

## “An investigation into the caloric check to fight obesity”



### Academic Master Cluster Project 298

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## 'Caloric check to fight obesity'



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## Summary

Nowadays, overweight and obesity are increasing rapidly all over world. In the Netherlands, obesity has almost doubled over the last decade. Now more than 40% of the Dutch adult population is overweight and more than 10% is obese.

Because obesity has become a rising problem, government and health organizations are trying to find solutions in order to prevent people to become more overweight. To increase consumer awareness about a healthy lifestyle, stimulating healthy food purchase behaviour is as an essential step to fight the increasing number of obese people.

To react to this increasing number, InnovatieNetwerk has invented a tool, called the 'caloric check'. This caloric check will be provided as a receipt in the supermarket with added information about the caloric content of the purchased products. This receipt can be used to assist consumers in monitoring their purchasing behaviour in relation to calories for a healthy lifestyle.

The purpose of the study is to investigate under which conditions the caloric check can be implemented in the supermarket in order to assist consumers in dealing with information about the caloric value of food products they purchase according to the consumer, supermarket, nutritional, and communicational view.

In order to investigate the caloric check, four receipts were designed, based on a theoretical framework of the Elaboration Likelihood Model and the Reinforcement theory. The research consisted of two different parts.

First through in-depth interviews, specialists have been asked what they think of the caloric check and the four receipts. The results of the study show that the specialists were interested in the idea of the caloric check. The specialists were divided in their opinion about the most preferred receipt. They gave various remarks and recommendations about the receipts. The main recommendations of the specialists were that the receipt should contain portion size instead of package size, the consumers should be informed in a positive way and the message should be as clear and understandable as possible.

In the second part the goal was to find out the preference and perception of consumers towards the different receipts of the caloric check. One hundred female consumers filled in a questionnaire. From the questionnaires it became clear that receipt 2 was considered to be the most preferred one, because the caloric information is mentioned behind every product. Also the informativeness, attractiveness, notability, and intelligibility of receipt 2 were higher compared to the other three receipts. On average the women were positive about the caloric check and saw it as a positive tool to develop a healthy lifestyle.

With the information of the quantitative and qualitative research one final receipt was designed, which included the recommended daily need of kcal per man/woman, the amount of calories per product and per portion, an advice, and a reference to a website.

Both specialists and consumers are interested in the idea of the caloric check, although taking the results of this study into account, more research is needed.

## Samenvatting

Overgewicht en obesitas is een groeiend probleem wereldwijd. In Nederland is de hoeveelheid mensen die obesitas hebben bijna verdubbeld over het laatste decennium. Van de Nederlandse volwassenen heeft meer dan 40% overgewicht en 10% heeft obesitas. Omdat obesitas een groeiend probleem is proberen regering en gezondheidsorganisaties oplossingen te vinden om overgewicht te voorkomen. Het creëren van een gezonde levensstijl is een essentiële stap hierin. Dit kan gedaan worden door consumenten bewust te laten worden van hun aankopen in de supermarkt en het kopen van gezonde producten te stimuleren.

Als reactie op het toenemende aantal mensen met obesitas, is het idee van een 'caloric check' gelanceerd door InnovatieNetwerk. Dit is een kassabon van de supermarkt met aanvullende informatie over de calorische waarde van gekochte producten. Het doel van de studie is om te onderzoeken onder welke voorwaarden de caloric check geïmplementeerd kan worden in de supermarkt om consumenten te voorzien van informatie over de calorische waarde van gekochte levensmiddelen. Dit werd bekeken vanuit het oogpunt van de consument, de supermarkt, de voedingskant en de communicatie kant.

Om het idee van de caloric check te onderzoeken, zijn er vier kassabonnen ontworpen, gebaseerd op theoretische kaders van het Elaboration Likelihood Model en de Reinforcement theorie. Het onderzoek bestond uit twee delen.

Als eerste zijn, door middel van diepte-interviews, specialisten gevraagd wat zij van het idee van de caloric check en de vier kassabonnen vonden. Uit de resultaten blijkt dat de specialisten geïnteresseerd zijn in het idee van de caloric check. De specialisten waren verdeeld over de meest geschikte kassabon. Er zijn diverse opmerkingen en aanbevelingen gegeven over de ontworpen kassabonnen. Het voornaamste advies van de specialisten was dat de calorische informatie beter per portie kan worden weergegeven dan de totale hoeveelheid calorieën per product. Ook kunnen consumenten het beste op een positieve manier geïnformeerd worden en moet de boodschap zo duidelijk en begrijpelijk mogelijk weergegeven worden op de kassabon van de supermarkt.

In het tweede deel vulden honderd vrouwelijke consumenten een vragenlijst in om de voorkeur van de consumenten te achterhalen over de caloric check. Uit de vragenlijsten kwam naar voren dat kassabon twee de voorkeur had, voornamelijk omdat de calorische informatie achter ieder product is vermeld. Ook was deze bon het meest informatief, aantrekkelijk, opmerkelijk en begrijpelijk vergeleken met de drie andere ontworpen kassabonnen. Over het algemeen waren de ondervraagde vrouwen positief over de caloric check en zagen de meeste vrouwen het als een positief hulpmiddel om een gezondere levensstijl te ontwikkelen.

Met de informatie over het kwantitatieve en het kwalitatieve onderzoek is een uiteindelijk bonnetje ontworpen, waarop de aanbevolen dagelijkse hoeveelheid kcal per man/ vrouw, de

calorische waarde per product en per portie, een advies en een verwijzing naar de website zijn opgenomen.

Zowel de specialisten als de consumenten waren geïnteresseerd in het idee van de caloric check, hoewel, de resultaten van dit onderzoek meenemend, meer onderzoek nodig is.

## 1. Introduction

### *Problem statement of obesity*

The proportion of people who can be classified as 'overweight' or 'obese' is increasing rapidly in Western countries. Also in the Netherlands, obesity (BMI>30) has almost doubled over the last decade. Nowadays more than 40% of the Dutch adult population is overweight and more than 10% is obese (Voedingscentrum, 2007).

According to the RIVM there are indications that every year around 40.000 new cases of diseases like diabetes, cardiovascular diseases and cancer originate as a consequence of obesity (RIVM, 2007). The direct costs of overweight and obesity, in the Netherlands only, are estimated between 0.5 and 1 billion Euro according to Voedingscentrum. The indirect costs, like non-attendance and social security, are around 2 billion Euro a year.

One of the main causes of obesity is a positive energy balance which means that the energy intake is higher than the energy expenditure. Often this unequal energy balance is a result of lifestyle factors, such as nutrition and physical activity (Voedingscentrum, 2007).

### *Campaigns to prevent weight gain*

Increased awareness about the lifestyle of people, like food purchase behaviour, is an essential step in the prevention of weight gain. There are indications that people are not actively trying to prevent weight gain, because they may not be aware of their weight gain, body-weight status or unhealthy eating and physical activity habits (Blokstra et al, 1999). In the Netherlands there are multiple projects which try to create awareness about a healthy lifestyle in order to stop or reduce the increasing number of obese people. For example, the campaign from the Dutch Institute of Sport and Movement (NISB) emphasizes the importance of 30 minutes movement minimal five days per week.

On the nutrition side, there are many campaigns as well, for example 'Balansdag' created by Voedingscentrum, which is about eating balanced over the week. In this way, a positive energy balance at one day can be compensated with a negative energy balance the next day. Also Voedingscentrum introduced the Dutch Caloriechecker on the internet, which a person can use to check if he or she has eaten more energy than he/she has used. Although in this way the amount of calories can be measured, some people have a fast metabolic system and the energy use will be higher than among people who have a low metabolic system. By using the Caloriechecker people can become more aware of their healthiness of their eating habits. However, this tool requires a lot of effort from people: they have to remember exactly what and how much they have eaten that day. It requires even more effort without the Caloriechecker on the internet. People can read the information of the caloric content of a product from the nutrition value declaration present on the label of the product. Nevertheless, not all products have caloric information on the package or the products are wrapped up by the supermarket, like for example fruit or meat products. This is because the declaration of

nutritional value is not obligatory in the Netherlands (Warenwetbesluit Etikettering van levensmiddelen, 1997). For most people it is still a lot of effort and it may be a problem to find out how many calories are actually consumed.

#### *Caloric check*

To react to the increasing number of obese people and taking the above mentioned problem into account, InnovatieNetwerk has invented a tool, called the 'caloric check', to help people making more healthy choices in their purchase behaviour in relation to calories. InnovatieNetwerk is an organization that develops new concepts in agriculture, agribusiness, nutrition and rural areas and ensures that these are put into practice by interested parties. The idea of the caloric check came up on a conference. On this conference on the 29<sup>th</sup> of November 2005, specialists from the health branch came together to have a debate about the problems around obesity and tried to find solutions.

The idea of the caloric check is that consumers can see on a receipt the total amount of calories of all products they have bought in the supermarket. Consumers can compare this total amount of calories with the amount of calories needed by the household for the days they bought these products.

In America, a similar approach already exists in the catering branch. For example the Nutricate Receipt. Companies in the catering industry, like hamburger and sandwich shops, put the kilocalorie, fat, protein, and carbohydrate content for each product on the receipt, as well as the percentage of the Recommended Daily Intake (Nutricate, 2007). Although it is not known what the effect of this receipt is on consumers, one of the features of the Nutricate Receipt might be that the relevant information is written down also in percentages, which is difficult to interpret for low educated people.

Also in the Netherlands, a comparable receipt exists at the company Unilever. At the canteen of Unilever a receipt with the amount of calories of the products bought is given. However many people buy only one meal in these shops instead of food for several days, as they do in supermarkets, on which this project will focus.

#### *Aim of the study*

The aim of the study is to investigate a receipt with information about the caloric content of all products bought in the supermarket. This is called a 'caloric check'. It can be a feasible tool for consumers to assist them in dealing with information about the caloric value of the food products they purchase. With feasibility is meant under which conditions the caloric check can be implemented in the supermarket, concerning the different point of views, like the consumer, supermarkets, nutritional, and communicational view.

### *Target group*

The investigation of the feasibility of the caloric check is targeted towards women of low social economic class, who are concerned about their own health and the health of their family members and who buy most of their groceries once a week.

These women are selected, because it is given that they have a less healthy lifestyle compared to women of higher social economic classes. They eat less vegetables and fruit, smoke and drink more and have less physical activity. Women of lower social economic class are overweighted more often and are having unhealthy physical conditions.

Although both low educated men and women are obese four times more often than high educated men and women, only women are selected (RIVM, 2006). The main reason to focus on women is that women still seem to carry the major shopping loads in the household although situations may force males to participate more in shopping activities, especially when they live as single parents or single adults. Fram and Axelrod (1990) reported that females have the primary responsibility for household shopping. In a consumer study for instance, 73 percent of qualified food shopping respondents were female (IMRA, 1992). Another reason is that the differences in physical conditions between social-economic classes are larger in the female population than in the male population.

Recent figures of GfK show that people with obesity are primarily appealed by discount supermarkets. Consumers who are obese do most of their shopping at Aldi and Lidl. Also, people with obesity have less discipline than other supermarket customers who are not obese. Relatively they spend more money on magazines, drinks, and snacks and they ignore the shelves with vegetables and fruit in comparison with non-obese consumers. People with obesity do more impulse purchases and can much easier be influenced. The figures show that they are less price or quality conscious and less brand loyal than other consumers. Interestingly, people with obesity are attracted by saving systems, sticking stamps is a popular activity (GfK, 2007).

### *Will consumers process the caloric information?*

As stated, the aim of the study is to investigate whether the caloric check is a feasible tool for consumers to assist them in dealing with information about the caloric value of the food products they purchase. Apparently, there is a large group of women who seem to have problems with their weight and living a healthy life. Therefore four receipts were designed with caloric information. The difference between a regular receipt and the new designed receipts is the extra information about the caloric content of the products. To find out how the idea of the caloric check itself is appreciated and which receipt is the most preferred and why, different specialists were interviewed and questionnaires were conducted for the consumers.

The goal of the caloric check is not to change consumer behaviour, but merely to supply consumers with both meaningful and simple information about the caloric content of the

overall food purchases. This can lead to more awareness among consumers towards their food purchases in relation to calories. To illustrate the meaning of the caloric check the following example can be used. A regular receipt is meant to inform people about the relative contribution of the products to the amount of money they have to pay; it makes them aware of their purchase behaviour in relation to money. Next to the price, the caloric check gives also caloric information of the purchased products; it makes them aware of the purchase behaviour in relation to calories.

The first phase of changing consumer behaviour is creating awareness of a need to reduce or remain their weight. In the process of forming an attitude towards the caloric check, the consumer first receives information from the outside world, processes the information using existing knowledge and becomes aware of the caloric check and finally the consumer has formed an attitude towards the caloric check. If consumers are aware, further steps need to be made to adapt the behaviour of consumers. To reach awareness of the consumer about their lifestyle, four receipts were designed to give information about the purchased calories.

These receipts were based on the theory of the Elaboration Likelihood Model of persuasion (Petty & Cacioppo, 1986). This theory is based on the idea that attitudes are important because attitudes guide decisions and other behaviour. According to the personal relevance of information, the relative important messages are transmitted and received through the central or peripheral route.

The central route is taken under high involvement condition. The peripheral route, on the other hand, is taken under the low involvement condition. This theory can be applied when creating awareness about food purchasing behaviour in relation to calories amongst consumers. Consumers who are conscious of their lifestyle and weight are highly involved processors. This group will elaborate on the message through the central route. Most likely this highly involved group of consumers will take a good look at the information on the receipt. Consumers who really want to loose or remain weight are motivated to think about the information on the receipt. Consumers who are not so much concerned about loosing weight are not highly involved. This group will elaborate the message under low involvement through the peripheral route. Most of the time these consumers only look at the colours and pictures of the receipt and are not interested in the idea behind the caloric check.

The receipts can be processed through both routes of persuasion. Two of the receipts can be processed through the central route and the other two through the peripheral route.

Receipts that can be processed through the central route are the ones that have only information displayed as text and numbers. Consumers need to have a close look at the receipt in order to understand the information and to interpret the calories. To understand this information, the consumer needs to be motivated to read and interpret the information. The information on the receipts that can be processed through the peripheral route has a more attractive design, like a shopping basket with colours, scratching and figures which represents

a family. At a glance consumers can see which products contain the highest amounts of calories or how many days their family can be fed. The scratching is a peripheral tool to get consumers involved into the message. Figures are most of the time understood and interpreted in a few seconds. This will not take a lot of effort from consumers, so even consumers which are not involved can process the information.

On all four receipts also advices can be given to consumers about healthy choices in relation to calories and put them at the bottom or at the back of the receipt. These advices can be specific for the products purchased: for example, if consumers bought cake, an advice would be: 'instead of cake you could choose for gingerbread. In this way you will have 50 percent less calories'. General advices could also be put on the receipt. An example of a general advice is: '30 minutes of physical activity at least 5 days a week is required to keep a healthy lifestyle'. These advices are processed through the central route because they have to be highly involved with the caloric information on the receipt.

In general, the information on the receipt has to be clear, consistent and understandable designed to attract attention. Consumers need to understand the information at a glance.

In order to inform consumers about the caloric content of purchased products four steps have to be taken like as in the Reinforcement theory (Hovland, et al, 1967). First the receipt has to be presented to the target group. Second, the receipts have to be designed in an outstanding manner; as a result the consumers will pay attention to the receipts and notice the difference between a receipt with caloric information and a normal receipt. Also the message of the receipts has to be comprehensible for the target group, women of low social economic class, who are concerned about their own health and the health of their family members. Therefore the receipts should contain simple and clear information about the calories of the products purchased. Third, if the message on the receipt is successfully processed, consumers will think about and compare their initial opinion and the new message and they feel the need to react on it. Fourth, they will be persuaded if a reward for accepting the new message on the receipt is greater than holding their initial opinion. If their initial opinion was that they are not interested in calories and concerned about their weight, they might change their opinion if they receive information in a simple way. The message on the receipt gives useful caloric information and the reward of improving their lifestyle by creating awareness towards the products purchased, can be positive for the receiver of the message. Attitude change results from learning produced through reinforcement. Receiving or accepting new opinions is the key to a change an attitude. The message must attract attention and must be easy to understand. More importantly, it must be presented in a way that reinforces the idea's validity (Hovland, Janis and Kelley, 1967).

The focus in this study is to investigate whether the caloric check is a feasible tool for women of lower social economic class to assist them in dealing with information about the caloric

content of the food products they purchase. This was investigated by interviewing eight specialists and conducting questionnaires among one hundred women in the supermarket. These interviews and questionnaires were used to find out which of the four designed receipts was most preferred. Also the reasons why the receipt was the most suitable, and what both specialists and women thought of the caloric check were asked to get an insight of their view on the caloric check.

## 2. Methodology

In this part the methodology used in the study is explained. To investigate if the caloric check can assist consumers in dealing with caloric information of the food products purchased qualitative and quantitative research were used. Qualitative research was executed to investigate what the specialist's think of the caloric check and which of the four receipts are preferred. The quantitative research was carried out to find out the preference and perception of consumers towards the four receipts of the caloric check and the idea of the caloric check itself.

The study was executed during two weeks among eight specialists and hundred consumers in the Netherlands. The data were collected by using in-depth interviews among the different specialists and by use of questionnaires for consumers at two different supermarkets in Wageningen. First an explanation of the designed receipts will be given, followed by the description of the qualitative and quantitative research.

### 2.1 Receipts of caloric checks

Different receipts have been designed in cooperation with InnovatieNetwerk to assist women of lower social economic class in dealing with information about the caloric value of the food products they purchase. The products that can be found on the receipts are chosen because they are typical products that are bought by an average Dutch family for a weekend. The information about the kilocalories per portion is obtained from the Caloriechecker from Voedingscentrum. The prices in the last column are estimated. The receipts are included in appendix 1.

- Receipt 1

Receipt 1 shows the total caloric amount in numbers. This receipt is a sum up of all calories purchased. At the bottom of the receipt a sentence is written 'With this purchased amount of calories an average man can be fed for more than 18 days'. Also the average amount of calories a men and women should consume is given as a direction. The thought behind this receipt is that consumers can see at a glance how much calories they have purchased in total. They can look if it is more or less than the last time they did their groceries. Also they can use the sentence as guideline.

- Receipt 2

Receipt 2 shows the amount of calories per product as well as the total amount of calories. In this way consumers can see where the calories originate from. To give them an insight about which products have the highest caloric value a top five has been made. This top five shows the products which add the most calories to the total amount of calories. To attract the consumer's attention, the top five has been designed as a graph in the shape of a shopping

basket. The graph contains only colours, no percentages to keep it easy and simple to process the information.

- Receipt 3

Receipt 3 has been set up in the same way as receipt 1; the total amount of calories of the products purchased is given. The difference is that a creative tool for consumer has been added. To get the consumer more involved, they have to scratch the total amount of calories.

- Receipt 4

Receipt 4 shows the amount of calories per product as well as the total amount of calories. On the receipt an illustration has been included of an average family, two adults and two children; there is a box where the number of days can arise. These days indicate the number of days this average family can be fed. This receipt is matched to the 'Bonus card system'. The Bonus card contains information about the household composition of the consumers. The card can read the specific information about the family. This information is used to illustrate the family on the receipt.

## **2.2 Qualitative research**

This part of the study started with executing qualitative research using in-depth interviews among eight specialists in order to obtain specific information about the caloric check.

### *Participants of the qualitative research*

In order to gain broader opinions from different fields, four target groups were defined:

- Specialists of supermarkets
- Specialists on marketing and innovation
- Specialists on nutrition
- Specialists of health associations

For each target group a list of specialists, who are involved in the obesity and/or consumer topic, was made. These persons were asked by phone and/or e-mail if they were willing to participate in the research. Also a back up list was made. Specialists of the back up list were asked if the specialist could not be reach, if he/she thought that they were not involved enough in the research topic, thought that it did not fit in the policy of the organization or if they did not have time to cooperate in the research.

The final list of specialists that were willing to cooperate in the research consists of:

Specialist of supermarkets

1. Hetty Essink, Department Brand management PLUS Retail
2. Dr. Simone Hertzberger, Hoofd Kwaliteit en Product Integriteit, Albert Heijn
3. Inge Oeseburg, Formula manager C1000

Specialist on marketing and innovation

4. Prof. Dr. Ir. Hans van Trijp, Wageningen University and Research Centre, Unilever

Specialist on nutrition

5. Prof. Dr. Jaap Seidell, Vrije Universiteit Amsterdam & Kenniscentrum Overgewicht
6. Ir. Karin Bemelmans, Hoofd afdeling projecten, Voedingscentrum

Specialists of health associations

7. Mary Stottelaar, Scriptum Communicatie over voeding
8. Mieke van Spanje, Chair Nederlandse Obesitas Vereniging

*Procedure of the qualitative research*

The first in-depth interview was on the 2<sup>nd</sup> of May and the last one on the 11<sup>th</sup> of May 2007. The procedure for the interviews was consistent. This means that the interviews were held every time in the same way. Each time two project members went to the specialist and held the interview. One of them led the interview and the other took notes during the interview. Interviews were also recorded by a MP3-player. The interview took place at the specialist's office or at their homes. All interviews were held face-to-face, thus not by telephone or e-mail. The face-to-face way of interviewing was chosen because it is more personal and more direct. Non-verbal behaviour could be observed by the interviewer and the receipts of caloric check could be shown. Also it is easier to anticipate on the information that is given during the interview. And face-to-face interviews result in broader answers, compared to interviews by phone (Emans, 2002). The duration of the interviews varied from 45 till 60 minutes. To thank the specialists for their cooperation a little present was given. Afterwards minutes of the interviews were made by using the notes and the MP3-player. Before starting the interview, an introduction was given and the specialist was asked why he or she was willing to cooperate. Secondly the procedure was explained by the interviewer (appendix 2).

*Content of in-depth interview*

The interview questions consisted of two parts referring to the research questions. First, questions were asked about the four receipts to investigate which receipt was preferred the most. Questions were asked like '*Which one of the four receipts do you find the most suitable?*' and '*Why do you think this receipt is the most suitable?*', which can provide also more ideas to improve the design of the receipts. Second, general questions about the caloric check were asked in order to obtain information about the opinions of the specialist to the idea of the caloric check. The interview questions of the second part were adapted to the work field of the specialist. For instance, a specific question for the specialist of marketing and innovation was '*Do you think the information on the caloric check will influence consumer behaviour?*' All questions of the in-depth interviews can be found in appendix 3.

## 2.3 Quantitative research

The quantitative research was executed to find out the preference and perception of consumers towards the different receipts of the caloric check. A questionnaire was conducted, which was used to ask one hundred consumers in Wageningen. Wageningen was chosen because it has an average population, except for the large student population. However, students were not included in the study population. Furthermore Wageningen was the most accessible city during the duration of this study to conduct the questionnaires. Wageningen has around 35.700 inhabitants (Gemeente Wageningen, 2007).

### *Pre-test*

Before executing the questionnaire, a pre-test was tested on five students to check if the design of questionnaire was clear enough. The pre-test was held in the canteen of Leeuwenborch building of the Wageningen University on the 9<sup>th</sup> of May, 2007. The questionnaires were filled in at Wageningen University and Research Centre. During the pre-test, participants gave answers to the questions and gave their opinion about the questionnaire. Participants made remarks about the structure of the questionnaire, the amount of information on a page and about using different letter types to distinguish questions in the questionnaire. The last two comments were not taken into account, because the respondents do not have to fill in the questionnaire by themselves. The first remark from the pre-test was taken into account and adapted to the questionnaire.

### *Procedure of quantitative research*

Before executing the questionnaires, managers of three supermarkets were informed about the project and asked if they were willing to cooperate. Two out of the three supermarkets gave permission to execute the questionnaires inside the store. In these supermarkets women from a low social economic class do their groceries most of the time. In both supermarkets the space inside the shop was big enough to stand or sit. Therefore, the questionnaires were executed inside, because it was more comfortable and if consumers can sit they wanted to cooperate sooner. The consumers were most willing to participate, when the interviewer mentioned that it only took five minutes. Different reasons were mentioned why people did not want to cooperate, like: their children were also present and did not have the patience, the parking card was not valid anymore, they were in a hurry or they had to go to other appointments. The questionnaires were executed in week numbers 19 and 20.

### *Participants of the quantitative research*

The target group of this research consists of women of lower social economic classes, who are concerned about their own health and the health of their family members and who buy most of their groceries once a week. In addition, women are all 18 years and older because they are often responsible for the groceries of the whole family and have to take care of their children. It is known that women of lower social economic classes buy their groceries more often in discount supermarkets. The women were recruited inside the supermarkets, right after they have paid at the cash desk. The participants were asked after they had bought their groceries, because the receipt could be used as a starting point for the questionnaire.

### *Content of the questionnaires*

The questionnaire contained 34 items, of which 4 closed items, 3 semi-closed items, 3 open items and 24 items on a Likert scale from 1 to 7. The questionnaire can be found in appendix 4. The questionnaire was divided into five parts. The first part consists of general questions to health issues, for example if the consumer is health aware, which can be answered with "Yes", "No" or "Sometimes". The second part contains statements about the informativeness, notability, attractiveness and intelligibility of the four receipts, which can be answered on 7 point Likert scale from "fully disagree" to "fully agree". This part was used to obtain more information about the preference of the different receipts specific for these elements. Third, one question was asked about which receipt the participant preferred the most and the reason why the participant choose this receipt as the most preferred. The fourth part consists of statements which can be used for the caloric check itself. The fifth part was the demographic part, for instance about education level, age and consumers' household composition. The level of education was divided into three categories, namely low (lagere school, LBO, MAVO), moderate (MBO, HAVO, VWO), and high (HBO, WO). The questionnaire is one A4 of questions, front side and back side of the paper. The questions were asked and the answers of the consumers were filled in by the interviewer. This makes it easier for the consumer to participate.

## **2.4 Data analysis of qualitative and quantitative research**

Summaries were made from the in-depth interviews to analyze the data from the qualitative research. The summaries of the interviews were composed together in one document and compared with each other.

For the analysis of the quantitative data first all open questions from the questionnaires were entered in Excel. In that way, the reasons why consumers preferred one or another receipt could be listed and compared.

Second, all (semi)-closed questions were entered into SPSS. All descriptive data, like age, education level, and average family size were presented as means  $\pm$ SD or percentages.

A paired-sample t-test was used to compare the values given to the informativeness, notability, attractiveness and intelligibility of the receipts. Factor analysis was used to investigate if the level of education is related to the attitude to the different receipts and the caloric check in general. For all analyses a two-sided p-value less than 0.05 was considered statistically significant. Statistical analyses were done using the statistical software program SPSS 12.0.1 for Windows.

### **3. Results**

#### **3.1 Results qualitative research**

##### *Findings*

The qualitative research was executed to investigate what the specialists thought of the idea of the caloric check in general and which of the receipts they liked the most. The main findings are pointed out underneath. First the findings of what the specialists thought of the idea of the caloric check itself are reported. After that, the opinions of the specialists on the four receipts are discussed, followed by some recommendations.

Specialists agreed that the goal of the caloric check is to make the consumers aware of their buying behaviour. This means the caloric check is an information tool rather than an educational tool. Changing the lifestyle pattern asks more effort of the consumers than simply reading the receipt. The question arises what the impact will be of the caloric check or what can be reached by implementing the caloric check? The findings of the impact of the caloric check on consumer behaviour can turn out in different ways. First, it will take some time before the caloric check is integrated in the shopping environment. The caloric check has to be accepted by the consumers. It should be in the back of the mind of the consumer while shopping. Second, the caloric check can be used to fight obesity, if it can contribute to and be combined with other ways of health campaigns. In general the specialists are positive about the idea of the caloric check, but specialists criticized the moment when the information about the caloric content of products is provided to the consumer. The information is given when the consumer has bought the products. The time between the moment of feedback of the bought calories and the moment of buying the product takes too long for the consumers.

In that way the consumers have to remember the information on their previous receipt, or they have to keep the receipt until the next shopping moment. Consumers need to be informed on the moment they choose their product, and then they have the possibility to choose an alternative.

After looking at the caloric check in general, as has been done in the previous part, the caloric check will be reviewed more detailed in this part. After reading this part it will become clear how the message should be presented on the caloric check.

First of all the presentation of the information to the consumers must be clear and understandable. The information on the receipt is clear, but the information needs to be explained more specifically. Most of the consumers find it difficult to read graphs and to understand the term 'kilocalories'. Therefore more guidance is needed to help the consumer to interpret this information and give them the possibility to do something with it. The message should be kept as simple and easy as possible. The way in which the message is presented at the caloric check is important. The specialists said that consumers are in need of positive

messages. Messages can be 'neutral', but consumers do definitely not want to hear negative messages. It is better to tell consumers what they gain by buying products with less calories. The consumers have to be rewarded instead of being punished. In fact 'eating is fun'. Also consumers will not accept the message if it is patronizing.

In the interviews with the specialists it became clear that consumers want information that is applicable for them. The intake advice of 2000 kilocalories a day for a woman is an estimated average. For every person the energy need is different, it depends for instance on the amount of physical activity and body composition. Specific advices to the consumers are more recommendable than general advices. If the messages are made personal, the consumer is able to do something with it.

The caloric check only mentions calories, but several specialists argue that healthy food is more than just about calories. Also the amount of sugar, fat and salt is involved. Healthy food does not always mean low calories. And high calories do not always mean 'unhealthy'. For example, the olive oil has a lot of calories per package, but it is a healthy product. The impact of the caloric check should not be that consumers make another choice with less calories, and less healthy, for example butter in stead of olive oil.

Crucial in the information provision is how the kilocalories are put on the receipt. The comments on the receipts were that the sizes of the products were missing. If an extra column could be inserted on receipt 2 and 4, where the weight is mentioned per package, it would be easier for consumers to compare the products. If consumers want to compare the products without the package size information they will get the wrong picture, because the weight or amount of the products on the receipt is not the same. For example on the receipt, full wheat bread contains more kilocalories than white rolls. This is due to the fact that the package size of bread (800 grams) is more than the weight of the rolls (400 grams). Without mentioning the package sizes, the consumer cannot see if weight might have something to do with the differences in the amount of calories per product.

From the beginning of the research the question was, whether it is more effective to put the kilocalories per package or per portion size on the receipt. Almost all specialists argued that mentioning kilocalories per portion size may be better than per package size. If the kilocalories are listed per package size it will be misleading for the consumers. For example, a package size of olive oil contains 9000 kcal, which seems a lot. Consumers might react on this by leaving the olive oil out of their shopping basket next time, while the whole package is never consumed at one time. If the portion size is showed on the receipt, this will only be 90 calories. Then the consumers see it in a different way.

Also, if a package size is used on the receipt, consumers have to convert it into the portion that is consumed: how many olive oil is used for a meal? Portion or package size should be mentioned on the receipt after each product, because consumers need this specific information.

Also comments were directed to the chosen target group. Some of the specialist argued that the target group, women in the lower social economic class who are concerned about their weight, might be too specific. The question is whether these women are concerned about their weight. They have other priorities, for example their income. Most of the consumers that are in the target group go to a supermarket where they can shop as cheap as possible, not as healthy as possible. Budget is for them of more importance than their weight. The specialists argue that therefore it would have been better to include women of other social economic classes as well.

Underneath, the opinions of the specialists about the four receipts will be explained separately. There was no joined opinion about one final receipt, although the remarks about the receipts came back during all interviews.

#### *Receipt 1*

Only summing up all the calories from the bought products is not useable for the consumers. What does 45.000 kcal mean? Where does this amount of kcal come from? Which products add the most to this number? This receipt needs more explanation about what is meant by the caloric information.

#### *Receipt 2*

The shopping basket is nice, colourful and creative. Some specialists thought that the information on the receipt is misleading. Now a bottle of olive oil contributes the most to the total amount of kilocalories. If consumers want to reduce their purchased amount of calories they will leave the top five out of their shopping basket next time and take products with less kilocalories. But in the case of olive oil this is not the desirable effect. On average olive oil is healthy, although it contains a lot of calories; it is one of the best products to use in its category. Furthermore a bottle of olive oil cannot be compared to 100 grams of minced meat for example, because olive oil is a stock product. This will be used multiple times, not only once like the meat. The information in the graph cannot be understood easily by consumers. They have difficulties in reading graphs. If the consumer has to understand the information, more guidance is needed.

#### *Receipt 3*

The scratching is generally received as a positive creative tool. People have to make an effort to see the amount of calories they have bought. However, how long will it work? When consumers have done it once, will it be attractive enough to do it twice? Once the consumers know the trick, they might get bored. Furthermore, people do not necessarily have to scratch. They can also ignore it. It may be a good idea to trigger them with a kind of reward.

#### *Receipt 4*

It is an interesting receipt, but all family members consume different amount of calories per day or week. A child eats less than an adult. Also the daily intake per adult differs. Elderly people eat less than people of thirty years old. Therefore it would be difficult for the consumer to know which amount of calories is normal for their family. Also it could not be made personal.

By now it has become clear how the specialists think about the caloric check and the four receipts. They also gave some recommendations how the receipts can be improved. The recommendations have been pointed out underneath.

When looking at how the information is provided on the caloric check, the specialists advised to use portion size instead of package size. Furthermore they stated that 'amount' of the product, for example: one liter of milk and 100 grams of minced meat should be put next to the bought product. In this way the consumer can see how many (kilo) grams of a product contains how much calories. Another idea is to make the message on the receipt more personal. 'Personal advices' can be put on the receipt, for example by offering alternatives for the products that the consumer has bought. An example of a personal advice is 'In stead of full fat yoghurt, you can also buy low fat yoghurt'.

As an alternative a ranking can be made of all products, in which the low caloric products are left out. Only a list will be presented where the top five of the products with the highest amount of calories are listed. An alternative is mentioned and the consumers can choose for themselves.

Furthermore it was recommended to use different colours to emphasize which products contain a lot of calories. Red can be used for products with a lot of calories, green for products with a low calorie amount and orange for products which are in-between. However, not all stakeholders would be pleased with this idea. Before it can be introduced it have to be overall accepted. It could be successful if all stakeholders cooperate. It was also suggested to put the 'Ik kies bewust' logo next to the products. The criteria for this logo focus on the reduction of saturated fatty acids, trans-fatty acids, the addition of sucker and natrium (Ik kies bewust, 2007). A lot of products already have this logo on the package. In this way consumers can easily see that not all products with high caloric content are an unhealthy choice.

Specialists also advised to offer more services to the consumer next to the caloric check. For example putting general advices for the consumers on a separate leaflet, that will be available in the supermarkets. Also, the caloric check can be related to the internet. Consumers, which want to look up extra information, can be referred to a website. To adapt the remarks about the time between the moment of feedback of the bought amount of calories and the moment of buying the product, it was suggested to make a combination of kilocalories on a receipt and

providing information in the supermarket on the moment the consumers choose their products. For example; give the same caloric information on the receipt as on the shelves in the supermarkets.

Winning prices will stimulate the consumer to look at the amount of calories and do actually something with it. Also introducing a saving system was mentioned. A saving system can trigger the consumer to be more involved with the caloric check.

To conclude, the specialists believed in the idea of the caloric check, although there is much more needed to change the behaviour of consumers and the caloric check has to be incorporated with the moment of choosing a product. Otherwise the information provision is too late. Not one receipt was preferred most by the specialists, although they agreed that the calories should be pointed out per product instead of the total amount of kilocalories, as done in receipts 2 and 4. The specialists have given several recommendations to improve the receipts. Finally, the choice is up to the consumer and they should be assisted in doing 'healthy' purchases, without giving them the feeling of being patronized.

### **3.2 Results quantitative research**

In total 100 women, with the average age of 50 years old,  $\pm 14$ , gave their preference for the different receipts and perception on the caloric check itself. Of these women, 51% belongs to the group of low educated women. In total 95% of the women said that they are aware of their health.

Also it becomes clear that the women of this research population are still responsible for the groceries (89%). Of the respondents 57% always takes a look at the current receipt provided in the supermarket and will see the caloric information on the receipt if the caloric check will be introduced. Almost an equal amount of women said that they never look on the nutrition label of a product in the supermarket (56%). These women do not see the amount of calories of a product during shopping, but 57% of them always look on the current receipt provided in the supermarket and will see the caloric amount of the products if the caloric check would be introduced.

#### *Most preferred receipt*

Most of the respondents preferred receipt 2 (61%) as shown in table 3.2.1. The most important reason to choose this receipt as most preferred is that the calories were mentioned behind every product (35%). Other reasons were that the receipt was clear (15%), that it is coloured (14%), and that the products that contribute the most to the total amount of calories are visible in the basket (15%). The percentages of the reasons why the receipt is preferred the most can be found in table 3.2.2.

Table 3.2.1 Percentages of respondents of the most and least preferred receipt

	<b>Most preferred receipt (%)</b>	<b>Least preferred receipt (%)</b>
Receipt 1	11	44
Receipt 2	61	4
Receipt 3	2	34
Receipt 4	20	16
Combination 1-3	0	1
Combination 2-4	3	0
Combination 2-3	1	0
Non	2	1

Table 3.2.2 Reasons for choosing the most preferred receipt

	<b>Most preferred receipt (%)</b>
<b>Receipt 1</b>	
Clear	40
Simple	20
Enough information	20
Other	40
<b>Receipt 2</b>	
Per product	35
Clear	15
Using basket	15
Coloured	14
Other	21
<b>Receipt 3</b>	
Nice	66
Opportunity to decide	33
Other	1
<b>Receipt 4</b>	
Illustration of family	41
Clear	21
Other	38

Table 3.2.3 Reasons for choosing the least preferred receipt

	<b>Least preferred receipt (%)</b>
<b>Receipt 1</b>	
Too little information	32
Cannot do anything with it	24
Total amount not interesting	14
Others	30
<b>Receipt 2</b>	
Too difficult	50
Chaotic	50
Others	0
<b>Receipt 3</b>	
Too much work	64
Unhandy	18
Others	18
<b>Receipt 4</b>	
Too much information	64
Too difficult	18
Others	18

After receipt 2, receipt 4 is indicated as the most preferred receipt. Of the women who had chosen receipt 4 as the most preferred, 41% found the illustration of the family interesting and handy. 21% found the receipt clear. Eleven percent of the women chose receipt 1 as the most preferred. The reasons were that the receipt was clear (40%), simple (20%), and did not contain too much information (20%). Only three people chose receipt 3 as the best. It was found a nice receipt (66%) and the opportunity to decide for themselves if they want to see the amount if purchased kilocalories is also mentioned by 33% of the respondents.

#### *Least preferred receipt*

Forty-four percent of the women chose receipt 1 as the least preferred one. As can be seen in table 3.2.3, the main reason was that there is too little information present on the receipt (32%). The second reason was that the total amount of kilocalories does not say anything to the consumers, they cannot do anything with it (24%), and the total amount is not interesting (14%). Secondly, 34% indicated receipt 3 as least preferred receipt. Sixty four percent of these women found it too much work and will not scratch it. Another reason was that it is unhandy (17%).

Receipt 4 has too much information on the receipt, according to 64% of the women who voted for receipt 4 as the least preferred. 18% found it too difficult. Only four women chose receipt 2 as the least preferred, of which two said that it was too difficult. The others said it was chaotic and not striking.

Besides these reasons, also the difference in the values given to the informativeness, notability, attractiveness and intelligibility of the receipts can be used to examine the reasons why receipts are more or less preferred. All receipts were statistically significant different from each other, with the exception of the attractiveness and intelligibility of the receipts 1 and 4 as can be seen in table 3.2.4. For all elements the respondents gave the highest assessment for the informativeness, notability, attractiveness and intelligibility of receipt 2 which is also indicated as the most preferred receipt by most of the women. The informativeness, notability, attractiveness and intelligibility of receipt 1 were statistically significant higher than receipt 3, although receipt 1 was reported as the least preferred receipt.

#### *Attitude towards the caloric check*

The values which have been given by the respondents to the statements measuring the perception to the caloric check and different other elements are shown in table 3.2.5. This table can be found on the next page.

In general women were positive about the caloric check and saw it as a positive tool to develop a healthy lifestyle. Although women have a positive attitude to the caloric information on a receipt in general, they are less willing to use it by themselves. Women thought that the provision of information per portion size will be useful compared to the provision of caloric information per product. A specific advice on the receipt was scored less than the change of

the caloric information per package size to portion size, but women are still positive about a specific advice.

Women of different education levels did not give statistically significant other values to the statements. Furthermore, the exclusion of women who were not health aware in the data analysis had not much influence on the results.

*Table 3.2.4 Mean scores given to the informativeness, notability, attractiveness and intelligibility, attractiveness, notable, and intelligibility of the four receipts.*

<b>Receipts</b>	<b>Mean score (<math>\pm</math>SD)</b> <i>Informative</i>	<b>Mean score (<math>\pm</math>SD)</b> <i>Attractiveness</i>	<b>Mean score (<math>\pm</math>SD)</b> <i>Notable</i>	<b>Mean score (<math>\pm</math>SD)</b> <i>Intelligibility</i>
1	3.38 (2.23) <sup>a</sup>	3.57 (2.02) <sup>a</sup>	3.50 (2.09) <sup>a</sup>	4.00 (2.11) <sup>a</sup>
2	5.26 (1.72) <sup>b</sup>	5.19 (1.91) <sup>b</sup>	5.46 (1.81) <sup>b</sup>	5.35 (1.83) <sup>b</sup>
3	2.62 (1.94) <sup>c</sup>	2.29 (2.00) <sup>c</sup>	2.84 (2.06) <sup>c</sup>	3.00 (2.17) <sup>c</sup>
4	4.14 (2.17) <sup>d</sup>	4.06 (2.15) <sup>a</sup>	4.55 (2.05) <sup>d</sup>	4.45 (2.16) <sup>a</sup>

*Note.* Vertical means not sharing common superscripts are significantly different at the 0.05 level.

*Table 3.2.5 Attitudes towards caloric check among Dutch women (n=100)*

<b>Statements</b>	<b>Mean score (<math>\pm</math>SD)</b>
In general I think it is very useful to have caloric information on a receipt.	4.73 (2.11)
I will use the caloric information on the receipt.	4.22 (2.46)
I think the caloric information on the receipt is useful.	4.62 (2.34)
I think the provision of caloric information per portion size is more useful compared to caloric information per total product.	5.28 (2.36)
If the calories are provided per portion size, it is easier to change my purchase behaviour.	4.19 (2.53)
I think it would be interesting if also food advises were provided on the receipt.	4.21 (2.27)
I think consumers are more aware of their shopping behaviour due to the caloric information on the receipt.	4.66 (2.00)
I experience the caloric information on the receipt as positive tool to develop a healthy lifestyle.	5.17 (2.08)

#### **4. Conclusion and discussion**

The aim of the research was to investigate whether the caloric check is a feasible tool for consumers to assist them in dealing with information about the caloric value of the food products they purchase.

##### *The main findings of the qualitative research*

In general, the findings indicated that the specialists were in favor of the idea of the caloric check and did not indicate one of the four receipts as the most suitable.

Although they liked the idea, they mentioned that the information of the caloric check arrives too late; consumers have already bought their groceries. According to the specialists, the consumer should be exposed already to the caloric information at the point of deciding which product they will buy. The consumer should be able to choose for an alternative. However, the caloric information of the receipt is provided after purchasing. The consumer needs to remember his/her groceries of the previous shopping moment till the next shopping moment before they can choose for an alternative.

The way in which the information is provided on the receipt is crucial for the understanding of the consumer. Consumers desire the information on the receipt in a clear, understandable and positive way, which is in line with the information on the receipts which provided in pure as objective, honest and positive way as possible.

In addition, most of the specialists stated that looking at the calories of a product is not the only aspect that counts considering a healthy lifestyle. Also other information is important, for instance fats and vitamins which are also present on the Nutricate Receipt next to the amount of calories. Not only a healthy lifestyle should be secured, but also physical exercise is needed. To overcome this comment, advises on physical activity could be included on the receipt and colour labels (red, orange, green) could be used. The consumers can see that products with high caloric content can be healthy. The problem with this method is that the suppliers of 'red' products would not agree with this. Therefore a better idea might be to use the 'ik-kies-bewust' logo behind the products that carry that logo. In this way, consumers are reminded on their purchase behaviour: the logo can be found on the package as well as on the receipt. The 'ik-kies-bewust' logo is a neutral logo which communicates healthy purchases. If more information is included, the information has to be clear and understandable.

One group of specialists, namely the supermarkets is interested in implementing the caloric check. They think healthiness is booming business at the moment and in the future, all small steps will help in order to get the consumer more health aware.

A lot of ideas about the caloric check came up during the interviews with the specialists. The idea to place the caloric check in a broader context, for example with an information campaign, can be used to make the caloric check more successful. Also it can be used to guide the consumer in understanding the receipts. To extend the information provision of the caloric check, a website can be matched to the caloric check and extra leaflets can be made available in the stores.

Also the products could be ranked on the receipt with the products with the highest caloric content on top. Only the amount of calories is given for the five products with the highest caloric content. This is almost the same idea as the shopping basket in receipt 2. This idea can be worked out, but the opportunity to inform the consumer of the caloric information of all products is lost.

The idea of implementing a saving system as proposed by a specialist may not be effective, because it has no direct reward for the consumer. If the receipt provides an incentive for the consumer, which can be used directly after the purchase, it may be more attractive for the consumer to use the caloric check. For example, consumers guess their total amount of kilocalories purchased at the cash deck, by typing in their estimation of the total kilocalories, like entering their PIN number. The estimation will be printed on the receipt and also the actual amount of kilocalories. If these numbers do not differ more than 10% from each other, the consumer wins a price. The consumer is rewarded directly and will look in more detail at the calories of the different products on the receipt.

#### *The main findings of the quantitative research*

Results suggest that the caloric check may increase awareness of unhealthy purchase behaviour of women. Most of the women were positive about the caloric check itself and saw it as a positive tool to develop a healthy lifestyle. The receipt that is most preferred by the women was receipt 2, especially because the caloric information is mentioned behind every product. Also the informativeness, notability, attractiveness and intelligibility of receipt 2 were higher compared to the other three receipts. Furthermore, the women preferred portion size instead of package size.

#### *Combination of qualitative and quantitative research*

Both specialists and consumers are interested in the idea of the caloric check. Specialists did not choose obviously one of the four receipts as the most preferred, but consumers chose receipt 2 as the most preferred receipt. Mentioning portion size instead of package size on the receipt was preferred by specialists and consumers.

Although the findings of both qualitative and quantitative research were positive and gives interesting information of the views of the specialists and consumers, there are some limitations.

### *Limitations of the study*

First of all, the technical feasibility of implementing the caloric check is not included in the research. The focus of the research was to investigate the different views of the specialists and consumers towards the caloric check, except from the technical part.

The questionnaire only asked for education level, although lower social economic class can only be measured if education level is combined with income level. This was not measured because questions about income level are sensitive to answer for most consumers.

After the specific questions for each receipt, most consumers chose receipt 1 as the least preferred, although the scores for the different elements of the first receipt were not the lowest. A reason for this could be that receipt 1 is the first one the consumers saw, and they had to get used to the idea of the caloric check. Only after the consumers had seen all the receipts they could compare them. The result is that receipt 1 is the least preferred, but receipt 3 received the lowest scores for the different elements (informativeness, notability, attractiveness and intelligibility, attractiveness, notable, and intelligibility).

When conducting the questionnaire there was some ambiguity in explaining the receipts to the consumers. In particular receipt 4 needed more explanation. In a normal situation when the caloric check is used, there is no explanation and consumers should understand the information on the receipt by themselves. A good explanation of the receipt is crucial for the understanding of the consumer. This can be done for example by campaigns.

### *Limitations of the findings*

Some of the specialists stated that the target group, women of lower social economic class that are concerned with their health and the health of the family members, are not interested in their health and weight. However, in the quantitative research it came out that 95 percent of the target group is health aware. This might be explained by the possibility that a number of the respondents gave socially desirable answers to the question 'Are you aware of your health?'.  
Furthermore, not all women were low educated. However, there were no differences in preference of the four receipts or about the idea of the caloric check itself between education levels. The caloric check is evaluated the same by consumers with a low education level and consumers with higher education levels.

Another limitation was that the consumers who participated in the questionnaire were relatively old. The average age of the target group was 50 years. An explanation can be that elderly people have more time to do their groceries and also more time to participate in the research. Another reason why older people participated in the research is that younger

women who were shopping with their children were most of the times in a hurry and therefore difficult to reach.

#### *Final receipt*

In general it can be concluded that although there are some limitations, the consumers and specialists are mainly positive about the caloric check. This means there is an indication that the caloric check will be received positively by a larger audience. Using the information that came out of the qualitative and quantitative research a new final receipt has been created.

This receipt shows the kilocalories per product, because that was the main reason why consumers preferred receipt 2. The caloric information is per portion, not per package size. This is because both the specialists and the consumers found it more useful. The portion size is mentioned in an extra column, so the consumers can see what quantity of a product contains which amount of calories. The products are in descending order; the products with the highest caloric content are at the top of the receipt. At the bottom of the receipt a sentence is stated: *'the products with the highest amount of kilocalories are at the top. Did you expect these products there? For more information about the products and their caloric information can you visit the website: 'www.calorieopdebon.nl' (calories on the receipt).*

On this website, as stated, all products with their caloric and other nutritional information will be presented. Also other information about healthiness can be found on the website.

Under the product list a reference for the consumers about the average daily energy intake has been given. The advice for women is to consume 2000 kcal and for men 2500 kcal per day. In this way, consumers are reminded of how many kilocalories they need per day.

Also a personal advice has been given. It is related to a product that the consumer has bought and that belongs in the top five of the products on the receipt with the highest amount of calories. In this case, the consumer has bought 'minced meat'. As an alternative it is suggested to buy minced meat from beef instead of from pork, this will save 40 kilocalories per portion. This is a positive message to the consumers, therefore the chance that it will be received as patronizing is small, and therefore it will be accepted more easily. Because the alternative is marked by a colour, it is more attractive for consumers to read it. It was shown from the results, that consumers preferred colours on the receipt.

There is chosen for the colour blue. Blue can be considered as a neutral colour. The consumer may associate the colour red as bad and the colour green as good. It is not the idea to force the consumer in their choice and blue does not associates with thoughts of good or bad.

It was chosen not to mention the total amount of calories at the bottom of the receipt, because it does not say anything to the consumers. If the total would be mentioned for all the portions on the receipt, it would not be relevant. The consumer will not only eat the products mentioned on the receipt, and also they will not consume only one portion of these products.

And when the calories are mentioned per package and thus all the purchased calories are added up, the consumer will get confused. The consumer cannot link the total amount of kilocalories per package to the kilocalories mentioned per portion.

The final receipt can be found in appendix 6.

## 5. Recommendations

Several practical recommendations can be pointed out. These recommendations can be taken into account for future research.

The final receipt is designed after the feedback of the specialists and the consumers on the different caloric checks. This can be used as a basis for implementing the caloric check in the future.

When finalizing the project, it can be stated that future research is required. The caloric check should be tested in a broader context. This means more stakeholders, as well as more supermarkets should be involved. A recommendation is to execute a pilot in a supermarket. When executing a pilot, it should be tested in some supermarkets in the Netherlands to get more insight of consumer behaviour related to the caloric check.

Also, it can be recommended to look at the technical feasibility of the caloric check. It is important to know if the caloric check is technical possible before implementing the caloric check. First of all, the cash system might be a problem. It is not known whether the caloric information of the products can be identified automatically by the system. In addition, to provide the right information of the caloric content on the receipt, a large number of nutrition information should be integrated in the system.

Furthermore the target group can be reviewed in future research. In future research also the view of the men can be investigated. The traditional roles of men and women are becoming less strict because men also do the groceries. Moreover, a broader target group can be considered when looking the age of the respondents. It can be interesting to find out what younger consumers think of the caloric check.

## 6. References

Blokstra A., Burns CM., Seidell JC. Perception of weight status and dieting behaviour in Dutch men and women. *International Journal of Obesity and Related Metabolic Disorders*. 1999, 23(1), 7–17.

Dutch Institute of Sport and Movement (NISB). Retrieved May 21, 2007, from <http://www.nisb.nl>

Elaboration Likelihood Model and the Heuristic-Systematic Model. *Attitude Change and Cognitive Dissonance*. Retrieved May 29, 2007 from <http://chiron.valdosta.edu/mawhatley/7670/activity/attitude.htm>

Emans, B. (1986). *Interviewen; theorie, techniek en training*. Groningen: Wolters-Noordhoff

Fram, E.H., Axelrod, J. The distressed shopper. *American Demographics*. 1990, 12, 44-45.

Gemeente Wageningen (2007). *Kerncijfers van 2007*. Retrieved March 19, 2007, from <http://www.wageningen.nl/content.jsp?objectid=2525>

GFK (2007). *Favoriete winkeldag?*. Retrieved May 24, 2007, from [http://www.gfk.nl/Nieuws/2007/Fashion/Textilia/23-02\\_007%20Favoriete%20winkeldag.pdf](http://www.gfk.nl/Nieuws/2007/Fashion/Textilia/23-02_007%20Favoriete%20winkeldag.pdf)

Hovland, C., Janis, I., Kelley, H. (1953). *Communication and Persuasion*. New Haven, CT: Yale University Press.

Hovland, J., Kelly. *Reinforcement Theory*. In Elliot, RM., Lindzey, G., MacCorquodale, K., (Eds), *Theories of Attitude Change*, 1967, 12-63.

Ik Kies Bewust, Productcriteria Ik kies bewust, versie 3.2, Retrieved June 30, 2007 from [http://www.ikkiesbewust.nl/downloads/productcriteria\\_ikkiesbewust.pdf](http://www.ikkiesbewust.nl/downloads/productcriteria_ikkiesbewust.pdf)

Innovatienetwerk (2007). *Concepten. Gezonde Samenleving*. Retrieved March 23, 2007 from <http://www.innovatienetwerk.org/nl/concepten/toon/5/GezondeSamenleving.html>

International Mass Retail Association (IMRA) (1993), *The 1992 Consumer Research Study: Stop, Look and Buy ... Where and Why*, IMRA, Washington, DC.

Lechner L., Brug J., De Vries H., Van Assema P., Mudde A. Stages of change for fruit, vegetable and fat intake: consequences of misconception. *Health Education Research*. 1998, 13(1), 1–11.

National Institute for Public Health and the Environment (RIVM) (2007). *Lichaamsgewicht, omvang van het probleem. Zijn er verschillen naar sociaal economische status?* Retrieved March 20, 2007 from [http://www.rivm.nl/vtv/object\\_document/o1255n18950.html](http://www.rivm.nl/vtv/object_document/o1255n18950.html)

Nutricate (2007). *Receipt. The ultimate marketing tool*. Retrieved March 23, 2007 from [http://www.nutricate.com/rest\\_receiptb.php](http://www.nutricate.com/rest_receiptb.php)

Obesitas Vereniging Nederland (2007). *Wie we zijn, wat we doen en over overgewicht*, Retrieved March 23, 2007 from <http://www.obesitasvereniging.nl>.

Petty, RE., Cacioppo, JT. (1986). *The Elaboration Likelihood Model of persuasion*. New York: Academic Press.

Ronda G., Van Assema P., Brug J. Stages of change, psychological factors and awareness of physical activity levels in The Netherlands. *Health Promotion International*, 2001, 16(4), 305–314.

Ruby RD., Birgit P. Married males and shopping: are they sleeping partners. *International Journal of Retail & Distribution Management*, 1995, 23(3), 27-33.

Solomon, M., Bamossy, G, Askegaard, S., Hogg, M.K. (2006). *Consumer Behaviour: A European Perspective* (3<sup>rd</sup> ed.). Pearson Education

Stuart U. Rich, Subhash C. Jain. Social Class and Life Cycle as Predictors of Shopping Behaviour. *Journal of Marketing Research*, 1968, 5(1), 41-49.

Triandis, H. (1971). *Attitude and Attitude Change*. New York: Wiley.

Voedingscentrum (2007) *Maak je niet dik! Calorie checker*. Retrieved March 23, 2007 from <http://www.caloriechecker.nl/www/scripts/tekst.php?tekstID=34>

Voedingscentrum (2007) *Gewicht, dieet, overgewicht*. Retrieved March 23, 2007 from <http://www.voedingscentrum.nl/voedingscentrum/Public/Dynamisch/gewicht+en+dieet/overgewicht/>

Warenwetbesluit Etikettering van levensmiddelen (geldend op: 01-06-2007). Retrieved June 1, 2007 from <http://wetten.overheid.nl>

## 7. List of abbreviations

AMC	Academic Master Cluster
BMI	Body Mass Index
CI	Confidence Interval
GfK	GfK Benelux Marketing Services
HAVO	Hoger Algemeen Voortgezet Onderwijs
HBO	Hoger Beroeps Onderwijs
KCAL	Kilocalories
LBO	Lager Beroeps Onderwijs
MAVO	Middelbaar Algemeen Voortgezet Onderwijs
MBO	Middelbaar Beroeps Onderwijs
MHN	Master Human Nutrition
MME	Master Management, Economics and Consumer studies
NISB	Nederlands Instituut voor Sport en Bewegen
PPM	Project Planning and Management
RIVM	Rijksinstituut voor Volksgezondheid en Milieu
SD	Standard deviation
SPSS	Statistical Package for the Social Sciences
VU	Vrije Universiteit
VWO	Vorbereidend Wetenschappelijk Onderwijs
WO	Wetenschappelijk Onderwijs

## 8. Appendices

### Appendix 1: Receipts of caloric checks

#### Receipt 1: Totaal kilocalorieën met toegevoegde uitleg in zin

	Verpakking	prijs
Gehakt HOH	500 gr	€ 1,59
Yoghurt (vol)	1 L	€ 0,60
Spaghetti	500 gr	€ 0,99
Bananen	500 gr	€ 0,89
Tomatensaus	400 mL	€ 1,15
Chips	200 gr	€ 0,76
Dubbelfris	1.5 L	€ 0,74
Kaas (48 +)	1 kg	€ 5,69
Roompaté	150 gr	€ 1,23
Hero between	150 gr	€ 1,50
Aardappelen	5 kg	€ 3,45
Olijfolie	1 L	€ 4,12
Sinaasappelsap	1.5 L	€ 0,89
Volkoren brood	heel brood	€ 0,70
Witte bollen	10 bollen	€ 1,50
Volle melk	1 L	€ 0,68
Suiker	1 kg	€ 0,79
Vanille pudding	500 gr	€ 1,15
Cola	1.5 L	€ 0,89
Brie	200 gr	€ 1,78
toastjes	250 gr	€ 1,45
	24 flesjes	
Kratje heineken	à 33 cl	€ 7,99
Pizza bolognese	300 gr	€ 1,88
Pizza kaas/ tomaat	300 gr	€ 1,20
Pizza verdura	300 gr	€ 1,59
chocoladepasta	400 gr	€ 2,05
roomboter	250 gr	€ 1,10
broccoli	500 gr	€ 1,85
vanilleyoghurt	1 L	€ 0,99
Beschuit	150 gr	€ 0,33
	<hr/>	
<b>Totaal</b>	<b>45063</b> kcal	€ 50,52

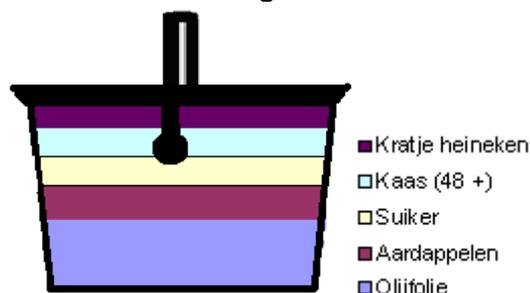
Aanbevolen dagelijkse hoeveelheid kilocalorieën  
Man: 2500 kcal      vrouw: 2000 kcal

Met deze aangekochte hoeveelheid calorieën kan een gemiddelde man meer dan 18 dagen gevoed worden.

## Receipt 2: Kilocalorieën bij elk product, met mandje

	Verpakking	kcal	prijs
Gehakt HOH	500 gr	1350	€ 1,59
Yoghurt (vol)	1 L	590	€ 0,60
Spaghetti	500 gr	470	€ 0,99
Bananen	500 gr	440	€ 0,89
Tomatensaus	400 mL	372	€ 1,15
Chips	200 gr	1098	€ 0,76
Dubbelfris	1.5 L	600	€ 0,74
Kaas (48 +)	1 kg	3790	€ 5,69
Roompaté	150 gr	570	€ 1,23
Hero between	150 gr	660	€ 1,50
Aardappelen	5 kg	4500	€ 3,45
Olijfolie	1 L	9000	€ 4,12
Sinaasappelsap	1.5 L	600	€ 0,89
Volkoren brood	heel brood	2160	€ 0,70
Witte bollen	10 bollen	1560	€ 1,50
Volle melk	1 L	700	€ 0,68
Suiker	1 kg	4000	€ 0,79
Vanille pudding	500 gr	575	€ 1,15
Cola	1.5 L	630	€ 0,89
Brie	200 gr	740	€ 1,78
toastjes	250 gr	930	€ 1,45
Kratje heineken	24 flesjes à 33 cl	3120	€ 7,99
Pizza bolognese	300 gr	610	€ 1,88
Pizza kaas/ tomaat	300 gr	630	€ 1,20
Pizza verdura	300 gr	600	€ 1,59
chocoladepasta	400 gr	2270	€ 2,05
roomboter	250 gr	1860	€ 1,10
broccoli	500 gr	100	€ 1,85
vanilleyoghurt	1 L	740	€ 0,99
Beschuit	150 gr	398	€ 0,33
<b>Totaal</b>		<b>45663</b>	<b>€ 50,52</b>

### Top 5 die het meeste toevoegt aan totale hoeveelheid kcal



### Receipt 3: Kras en de totale hoeveelheid kilocalorieën verschijnt

	Verpakking	prijs
Gehakt HOH	500 gr	€ 1,59
Yoghurt (vol)	1 L	€ 0,60
Spaghetti	500 gr	€ 0,99
Bananen	500 gr	€ 0,89
Tomatensaus	400 mL	€ 1,15
Chips	200 gr	€ 0,76
Dubbelfris	1.5 L	€ 0,74
Kaas (48 +)	1 kg	€ 5,69
Roompaté	150 gr	€ 1,23
Hero between	150 gr	€ 1,50
Aardappelen	5 kg	€ 3,45
Olijfolie	1 L	€ 4,12
Sinaasappelsap	1.5 L	€ 0,89
Volkoren brood	heel brood	€ 0,70
Witte bollen	10 bollen	€ 1,50
Volle melk	1 L	€ 0,68
Suiker	1 kg	€ 0,79
Vanille pudding	500 gr	€ 1,15
Cola	1.5 L	€ 0,89
Brie	200 gr	€ 1,78
toastjes	250 gr	€ 1,45
	24 flesjes	€ 7,99
Kratje heineken	à 33 cl	
Pizza bolognese	300 gr	€ 1,88
Pizza kaas/ tomaat	300 gr	€ 1,20
Pizza verdura	300 gr	€ 1,59
chocoladepasta	400 gr	€ 2,05
roomboter	250 gr	€ 1,10
broccoli	500 gr	€ 1,85
vanilleyoghurt	1 L	€ 0,99
Beschuit	150 gr	€ 0,33
<b>Totaal</b>	<hr/>	<hr/>
	45063 kcal	€ 50,52



Aanbevolen dagelijkse hoeveelheid kilocalorieën  
 Man: 2500 kcal      vrouw: 2000 kcal

**Receipt 4: hoeveel dagen kan u UW familie voeden met de aangekochte hoeveelheid kilocalorieën?**

	Verpakking	kcal	prijs
Gehakt HOH	500 gr	1350	€ 1,59
Yoghurt (vol)	1 L	590	€ 0,60
Spaghetti	500 gr	470	€ 0,99
Bananen	500 gr	440	€ 0,89
Tomatensaus	400 mL	372	€ 1,15
Chips	200 gr	1098	€ 0,76
Dubbelfris	1.5 L	600	€ 0,74
Kaas (48 +)	1 kg	3790	€ 5,69
Roompaté	150 gr	570	€ 1,23
Hero between	150 gr	660	€ 1,50
Aardappelen	5 kg	4500	€ 3,45
Olijfolie	1 L	9000	€ 4,12
Sinaasappelsap	1.5 L	600	€ 0,89
Volkoren brood	heel brood	2160	€ 0,70
Witte bollen	10 bollen	1560	€ 1,50
Volle melk	1 L	700	€ 0,68
Suiker	1 kg	4000	€ 0,79
Vanille pudding	500 gr	575	€ 1,15
Cola	1.5 L	630	€ 0,89
Brie	200 gr	740	€ 1,78
toastjes	250 gr	930	€ 1,45
	24 flesjes	3120	
Kratje heineken	à 33 cl		€ 7,99
Pizza bolognese	300 gr	610	€ 1,88
Pizza kaas/ tomaat	300 gr	630	€ 1,20
Pizza verdura	300 gr	600	€ 1,59
chocoladepasta	400 gr	2270	€ 2,05
roomboter	250 gr	1860	€ 1,10
broccoli	500 gr	100	€ 1,85
vanilleyoghurt	1 L	740	€ 0,99
Beschuit	150 gr	398	€ 0,33
<b>Totaal</b>		<b>45663</b>	<b>€ 50,52</b>



**5** dagen X



## **Appendix 2: Procedure of the in-depth interview**

### **Procedure of the interview**

The following information will be told to the specialist, who cooperates in the research.

- At the interview, the following 3 persons will be present:
  - \* the specialist
  - \* the interviewer
  - \* the secretary
- You, as an specialist has the right to look through the interview and correct the outcomes, before published
- For the quality of the research, it is important that the interview takes place in a quit environment, without any distraction.
- During the interview, prerecording equipment will be used. If you object to it, we would like you to tell it.
- The answers of the interview will be treated strict personally.
- The final report will be made by the members of AMC (Academic Master Cluster) group.
- At least the final report will be read by Ir. J.M. Rutten and Dr. H.J. Huizing, InnovatieNetwerk, department 'Gezonde Samenleving', Prof. dr. E.W. Brascamp, Wageningen University and Research Centre (coach of this project), the specialists who cooperated in this research, and the members of the AMC group,
- The report will not be confidential.

### **Appendix 3: In-depth interview introduction and questions**

#### **Introduction (same for every specialist)**

First of all we would like to thank you for your cooperation. The caloric check is a cash slip on which consumers can see the calories of the products that they have bought.

InnovatieNetwerk gave us the order, to see if this is a feasible tool for consumers to assist them in dealing with information about the caloric value of the food products they purchase.

The target group of the caloric check is: women of lower social economic classes, who are concerned about their own health and the health of their family members and who buy most of their grocery once a week.

We will investigate this by doing in-depth interviews with specialists and questionnaire with consumers.

During the in-depth interview we will ask you different questions about the caloric check. There are no right or wrong answers; it is your opinion about the caloric check. If you have any question during the in-depth interview, don't hesitate to ask them.

Thank you again for your cooperation.

Kind regards,

Josien Heidekamp

Yvonne Schillemans

Inge Wagenaar

Truus van Woudenberg

Yiting Yang

## **In-depth interview questions for the specialist of marketing and innovation in English**

Prof. dr. ir. Hans van Trijp

*Wageningen University and Research Centre, Unilever*

Part 1: Questions about the four receipts (see attachment for the different receipts)

1. Which of the four receipts beneath do you find the most suitable?
2. Why do you think this receipt is the most suitable?
3. What do you think of the other receipts?
4. Do you have additional remarks on the receipts?

Part 2: General questions in relation to the caloric check:

5. What do you think of the idea of the caloric check in general?
  - a. Do you think in the market there is a need of a caloric check?
  - b. Do you think that consumers are in need of a caloric check?
  - c. Do you think consumers understand the nutritional information on the caloric check?
  - d. Do you think the information on the caloric check, will influence consumer behaviour?
  - e. Do you think consumers understand the added-value of the caloric check?
  - f. Do you think supermarkets understand the added-value of the caloric check?
  - g. Do you think caloric check is useful in the sense of new innovations in order to fight obesity?

### **In-depth interview for specialists on nutrition**

Prof. dr. Jaap Seidell

*Vrije Universiteit Amsterdam, Kenniscentrum Overgewicht*

Ir. Karin Bemelmans

*Hoofd afdeling projecten, Voedingscentrum*

Deel1: Vragen over de vier kassabonnen (zie bijlage voor de verschillende kassabonnen)

1. Welke van de vier kassabonnen vindt u het meest geschikt?
2. Waarom denkt u dat deze kassabon het meest geschikt is?
3. Wat vindt u van de andere kassabonnen?
4. Zou u nog op- en of aanmerkingen willen plaatsen bij de kassabonnen?

Deel 2: Algemene vragen in relatie tot de caloric check

5. Wat vindt u van het totale idee?
  - a. Denkt u dat er bij de (uit een lage sociale economische klasse) een behoefte bestaat aan een dergelijke kassabon?
  - b. Denkt u dat consumenten begrijpen wat calorieën zijn?
  - c. Denkt u dat consumenten met behulp van de caloric check bewuster zullen worden (of zullen veranderen) van hun levensstijl?
  - d. Denkt u dat de caloric check een geschikt middel is om mensen 'effectief' af te laten vallen?
  - e. Denkt u dat er in de supermarkten en bij andere betrokken partijen en behoefte bestaat aan een dergelijk kassabon?

## **In-depth interview questions for the specialists of supermarkets**

Hetty Essink, Department

*Brand management PLUS Retail*

Dr. Simone Hertzberger

*Hoofd Kwaliteit en Product Integriteit, Albert Heijn*

Inge Oeseburg

*Formula manager C1000*

Deel1: Vragen over de kassabonnen (zie bijlage voor de verschillende kassabonnen)

1. Welke van de vier kassabonnen vindt u het meest geschikt?
2. Waarom denkt u dat deze kassabon het meest geschikt is?
3. Wat vindt u van de andere kassabonnen?
4. Zou u nog op- en of aanmerkingen willen plaatsen bij de kassabonnen?

Deel 2: Algemene vragen in relatie tot de caloric check

5. Wat vindt u van het totale idee?
  - a. Denkt u dat er in de supermarkten een behoefte bestaat aan een caloric check?
  - b. Denkt u dat er bij de consumenten een behoefte bestaat aan een caloric check?
  - c. Denkt u dat de aankopen in de winkel zullen dalen door de informatie op het bonnetje?
  - d. Denkt u dat de klanten van Albert Heijn/C1000/Plus bewust bezig zijn met hun aankopen?

## **In-depth interview questions for the specialists of health associations**

Mary Stottelaar

*Scriptum Communicatie over voeding*

Mieke van Spanje

*Chair Nederlandse Obesitas Vereniging*

Deel1: Vragen over de kassabonenn (zie bijlage voor de verschillende kassabonnen)

1. Welke van de vier kassabonnen vindt u het meest geschikt?
2. Waarom denkt u dat deze kassabon het meest geschikt is?
3. Wat vindt u van de andere kassabonnen?
4. Zou u nog op- en of aanmerkingen willen plaatsen bij de kassabonnen?

Deel 2: Algemene vragen in relatie tot de caloric check

5. Wat vindt u van het totale idee?
  - a. Denkt u dat er bij de vrouwen (uit een lage sociale economische klasse) een behoefte bestaat aan een dergelijke kassabon?
  - b. Denkt u dat deze vrouwen de (voedings) informatie en dus de boodschap op de caloric check begrijpen (o.a. calorieën)?
  - c. Denkt u dat de caloric check een geschikt middel is mensen te helpen met het af vallen of gewicht te behouden?
  - d. Denkt u dat vrouwen (uit een lage sociale economische klasse) de toegevoegde waarde inziet van een dergelijk kassabonnetje?

Appendix 4: Questionnaire

## Questionnaire calories on the receipt

*This survey is about providing caloric information on the receipt of the supermarket*

*The next questions are about your lifestyle*

**1 Are you aware of your health?**

0 Yes, by ..... 0 No

**2 If you buy the groceries, do you look at the calories of the product?**

0 Yes, always 0 Sometimes 0 No, never

**3 If you buy the groceries, do you look at the receipt?**

0 Yes, always 0 Sometimes 0 No, never

**4 Where do you look at, if you make use of the receipt? .....**

*The next questions are about the different models of receipts that provide caloric information*

**5 Give an indication of how much you agree for the next statements at Receipt 1**

I think that the providing of calories on the receipt is informative  
Fully disagree 1 2 3 4 5 6 Fully agree 7

I think that the receipt is designed attractive  
Fully disagree 1 2 3 4 5 6 Fully agree 7

I think that the whole receipt is notable  
Fully disagree 1 2 3 4 5 6 Fully agree 7

I think that the way in which the calories are presented on the receipt is intelligibility  
Fully disagree 1 2 3 4 5 6 Fully agree 7

**6 Give an indication of how much you agree for the next statements at Receipt 2**

I think that the providing of calories on the receipt is informative  
Fully disagree 1 2 3 4 5 6 Fully agree 7

I think that the receipt is designed attractive  
Fully disagree 1 2 3 4 5 6 Fully agree 7

I think that the whole receipt is notable  
Fully disagree 1 2 3 4 5 6 Fully agree 7

I think that the way in which the calories are presented on the receipt is intelligibility  
Fully disagree 1 2 3 4 5 6 Fully agree 7

**7 Give an indication of how much you agree for the next statements at Receipt 3**

I think that the providing of calories on the receipt is informative  
 Fully disagree 1 2 3 4 5 6 Fully agree 7

I think that the receipt is designed attractive  
 Fully disagree 1 2 3 4 5 6 Fully agree 7

I think that the whole receipt is notable  
 Fully disagree 1 2 3 4 5 6 Fully agree 7

I think that the way in which the calories are presented on the receipt is intelligibility  
 Fully disagree 1 2 3 4 5 6 Fully agree 7

**8 Give an indication of how much you agree for the next statements at Receipt 4**

I think that the providing of calories on the receipt is informative  
 Fully disagree 1 2 3 4 5 6 Fully agree 7

I think that the receipt is designed attractive  
 Fully disagree 1 2 3 4 5 6 Fully agree 7

I think that the whole receipt is notable  
 Fully disagree 1 2 3 4 5 6 Fully agree 7

I think that the way in which the calories are presented on the receipt is intelligibility  
 Fully disagree 1 2 3 4 5 6 Fully agree 7

**9 Which of the receipts do you prefer the most?**

- 0 Receipt 1, because.....
- 0 Receipt 2, because.....
- 0 Receipt 3, because.....
- 0 Receipt 4, because.....

**10 Which of the receipts do you prefer the least?**

- 0 Receipt 1, because.....
- 0 Receipt 2, because.....
- 0 Receipt 3, because.....
- 0 Receipt 4, because.....

**The next questions are about the whole idea of providing caloric information on the receipt**

**11 Give an indication of how much you agree for the next statements**

In general I think it is very useful to have caloric information on a receipt.  
 Fully disagree 1 2 3 4 5 6 Fully agree 7

I will use the caloric information on the receipt  
 Fully disagree Fully agree



## Appendix 5: Codebook questionnaire

### Question 1.:

Yes: 0

No: 1

### Question 2:

Yes, always: 0

No, never: 1

Sometimes: 2

### Question 3:

Yes, always: 0

No, never: 1

Sometimes: 2

**Question 4:** open question => excel

### Question 5:

Informative: 1 2 3 4 5 6 7

Attractive: 1 2 3 4 5 6 7

Notable: 1 2 3 4 5 6 7

Clear: 1 2 3 4 5 6 7

### Question 6:

Informative: 1 2 3 4 5 6 7

Attractive: 1 2 3 4 5 6 7

Notable: 1 2 3 4 5 6 7

Clear: 1 2 3 4 5 6 7

### Question 7:

Informative: 1 2 3 4 5 6 7

Attractive: 1 2 3 4 5 6 7

Notable: 1 2 3 4 5 6 7

Clear: 1 2 3 4 5 6 7

### Question 8:

Informative: 1 2 3 4 5 6 7

Attractive: 1 2 3 4 5 6 7

Notable: 1 2 3 4 5 6 7

Clear: 1 2 3 4 5 6 7

### Question 9:

Receipt: 1 2 3 4

=> why? In excel

### Question 10:

Receipt: 1 2 3 4

=> why? In excel

### Question 11:

Useful on the receipt in general: 1 2 3 4 5 6 7

I will use information cc: 1 2 3 4 5 6 7

Information on cc is useful: 1 2 3 4 5 6 7

Portion size more useful: 1 2 3 4 5 6 7

Portion size easier to change purchase behaviour: 1 2 3 4 5 6 7

Food advices: 1 2 3 4 5 6 7

more aware, groceries: 1 2 3 4 5 6 7

positive tool, creating a healthy lifestyle: 1 2 3 4 5 6 7

**Question 12:** age  
=> just fill in

**Question 13:**  
Total: (adults + kids)  
Adult:  
Kids:  
=> just fill in

**Question 14:**  
Man: 0  
Woman: 1  
Both: 2

**Question 15:**  
Lagere school: 1  
LBO: 2  
MAVO: 3  
HAVO: 4  
VWO: 5  
MBO: 6  
HBO: 7  
WO: 8

**Categories education:**  
Low: Lagere school, LBO, MAVO  
Middle: MBO, HAVO, VWO  
High: HBO, WO

## Appendix 6: Final receipt

	Portie	Kcal per portie	Prijs
Pizza kaas/ tom	stuk	630	€ 1,20
Pizza bolognese	stuk	610	€ 1,88
Pizza verdura	stuk	600	€ 1,59
Gehakt HOH	100 gr	270 *	€ 1,59
Chips	schaaltje	140	€ 0,76
Vanille pudding	schaaltje	140	€ 1,15
Witte bollen	1 bol	130	€ 1,50
Kratje heineken	flesje	130	€ 7,99
Hero between	1 stuk	110	€ 1,50
Vanilleyoghurt	schaaltje	110	€ 0,99
Volle melk	glas	95	€ 0,68
Yoghurt (vol)	schaaltje	90	€ 0,60
Olijfolie	eetlepel	90	€ 4,12
Sinaasappelsap	glas	90	€ 0,89
Volkoren brood	snee	90	€ 0,70
Bananen	stuk	90	€ 0,89
Cola	glas	90	€ 0,89
Dubbelfris	glas	90	€ 0,74
Chocoladepasta	broodbeleg	85	€ 2,05
Kaas (48 +)	broodbeleg	75	€ 5,69
Brie	broodbeleg	70	€ 1,78
Roompaté	broodbeleg	55	€ 1,23
Suiker	lepel	50	€ 0,79
Spaghetti	opscheplepel	45	€ 0,99
Aardappelen	opscheplepel	40	€ 3,45
Beschuit	stuk	40	€ 0,33
Roomboter	broodbeleg	35	€ 1,10
Tomatensaus	sauslepel	25	€ 1,15
Toastjes	stuk	20	€ 1,45
Broccoli	opscheplepel	10	€ 1,85
Totaal			€ 50,52

Aanbevolen dagelijkse hoeveelheid kilocalorieën

Man: 2500 kcal    Vrouw: 2000 kcal

\* In plaats van half-om-half gehakt kunt u ook rundergehakt gebruiken.  
Dit scheelt ongeveer **40 kcal** per portie.

De producten met de meeste kilocalorieën staan bovenaan,  
had u deze producten daar verwacht?

Voor meer informatie over de producten en hun calorische waarde kun  
u terecht op de site: [www.calorieopdebon.nl](http://www.calorieopdebon.nl)