, could make the evaluation more valuable. First of all, the participants were recruited non-randomly because there was no thought of another way than personal messaging after Instagram failed to recruit people. The participants were this way all but one acquaintances of the author. The answers in the questionnaires and interviews could now be too positive towards Fresh 'n Friendly because the author was known by them. The consequence of this is that the results could be not realistic and therefore not be used to estimate the desire or support for a larger group of students. Especially results of the proportion of students who would like to order again when the service becomes available again could be stronger and more detailed when students could have been chosen randomly. This first point could be improved by sending out the recruit messages to more channels, for example, group apps or via e-mail lists of (study or student) associations.

Secondly, there could have been more participants. More participants could bring more valuable results to the evaluation, and more suggestions for improvement. However, ten participants is a reasonable amount to find out design flaws and therefore the design flaws are assessed to be significant for a strong conclusion. Additionally, if more possible participants would have been asked in the same way, it is not likely that much more participants would have joined. The period before the test week (only 1 to 2 weeks before), was too short for that.

Thirdly, because organic food is more expensive than conventionally grown food, the students should have been informed in the questionnaire before being asked about the prices that the food was organic. Although they were informed in the order form, this could have been forgotten or not read. The prices could have been perceived more as too cheap than reasonable if people knew the service was fully organic.

Fourthly, Regarding the user interviews, more information should have been requested regarding what the students found of the service being fully organic because at the moment not in all interviews more questions were asked. An improvement would also be to record the interview sessions with audio because then uncertainties about what the users answered can be worked out individually.

Finally, What would have been more interesting and could be a point of future work is a questionnaire later in time. Therefore, the participants could be asked a longer period after the research week if they kept up with their dietary improvement goals. Because of the present timing of the questionnaire, the dietary behaviour during the test week was measured. This is not more interesting than asking if they reached their dietary goals using the service, because the service did provide healthy foods to improve with. These results have been left out, but can be seen in Appendix K.4 Average dietary improvements during the test week. In the current study, the questionnaire did only measure how the participants *thought* they would keep up in the future. Therefore, the results can not make a claim and are considered a suggestion.

## 7 Conclusion

This project was undertaken to design a healthy breakfast delivery service called Fresh 'n Friendly and evaluate how empowering the service is for HBO/University students for a long-term dietary improvement. The present study provides the first assessment of such a healthy breakfast service in which the participating students were able to order in the test week from Monday, June 21 to Friday, June 25. This first assessment suggests that the students would like to use such a service to reach their dietary goals. Coming from the questionnaires and user interviews, the taste, healthiness and time/effort reductions when using the service were liked, and the service in itself as well. However, the cards and looks of the service were not liked, and could both be improved. Coming from the questionnaire, a more cautious suggestion can be made about the extent to which the service was inspiring for long-term change after the service ceased. The suggestion coming from this research would be that students would be likely to eat more healthy breakfasts in the future, but are less likely to prepare more healthy breakfasts because of the service. These conclusions coming from the questionnaires and user interviews can only be made with caution, because only ten participant took part in the research, whereof three were interviewed, and the participants were recruited non-randomly. In the background research, it was determined that students would need a time- and effort saving, cheap solution for dietary improvements. The positive results coming from the evaluation do suggest that these are the main reasons for the service to be empowering. In terms of empowerment for dietary improvement, the service should continue, but future work has to prove if the money issues (not making a profit yet) can be overcome.

## 8 Discussion

The present study was designed to determine the extent of empowerment for students using the service. The current study found that students, in general, would be likely to order again at Fresh 'n friendly. This finding has important implications for developing the service further. However, there are several limitations identified in this study that question if the result could say "students in general". The first limitation is that the participants were recruited non-randomly. The students might all already be interested in eating healthy, so for the students who are not interested in the service might not be a solution. These results, therefore, need to be interpreted with caution.

The second limitation is that the persons interviewed were recruited semi-randomly prioritizing them on the extent of expected availability for an interview. Therefore, the results might be a bit more positive about the service than they would be if random persons were chosen.

One other limitation is the limited amount of participants. The number of participants should be much more to come to significant findings. But because there were no more participants than 10 participants found, for this study it was unfortunately not reached to run the service with more participants. Also, the amount of user interviews could have been higher. But due to time restrictions, more interviews have not been held.

The fourth limitation is that there was not communicated clearly about the service being organic. If so, the service would probably be perceived as cheaper. In all, communicating more clearly about this in more places might have influenced results about prices and perceived healthiness. Not communicating could have had the consequence that the prices were seen as reasonable and expensive.

Another point of discussion is what would have been happened if professional recipe cards were implemented. This is because the findings on the recipe cards are rather disappointing. The fact that the cards were disliked does not indicate that professionally designed cards are also disliked. They could be implemented as an inspiring and unique factor in the future.

An initial objective of the project was to increase the self-efficacy of the students. However, when self-efficacy is encouraged and students will plan to make recipes for themselves, they will be likely to order less in the future. If they would practically make the breakfasts for themselves the goal of this project would be achieved. However, it is questioned if the students would do this because of the already many times mentioned time-and effort constraints students have. So, for the sake of scalability and increase of people's health, recipe sharing should be ceased.

## **9 Future work**

### **9.1 Continuation of the service**

It is concluded that the service did empower the students to improve dietary habits while using the service. It is concluded that the service should continue, but that future work is needed to prove if the service is feasible. Therefore, in terms of reaching the mission of the author and the solution, the service should be tried for a longer period. If the service runs for a longer period, also more inspiration for dietary improvements can be expected. In the following paragraphs, the way of continuing the service is described.

#### **9.1.1 Inspirational and educative aspects**

Since the cards could be improved, for example towards a digital one, there should be brainstormed of new ways to continue inspire students for making their dietary improvements. Delivering the *healthy* breakfasts is also considered as an inspirational aspect, because of the inherent taste and healthiness.

#### **9.1.2 Breakfast layout & Marketing**

The looks of the breakfasts were not great. The looks could be improved or the breakfast should not be shown beforehand. For improvement of the looks, in the future can be experimented with mixing the ingredients less and putting them more separate in the meal prep boxes. Brainstorms about what mixed colors are acceptable (greenish, yellowish) and what is not acceptable (f.e. brownish) are needed. In future Instagram posts or ordering pages, it would be better to not use images of the individual ingredients instead of the recipes, because in general, the recipes tasted better than they looked. But if participants tasted it while looking at it, they were positive about it and did have the right experience. Therefore, Instagram should not show beforehand how the breakfasts look exactly, but only show the ingredients that students know the taste of. If, however, in the future the looks have been improved, they could of course be shown beforehand, which makes great Instagram material to post just before breakfast time. Besides the breakfasts, great Instagram material would be fun posts, just as the three-wheeler tuc-tuc post. And in the future, more posts about the service's mission can also be posted, as already intended in Appendix E Instagram Promotion. How exactly is still needed brainstorm on.

#### **9.1.3 Sustainability**

For staying sustainable in terms of reducing food waste, the service should try to make a deal with other (organic) supermarkets for buying or getting almost expired ingredients for (almost) nothing.

#### **9.1.4 Finances and Expanding the service**

To develop a full picture of the feasibility to scale up the Healthy Breakfast Delivery Service, Fresh 'n Friendly, more experiments must be done while the service is continued. The aim of the expansion is to reach more students and start making a profit. Hopefully, by scaling up the service, the profit made per delivery can be lowered.

For being fully complete in this thesis, one attribute of the service that was not evaluated was that non-students did also show interest in the service, so it is also a possibility the breakfasts as well to sell to other and probably richer people compared to students. They might also be able

to spend more money on the service, so the profit can be higher selling it to these can come from these people.

However, the service is targeting students and has maximum capacities (only a certain amount of orders can be delivered in one morning) or more one-time investments must be made by buying more delivery vehicles (not in the author's budget). For the start of the company, the electric three-wheeler tuc-tuc of Ecocentrum Emma could be used and a lot can be delivered utilizing that vehicle.

First, the service will become available to everyone. Students are still targeted in marketing, but also non-students can order. Furthermore, some menu options in the dry stable ingredients could now and then be offered to lower the chance of not liked breakfasts (f.e. millet and oatmeal as options). To keep the service manageable, an upper limit on the number of orders a day must be set. After experimenting with this upper limit, the upper limit can be increased incrementally to new reachable values. In addition, bulk packages should be bought and working hours should be kept as low as possible, for example by neglecting the cards and not sharing the recipes in the beginning when the recipe creation still takes too much time. Later, when no recipes require creation anymore, time can be spent to put the recipes online. There must be thought of a way to sell the recipes online and not offer them for free, because otherwise there is no money made. However, a brainstorming session is needed about this after the service is running at a larger scale. In addition, to lower costs, ingredients in bulk can be bought at the suppliers of Ecocentrum Emma, for fewer euros per kilogram.

One questionable aspect of scaling up the service are proposed earlier in section 6.9 Discussion on Scalability, is the extent of scalability of the almost spoiled and free FV used in the service. This way, approximately 40 % more profit per delivery was made. However, as the service would be scaled-up, the natural food shop, which supplies the almost spoiled products, can eventually not supply enough. Therefore, a deal with Ekoplaza Enschede or other organic suppliers could be made in the future to get their almost spoiled FV.

One other questionable aspect is that as the service scales up, the number of payment requests increase. Making these requests can take too much time. Therefore, a website with payment possibilities or a Tikkie link can be made with the possibility of filling in the ordered amount. More brainstorming is needed to get to a good ordering and payment mechanism because the old one would not work anymore when scaled up.

Finally, if in any way tried the service fails to make a profit, sponsors could be asked as last resort. There might be people willing to spend money on giving students better dietary habits.

### **9.1.5 Professional Website or Application**

One vision about this service is that it has a professional website or application. On this website, the most important feature will be an online ordering mechanism. However, for being able to run the service again soon and to experiment with expansion, a Google Form (on for example a page of the author's portfolio website) would be good enough for the time being. On the website, however, could be an ordering mechanism with automated payments via iDeal. This would be perfect to use for scaling up and could be considered after the service was able to scale up.

## **9.2 Future Work**

The future work proposed is to experiment with scaling up the service incrementally, but also with the improvement of the breakfasts' lay-outs.



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## Appendices

### A Collaboration with Ecocentrum Emma

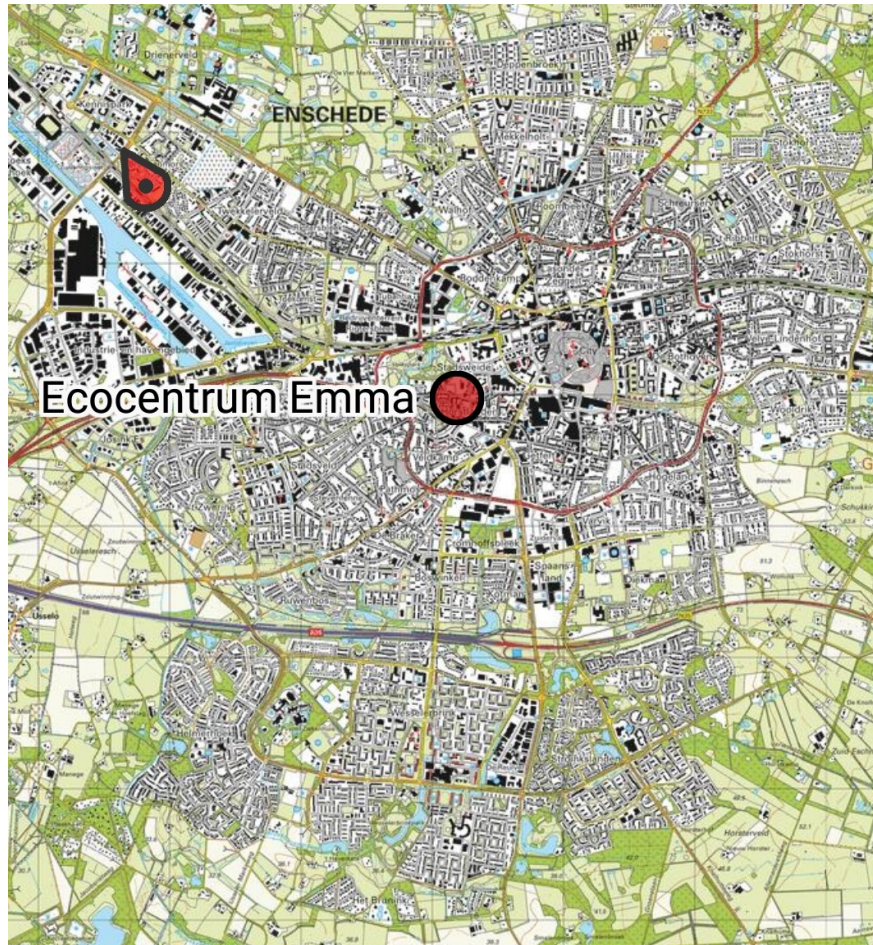


Figure 45: Location of Ecocentrum Emma in Enschede

#### A.1 Contact Details of Ecocentrum Emma

The address details of Ecocentrum Emma are the following:

##### **Ecocentrum Emma**

**Post address:** Emmastraat 189, 7513 BC, Enschede (see Figure 45)

**Contact person:** Susanne Groten

**e-mail address:** [info@ecocentrumemma.nl](mailto:info@ecocentrumemma.nl)

**Phone number:** +31611356236

**Website:** [www.ecocentrumemma.nl](http://www.ecocentrumemma.nl)

## A.2 Declaration of the professional kitchen of Ecocentrum Emma

Beste Jarl en de begeleiders en commissies van de UT.

Hiermee geef ik aan, dat Jarl Witt onder mijn mede-supervisie en eindverantwoordelijkheid zijn opdrachten mag uitvoeren,

in het kader van:

1. realiseren van zijn bachelor opdracht en bij horende horeca activiteiten
2. `www.ecocentrumemma.nl` = context, locatie
3. bio eetcafe emma: horeca vergunning en diverse horeca activiteiten
4. Leerbedrijf Dr. Susanne Groten, met verschillende erkenningen incl. toelatingen "voor alle niveaus"

Overigens heb ik (vrij lang geleden) 16 jaar gewerkt als universitair docent aan het ITC- nu UT- waaronder op het gebied van duurzame productiesystemen.

vriendelijke groeten, Susanne Groten, 06 11 35 62 36, `info@ecocentrumemma.nl`

## **B Summary of Two Individual Interviews of Two UT Researchers**

### **B.1 Question 1: What makes that students do not eat healthy?**

- The alternatives (healthy eating) cost too much time; so: lack of time;
- Perceived high prices of healthy food;
- Interests/do not care;
- They eat what others make for them, especially for dinner;
- Social norms;
- Do not want to/lack of priority;
- Taste is important, because if students try something new, little steps are doable and big steps certainly not; big steps taste terrible;
- Image of students (self-identity), they have the image that students drink a lot of alcohol and eat a lot of pizza;
- No knowledge about healthy food; health awareness;
- Students who just moved to the dorms want to do everything their parents did forbid them, like for many not eating FV.
- Social pressure of peers; students challenge each other to drink a lot of beer or doing other unhealthy stuff;
- Especially at the starting age of students they have a difficulty in seeing consequences on the long term. There is often thought to be observed that they just don't care;
- Social interaction is also important: if no one in the surrounding of students makes a switch to healthy food, others will also not make the switch.

To summarize, the most important reasons are lack of time or priority, low health awareness and self-identity, and social norms.

### **B.2 Question 2: What is a healthy diet?**

- A healthy diet is mainly about eating pace. If you eat too fast, the signal of being satisfied is not yet there, and you keep eating, which results in too much food consumed, which is not good. Of course it is about what you eat, but too much is not good in general;
- Also, it is about processed foods, because processed foods are easily over-consumed. Taking more time for food is better, because then people know when they are satisfied.

### **B.3 Question 3: What should be the contribution of breakfast for a healthy diet?**

- If the breakfast is the only moment someone eats fruit or from another healthy food group, than the breakfast becomes more important;
- Also breakfast needs depends on what people do on a day; how much activities they engage in.

To summarize, healthy eating is not only about what you eat, but also about the amounts taken in. And because over-consumption is more likely to happen with the consumption of processed foods, processed foods should be avoided. Breakfast can become important if it is the only moment someone eats one specific healthy food group and the energy intake of a breakfast also depends on how much activities individuals do on a day.

### **B.4 Question 4: What is empowerment?**

- Academically, empowerment is used in different ways. For example, in philosophy it is an ethical image of man where people make decisions for themselves, and the decisions are not made for them;
- Empowerment means also no inconvenience, and if people feel forced by the intervention, it will not succeed.
- People could be encouraged by nudges to make decisions for themselves.
- To empower it must be clear what is in the intervention for students; what they do gain by using it.

To summarize, empowerment is used in different ways within different fields. However, it could be stated that empowerment means to help without being inconvenient or forceful, and making clear what students gain from the help they get.

### **B.5 Question 5: What kind of technology would help for students to improve dietary habits?**

- A technology that fits for students does NOT mean more effort for them, so the advise is to marginalize interaction.
- It is questionable whether students want to put effort into it/if they are open for knowledge spread via technology.
- It must be something that does not bore students.
- If recipes are spread, students are likely to try a new recipe once and after that they go back to normal.

To summarize, the technology UT researchers propose must be with minimal interaction, minimal effort and must not bore the students.

## C Questionnaire about Breakfast Habits Amongst students

### C.1 The Questionnaire



## Consent form and information brochure

### Introduction:

Welcome to this short survey about breakfast habits. It will only take 2-3 minutes to complete.

My GP is about the empowerment of university students to help them eat more healthful, focusing on breakfast.

To collect only answers from the target group, only university/HBO students are asked to fill out this form.

Are you a University/Saxion student?

If yes, you can participate. If no, you fall outside of the scope of my project and you can stop this survey now.

### Consent form:

The collected data will be used for the background research of my GP to give an indication of the habits and needs amongst students. For this reason, data about breakfast habits and possible needs of change will be collected and analysed.

This is an anonymous form, so no names or very personal data will be asked from you or collected. However, you will be asked for your living situation, because this can be a relevant social factor of your habits. The data that will be published through my report are both an analysis of percentages and general interactions between answers. The raw data will be stored securely on drive and will not be shared with anyone outside this project, so, not with anyone but my supervisors.

Participation is completely voluntary. During this survey, you may stop filling it in at any moment by closing the browser tab. Do not feel obliged to continue filling it in at any moment during the questionnaire. In any case, withdrawing after submitting would be possible. You can contact me if you want to withdraw afterwards. If you do so, your input will be excluded from the results and the analysis. If you have any ethical questions, you can contact the ethical committee at: [ethicscommittee-cis@utwente.nl](mailto:ethicscommittee-cis@utwente.nl). If you have any questions, complaints or remarks about the content of this form, or you want to withdraw afterwards, you can contact me at: [j.e.witt@student.utwente.nl](mailto:j.e.witt@student.utwente.nl), or my supervisor: [a.m.schaafstal@utwente.nl](mailto:a.m.schaafstal@utwente.nl).

By clicking on the box below you say that you confirm to be informed about that this is an anonymous form for the purpose of my GP about maybe empowering you to eat breakfast more healthful. Also you are informed that participation is completely voluntary and can be stopped at any moment during this questionnaire. And that you afterwards can ask for the exclusion of your input. Additionally, all your questions have been answered to your satisfaction. Finally, you accept that your data will be used for analysis.

By the ticking of this box I say that I read the consent form above, know that this survey is completely voluntary and can be stopped at all times, and accept that my data to be filled in about breakfast habits may be used for analysis. (Tick-box)

### 1.1. Questions

I consider a breakfast to be a meal before doing any study-related work. I mean it like a starter of the day.

1. How often do you eat breakfast?
  - Every day

- 4-6 times a week
- 2-4 times a week
- 1 or less times a week
- Almost never
- Never
- Other:

If you never eat breakfast, go to question 5.

2. What are your regular activities just before eating breakfast? (pick all options applicable)

- Getting out of bed
- Taking a walk
- Talking with my housemates
- Doing the dishes of last night
- Brushing my teeth
- Other:

Question 3 and 4 are appreciated, but they are optional. Rather think about question 5 and 6 if you have lack of time or something.

3. What are products you have for breakfast? (pick all options applicable)

- Bread
- Cereals
- Dairy (e.g. milk/yogurt/quark/kefir)
- Cheese
- Jam
- Peanut-butter
- Butter
- Fruit
- Nuts
- Oats
- Overnight oats
- The (dinner) leftovers from the past day(s)
- Something else:

4. Why do you have this product(s)? (pick all options applicable)

- Because I feel like eating
- Because it is left in the fridge/kitchen
- Because I like its taste
- Because it is (relatively) cheap
- Because I think it is good for my health
- Because I do not have to snack for the remainder of the morning
- Because I am a healthy eater
- Other:

If you have breakfast every day, you can skip question 5 and continue with question 6.

5. Think about the days that you do NOT eat breakfast. Why do you then not eat breakfast? (pick all options applicable)

- Because I do not feel like eating
- Lack of time

- Lack of motivation
  - Lack of confidence to prepare something tasty
  - Other:
6. Would you like to change something in your breakfast or in your breakfast pattern? If yes, what would you like to change? And why?  
Open answer.

Last questions:

Thanks for all your responses in advance!

7. What is your home situation?

- At my parents
- In a student house
- I live alone
- I live together with my partner
- I prefer not to say
- Other:

8. Do you have any remarks/things to elaborate on or questions? Let them know in the text below: Open answer

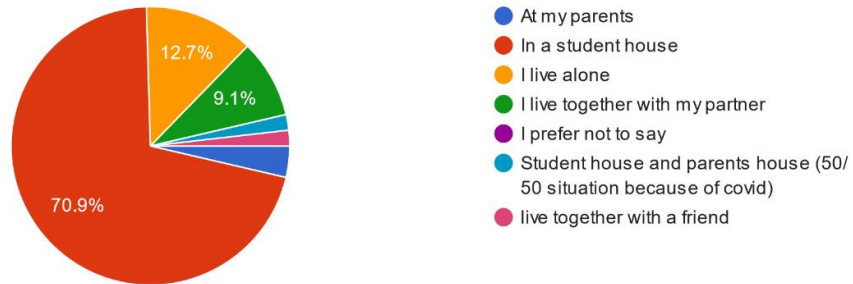
## C.2 Analysis

55 responses until Friday, April 9. Sent out on Thursday, April 8.

- Home situation

What is your home situation?

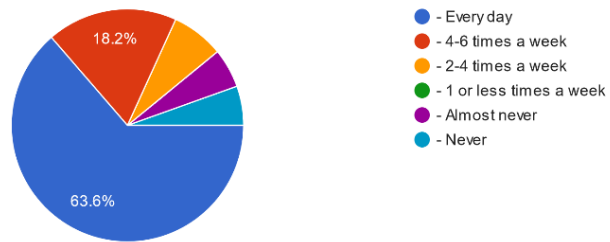
55 responses



- Pattern

1. How often do you eat breakfast?

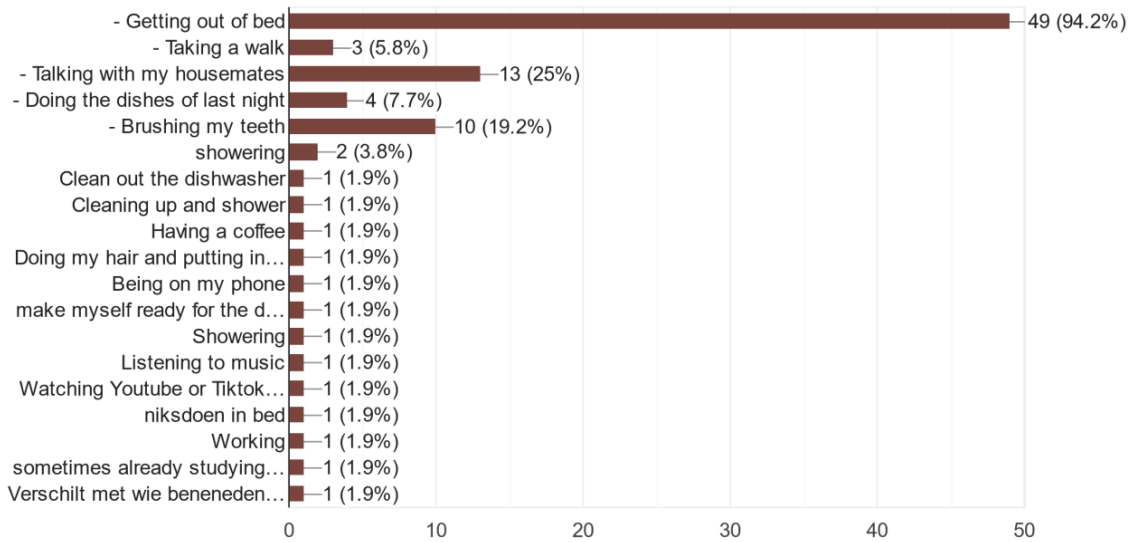
55 responses



- Regular activities just before breakfast

## 2. What are your regular activities just before eating breakfast? (pick all options applicable)

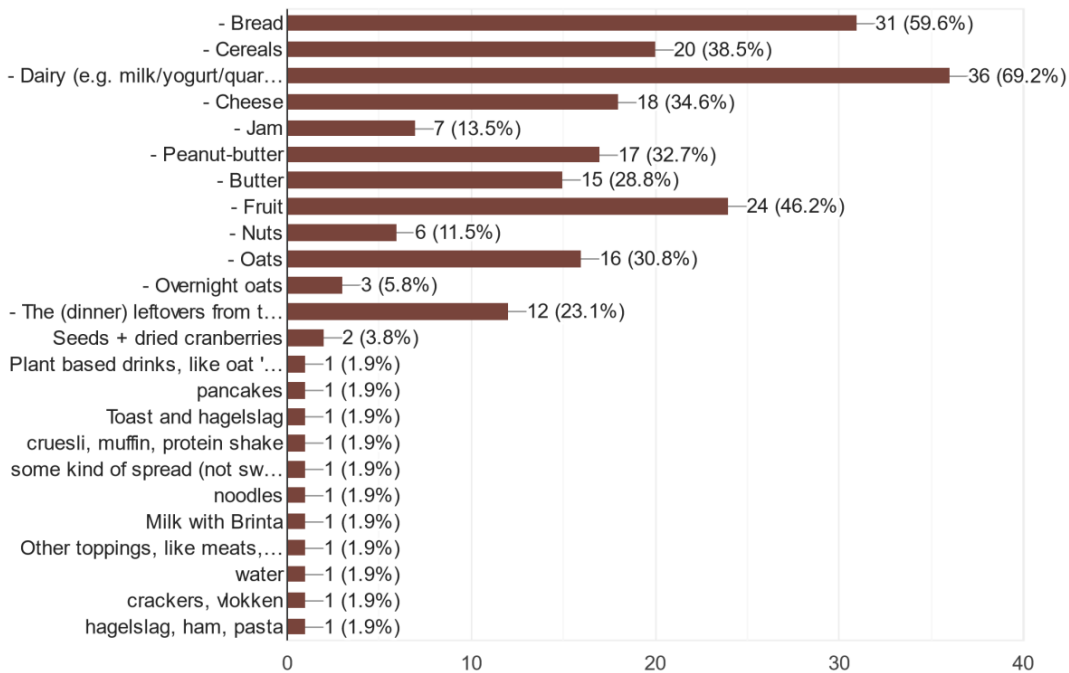
52 responses



## - Products

### 3. What are products you have for breakfast? (pick all options applicable)

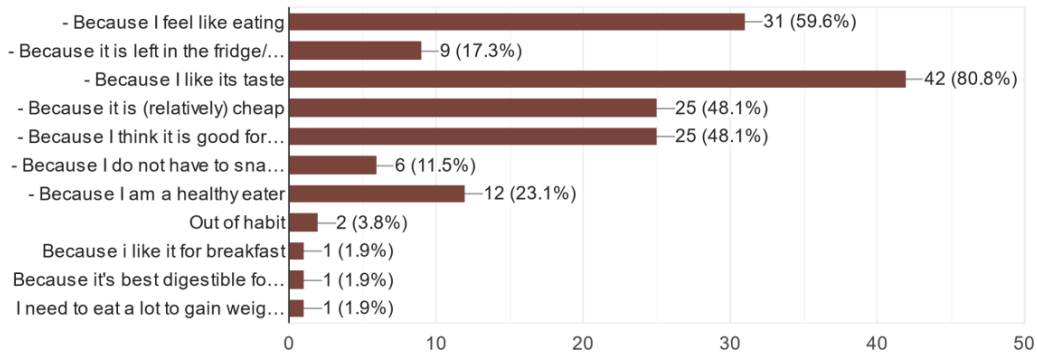
52 responses



## - Reasons for consuming breakfast

#### 4. Why do you have this product(s)? (pick all options applicable)

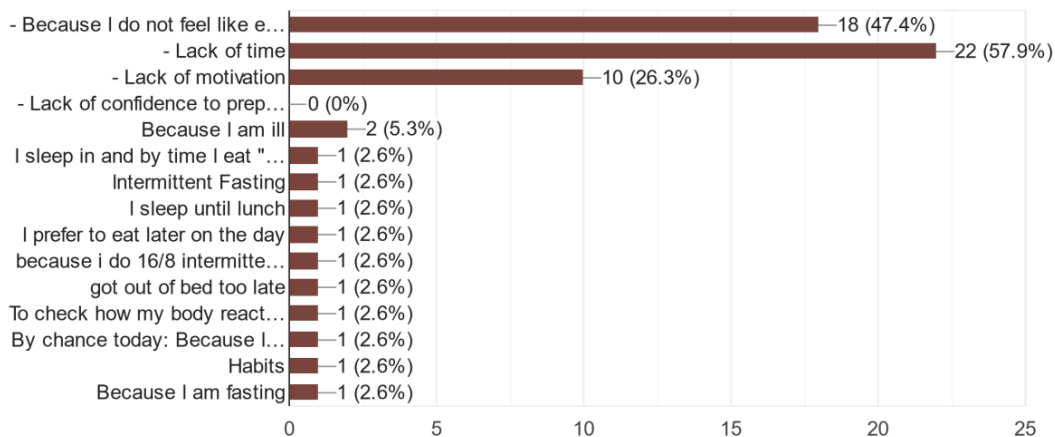
52 responses



#### - Reasons of not consuming breakfast

#### 5. Think about the days that you do NOT eat breakfast. Why do you then not eat breakfast? (pick all options applicable)

38 responses



#### - Do you want to change something?

Would you like to change something in your breakfast or in your breakfast pattern? If yes, what would you like to change? And why?

In Table 1, the codes and quantifications are given for this question. Because many answers were given, categories are made based on these answers. More varied or less sugar/fat is also coded for people that wanted to eat healthier in general, because they seemed to be linked in the responses. In Figure 1, a pie chart with the data from Table 1 is shown. This pie chart is created with python code, which is in the text box underneath the image.

Table 1: Appendix Breakfast Habits: the desired change coded and quantified

	No desired change	More varied or less sugar/fat	More regular breakfast pattern	Desired to spend more time on breakfast	More varied or less fat/sugar and more regular	Other	No response
#	32	11	5	2	1	2	2
%	58.2	20.0	9.1	3.6	1.8	3.6	3.6

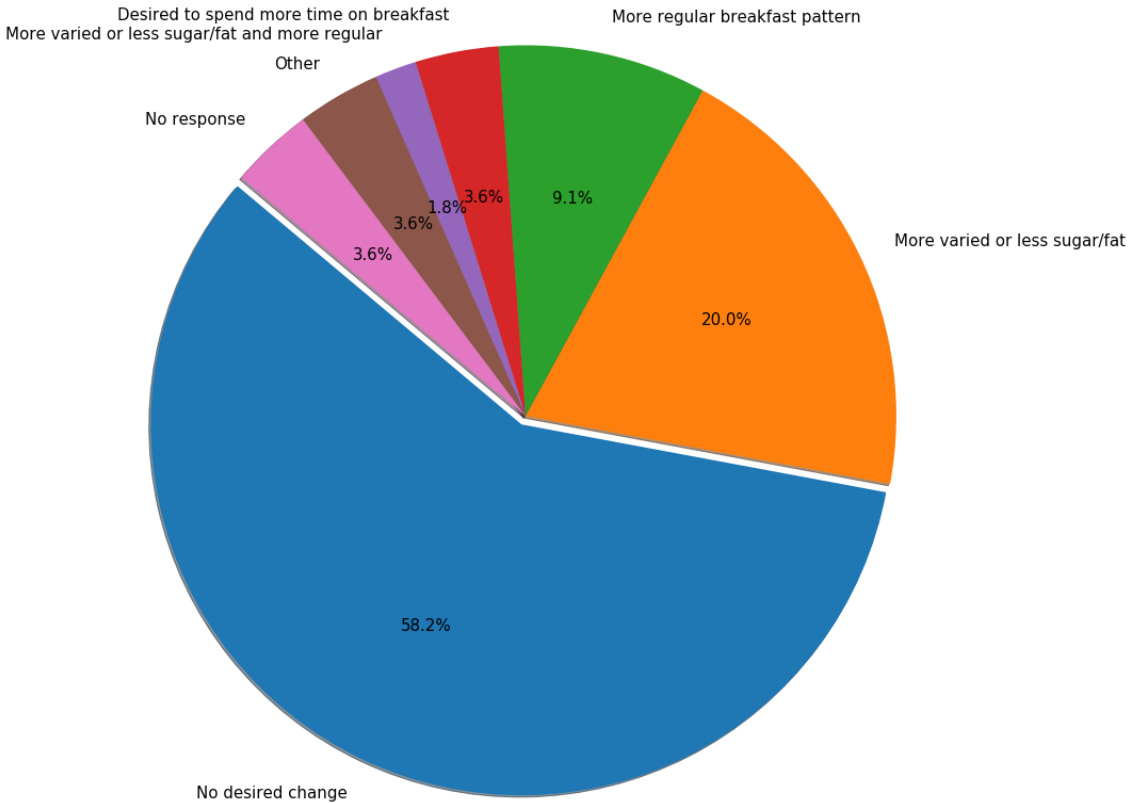


Figure 1: Pie chart of the percentages of desired changes and what kind of changes



# code written by Jarl Witt, s2155486 --- code for the pie chart, see previous page.

```
import matplotlib.pyplot as plt
```

```
# Labels and sizes
```

```
labels = 'No desired change', 'More varied or less sugar/fat', 'More regular breakfast pattern', 'Desired to  
spend more time on breakfast', 'More varied or less sugar/fat and more regular', 'Other', 'No response'
```

```
sizes = [32, 11, 5, 2, 1, 2, 2]
```

```
# chosen theme
```

```
theme = plt.get_cmap('hsv')
```

```
# text size
```

```
textprops = {"fontsize":18}
```

```
# separate the non desired change with the desired change
```

```
explode = (0.1, 0, 0, 0, 0, 0, 0) # explode 1st slice
```

```
# Plot
```

```
plt.pie(sizes, explode=explode, labels=labels,
```

```
autopct='%1.1f%%', shadow=True, startangle=140, radius = 4, textprops = textprops)
```

```
plt.show()
```

## **D List of Used BCTs with Description**

The Behaviour Change Techniques (BCTs) used are from Michie (2013). This section starts on the next page below, due to the fact a pdf is pasted in the L<sup>A</sup>T<sub>E</sub>Xreport.

<b>BCT number and name</b>	<b>Description</b>	<b>How used in Fresh 'n Friendly</b>
1.4 Action planning	Set or agree on a goal defined in terms of a positive outcome of wanted behaviour	The ordering mechanism is an action planning mechanism. Also, in the beginning of the week is asked what your dietary goals are (in any case in the test week, but also possible in the future).
4.1 Instruction on how to perform a behaviour	Advise or agree on how to perform the behaviour (includes 'Skills training')	This is implemented in the collectable recipe cards given along with the breakfasts.
6.3 information about other's approval	Provide information about what other people think about the behaviour. The information clarifies whether others will like, approve or disapprove of what the person is doing or will do	Because you can order together with a roommate and get a cashback of 0.10 euro per order made together.
7.1 Prompts/cues	Introduce or define environmental or social stimulus with the purpose of prompting or cueing the behaviour. The prompt or cue would normally occur at the time or place of performance	A notification that would remind the students to order again would prompt the students to plan the desired behaviour of eating a healthy breakfast.
7.2 Cue signalling reward	Identify an environmental stimulus that reliably predicts that reward will follow the behaviour	The cue signalling reward in the service is the memory of the food tried before by students.
8.3 Habit formation	Prompt rehearsal and repetition of the behaviour in the same context repeatedly so that the context elicits the behaviour	Since the service provides more often than once healthy breakfasts, eating a healthy breakfast could become a habit on the long run. A possible feature to strengthen habit formation is giving discounts for ordering the whole week.
9.1 Credible sources	Present verbal or visual communication from a credible source in favour	The healthy ingredients will be based on the Wheel of Five, which is a

	of or against the behaviour	scientifically credible source.
10.2 Material reward	Arrange for the delivery of money, vouchers or other valued objects if and only if there has been effort and/or progress in performing the behaviour (includes 'Positive reinforcement')	If the cards are collectable items, they can become valuable to the students.
10.3 non specific reward	Arrange delivery of a reward if and only if there has been effort and/or progress in performing the behaviour (includes 'Positive reinforcement')	A medal, either a virtual or material one can be given to students who order a healthy breakfast multiple times in a row.

## **E Instagram Promotion**

This section starts on the next page below, due to the fact a pdf is pasted in the L<sup>A</sup>T<sub>E</sub>Xreport.

# Instagram Promotion of Fresh 'n Friendly

**Table: overview of all posts of Fresh 'n Friendly.**

Date	Post type	Post
Wed 19-05-2021	Feed	Call for action to give packaging material. This post is deleted after realizing that first other posts are needed, like introducing myself.
Mo 24-05, around 10:00	Feed	Introducing myself with a picture on the market of Van Heek Plein
Tue 25-05, around 12:00	Feed	Introducing the logo and explaining the name of the service: Fresh 'n Friendly
Wed 26-05, 10:30	Feed	Introducing Fresh nuts as a healthy ingredient.
Thu 27-05, 9:15	Feed	Create a new life for your used food boxes!
Fri 28-05	Feed	Recruitment of participants for the evaluation week for random recruitment.
Tue June 1	Feed	Introducing oatmeal as a long energy giver with minerals.
Fri June 4	Feed video	The process video of Fresh 'n Friendly.
Sun June 6	Archive created	Because of partnership with Ecocentrum Emma: The food boxes are not asked for anymore.
Mon June 7	Short stories	Sharing of new partnership, explaining the update.
Tue June 8	Feed video	Video of me in the electric three wheeler tuc-tuc of Ecocentrum Emma
Thu June 10	Feed	Joke: ever having trouble in the kitchen? -> order at Fresh 'n Friendly
Fri June 11	Feed	Sharing new partnership with Ecocentrum Emma with a picture of the outside sign of the centre + a self made flag using a Fresh 'n Friendly sticker and a just found on the street bike spike.
Sat June 12	Feed	Sharing the ingredients put on a table of Ecocentrum Emma in the shape of a smiling face.
Sat June 19	Feed	Advertisement for the test week with the bike bags of DHL and a little sticker of Fresh 'n Friendly, but and advertisement for who?
Mon June 21	Feed	Review message from @meneerboeddha on Facebook, reposted on Instagram.
Tue June 22	Feed	Breakfast Tuesday: Post of what I made on Tuesday and a talk of advertisement.
Wed June 23	Feed	Picture of what I delivered on Wednesday (Avocado) with an ingredient list.
Fri June 25	Feed	Carrot cake breakfast. Only picture and name.
Thu July 15	Archive created	The post of the carrot cake breakfast was archived, because the evaluation someone told that the ingredients do not look tasty enough. The carrot cake breakfast looked worst, so I deleted that one.

# Profile of Fresh 'n Friendly at the delivery date

Instagram

Zoeken

## Requests in English and Dutch to follow Fresh 'n Friendly:

For in groups and chats: (RSK, Familie, SA int., Create y3, XR Enschede). Around 24 new followers.

Hi guys! Do you want to follow the process of how I am going to help you to eat a more healthful breakfast? Follow me on Instagram:

[https://www.instagram.com/fresh\\_n\\_friendly/](https://www.instagram.com/fresh_n_friendly/)

Hé mensen! Willen jullie volgen hoe ik handen en voeten aan jullie ga geven om gezonder te ontbijten? Volg me dan op Instagram:

[https://www.instagram.com/fresh\\_n\\_friendly/](https://www.instagram.com/fresh_n_friendly/)

Hé familie! Willen jullie volgen hoe ik handen en voeten aan studenten ga geven om gezonder te ontbijten? Volg me dan op Instagram:

[https://www.instagram.com/fresh\\_n\\_friendly/](https://www.instagram.com/fresh_n_friendly/)

## Introducing myself

Placed: 24/05/2021



Jarl is the name, you might know me, but still there will be things you do not know of me :D

I would love to do a job in which I cook for others, or a job that includes doing practical work with much exercise, in which the tasks are preferably alternating.

I'm doing my bachelor thesis in creative technology and the assignment is to empower you to improve your lifestyle. I am into cooking, sustainability and food and therefore I would like to empower you to improve dietary behaviour, and

ultimately for the rest of your lives.

The breakfast is the first meal of the day and an important one, because it improves cognitive performance and it reduces chance of headaches.

Because of this benefits of breakfast and because I would love to do the job, Fresh 'n Friendly is born. This "from student, to students" service delivers healthy breakfasts at your front doors by bike.

On the picture I am by bike on the Market of Enschede on Van Heekplein. There are fresh, healthy ingredients which I would love to incorporate in DELICIOUS breakfasts for you!

I am working on healthy breakfast recipes right now. New content about the service and the healthy recipes is yet to come! Please keep an eye on my posts, because a call for participation for students on the campus in the pilot phase is on his way!



#creativetechnology #create #sustainability #sustainable #fresh #food #breakfast  
#delicious #tasty #empower #nuts #fruits #business #friendly #ecofriendly  
#responsible #education #learn #improve #improvelifestyle #homedelivery  
#bikedelivery #biking #students #market #universityoftwente #vanheekplein  
#vanheekpleinenschede

Note: first 3 minutes: 4 likes. 3 from people I do not know. The hashtags are working!

## Logo

Placed: 25/05/2021

The Logo is:



Did you know that fresh fruits are highest in vitamin C?

The service buys food at the market of Van Heekplein, where fresh foods are all around. The service will provide foods that are high in nutrients.

A freezer is also used to lower the decline of nutrients and keep berries and other fruits fresh.

And did you know that this service will be friendly in many ways? First of all because it is trying to help students.

Second of all because the groceries and deliveries are done by bike, which makes the service eco-friendly.

One of the many more reasons is that the service tries to reuse food packages to transport the breakfasts in.

So: if you have some leftover food packages or ice cream containers that can be reused, please send me a DM [@Fresh 'n Friendly](#), I am more than willing to pick them up!

Design credits of the logo: [@aineaakster](#)

[#name](#) [#service](#) [#logo](#) [#logotype](#) [#fresh](#) [#friendly](#) [#ecofriendly](#)  
[#ecofriendlyliving](#) [#food](#) [#breakfast](#) [#creativetechnology](#) [#sustainable](#) [#delicious](#)  
[#tasty](#) [#nuts](#) [#fruits](#) [#responsible](#) [#education](#) [#improvelifestyle](#) [#lifestylechange](#)  
[#homedelivery](#) [#bikedelivery](#) [#fooddelivery](#) [#students](#) [#market](#) [#universityoftwente](#)  
[#recycle](#) [#reuse](#) [#foodboxes](#)

## Market place Hengelo

Placed: 26/05/2021

Video of Brink nuts market!

Jarl put fresh nuts in breakfast.

..

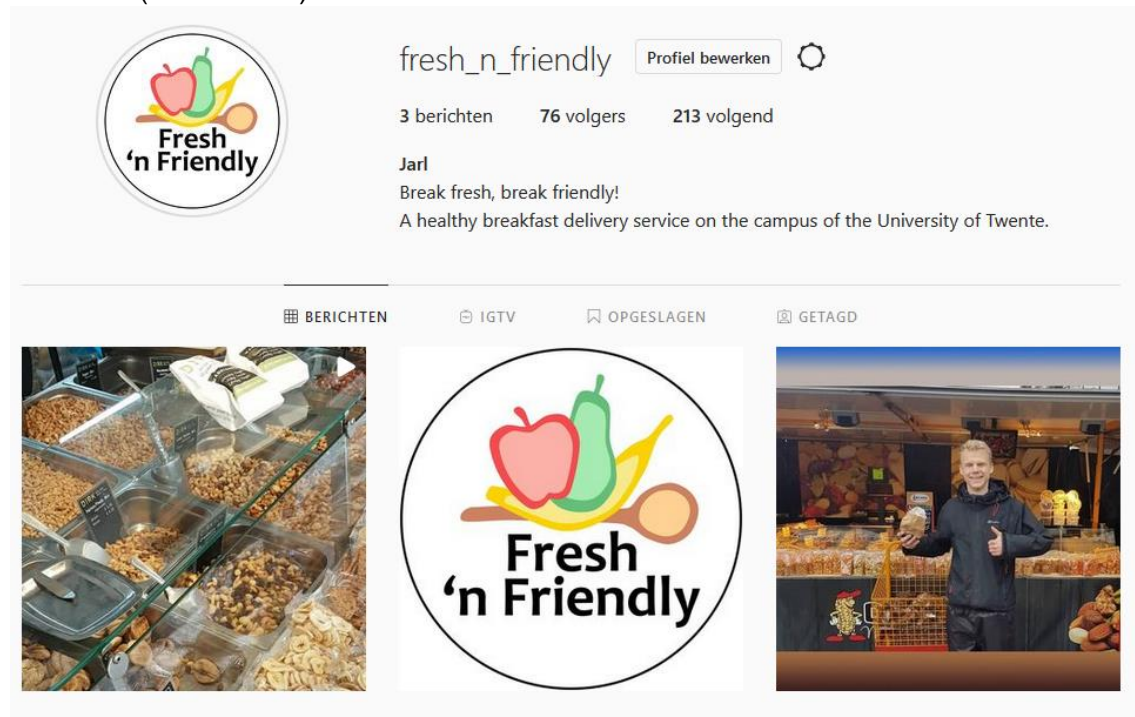
These fresh nuts are very effective!

..

“Students” became more fit.

#fresh #food #breakfast #market #friendly #creativetechnology #create #nuts #tasty  
#delicious #bike #bikedelivery #homedelivery #universityoftwente #groceries  
#effective #fit #healthy #students

After this (26/05/2021) the feed looks like this:



## Call for food boxes to use for delivery from home kitchen

Placed: 27/05/2021, 9:15

Create a new life for your used food boxes! (Inside these boxes will be your

DELICIOUS food!)



I would like to do my deliveries in ice cream containers, yoghurt buckets or other reusable package materials.

This means a more sustainable service and cheaper products for you!

Do you have suitable product packages left? I'll be more than happy to pick them up! Please send a DM to @fresh\_n\_friendly.

#create #creativetechnology  
#newlife #boxes #breakfast  
#recycle #reuse  
#sustainable #service

#responsible #food #fresh #fruit #vitamins #healthy #friendly #ecofriendly  
#bikedelivery #homedelivery #order #students #universityoftwente #education

Picture: call for food boxes (3).

## First post for the Recruitment of Participants

Planning to be placed: 28/05/2021, 8:45 (around breakfast time)



Do you want some of these fresh ingredients in your breakfast delivered at your door for max 2.15 EURO? From 14-18 of June the service will be available for (some of) you.

Do you live on/around campus and are you willing to participate for this pilot phase? Link is in bio.

Here is the deal: if you order all five days (so either a weekly plan or ordering every day with the daily plan, you will get a nice present at the end of the week.

And you will also get a 10 cent cashback per order if you order with someone at the same address, so team up with your housemates and get ready!

#deal [#research](#) #utwentecreate #create [#service](#) [#fresh](#) [#friendly](#) [#ecofriendly](#) [#ecofriendlyliving](#) [#food](#) [#breakfast](#) [#creativetechnology](#) [#sustainable](#) [#delicious](#) [#tasty](#) [#nuts](#) [#fruits](#) [#responsible](#) [#education](#) [#improvelifestyle](#) [#lifestylechange](#) [#homedelivery](#) [#bikedelivery](#) [#fooddelivery](#) [#students](#) [#market](#) [#universityoftwente](#) [#recycle](#) [#reuse](#) [#foodboxes](#)

Want to have this delivered? From 14-18 of June this will be possible for (some of) you. Do you live on/around campus and are you willing to participate in this one week pilot? Link is in bio.

## Introducing oatmeal



What gives you energy throughout the day? Yup, it is your food!

..

An important ingredient Fresh 'n Friendly will offer is fresh oatmeal (from the market!). After all; you can't say 'oatmeal' without 'meal'.

..

Oatmeal breaks down to become energy that's slowly absorbed by your body and it contains many minerals like potassium and magnesium.

..

So feel your healthy tummy filled with fresh oatmeal from Fresh 'n Friendly!

..

#fresh #oatmeal #food #breakfast #market #friendly #creativetechnology #create #nuts #tasty #delicious #bike #bikedelivery #homedelivery #universityoftwente #groceries #effective #fit #healthy #students #utwentecreate



## Introduction of the company process



**Message:**

Do you want to try a healthy breakfast service?

..

Eating a healthy breakfast without putting in effort?

..

Do you want to try oatmeal with fresh fruits, dried fruits, fresh nuts, seeds and spices?

..

For a cheap price of max. 2.15 per breakfast?

..

Fresh 'n Friendly can do this for you! Sign up and participate in the pilot week (14-18 June) of Fresh 'n Friendly.

..

Do you want to signup for the pilot test of Fresh 'n Friendly? The link in the bio will be open until next Monday June 7.

..

Sign up and enjoy a healthy no-effort breakfast!

..

Audio: Ofshane - Road Tripzzz - creative commons library of youtube.

..

#breakfast #cooking #homedelivery

#fresh #food #healthy #fruits #nuts #spices #tasty #delicious #creativetechnology

#students #utwentecreate #universityoftwente

#enschede #homecooking

## Ecocentrum Emma

Sped-up video of me riding in the tuc Tuc with music.



Zooof Zooof! The breakfast service will be at your door soon.

Fresh 'n Friendly is now partners with @ecocentrumemma and among many other positive things (a better kitchen) the area of delivery is enlarged!

Recruitment for the research week is still open, link is in bio.

#ecocentrumemma #fresh #breakfast #delivery #electric #utwentecreate  
#universityoftwente #enschede

## Advertisement joke about troubles in the kitchen



Ever having troubles in the kitchen?

..

Let me help you fix this with pre made breakfast delivery service Fresh 'n Friendly.

..

Subscription possibility for the test week: the link to the form is in Bio.

#breakfast #kitchen #fail #friendly #home #joke #fun

## Some other posts for advertisements:



Picture with the Fresh 'n Friendly flag made of a found bike spike and one sticker.

Did you know Fresh 'n Friendly is going to test the service in this eco centre!

..

The products will be from organic food store, and therefore will be organic and as much as possible local produce.

..



Do you still want to help with this test week and get the opportunity to get a healthful breakfast delivered? Link is in Bio!

#fresh #morning #breakfast #friendly #organic #food #delivery

Smiling face



See the smile of this happy face? I hope you will enjoy these products as well.

..

Against all odds, they will be delivered in the meal boxes in the eyes of the happy face! This is made possible by

[@ecocentrumemma](#)

..

The boxes are reusable and they have a deposit of 2.5 Euro. However, I would say they are more comfortable.

..

[#happy](#) [#face](#) [#fruits](#) [#oatmeal](#) [#healthy](#)

[#fresh](#) [#friendly](#) [#smile](#) [#utwentecreate](#)

## Biking advertisement

Photo of my DHL cycle-bags of my bike with a Fresh 'n Friendly Sticker on the middle of the DHL letters.



Biking advertisement for... For who actually?

I hope you have seen that the service will deliver in Enschede West and not merely on the campus anymore.

The test week will take place next week (21-25 of June) and participation is still possible!

Do you still want to participate in the research? Link to sign up is in Bio. (Student or non-student) prices: one breakfast (healthful ingredients) for students: 2,- and

for non-students: 4,-.

This price difference is to encourage you to make such varied breakfasts throughout the week yourself, but because I have the means to this, I will help you first with products of [@EcocentrumEmma!](#)

[#breakfast](#) [#service](#) [#healthy](#) [#variedfood](#) [#fitness](#)

## Reposting a review from Facebook:



Wat een fantastisch bericht mocht ik ontvangen vandaag na het bezorgen van mijn eerste reeks ontbijtjes:

Ontbijtje aan huis 🌿🙏

Bij het Wildplukken mocht ik Jarl Witt ontmoeten. Hij vertelde me dat hij net zijn nieuwe Fresh 'n Friendly bedrijfje aan het lanceren is 🌱

Ik was wel nieuwsgierig naar zijn ontbijtje 😊

Vanmorgen ging de bel. Op zijn fiets door de regen 🌧️, Mama Natuur is blij, bracht die me een ontbijtje 🍀 Zó lief en Yummie! 🍌🍌🍌🍌

Hij wil graag dat studenten (én natuurlijk alle andere mensen) zich bewust worden van de waarde van voeding, de energie die het met zich meedraagt/je tot je neemt én wat voor invloed het heeft op je mens zijn én onze Planeet Aarde 🌿

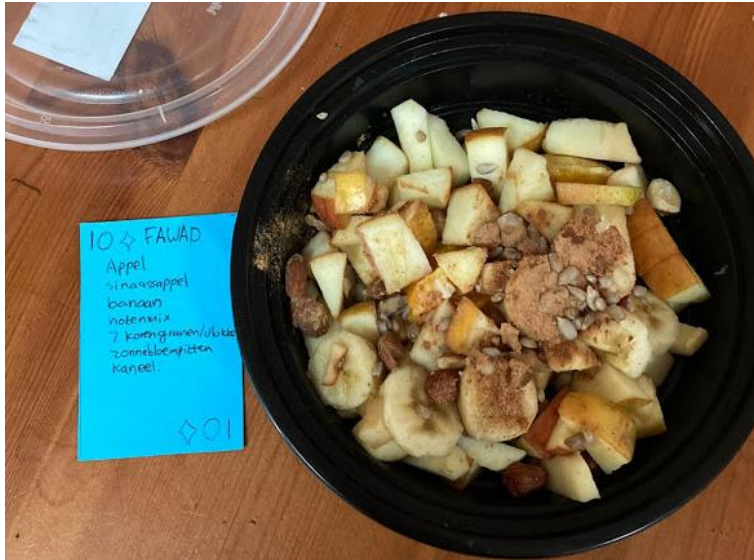
Mooi ❤️

Dat je mag groeien én bloeien 🌸🌈

Wil jij ook een ontbijtje proeven én woon je in Enschede? Deze week is het nog testweek: <https://forms.gle/yMVb4jnhXw88JN31A>

#beautiful #message #fresh #morning #breakfast #friendly #organic #food #delivery #utwentecreate

## Breakfast Tuesday: Apples with cinnamon



Think about how the world was without Fresh 'n Friendly. Less tasty, less easy and less healthy, was it not?

..

But fotunately Fesh 'n Friendly is there now!

...

Today I made another person very happy with this breakfast.

...

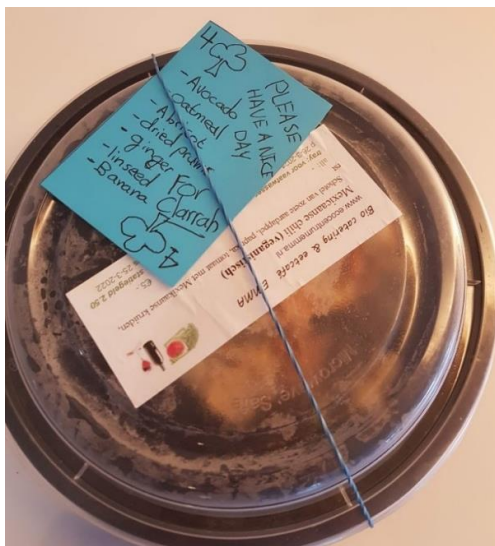
So we can add "people were less happy" to the list!

...

[#breakfast](#) [#Fresh](#) [#friendly](#) [#apple](#) [#banana](#) [#cinnamon](#) [#wholegrains](#) [#variedfoods](#) [#utwentecreate](#)

## Breakfast Wednesday

1



2



Swipe to see what's in the box!

...

Avocado

Oatmeal

Apricot

Dried prunes

Ginger

Cinnamon

Linseed

Banana

...

#healthy #breakfast #delivery #service #fresh #friendly #utwentecreate #enschede  
#ecocentrumemma

## **Future plans:**

### **Mission statement**

The plan is to make a video with the mission statement and some nice edits in the future. Maybe post this when the service will be running again.

Fresh 'n Friendly is:

Healthy and Supportive.

Fresh and Innovative.

Friendly and Sustainable.

While focusing on your health by delivering a healthy breakfast.

#supportive #innovative #sustainable

## **F Recruitment Form**

This section starts on the next page below, due to the fact a pdf is pasted in the L<sup>A</sup>T<sub>E</sub>Xreport.

# Fresh 'n Friendly one week pilot

Are you (a student) living in Enschede (preferably campus/Enschede West or City Centre) and do you want to try one working week of the service? Please note that because of safety reasons, I will not select any participants with a food allergy.

The one week pilot of Fresh 'n Friendly will be coming soon.

Subscribe to this list for participation of the pilot week. If you will be selected, you will be contacted with more information at the latest one week before the start of the research.

The information asked in this form is saved privately on the University drive and will be deleted after the project is done.

Follow the process of the project and the possible continuation of Fresh 'n Friendly on Instagram: [https://www.instagram.com/fresh\\_n\\_friendly](https://www.instagram.com/fresh_n_friendly)

How the service works:

Step 1: Ordering. At the start of the week you may choose a weekly or daily plan. There are two different Google forms for this. In the weekly plan you order for the whole week in once, and you may choose from many options for each day. In the weekly plan the breakfasts will be delivered fresh every day just like the daily plan. In the daily plan, each day you will receive a new Google form with some options. For the daily plan, you are every day free to order or not order. You can put a preferred "delivered before" - time between around 7:30 and around 9:00 at the end of the forms.

Note: Cashback and present: if you order all five days (so either a week plan or ordering every day with the daily plan), you will get a nice present at the end of the week. And if you order together with someone living at the same address, you'll get a 10 cents per order cashback at the end of the week.

Also note: there is a deposit on the boxes of 2.5 EURO, because of the high quality meal prep boxes that are used.

Last note: students will pay discount prices, but if you are not a student anymore you will pay a bit more. This is because then students can get student discount.

Step 2: Payment. Right after sending your order (if you order late, this will be around 6:30 in the morning) you will get a payment request from the bank to pay the precise amount. After payment, the order is confirmed and the breakfast will be in the making.

Step 3: Delivery. The breakfast will be delivered as much as possible at your preferred time between around 7:30 and around 9:00.

Step 3 continued: Enjoying your delivered breakfast.

Step 4: Doing no dishes. You do not have to wash the meal prep box and lid, but you have to save them. The next day, they will be picked up at your next order. And if you do



not order for the next day, the deliverer will still come by and pick it up. If that is the case, put the box before 7:30 (or the evening before) with the lid just outside your door for easy pick-up.

Step 5: Order again. If you had a weekly plan, just await the new delivery. And if you had a daily plan, do not forget to order for the next day before 6:00 in the morning.

Step 6: Cashback and present. You can send me a payment request with 0,10 euro per order you did together with your flatmate(s). If you ordered all 5 days, you will get a nice present delivered on Saturday.

\* Required

1. Email \*

---



2. In the image are representative ingredients. What breakfast would you prefer if you would have to choose from these three representative breakfasts?



Mark only one oval.



- ☐ Forest fruits with raisins and spices (cinnamon, ginger and cardamom)



- ☐ Fresh oats with apple, banana, nuts and cinnamon



- ☐ Fresh oats with grapes, mandarins, nuts and spices (image included)

3. Name \*

---

4. Home-address in Enschede (street and house number) \*

---

5. Do you have any allergies? I do not select participants with allergies for safety reasons. \*

*Mark only one oval.*

☐ I have no allergies that I am aware of

☐ I have (a) food allergie(s)

---

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Google Forms

## **G   Fresh 'n Friendly Order Form (Google Form)**

This section starts on the next page below, due to the fact a pdf is pasted in the L<sup>A</sup>T<sub>E</sub>Xreport.

# Fresh 'n Friendly Order Form

Welcome to the order form of the Fresh 'n Friendly test week!

First I want to stress that you are not forced to order. You are by all means free to (not) use the service. You may see it as a service that is available for you via a website and as an opportunity to reach your set dietary improvement goals. Maybe you wished to eat more varied or to improve on some components of the wheel of five or something else. All in all I hope this service will help you!

\* Required

1. Email \*

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## SUMMARY

1. Choose the dates you want to have a ready to eat breakfast (what it is approximately see section Recipes)
2. Choose your preferred time for delivery (between 8:00 and 9:15)
3. Get a payment request including a deposit of 2.5 EURO for the boxes
4. Get a "wheel of five" breakfast delivered
5. Enjoy!

## Final Decision

I made a final decision. I will make every day one big pot of another nutritious and fresh breakfast and share it with you for an affordable price (Friendly as I am: \*smile\*).

Why? This is because every day there are other fruits ripe or fruits that expire if it rests for too long after. Also because I can not bring over the tastes without you trying it out, so you just have to see what you get. It will be varied and healthful; as described in the recipe section.

Order Before 6 o'clock in the Morning for that same day

You can order now and later this week with this form.

If you order in the night, you will get a payment request just after 6. This is just to give you space, however, note that you still have to pay beforehand.

### Price and Payment

Price for each breakfast (including delivery): €2,-

Cashback if you order at the same date as at least one of your flatmates/housemates is €0,10 per order.  
(you will be contacted at the end of the week )

You will get a payment request after ordering. Only when payment is done, the actual breakfasts will be delivered.

### Deposit

The breakfast boxes in are owned by Ecocentrum Emma. Their deposit is 2,50 EURO and this will be added to the total of the payment request.

Do not throw away the boxes, but do wash them (if you want they may in the dishwasher) or do nothing and I will collect them the day after or when I bring the next delivery. When I bring a new order I will not ask for a deposit again. Only when you decide to not order again I will give the deposit back.

### Fresh 'n Friendly Recipes

All recipes are ready to eat.

#### Basis

- oatmeal or 7 wheat whole grain (a pre-bought mix from Ecocentrum Emma)

Variation between the days:

- Types of nuts
- Types of dried fruits
- Types of fruits
- Types of seeds
- Types of spices

### Foods to add Yourself:

Add your own yogurt, quark or other dairy product to your liking.

### Other Tips:

After adding a dairy product you might like to make a smoothie from the breakfast.

Do not eat your breakfast too fast, since then you will not feel fast enough when you are full.

### Organic Ingredients

The ingredients are from organic produce and come from Ecocentrum Emma. This is for your health, for the environment, animal welfare and taste. For more information and for the reasons why go to <https://www.ecocentrumemma.nl/waarom-biologisch/>

### Storable Breakfasts

If a portion is too big for you my tip is to not over-eat yourself. The breakfasts can be conserved in the fridge for at least 24 hours and you can eat it next morning. Always look at it, smell it and if you then trust it, taste it, to make sure the breakfast is still good to eat.

### Collectable Recipe Cards

Along with each breakfast you will get a collectable recipe card.

I hope that this card inspires you to cook such recipes for yourself or for you and your flatmates/housemates!

### Present for Participation

Everyone will get a little present for participation on Friday.

If you do not order on Friday, the present will be delivered in your post box on Friday.

### Questions and Remarks

For questions or remarks you can whatsapp me or call me (especially call me in the morning). +31681992529. Of course you may also e-mail me: [j.e.witt@student.utwente.nl](mailto:j.e.witt@student.utwente.nl)

## 2. Which days do you want to order? \*

*Check all that apply.*

- ☐ Monday June 21
- ☐ - Tuesday June 22
- ☐ Wednesday June 23
- ☐ Thursday June 24
- ☐ Friday June 25

3. What is your preferred time of delivery? \*

*Mark only one oval.*

☐ 8:00

☐ 8:15

☐ 8:30

☐ 8:45

☐ 9:00

☐ 9:15

☐ You can come by at one of these times that fits you best.

☐ Other: \_\_\_\_\_

4. Is there anything I need to know about the delivery address or other things I need to know?

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Google Forms

## **H Information Brochure and Consent Form for full participation of the test week**

This section starts on the next page below, due to the fact a pdf is pasted in the L<sup>A</sup>T<sub>E</sub>Xreport.



# Information brochure and consent form prior to research on a healthy breakfast delivery service

Thank you for being interested to participate in my research. In this information brochure you will read about the goal of the service and how it works, and the consent form you need to sign when you decide to participate.

If you have any questions: my e-mail address is: [j.e.witt@student.utwente.nl](mailto:j.e.witt@student.utwente.nl) and my supervisors e-mail address is: [a.m.schaafstal@utwente.nl](mailto:a.m.schaafstal@utwente.nl)

Contact person of Ecocentrum Emma, Susanne Groten,  
e-mail: [info@ecocentrumemma.nl](mailto:info@ecocentrumemma.nl)

Phone number: +31611356236

## Summary of research design

During the test week ([fill in dates] of June) you will be able to order. In the next section the different steps of the service are described. Statistical data of who orders how often will be collected and questionnaires needs to be filled out to evaluate the service.

Before and afterwards you will be asked to fill in an online questionnaire. In the questionnaire before you will be asked what your goals are using the service. In both questionnaires you will be asked about your eating behaviour. In the questionnaire afterwards you will also be asked about the opinions and experiences of the service. In addition, you will be asked to what extent you reached the set goals of using this service. For these questionnaires you will sign a separate consent form.

Lastly, if time allows me (since this researched is done later than expected), the possibility exist that you will be invited for an online interview for a more qualitative evaluation of the service try out.

## The goal of the service

A healthy breakfast delivery service is the general concept that came up in my Graduation project for Creative Technology. This service, with the purpose to help mainly students, called Fresh 'n Friendly, will be tested and evaluated. The main target group are adult students living around the campus who wants to improve their dietary habits. All basic ingredients of the healthy recipes of this service are in the fact sheet of the wheel of five of the Netherlands Nutrition Centre (2017). The recipes are also tried to be based on the proportions of the wheel of five. For example lots of fruits and a handful of unsalted nuts, complemented with whole wheats like oatmeal. The concept tries to improve the dietary habits by also including the instructions creatively on how to make the delivered breakfast.

## How the service works

Step 1: Ordering. At the start of the week you may choose a weekly or daily plan. There are two different Google forms for this. In the weekly plan you order for the whole week in once, and you may choose from many options for each day. In the weekly plan the breakfasts will be delivered fresh every day just like the daily plan. In the daily plan, each day you will receive a new Google form with some options. For the daily plan, you are every day free to order or not order. You can put a preferred “delivered before”-time between around 7:30 and around 9:00 at the end of the forms.

Note: Cashback and present: if you order all five days (so either a week plan or ordering every day with the daily plan), you will get a nice present at the end of the week. And if you order together with someone living at the same address, you'll get a 10 cents per order cashback at the end of the week.

Also note: there is a deposit on the boxes of 2.5 EURO, because of the high quality meal prep boxes that are used.

Last note: students will pay discount prices, but if you are not a student anymore you will pay a bit more. This is because then students can get student discount.

Step 2: Payment. Right after sending your order (if you order late, this will be around 6:30 in the morning) you will get a payment request from the bank to pay the precise amount. After payment, the order is confirmed and the breakfast will be in the making.

Step 3: Delivery. The breakfast will be delivered as much as possible at your preferred time between around 7:30 and around 9:00.

Step 3 continued: Enjoying your delivered breakfast.

Step 4: Doing no dishes. You do not have to wash the box and lid, but you have to save them. The next day, they will be picked up at your next order. And if you do not order for the next day, the deliverer will still come by and pick it up. If that is the case, put the box before 7:30 (or the evening before) with the lid just outside your door for easy pick-up.

Step 5: Order again. If you had a weekly plan, just await the new delivery. And if you had a daily plan, do not forget to order for the next day before 6:00 in the morning.

Step 6: Cashback and present. You can send me a payment request with 0,10 euro per order you did together with your flat mate(s). If you ordered all 5 days, you will get a nice present delivered on Saturday.

## The research

Before and after this breakfast service test week, I carry out a research study. By participating in the breakfast service you also agree to be part of this study. In this section I describe in detail how the research part works.

### People with food allergies are excluded

Students with food allergies are excluded from this research and it is highly important that you have no allergies. You were not selected if you said you had any, and to ensure no harm I exclude them from my research.

However, it is possible that a new food product is tried during the research and an unknown allergic reaction will occur. In the worst case that an allergic reaction occurs from eating a new food product, the researcher involved will not be responsible and will not pay for any unexpected medical costs. These unexpected costs will be for the person who had the unexpected allergic reaction.

### Voluntary participation

Participation in this research week is completely voluntary and you can stop ordering or participating at any moment in time. You may act like you order from a normal company and you are not forced to order any breakfast you think you do not like or for other reasons. You may stop participating in the test phase of the service for any reason. If you have any complaints or remarks during the week or afterwards, you may contact me (calling remains fastest) or my supervisor.

Also, after signing this form it is still completely voluntary to participate in the online questionnaire or online interview afterwards. You are not forced to do so and you have the possibility to refuse the questionnaire or interview invitation. You will receive a separate information brochure and consent form for the questionnaire and/or interview.

### Food preparation

The preparation of the food will be done in Ecocentrum Emma, a place with a restaurant kitchen and a catering permit. Hygiene is highly cared for and therefore food borne illnesses will be prevented. However, the possibility exists that you think you had become sick of a breakfast. The additional health costs are not my responsibility and unexpected medicine costs are for the customer.

### Prices and payment

For the service real money and a test price will be used. The expected price range of the products will be between 1,50 and 2,50, and 3.50 – 4.50 for non-students. This can be a bit subject to change as other breakfasts may be offered as well, but this is the price to think about. The prices will always be included in the Google form and you may always refuse payment for any reason. However, if you have not paid, you will also not get the breakfast delivered.

### Covid-19 measures

For covid-19 measures, the deliverer will always be 1,5 m from the door and the food boxes will be put on the ground. The hands and the bike handlebar of the deliverer will be cleaned with alcohol before delivery. Navigation will be done as much as

possible without the mobile phone, so mobile phone usage is minimized and hygiene is more ensured. The mobile phone will be cleaned regularly for the cases when navigation using the phone is still needed.

#### Data collection

The data collected for the service will be stored privately on the drive of the University of Twente. The raw data will not be shared with anyone. The personal data will be used for the service and for the invitation of filling out a questionnaire or participating in an online interview. The names and home addresses will be coded in numbers for further processing. The statistics of what and how many times certain persons or households have ordered is collected and then coupled with the coded numbers of the names and home addresses. This data is used for the evaluation to know how much and in which way the service is used. The outcome of this analysis will be in the report of the project. The personal identifiable data will be deleted within 2 weeks after processing. By no means any personal identifiable data will be stored after the research.

If afterwards you want to exclude your input from the statistics, the answers of the online questionnaire or interview for any reason, it is possible to contact me and that will be assigned as far as we can trace back the information (best to do this within 2 weeks after the research week).

#### Do you have any questions?

For general questions: my e-mail address is: [j.e.witt@student.utwente.nl](mailto:j.e.witt@student.utwente.nl) and my supervisors e-mail address is: [a.m.schaafstal@utwente.nl](mailto:a.m.schaafstal@utwente.nl)

For faster contact or questions before or during delivery, you may call me. My phone number is: 0681992529.

If you have any ethical concerns or questions, you can contact the ethical committee at: [ethicscommittee-cis@utwente.nl](mailto:ethicscommittee-cis@utwente.nl)

## Consent form

If you decide to participate in the research, you agree by checking the box for the following text. You also need to declare that you have no known allergies.

☐

By signing this consent form I confirm that I have read and understood the information stated in the information brochure. I participate voluntary and I am aware of my right to withdraw at any time. I have no allergies that I am aware of. I give the permission to collect and use the personal data for the service and invitations of questionnaires as described above. I give the permission to collect and use the statistical data as described above. I am aware that my input can always be excluded from the research by contacting Jarl Witt. All my questions have been answered to my satisfaction.

☐

I declare that I have no known allergies.

Date: .../.../.....

## I Signed Consent by all 10 participants

In Figure 46 is shown that all participants had signed the informed consent prior to the research, see above in Appendix H. In Figure 47 is shown that no participants had any known allergies.

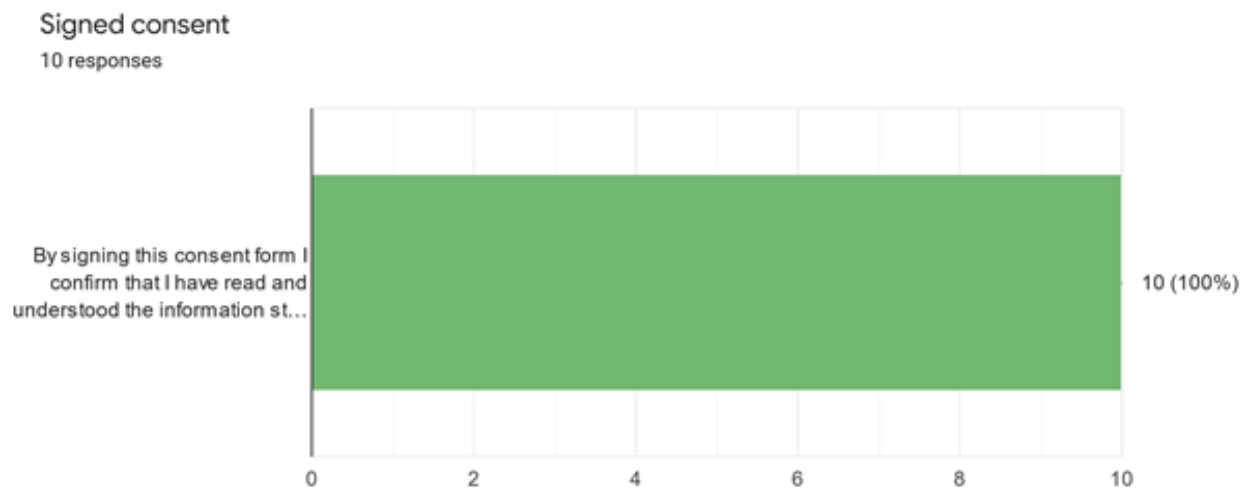


Figure 46: All 10 participants did sign the consent forms

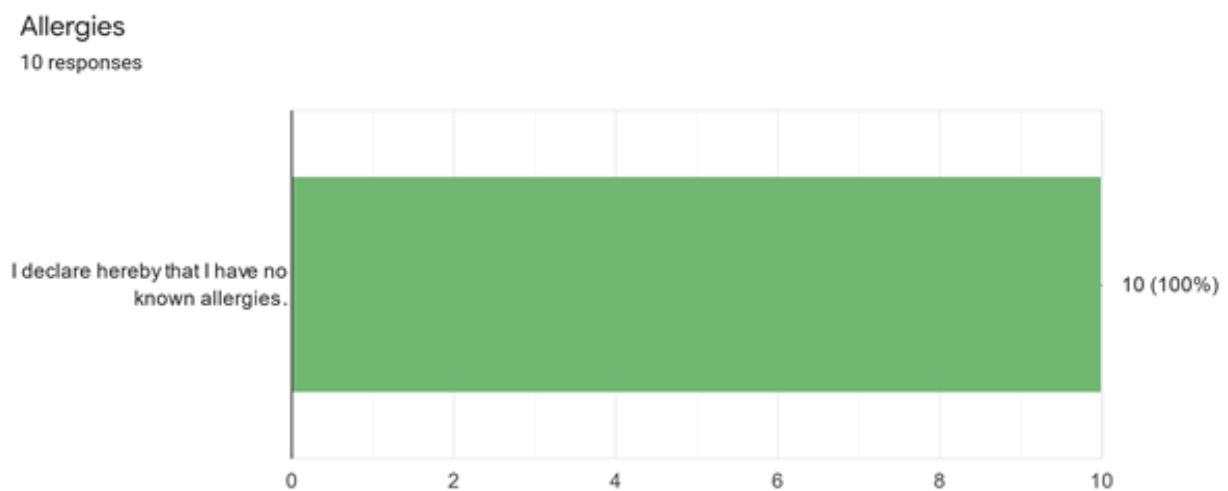


Figure 47: All 10 participants stated that they had no known allergies

## **J Questionnaire before the test week**

### **J.1 Consent and Questionnaire**

This section starts on the next page below, due to the fact a pdf is pasted in the L<sup>A</sup>T<sub>E</sub>Xreport.

# Fresh 'n Friendly questionnaire before research

\*You will get a link to the order forms soon after you submitted this form.\*

\* Required

## 1. Email \*

### Information brochure and consent form for the survey prior to the research on a healthy breakfast delivery service

Welcome to the survey about your current eating behaviour. If you read this, you are probably going to be a participant of the healthy breakfast delivery service test. If you are not going to be a participant of this test, you can stop this survey right now. The goal of the survey is to know your starting point and to set goals of eating behaviour to compare with after the week. You will be asked about your eating behaviour: questions like how much of the products in the wheel of five you eat throughout a week and how varied you eat.

### Information brochure

Filling out this survey is completely voluntary. You can stop this questionnaire at any moment by closing the browser tab. Do not feel forced to keep filling it out if you have already filled out any answers. You can contact me if you want to withdraw after submitting for any reason. If you withdraw, we will try to exclude your input from the results.

You are asked to give an e-mail and that is why this info will be stored privately and deleted at the latest two weeks after processing. As already stated in the information brochure prior to the research, the data will be linked to the statistics collected during the week and transformed into number codes and deleted two weeks afterwards. The data collected will be stored privately on the drive of the University of Twente and will be used in the report after excluding your name.

For general questions or if you want to withdraw afterwards: my e-mail address is: [j.e.witt@student.utwente.nl](mailto:j.e.witt@student.utwente.nl) and for other questions, my supervisors e-mail address is: [a.m.schaafstal@utwente.nl](mailto:a.m.schaafstal@utwente.nl)

If you have any ethical concerns or questions, you can contact the ethical committee at: [ethicscommittee-cis@utwente.nl](mailto:ethicscommittee-cis@utwente.nl)

## 2. Signed consent \*

*Check all that apply.*

☐ By signing this consent form I confirm that I have read and understood the information stated above. I participate voluntary and I am aware of my right to withdraw at any time. I give the permission to collect and use the personal data as described above. I am aware that my input can always be excluded from the research by contacting Jarl Witt. All my questions have been answered to my satisfaction.



Breakfasts  
based on  
the "schijf  
van vijf"  
(Wheel of  
five)

The wheel of five is a reference tool for healthy dietary proportions.

The fact sheet for reference is the following: [https://www.voedingscentrum.nl/Assets/Uploads/voedingscentrum/Documents/Professionals/Pers/Factsheets/English/Fact sheet The Wheel of Five.pdf](https://www.voedingscentrum.nl/Assets/Uploads/voedingscentrum/Documents/Professionals/Pers/Factsheets/English/Fact%20sheet%20The%20Wheel%20of%20Five.pdf)








Note that I am not a diet expert, I ask things based on the "schijf van vijf" and on the fact that it is good to eat more varied in terms of food safety. This is because different foods have different harmful compounds, and it prevents you from eating too much from one harmful compound if you eat varied throughout the day and the week. (also in the fact sheet).

De schijf van vijf (Wheel of five)



Legend of the Wheel of five:

The general recommendations regarding foods in the Wheel of Five are as follows:

-  Lots of fruit and vegetables
-  Especially whole grain products, such as whole-grain bread, whole-grain pasta and couscous, and brown rice
-  Less meat and more plant-based food. Vary the diet, switch between fish, pulses, nuts, eggs and vegetarian products
-  Sufficient dairy products such as milk, yogurt and cheese
-  A handful of unsalted nuts
-  Soft or liquid spreadable fats and cooking fats
-  Sufficient amounts of fluid, such as tap water, tea and coffee

Breakfast recipes

According to these recommendations the breakfast recipes are designed.

I look forward to your possible dietary improvements, according to these proportions!

### Goal setting

The following questions are about the possible dietary improvement goal you want to set.

3. What would you like to improve on ingredients? \*

*Check all that apply.*

☐ - More whole grains compared to refined grains.

☐ - More fruits;

☐ - More nuts a day, up to a handful;

☐ - I do not need to improve;

Other: ☐ \_\_\_\_\_

4. Would you like to eat more varied? If yes, why? \*

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5. Any other goals you would like to set? (eating breakfast every day for example)

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Eating behaviour of  
last week

If the amounts are asked on average on a day: try to calculate the average of last week.

Breakfast is defined as a meal before doing any study/work.

6. What is the amount of whole grains you eat on average on a day? \*

*Check all that apply.*

- ☐ - 1-4 whole wheat bread  
☐ - 4-8 whole wheat bread  
☐ - 1 portion of oatmeal  
☐ - 2 portions of oatmeal  
☐ - 1 rye bread  
☐ - 1 portion of whole wheat pasta  
☐ - I do not eat any whole grains;

Other: ☐ \_\_\_\_\_

7. How many portions of fruits do you eat on average on a day? Try to calculate the sizes of fruit to a portion of 100 g, for example 1 small apple is a portion, and 5-10 grapes is also a portion. \*

*Mark only one oval.*

- ☐ - I do not eat fruits on average  
☐ - 1 portion  
☐ - 2 portions  
☐ - 3 portions  
☐ Other: \_\_\_\_\_

8. What is the amount of nuts do you eat on average on a day? One handful is estimated as 30 grams.  
\*

*Mark only one oval.*

- ☐ - 0  
☐ - Half a handful;  
☐ - One handful  
☐ Other: \_\_\_\_\_

9. What is the amount of dairy product portions on average on a day? (250 ml milk, 150 g yogurt or quark, or kefir)

*Mark only one oval.*

- ☐ - 0
- ☐ - 1
- ☐ - 2-3
- ☐ - 3 or more
- ☐ Other: \_\_\_\_\_

10. How many different breakfast ingredients do you eat throughout the week? So if you eat sandwiches every day and only switch sweet toppings, it is one type of ingredient. But if you for example eat on one day oatmeal and the other bread, it is two. And if you switch between fruits every day it is that amount of fruits you vary with on average. \*

*Mark only one oval.*

- ☐ - 1 ingredient
- ☐ - 2 – 3 ingredients
- ☐ - 3 – 5 ingredients
- ☐ - I do not eat breakfast;
- ☐ Other: \_\_\_\_\_

11. What is the amount of snacks that you eat on average on a day? (one portion is estimated as 30 g) \*

*Mark only one oval.*

- ☐ - I do not eat any snacks on average;
- ☐ - 1 portion;
- ☐ - 2-3 portions
- ☐ Other: \_\_\_\_\_

12. How much portions of products with hidden sugars do you eat on average on a day? (portion sizes differ between product, but if you do not know, estimate it on 30 grams or a handful) Hidden sugars are sugars you are not aware of. They are for example products like yogurt with a taste, cereals (muesli, crunchy, granola), or dried fruits. Although dried fruits contain also more sugars than you think, they are also moderately used in some breakfast recipes, because of the taste and fibre they provide. \*

*Mark only one oval.*

- ☐ - I do not eat any hidden sugars on average.
- ☐ - 1 portion
- ☐ - 2-3 portions
- ☐ Other: \_\_\_\_\_

End of the questionnaire

13. Did you miss anything in the questionnaire and do you have anything you would like to add?

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14. Do you have any remarks about the questionnaire?

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Way of ordering:

You will get a link to the order page after you submitted this form. The service is available during the weekdays next week, Monday to Friday, 21-25 of June.

The next step is to decide for which days you need breakfast. You will get more info on the order page, which will be send to you by e-mail soon!

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Google Forms

## **J.2 Results of the Questionnaire before the test week**

This section starts on the next page below, due to the fact a pdf is pasted in the L<sup>A</sup>T<sub>E</sub>Xreport.

Participant #	Signed consent	What would you like to improve on ingredients?	Would you like to eat more varied? If yes, why?	Any other goals you would like to set? (eating breakfast every day for example)
1	Yes	- I do not need to improve;	Just a bit I would say. I mainly like the idea of having different kinds of breakfast during the week. Right now I always eat the same.	no.
2	Yes	- More fruits;	Yes, 'verandering van spijs doet eten' = "Variety is the spice of life", plus it's healthier	
3	Yes	- More fruits;	Not specifically, but more varied is healthier	
4	Yes	- More fruits;, - More nuts a day, up to a handful;	Yes, I normally just eat two sandwiches with peanut butter and chocolate sprinkles which isn't varied and pretty unhealthy (but simple and quick for me)	
5	Yes	- More fruits;	yes , To have a different taste	eating breakfast everyday
6	Yes	Less refined products or junkfood	Yes, I would like to eat more different greens, such as beans or cabbage. These contain other nutritional values. But this is more for lunch or dinner instead of breakfast.	Maybe eating tastier, because I often find oatmeal a bit boring
7	Yes	- More fruits;	Verandering van spijs doet eten = "Variety is the spice of life"	
8	Yes	- More fruits;, - More nuts a day, up to a handful;	Yes, to improve health	
9	Yes	- More whole grains compared to refined grains., - More	Yes, to stay healthy	Stay full for longer
10	Yes	- More whole grains compared to refined grains., - More fruits;, - More nuts a day, up to a handful;	Yes for more energy/fit feeling and my health long term	Have fresh fruit available in my house always



Participant #	WG	Fruits	Nuts	Dairy products	Different breakfast ingredients.
1	- 1-4 whole wheat bread, - 1 portion of oatmeal	- 1 portion	- Half a handful;	2.5	I don't really understand what I need to answer. Every day I eat yoghurt with banana and a mix of oatmeal, cranberries, sunflowerseeds, pumpkinseeds and linseed.
2	- 1-4 whole wheat bread, - 1 portion of oatmeal	- I do not eat fruits on average	0	2.5	- 1 ingredient
3	- 1-4 whole wheat bread, - 1 portion of oatmeal	- 1 portion	0	1	- 2 – 3 ingredients
4	- 1-4 whole wheat bread, - 1 portion of whole wheat pasta	- 2 portions	0	1	- 1 ingredient
5	- 1 rye bread	- 2 portions	0	0	- I do not eat breakfast;
6	- 1-4 whole wheat bread, - 1 portion of oatmeal, 2 or 3 times a week pasta (often not whole grain, but white flour)	- 3 portions	0	0	- 3 – 5 ingredients
7	- 1-4 whole wheat bread, - 2 portions of oatmeal	0,5 portion	0	1	- 1 ingredient
8	- 1-4 whole wheat bread, - 1 portion of oatmeal	- 1 portion	- Half a handful;	2.5	- 2 – 3 ingredients
9	- 1 portion of oatmeal, - 1 portion of whole wheat pasta	- 2 portions	- Half a handful;	2.5	- 2 – 3 ingredients
10	- 1-4 whole wheat bread, - 1 portion of oatmeal, - 1 portion of whole wheat pasta	- 1 portion	0	1	- 3 – 5 ingredients

Participant #	Snacks (30g)	Hidden sugars (30 g)	Did you miss anything in the questionnaire and do you have anything you would like to add?	Do you have any remarks about the questionnaire?
1	- 1 portion;	- 1 portion	No	Sometimes the questions were a bit unclear or hard answer.
2	- I do not eat any snacks on average;	- 1 portion		
3	- 1 portion;	- 1 portion		
4	- 1 portion;	- 1 portion		
5	- 1 portion;	- 2-3 portions	nothing to add	Not yet
6	- 1 portion;	- 2-3 portions	Maybe ask for allergies? Don't have them tho, but that would explain why some people don't eat dairy for example	
7	- 1 portion;	- 1 portion		
8	- 1 portion;	- 1 portion		
9	- 2-3 portions	- 1 portion		
10	- 1 portion;	- 1 portion	Nope	Nope

## **K Questionnaire after the test week**

This section starts on the next page below, due to the fact a pdf is pasted in the L<sup>A</sup>T<sub>E</sub>Xreport.

### **K.1 Consent and Questionnaire**

# Fresh 'n Friendly questionnaire after research

\*You will get a link to the order forms soon after you submitted this form.\*

\* Required

1. Email \*

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## Information Brochure and Consent Form

Welcome to the survey about what your opinion and feedback is about the healthy breakfast delivery service for students in Enschede that was tested in the week from 21-25 of June. If you read this, you were probably a participant of this test. If you were not a participant of this test, you can stop this survey right now. The goal of the survey is to evaluate to what extent the service empowers you/students to improve dietary habits and to look what points of improvement are to increase the empowerment.

The questions are among others about your goals, your opinions and your experiences, and also about points of improvement. Did you reach your set goals? Did you make dietary improvements? Again the same questions about dietary habits will be asked as in the questionnaire before the research. If you made improvements, did this breakfast service promote these improvements? What did you think of the recipes, portion sizes, price, freshness of the ingredients, and how much did it fill your belly? And how did you feel throughout the days? Next to that there is asked to give points of improvement that you can think of to better promote the importance of a healthful breakfast.

## Information Brochure

Filling out this survey is completely voluntary. You can stop this questionnaire at any moment by closing the browser tab. Do not feel forced to keep filling it out if you have already filled out any answers. You can contact me if you want to withdraw after submitting for any reason. If you withdraw, we will try to exclude your input from the results.

You are asked to give an email address and thus this info will be stored privately and deleted at the latest two weeks after processing. As already stated in the information brochure prior to the research, the data will be linked to the statistics collected during the week and transformed into number codes and deleted two weeks afterwards. The data collected in this survey will be stored privately on the drive of the University of Twente and will be used in the report (after excluding your name).

For general questions or if you want to withdraw afterwards: my e-mail address is:

[j.e.witt@student.utwente.nl](mailto:j.e.witt@student.utwente.nl) and for other questions, my supervisors e-mail address is:

[a.m.schaafstal@utwente.nl](mailto:a.m.schaafstal@utwente.nl)

If you have any ethical concerns or questions, you can contact the ethical committee at: [ethicscommittee-cis@utwente.nl](mailto:ethicscommittee-cis@utwente.nl)

## Consent Form

If you decide to fill out the survey you agree by checking the box for the following text.

## 2. Signing \*

*Check all that apply.*

☐ By signing this consent form I confirm that I have read and understood the information stated above. I participate voluntary and I am aware of my right to withdraw at any time. I give the permission to collect and use the personal data as described above. I am aware that my input can always be excluded from the research by contacting Jarl Witt. All my questions have been answered to my satisfaction.

Reasons to participate in the test week

## 3. How did you hear about Fresh 'n Friendly? \*

*Mark only one oval.*

- ☐ Fresh 'n Friendly Instagram;
- ☐ Group app where Jarl send a message about the project in;
- ☐ Personal message from Jarl;
- ☐ Via housemates;
- ☐ Other: \_\_\_\_\_

## 4. Why did you participate? \*

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5. What goals did you set at the start of the week? (if you do not remember, contact me) \*

*Check all that apply.*

- ☐ - More whole grains compared to refined grains.
- ☐ - More fruits;
- ☐ - More nuts a day, up to a handful;
- ☐ - I wanted to eat more healthful.
- ☐ - Eating breakfast more often.
- ☐ - I did not need to improve;
- ☐ - I wanted to eat more varied;

Other: ☐ \_\_\_\_\_

6. Any other goals you have set?

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7. Did your dietary goals change or did you add any goals? If yes, what goals did you change or add and why?

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8. Have you reached the goals you set this week because of the service? \*

Mark only one oval.

- ☐ Yes
- ☐ No
- ☐ I did not set any goals.
- ☐ I did reach my goals around halfway.
- ☐ Other: \_\_\_\_\_

9. Do you think you are more motivated to keep up with your dietary goals because of the service?  
Why (not)?

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Eating behaviour during  
the test week

If the amounts are asked on average on a day: try to calculate the average during the test week.

Breakfast is defined as a meal before doing any study/work.

#### Dietary proportions according to the wheel of five

The wheel of five is a reference tool for healthy dietary proportions.

The fact sheet for reference is the following: [https://www.voedingscentrum.nl/Assets/Uploads/voedingscentrum/Documents/Professionals/Pers/Factsheets/English/Fact sheet The Wheel of Five.pdf](https://www.voedingscentrum.nl/Assets/Uploads/voedingscentrum/Documents/Professionals/Pers/Factsheets/English/Fact%20sheet%20The%20Wheel%20of%20Five.pdf)








Note that I am not a diet expert. I ask things based on the "schijf van vijf" and on the fact that it is good to eat more varied in terms of food safety. This is because different foods have different harmful compounds, and eating varied prevents you from eating too much from one harmful compound.

## De schijf van vijf (Wheel of five)



## Legend of the Wheel of five:

The general recommendations regarding foods in the Wheel of Five are as follows:

-  Lots of fruit and vegetables
-  Especially whole grain products, such as whole-grain bread, whole-grain pasta and couscous, and brown rice
-  Less meat and more plant-based food. Vary the diet, switch between fish, pulses, nuts, eggs and vegetarian products
-  Sufficient dairy products such as milk, yogurt and cheese
-  A handful of unsalted nuts
-  Soft or liquid spreadable fats and cooking fats
-  Sufficient amounts of fluid, such as tap water, tea and coffee

10. What of the wheel of five did you recognise?

*Check all that apply.*

- ☐ - Whole grains;
- ☐ - Fruits;
- ☐ - Vegetables;
- ☐ - Less meat and more plant-based food;
- ☐ - Nuts;
- ☐ - Oils and spreads;
- ☐ - Dairy products;



11. What is the amount of whole grains did you eat on average on a day? \*

*Check all that apply.*

- ☐ - 1-4 whole wheat bread
- ☐ - 4-8 whole wheat bread
- ☐ - 1 portion of oatmeal
- ☐ - 2 portions of oatmeal
- ☐ - 1 rye bread
- ☐ - 1 portion of whole wheat pasta
- ☐ - I do not eat any whole grains;

Other: ☐ \_\_\_\_\_

12. How many portions of fruits did you eat on average on a day? Try to calculate the sizes of fruit to a portion of 100 g, for example 1 small apple is a portion, and 5-10 grapes is also a portion. \*

*Mark only one oval.*

- ☐ - I do not eat fruits on average
- ☐ - 1 portion
- ☐ - 2 portions
- ☐ - 3 portions
- ☐ Other: \_\_\_\_\_

13. What is the amount of nuts you did eat on average on a day? One handful is estimated as 30 grams. \*

*Mark only one oval.*

- ☐ - 0
- ☐ - Half a handful;
- ☐ - One handful
- ☐ Other: \_\_\_\_\_

14. What is the amount of dairy product portions you consumed on average on a day? (250 ml milk, 150 g yogurt or quark, or kefir)

*Mark only one oval.*

- ☐ - 0
- ☐ - 1
- ☐ - 2-3
- ☐ - 3 or more
- ☐ Other: \_\_\_\_\_

15. How many different breakfast ingredients did you eat throughout the week? So if you eat sandwiches every day and only switch sweet toppings, it is one type of ingredient. But if you for example eat on one day oatmeal and the other bread, it is two. And if you switch between fruits every day it is that amount of fruits you vary with on average. \*

*Mark only one oval.*

- ☐ - 1 ingredient
- ☐ - 2 – 3 ingredients
- ☐ - 3 – 5 ingredients
- ☐ - I do not eat breakfast;
- ☐ 5 - 7 ingredients
- ☐ 7-10 ingredients
- ☐ I do not know exactly, it seemed to be a lot
- ☐ Other: \_\_\_\_\_

16. What is the amount of snacks that you eat on average on a day? (one portion is estimated as 30 g) \*

*Mark only one oval.*

- ☐ - I do not eat any snacks on average;
- ☐ - 1 portion;
- ☐ - 2-3 portions
- ☐ Other: \_\_\_\_\_

17. How much portions of products with hidden sugars do you eat on average on a day? (portion sizes differ between product, but if you do not know, estimate it on 30 grams or a handful) Hidden sugars are sugars you are not aware of. They are for example products like yogurt with a taste, cereals (muesli, crunchy, granola), or dried fruits. Although dried fruits contain also more sugars than you think, they are also moderately used in some breakfast recipes, because of the taste and fibre they provide. \*

*Mark only one oval.*

- ☐ - I do not eat any hidden sugars on average.
- ☐ - 1 portion
- ☐ - 2-3 portions
- ☐ Other: \_\_\_\_\_

#### The Breakfasts

18. Are you inspired to try more healthful breakfasts because of the breakfast service? \*

*Mark only one oval.*

- ☐ Not at all;
- ☐ Not really;
- ☐ Neither inspired or not inspired;
- ☐ Yes a bit;
- ☐ Yes;
- ☐ Fully inspired;
- ☐ Other: \_\_\_\_\_

19. What makes you (not) inspired to try more healthy breakfasts? \*

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20. Are you inspired to prepare healthy breakfasts yourself, because of the breakfast service? \*

Mark only one oval.

- ☐ Not at all;
- ☐ Not really;
- ☐ Neither inspired or not inspired;
- ☐ Yes a bit;
- ☐ Yes;
- ☐ Fully inspired;
- ☐ Other: \_\_\_\_\_

21. Why are you (not) inspired to prepare healthy breakfasts yourself? \*

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Monday: Tropical feast with the recipe/ingredient collectable card (without the Schulp drankje)



22. On a 1-10 scale, how did you like...

Mark only one oval per row.

	1	2	3	4	5	6	7	8
The looks;	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The taste;	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The healthfulness;	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The price/quality ratio;	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The collectable card;	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The extent of desired satisfaction for breakfast;	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Tuesday: Dutch (orange) apple pie breakfast with the "fill the ingredients in yourself" collectable card.



23. On a 1-10 scale, how did you like...

*Mark only one oval per row.*

	1	2	3	4	5	6	7	8
The looks;	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The taste;	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The healthfulness;	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The price/quality ratio;	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The collectable card;	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The extent of desired satisfaction for breakfast;	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Wednesday: Avocado apricot and dried prunes with a "wish" or "message" collectable card.



24. On a 1-10 scale, how did you like...

Mark only one oval per row.

	1	2	3	4	5	6	7	8
The looks;	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The taste;	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The healthfulness;	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The price/quality ratio;	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The collectable card;	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The extent of desired satisfaction for breakfast;	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Thursday: Millet time with the "most unknown ingredients" on the collectable card.





25. On a 1-10 scale, how did you like...

*Mark only one oval per row.*

	1	2	3	4	5	6	7	8
The looks;	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The taste;	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The healthfulness;	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The price/quality ratio;	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The collectable card;	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The extent of desired satisfaction for breakfast;	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Friday: carrot cake breakfast with the collectable card telling only the name of the breakfast.



26. On a 1-10 scale, how did you like...

*Mark only one oval per row.*

	1	2	3	4	5	6	7	8
The looks;	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The taste;	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The healthfulness;	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The price/quality ratio;	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The collectable card;	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The extent of desired satisfaction for breakfast;	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other questions

Ordering

27. If you could choose between seeing and not seeing beforehand what breakfast you will get, what would you do? \*

*Mark only one oval.*

- ☐ Seeing the breakfast beforehand;
- ☐ Not seeing it beforehand;
- ☐ Other: \_\_\_\_\_

28. And why would you do that? \*

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#### The Price

29. How do you think about the 2 euros asked for one breakfast including delivery? \*

*Mark only one oval.*

- ☐ Too cheap;
- ☐ Cheap;
- ☐ Reasonable;
- ☐ Expensive
- ☐ Too expensive;
- ☐ Other: \_\_\_\_\_

30. Why do you think that? \*

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31. How much would you pay for one of such breakfast delivered? \*

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32. And why would you pay that?

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33. If you have a job with a good salary in the future, what would you in that case pay for such breakfast delivered? \*

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34. And why would you pay that?

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#### Service Continuation

35. If this service becomes available in the future, would you make use of it more often? Why (not)? \*

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36. Do you have any ideas about what improvements or changes would make it more attractive to order more often?

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End of the questionnaire

37. Any general tips of the service you have not been able to mention or fill in yet?

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38. Any general points of improvement of the service you have not been able to mention or fill in yet?

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39. Did you miss anything in the questionnaire and do you have anything else you would like to add?

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40. Do you have any remarks about the questionnaire? You can share them here:

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Thank you for your time filling out this form!

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## **K.2 Results of the Questionnaire after the test week**

This section starts on the next page below, due to the fact a pdf is pasted in the L<sup>A</sup>T<sub>E</sub>Xreport.



Participant #	Signed consent	How did you hear about Fresh 'n Friendly?	Why did you participate?	What goals did you set at the start of the week?	Any other goals you have set?	Did your dietary goals change or did you add any goals?
1	Yes	Personal message from Jarl;	Because I was curious to see the kind of recipes and I thought it was easy because I did not have to make breakfast myself	- I wanted to eat more varied;; I think another one too, but I do not remember	No	No.
2	Yes	Personal message from Jarl;	My regular breakfast was a bit boring, so I liked the idea of some variation for a week.	- More fruits;		No
3	Yes	Personal message from Jarl;	It is a good initiative	- More fruits;; - I wanted to eat more healthful.		
4	Yes	Via housemates;	It sounded like an attractive deal to not have to worry about making breakfast as it will be delivered	- More whole grains compared to refined grains., - More nuts a day, up to a handful;, - I wanted to eat more varied;	Get up early and become more productive in the morning	It did not change
5	Yes	Personal message from Jarl;	I need a health breakfast	- I wanted to eat more healthful., - Eating breakfast more often.	No	I didn't change anything
6	Yes	Via housemates;	Seemed nice to not have to make breakfast in the morning, saves time.	- I wanted to eat more varied;		
7	Yes	Group app where Jarl send a message about the project in;	To help a friend out	- I wanted to eat more varied;		
8	Yes	Personal message from Jarl;	I was interested in the idea.	- More nuts a day, up to a handful;, - I wanted to eat more varied;		
9	Yes	Via housemates;	To try something different for breakfast and because of time	- More whole grains compared to refined grains., - More nuts a		
10	Yes	Via a common friend	Very interested in the process and the thought behind it	I do not dare to fill this in.	don't think so	nope

Participant #	Have you reached the goals you set this week because of the service?	Do you think you are more motivated to keep up with your dietary goals because of the service? Why (not)?	What of the wheel of five did you recognise?
1	Yes	I do not think that I am able to keep up with eating more varied without using the breakfast delivery service. The three most important reasons are: 1 costs, 2 preparation time, 3 storage (expiring food)	- Whole grains;; - Fruits;; - Vegetables;; - Nuts;; - Dairy products;
2	Yes	Not really, as preparing a more elaborate breakfast takes up more time in the morning	- Whole grains;; - Fruits;; - Vegetables;; - Less meat and more plant-based food;; - Nuts;; - Oils and spreads;; - Dairy products;
3	Yes		- Whole grains;; - Fruits;; - Nuts;; - Dairy products;
4	Yes	The recipes were very original and definitely inspire me to get more creative with my breakfast!	- Whole grains;; - Fruits;; - Vegetables;; - Nuts;
5	Yes	Yes, I want to be healthy	- Fruits;; - Vegetables;; - Nuts;
6	No	Yes, I only used the service once this week and I think I will reach my goals when I had ordered several times this week.	- Whole grains;; - Fruits;; - Vegetables;; - Less meat and more plant-based food;; - Nuts;; - Oils and spreads;; - Dairy products;
7	Yes		- Whole grains;; - Fruits;; - Vegetables;; - Less meat and more plant-based food;; - Nuts;; - Oils and spreads;; -
8	Yes	If the service kept on going I would keep on using it probably.	- Whole grains;; - Fruits;; - Vegetables;; - Less meat and more plant-based food;; - Nuts;; - Oils and spreads;; - Dairy products;
9	I did reach my goals around halfway.		- Whole grains;; - Fruits;; - Vegetables;; - Nuts;; - Oils and spreads;; - Dairy products;
10	Yes	yes, I should incorporate fruit and nuts into my breakfast more often! it was delicious and I felt good about myself afterwards.	- Whole grains;; - Fruits;; - Vegetables;; - Less meat and more plant-based food;; - Nuts;; - Oils and spreads;

Participant #	WG	Fruits	Nuts	Dairy products (150 g)	Different ingredients	Snacks (30 g)	Hidden sugars (30g)	Are you inspired to try more healthful breakfasts
1	- 1-4 whole wheat bread, - 1 portion of oatmeal	- 2 portions	Half a handful	1	3 – 5 ingredients	- 1 portion;	- 1 portion	Yes a bit;
2	- 1-4 whole wheat bread, - 1 portion of oatmeal	- 1 portion	One handful	2.5	I do not know exactly, it seemed to be a lot	- I do not eat any snacks on	- 1 portion	Yes a bit;
3	- 1-4 whole wheat bread	- 1 portion	0	2.5	- 2 – 3 ingredients	- 1 portion;	- 1 portion	Yes a bit;
4	- 1-4 whole wheat bread	- 2 portions	0	1	- 1 ingredient	- 1 portion;	- 1 portion	Yes a bit;
5	- 1 portion of oatmeal, - 1 portion of whole wheat pasta	- 1 portion	- One handful	1	- 2 – 3 ingredients	- 1 portion;	- 1 portion	Yes;
6	- 1-4 whole wheat bread, - 1 portion of oatmeal	- 3 portions	0	0	- 3 – 5 ingredients	- 1 portion;	- 1 portion	Yes;
7	- 1-4 whole wheat bread, - 1 portion of oatmeal	- I do not eat fruits on	0	1	- 1 ingredient	- 1 portion;	- 2-3 portions	Neither inspired or not inspired;
8	- 2 portions of oatmeal	- 2 portions	- Half a handful;	2.5	- 2 – 3 ingredients	- 1 portion;	- 1 portion	Yes a bit;
9	- 1-4 whole wheat bread, - 1 portion of	- 1 portion	- Half a handful;	2.5	- 1 ingredient	- 2-3 portions	- 1 portion	Already did
10	- 1-4 whole wheat bread, - 1 portion of oatmeal	- 1 portion	- Half a handful;	2.5	- 3 – 5 ingredients	- 1 portion;	- 1 portion	Fully inspired;

Participant #	What makes you (not) inspired to try more healthy breakfasts?	Are you inspired to prepare healthy breakfasts yourself, because of the breakfast service?	Why are you (not) inspired to prepare healthy breakfasts yourself?
1	The fact that I found (most) of the breakfasts tasty while knowing it was healthy too.	Yes a bit;	Because it's tasty. I already made a kind of healthy breakfast normally. But this inspires me to also try different types
2	It tasted good and feels healthy, however it takes more time and money	Not really;	See my answer for the previous question: It tasted good and feels healthy, however it takes more time and money
3	It is quite simple and healthier	Yes a bit;	It is quite simple to make
4	The amounts of variations you can do with oatmeal. They all tasted very different even though it started with the same base. I really noticed being more energetic after the fruits than with my normal breakfast	Yes a bit;	As I said I could feel more energetic and full with the breakfast which was really nice. I felt healthy, which is also of course a bit placebo because of the idea that I'm eating healthier
5	I want to lose weight and have a healthy body	Fully inspired;	From the breakfast I received from Jarl, I recognized the healthiness, I used to eat anything
6	It makes me more aware of eating healthy. Eating a healthy breakfast also gives you energy for the rest of the day.	Yes a bit;	I already ate healthy before the service
7	Not really worth it	Yes a bit;	The Dutch translation of: "Variety is the spice of life"
8	It is healthy and it was nice	Neither inspired or not inspired;	I try to spend as little as possible time on making food, as I don't really get any enjoyment out of it
9	Already ate healthy	Yes;	Already did make healthy breakfasts myself.
10	I really enjoyed the fruits and nuts in my oatmeal, and it is easy to add these	Fully inspired;	It seems easier than I thought it was, if you eat oatmeal, because the fruit can be a bit overripe or old!

Participant #	If you could choose between seeing and not seeing beforehand what breakfast you will get, what would you do?	And why would you do that?	How do you think about the 2 euros?
1	Not seeing it beforehand;	I think that the pictures wouldn't motivate me to eat it. In general I think that the breakfast does not look super tasty on the picture. I think I would rather have a list of ingredients and pictures of those ingredients separately. It's the taste of the meal that motivates me to eat it, not the picture.	Reasonable;
2	Not seeing it beforehand;	I liked the surprise effect, and usually it tasted better than it looked	Reasonable;
3	Not seeing it beforehand;	Then it is a surprise	Too expensive;
4	Not seeing it beforehand;	I liked the surprise factor. I am not a picky water so I was pretty confident I would like them either way. Because of this it was fun getting up every day wondering what would be awaiting me	Reasonable;
5	Seeing the breakfast beforehand;	Knowing that I will like it or not	Reasonable;
6	Seeing the breakfast beforehand;		Cheap;
7	Not seeing it beforehand;	I like the surprise factor	Cheap;
8	Seeing the breakfast beforehand;	I might not like all breakfasts, an option to choose would be nice.	Cheap;
9	Seeing the breakfast beforehand;	Possibly add more	Reasonable;
10	Not seeing it beforehand;	I like surprises and I eat everything	Reasonable;

Participant #	Why do you think that?	How much would you pay for one of such breakfast delivered?
1	I think it's kind of reasonable because I assume that the nuts and stuff are more expensive than a simple "boterham". Still, I think it maybe could be less. At home I sometimes manage to make dinner for 2 euros per person, and I feel like breakfast should be cheaper than dinner. But I think most people would think 2 euros is a reasonable price.	1,50
2	On this scale it cannot be much cheaper, it's probably a bit on the cheap side. However, more than €2,- for a breakfast is a bit much for me.	€1,20
3	It is not affordable for students	1.1
4	I think making it myself would be much cheaper but seeing that also a lot of time goes into preparing and delivering which is greatly appreciated as I don't feel like doing it myself in the morning it is very reasonable.	If I were to use this on a daily basis and really take like a long term subscription I would say 1.50 is a nice price
5	With all the ingredients in the breakfast and delivery service ,it was reasonable	2
6	It could be a little bit more, because of the service and all the different ingredients. Also, I am wondering whether you make profit with 2 euros a meal ;)	3
7	You seem like cheap labor :)	Up to 2,5
8	Delivery costs are very expensive usually, and if that's not done by a volunteer it can't be this cheap.	no idea
9	Since the service is inclusive delivery it was fine. Without service it would be a little expensive for a breakfast (my own breakfast is around 1,50)	2,5 max
10	Because you make it in big batches, so it can be cheap, but also, it is delivered to your door so 1 euro would be insane	2 euros or 2,50

Participant #	And why would you pay that?	If you have a job with a good salary in the future, what would you in that case pay for such breakfast delivered?
1	Because I think that would be a reasonable student price	4 euro's
2	That's about half my upper limit for dinner	€3,-
3		Maybe more
4	If you have to pay for it every day you don't want big expenses. Of course then it would need a bigger production line to lessen the effort for the maker	If I would have a good paying job I would be much more willing to pay up to 3.50
5	Healthy breakfast is important	Same price
6	It is handy when you don't have time in the morning or you are just starting to eat healthy. However I am already eating oatmeal and I have all the time in the world to make breakfast, so I think it is not a service I would join.	4
7	Any more and the cost would outweigh the benefits	Still up to 2,5
8	It would depend on specifics that are unknown at this point.	No idea
9	I try to keep my breakfast below 2 euros	3-4 euros
10	Because you make it in big batches, so it can be cheap, but also, it is delivered to your door so 1 euro would be insane	3 or 3,50

Participant #	And why would you pay that? (2)	If this service becomes available in the future, would you make use of it more often? Why (not)?
1	Because I would be able to afford it and because I would feel good about paying a little extra so that students can pay a bit less. If students pay the same, I would say 3,50 is the max	Maybe. It would mainly depend how flexible the delivery is and whether I can choose my preferences. I think I would not like to get breakfast at the same time every day. And at some point I would have my favourite recipes, so I would prefer to eat the ones I like more (like a couple of 4 maybe).
2	I probably wouldn't mind the extra expense, plus this seems to be a more reasonable price for the delivery service.	Probably only occasionally, but not a lot. It's a bit expensive for me and usually I have a tight schedule in the morning between getting up and leaving.
3		If cheaper sometimes
4	If I had the money I would allow myself this lazy luxury more easily as I could also miss the money more easily	Yes, i enjoyed it and it helped me start my day a lot. I woke up with the idea that breakfast was already waiting for me so that I would figuratively jump out of bed and be excited for the food
5	If it will be Available to the same price ,can't pay more	Yes, lack of time to do it by my self
6	You have less time to make your own breakfast and you still eat healthy.	Yes, I think when I have a job it would be very nice! I also do not like to eat my breakfast straight away when I wake up and these meals are very handy to take with you.
7		Probably not, but that's because my sleep pattern is too inconsistent to make use of the service properly
8	It would depend on specifics that are unknown at this point.	I would consider it.
9		Not yet, maybe after corona is done
10	because door delivery is very luxurious	yes! a few (2 or 3) days a week, because I felt really good about myself knowing I ate good fuel for my body in the morning



Participant #	Do you have any ideas about what improvements or changes would make it more attractive to order more often?	Any general tips of the service you have not been able to mention or fill in yet?
1	You could do something with a discount for something. Dutch people love discounts or stuff that is free. That would be something to motivate them. To make it easier for yourself, you could say that the people who order at a set time (for example 9 o'clock on certain days of the week) would get a discount.	I like it that the service is personal. Someone comes to bring it to your house.
2	Maybe a form of contactless delivery, like a meal that is delivered through your mailbox/on your doorstep some time before you wake.	The delivery was always with a smile
3		
4	No.	I'd like to thank you for the hard work every morning and am happy to have participated in the test
5	The looks of breakfast could be improved, the rest is fine	No
6	Discount when you order for the whole week. Maybe also make the meals look a bit more attractive. Also, provide the opportunity to choose what to have for breakfast.	Thank you for the meal and good luck with your thesis! :)
7	My tip would be to add the whole grains separately, because then they will stay more fresh	👍 great delivery service. (Although you were three quarters too early 😊)
8	No idea	
9		
10	The oatmeal was a bit flavourless the first 2 breakfasts I had (it said 'anijs' and stuff, but I didn't taste anything). The raw carrot chunks were too big in the carrot cake oatmeal, but the oatmeal in that one was DELICIOUS with the cinnamon. no other changes because it was exactly as I'd imagined: dependable delivery, no hassle with cleaning the container, fruits and nuts and healthy stuff to start the day.	

Participant #	Any general points of improvement of the service you have not been able to mention or fill in yet?	Did you miss anything in the questionnaire and do you have anything else you would like to add?
1	I think it might be smarter to not have to pick up boxes from peoples house if people do not order again. They pay a fee for the box, so you could do just like beer bottles: they have to bring them back in order to get their money back. You could work with a system where people can hand in the boxes somewhere on campus. If they forget, they don't get their money.	Nope. I think the breakfast service was really nice :)
2	Maybe a digital version of the ingredient card	
3		
4		
5	No	No
6		
7	See two questions back, and if you would let the customers know what your ETA (estimated time of arrival) is then they can be prepared before opening the door :)	
8		
9		
10	also already mentioned. I don't care at all about the cards, they do not excite me, so I would not want you to waste time and resources on them for me.	nope

Participant #	Do you have any remarks about the questionnaire? You can share them here:
1	I think I already mentioned it before, but I'm not very sure about what I filled in at the part for how many things I eat from the wheel of five. So I'm not sure how you can take conclusions from that part
2	
3	
4	I didn't order breakfast on Monday so I rated all the categories a 5 as there was no option to skip it so keep in mind this is not a real rating
5	No
6	
7	
8	
9	
10	nope

### K.3 Grade table

This section starts on the next page below, due to the fact a pdf is pasted in the L<sup>A</sup>T<sub>E</sub>Xreport.

Participant #	Day 1: [The looks;]	Day 1: [The taste;]	Day 1: [The healthfulness;]	Day 1: [The price/quality ratio;]	Day 1: [The collectability card;]	Day 1: [The extent of desired satisfaction for breakfast;]	Day 2: [The looks;]	Day 2: [The taste;]	Day 2: [The healthfulness;]	Day 2: [The price/quality ratio;]	Day 2: [The collectability card;]	Day 2: [The extent of desired satisfaction for breakfast;]	Day 3: [The looks;]	Day 3: [The taste;]
1	6	8	9	7	7	8	8	9	9	7	8	8	6	5
2	6	7		6	6	8	8	8	8	6	7	8	7	6
3	7	9	8	8	8	8	7	7	8	8	7	7	4	4
4						5	8	9	8	7	8	9	8	7
5													5	10
6							4	8	9	8	4	9		
7													7	6
8	7	8	8	7	7	7	8	8	8	8	8	8	8	8
9	4	8	6	6	8	4	6	8	6	6	6	8	2	4
10	8	4	7	7	1	6							6	4

Participant #	Day 3: [The healthfulness;]	Day 3: [The price/quality ratio;]	Day 3: [The collectable card;]	Day 3: [The extent of desired satisfaction for breakfast;]	Day 4: [The looks;]	Day 4: [The taste;]	Day 4: [The healthfulness;]	Day 4: [The price/quality ratio;]	Day 4: [The collectable card;]	Day 4: [The extent of desired satisfaction for breakfast;]	Day 5: [The looks;]	Day 5: [The taste;]	Day 5: [The healthfulness;]	Day 5: [The price/quality ratio;]
1	7	7	7	5	6	8	9	7	7	8	6	8	8	7
2	8	6	6	8	7	9	8	6	6	8	6	8	8	6
3	7	6	7	4	6	8	7	7	7	7	5	4	7	6
4	9	6	10	8	9	8	9	9	8	9	9	9	10	9
5	10	10	10	10	5	10	10	10	10	10				
6														
7	8	8	10	10										
8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
9	6	6	6	6	4	6	6	6	6	6	6	8	6	8
10	8	7	1	5							9	8	8	8

Participant #	Day 5: [The collectable card;]	Day 5: [The extent of desired satisfaction for breakfast]
1	6	8
2	7	8
3	6	6
4	8	9
5		
6		
7		
8	8	8
9	2	8
10	1	8

#### K.4 Average dietary improvements during the test week

In Figure 48 the sum of the changes per food group (positive and negative outcomes) of all participants are shown. What is positive is the reduction of hidden sugars, the increase in variety, dairy products, nuts and fruits. However, the amount of WG lowered somehow. It is not clear where that comes from.

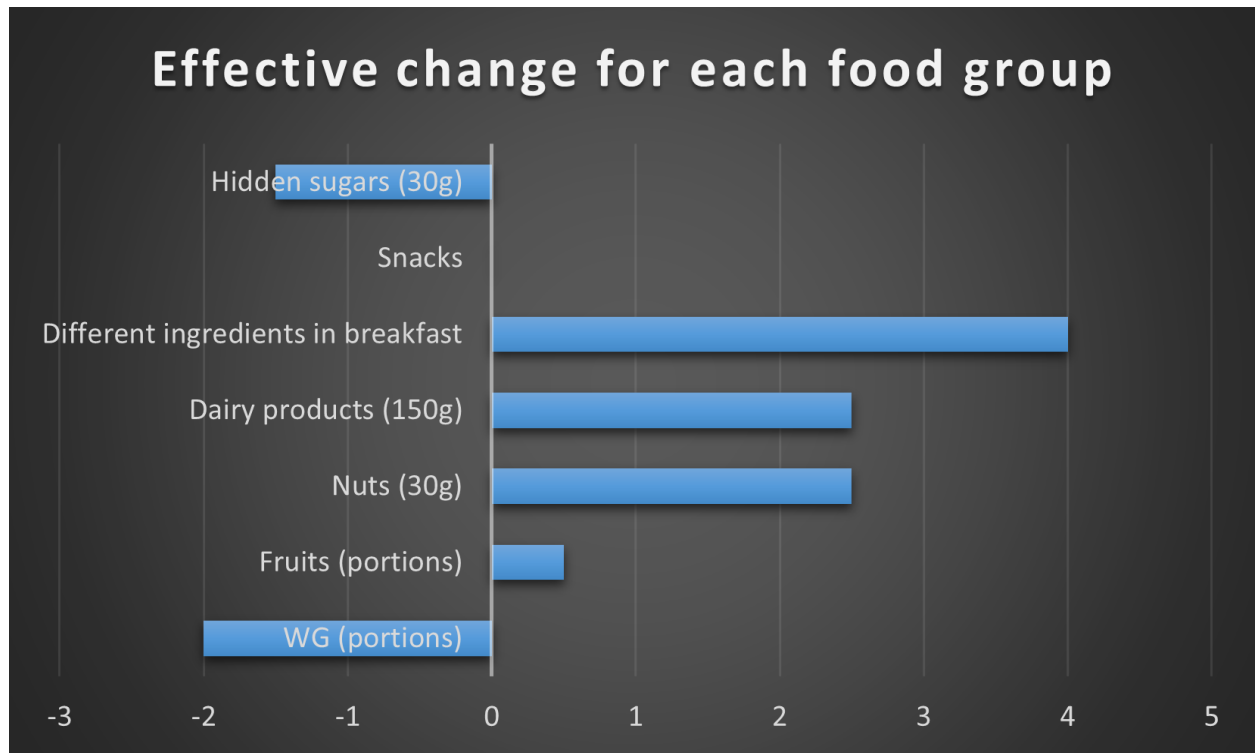


Figure 48: The effective change for each food group

## L User Interviews

### L.1 Information Brochure and Consent Form



# **Information brochure and consent form for the interview after the research on a breakfast delivery service.**

Welcome to the information brochure about the interview to get insight in what your opinion and feedback is about the healthy breakfast delivery service for students in Enschede that was tested in the week from 21-25 of June. If you read this, you were probably a participant of this test. The goal of the interview is to evaluate the healthy breakfast delivery service and to find possible design flaws. You will be asked about your reasons to participate in the test week, dietary goals and your eating behaviour and about tips and tops for the breakfast service. In addition there is asked about your opinion about different parts of the service. Follow up questions can be asked if needed.

## **Information brochure**

Participating in this interview is completely voluntary. Although you have already said that you wanted to participate, you are not obliged to take part in an interview and may still let me know that you stop. You can also contact me afterwards if you want to withdraw after the interview for any reason. If you withdraw, we will try to exclude your input from the results.

In the online interview you automatically give a name. This name will be coded right away to numbers to link the qualitative interview data to the statistics during the week. The qualitative data will be notated and it will be stored privately on the drive of the University of Twente and will be used in the report (after excluding your name).

You will not be recorded, since I will note down your answers and use that for my final report.

For general questions or if you want to withdraw afterwards: my e-mail address is: [j.e.witt@student.utwente.nl](mailto:j.e.witt@student.utwente.nl) and for other questions, my supervisors e-mail address is: [a.m.schaafstal@utwente.nl](mailto:a.m.schaafstal@utwente.nl)

If you have any ethical concerns or questions, you can contact the ethical committee at: [ethicscommittee-cis@utwente.nl](mailto:ethicscommittee-cis@utwente.nl)

## Consent form

If you decide to give consent for the interview about the healthy breakfast delivery service, you agree by checking the box for the following text:

☐

By signing this consent form I confirm that I have read and understood the information stated above. I participate voluntary and I am aware of my right to withdraw at any time. I give the permission to collect and use the personal data as described above. I am aware that my input can always be excluded from the research by contacting Jarl Witt. All my questions have been answered to my satisfaction.

Date: .../.../.....

## L.2 Questions and Answers

Three individual interviews were conducted. In this question and answer scheme, the questions are numbered and the participants are participant (a), (b) and (c). They were all participants from the test week.

1. What were your reasons to participate in the test week?
  - (a) Because the author was so enthusiastic about it. And it is important what people eat. From bad diet, people can become not at ease with themselves or not physically fit. That is why I find it a very nice initiative.
  - (b) I was interested in the health aspect. Besides, I was wondering if I could make smoothies from it (which was accomplished). And it was being offered, so why not participate?
  - (c) To do something else. Normally I only eat smoothies for breakfast, perfect for me, but that is always the same. I wanted to do something else for a change.
2. What were your goals set and why?
  - (a) The goal was to eat more fruit. Because it is often the case that I sparsely visit the store and I do not have fruit.
  - (b) I wanted to try it. A *healthy* breakfast? Fine.
  - (c) Not much goals, because I already ate the nutrients I need in my regular breakfast. More fibre would be nice since I do not eat that much fibre.
3. Did the service help to reach the goals? Why (not)?
  - (a) Yes, because otherwise, I would have to search too long for the seasonal fruit, they are hard to find in the supermarket. In addition, I want to eat local produce!
  - (b) Yeah, for the health I guess.
  - (c) No clear answer in the interview.
4. What did you think of the price (2 euro)?
  - (a) I think it is a high price. It costs more than the average dinner I make. The highest price that I would spend on the service would be 2.30 euro, but not for every day!
  - (b) More oatmeal would be better for the same price because it was not always filling enough.
  - (c) No clear answer in the interview.
5. Did you have any expectations? If yes, what were these expectations?
  - (a) I would see. Since I am a picky eater I did not know if the breakfasts would be nice.
  - (b) I did not know what to expect, but the breakfasts were different than I could have thought of.
  - (c) I had more expected that I could see what was in the breakfasts. Less mixed breakfast when delivered.
6. Did Fresh 'n Friendly met the expectations? And what did not meet the expectations?
  - (a) Yes it did meet the expectations, Better than expected.

- (b) I did not know what to expect, but the breakfasts were different than I could have thought of.
  - (c) I expected to know what I would get beforehand, so that was missed. (Comment: This participant missed in the order form that the plans changed. Before it was announced that there was a choice of menu. It was not clear, and the first form should tell the truth because that one was taken for granted)
7. Did you know that the products used are organic?
- (a) Yes, I have more times thought to start eating organically. However, it is too expensive. Another question is if mass production is not more energy efficient than organic production, and therefore the benefits of using organic could be less.
  - (b) I was not aware of it.
  - (c) No answer from the interview. Comment: the author might have forgotten to ask.
8. If the service was available every day, would you order more often?
- (a) Not too often, because the price is too high. If it would become 1.30 euros or something I would do it every day.
  - (b) If you could choose what you will get, it would be nice, because some recipes were pretty good.
  - (c) Especially when I would go to University when there is more time pressure in the morning, I would order more often.
9. If the service was only available a couple of days a week, how do you find that?
- (a) Fine. Then there is also some space in the week to make something yourself.
  - (b) Fine.
  - (c) Fine, because then you can switch between the service and your things.
10. Are you inspired to prepare a similar healthy breakfast when getting this?
- (a) Yes, normally I would make the same breakfast every day. I am inspired to put more fruit in my breakfast like in the service because that tastes better.
  - (b) No sustainable change, but it gives probably some input for future breakfast choices.
  - (c) No because I already ate something optimal for me. For once it was nice. The cards were working for inspiration (if the card showed ingredients). *I told the participant that the last one was rhubarb, the carrot cake.* The participant responded: that would not have worked and I probably would have liked it less if you would have put on the card that rhubarb was in there. I liked the breakfast very much, it even was my favourite, because there was only "carrot cake" on the card.
11. Did you keep the recipe cards for inspiration?
- (a) No clear answer has been given or the question was not asked.
  - (b) The cards did not interest me, you can get them back if you like.
  - (c) The cards were inspiring if they showed ingredients. I am going to keep these cards with ingredients. But not because of the collectable attribute.

12. How would you find if you could leave out products?
- (a) Fine.
  - (b) Yes, it would be fine if I could say that I would not like some products.
  - (c) No clear answer in this interview.
13. Any other tips or tops you have? Or any other remarks?
- (a) Top: It is nice to eat such a breakfast first, before going to study.
  - (b) Tip: More oatmeal would be nice. It was not always enough and I had to add more myself. Remark: the millet on Thursday was not nice, although I made a smoothie of it. Top: it was more healthy than my regular breakfasts.
  - (c) Top: Nice service. Tips: The most added value would probably be when the University is open. For the looks: less mixed breakfast when delivered, and it might be good to deliver it in meal boxes with different compartments to really separate the ingredients. The millet on Thursday was not nice, solve this for example by giving two options. I would like to see more dairy products in the breakfasts.