

Nudging sustainability; can nudging increase the sales of sustainable food products?



Christa Ooms – 950322622080

June 2016

Wageningen University
BSc Health and Society

Supervisor: prof.dr.ir. JSC (Han)
Wiskerke

Secretariat Sociology and
Anthropology of Development

Abstract

Environmental wellbeing is an important topic and more sustainable alternatives are produced by the industry and found on the shelf in the supermarket. An increasing amount of people has created a positive attitude towards sustainable products, however the actual behaviour of buying these products lacks behind. There is a gap between attitude and behaviour which could become smaller by using nudging techniques in supermarkets and nudging consumers towards stores with sustainable products. The Dual Process Theory was used to explain the underlying mechanisms of nudging. According to the theory people are not acting rational all the time but have two systems to create behaviour. System 1 is automatic, fast and based on heuristics and system 2 is slow, controlled and analytic. Nudging can influence people when they are using system 1. Not all nudges are the same though, therefore nudges can be divided in type 1 nudges and type 2 nudges and they can differ in level of transparency. Data conducted with a literature review showed that different nudges can influence the sales of sustainable products in supermarkets. There were no nudges found which increase the amount of costumers going to a store with sustainable products, however there were nudging strategies found that can influence pedestrian routing behaviour. In conclusion, positioning, using social norms and labels can increase the sales of sustainable products in the supermarket. Nudging strategies which can influence routing behaviour could probably increase the amount of costumers choosing for stores with sustainable products.

Table of Content

- 1. Introduction 3
- 2. Theoretical framework 5
- 3. Method 8
- 4. Results 8
 - 4.1. Positioning 11
 - 4.2. Social norms 12
 - 4.3. Labels..... 13
 - 4.4. Routing 14
- 5. Discussion 16
- 6. Conclusion..... 18
- 7. Reference list..... 19

1. Introduction

Nowadays food security and the environmental wellbeing of our world is an important topic and production processes seem to have a lot of influence on environment wellbeing (Clark, 2007). With a growing population and increasing living standards this can become an even bigger problem. Human consumption patterns has increased a lot and people overuse the natural resources of the earth. Overconsumption leads to a decline in biodiversity, deforestation, desertification and scarcity of water. Increase in pollution and increase in population are among others the main reasons to stress the global environment. (Clark, 2007; Dunlap & Jorgenson, 2012). The past couple of years there has been more awareness of the environmental impact of food production (Vermeir & Verbeke, 2006; Nemecek, Jungbluth, Canals & Schenck, 2016). To ease the impact of food production changes should be made in storage, transport, packaging and production. Sint (2011) claims in his study that local food products have less environmental impact due to a short production chain with often short transportation routes and more sustainable ways of packaging. Furthermore, plant based products have a smaller effect on the environment than animal products with meat in particular (Tilman & Clark, 2014). Therefore, an increase in the sales of environmental friendly products could be less stressful for the global environment.

To increase the sales of sustainable foods it is important to know what the reasons are behind buying these products. There has been much research on the incentives and barriers of pro-environmental behaviour (Kollmuss & Agyeman, 2002). Kollmuss & Agyeman (2002) discuss in their literature review the behaviour models concerning pro-environmental products. In many of these models, attitude, knowledge and involvement are seen as important factors which influence the practice of environmental friendly behaviour. Many people have a positive attitude towards pro-environmental products (Moser, 2015). However a positive attitude and knowledge does not always lead to pro-environmental behaviour like buying more sustainable food products. There is a gap between the attitude and the actual behaviour of buying. A possible explanation for this gap can be that most of our behaviour is habitual (Ohtomo, 2013) and that people do not act rational at all times (Sunstein & Thaler, 2008). We live in a society which contains many impressions and people have limited time, so people filter out the unimportant aspects. Theories used to study intention and behaviour often see human behaviour as something conscious but we make a lot of decisions based on heuristics and habits (Ohtomo, 2013). A lot of our actions are not consciously thought through, but go through the so called 'peripheral route' (Aarts & van Woerkom, 2008). Therefore, marketing strategies for sustainable foods should not only focus on giving information but also use different marketing techniques that respond to the peripheral route.

One of these alternative marketing techniques is nudging. With nudging changes are made in de choice architecture (Marteau, Ogilvie, Roland, Suhrcke & Kelly, 2011). Due to changes in the environment the 'better' choice becomes the most logical choice. This strategy can influence behaviour through the peripheral route which involves that without consciously thinking about their actions people get pushed in a certain direction. There are many forms of nudging which can influence behaviour like providing information about the social norm, triggering designs and ego stimulation information. There is limited research to whether or

not these kind of marketing strategies may increase the sales of environmental products. Stimulating the sales of sustainable foods could take place in a supermarket since shopping groceries is a low-involvement task which people perform for a large part based on routine and heuristics (Thøgersen, Jørgensen & Sandager, 2012; Scheibehenne, Miesler & Todd, 2007). Furthermore, nudging strategies could be used to guide people to the local stores, stores specialized in certain foods or food markets due to the fact that according to Hill (1982) routes people take are often chosen unconsciously.

In this study sustainable foods are defined as foods with the eco-logo, local products, products which not harm animal and environmental welfare, vegetarian foods and fair trade products. Specialized stores are defined as shops other than the supermarkets where sustainable foods are available like local shops and farm shops in the city. The aim of this literature review will be to investigate if nudging can increase the sales of pro-environmental products. Therefore the main research question is:

‘Which nudging strategies increase the sales of sustainable foods in the supermarket and in stores with sustainable foods?’

This research question can be divided in two sub questions namely; 1) Which nudging strategies increase the sales of sustainable foods in the supermarket? and 2) Which nudging strategies can increase the amount of customers choosing specialized stores with sustainable foods?

2. Theoretical framework

Dual process theory

As mentioned in the introduction a gap can be observed between attitude towards sustainable products and actual purchasing behaviour. The dual process theory can clarify the gap that is been found between attitude and behaviour. It can explain the mechanism that lies behind the success of nudging. The theory expresses if it is possible to influence automatic behaviour patterns in grocery shopping or in choosing a specific store. With this theory it is possible to explain the moments where buying-behaviour can be changed by the effects of nudging.

The dual process theory suggests that humans have two systems of thinking that influence our ways of acting (Kahneman, 2011; Stanovich, 1999). Researchers have used many different labels for these two systems, with four of them being discussed in this paper.

First, Evans (2006) divides the systems into 'heuristic' and 'analytic'. Heuristic processes and analytic processes help us with reasoning and understanding problems we face. Reasoning is facilitated by three principles according to Evans, Over and Handley (2003). Humans can only process one hypothesis about a problem at the time, this is called the principle of singularity. Hypothetical thinking can be seen as reasoning about knowledge that goes beyond factual knowledge about visible objects, for example forecasting or hypothesis testing. Not do humans only process one hypothesis at the time, they also only process the most relevant parts of problems, this is called the principle of relevance. Both the principle of singularity and the principle of relevance are seen as heuristic processes. Analytical processes evaluate these heuristic processes and accept the hypothesises most of the time unless there is a sufficient reason to reject them, this is called the principle of satisficing. The analytical processes takes way more processing capacity than the heuristic processes and they are slower, needs conscious effort and uses central working processes of the brain (Evans, 2006).

Secondly, Strack and Deutsch (2004) divide the two ways of processing into the 'impulsive system' and 'reflective system'. The impulsive system is seen as a network of associations and the links between associations in this system can be activated by anything that people see. These links between associations can be developed by the reflective system and activated associations can create a reflection/evaluation by the reflective system. The impulsive system facilitates behaviour that is based on associative links, while the behaviour facilitated by the reflective system is based on facts and values. Therefore, humans are not fully rational actors, and these systems together create automatic and controlled human behaviour.

Thirdly, Petty and Cacioppo (1986) talk about the central route and the peripheral route discussing attitude change. When processing by making use of the central route, attitudes are constructed based on systematic thinking, which will require motivation and competence. The peripheral route does not need motivation or competence but creates attitudes based on heuristics and simple cues. An example of a heuristic or cue is that when people see a commercial with someone stereotypically dressed as a scientist (white coat, glasses etc.) they will easily accept the information this person is presenting. The cue is the outfit of the scientist with as result that we assume that the information this person is giving us is reliable. The level of involvement determines the willingness to pay cognitive effort. Someone who is

not interesting in the topic will believe the person dressed as scientist sooner than someone who is more involved.

Final, Shiffrin and Schneider (1977) label the two systems of information processing as 'automatic' and 'controlled'. The automatic way of processing information is without subject control, there is no attention needed and automatic processing does not use capacity of the processing system. Controlled processing requires attention, the subject has control over it and the capacity of the processing system is limited. Automatic processing is behaviour that people already learned and which is stored in long-term memory. On the other hand, controlled processes are used when behaviour is not learned yet and these controlled processes of learning new behaviour patterns facilitates long-term memory and thereby automatic processing.

Even though the names for the two systems differ between researches, it comes down to two ways of processing with similar distinctions. Overall, system 1 is seen as an intuitive and automatic way of thinking which is fast, unconscious and is based on heuristics. System 2 is an analytical and reflective way of thinking, whereby information is processed consciously, slowly and in a controlled way. The way people act can come from both systems but also from an interaction of both systems (Kahneman, 2011).

Taking these two systems into account Hansen and Jespersen (2013) suggest that there are also two types of nudges. Type 1 of nudging effects the behaviour only by influencing the automatic way of thinking while type 2 of nudging stimulate the reflective system by influencing the automatic system. An example of a type 1 nudge is the use of smaller cups or plates which makes people eat or drink less without being aware of this. Type 2 nudge is for example footprints on the ground showing the route to the stairways. People first automatically follow the footprints and this stimulates reflective decision-making to take the stairs instead of the elevator. Furthermore Hansen and Jerspersen (2013) suggest to divide nudges not only in two types but also divide them according to the level of transparency. When the goal of a nudge is clear and visible for people the nudge is transparent. With nudging there are methods used which unconsciously steer people in a 'better' direction, therefore some people see nudging as a form of manipulation (Wilkinson, 2013). Although people are not forced to perform particular behaviour, there have been some objections that nudges are limiting autonomy and liberty. When making the nudge more transparent consumers know that they are attempted to be influenced (Quigley, 2014). That the reason why Hansen and Jerspersen (2013) make a distinction between transparent and non-transparent nudges.

By categorizing nudges by type and level of transparency four combinations are possible; type 1 transparent, type 1 non-transparent, type 2 transparent and type 2 non-transparent. A system of coordinates is made with type and transparency on the axes to visualize the different ways of nudging (figure 1).

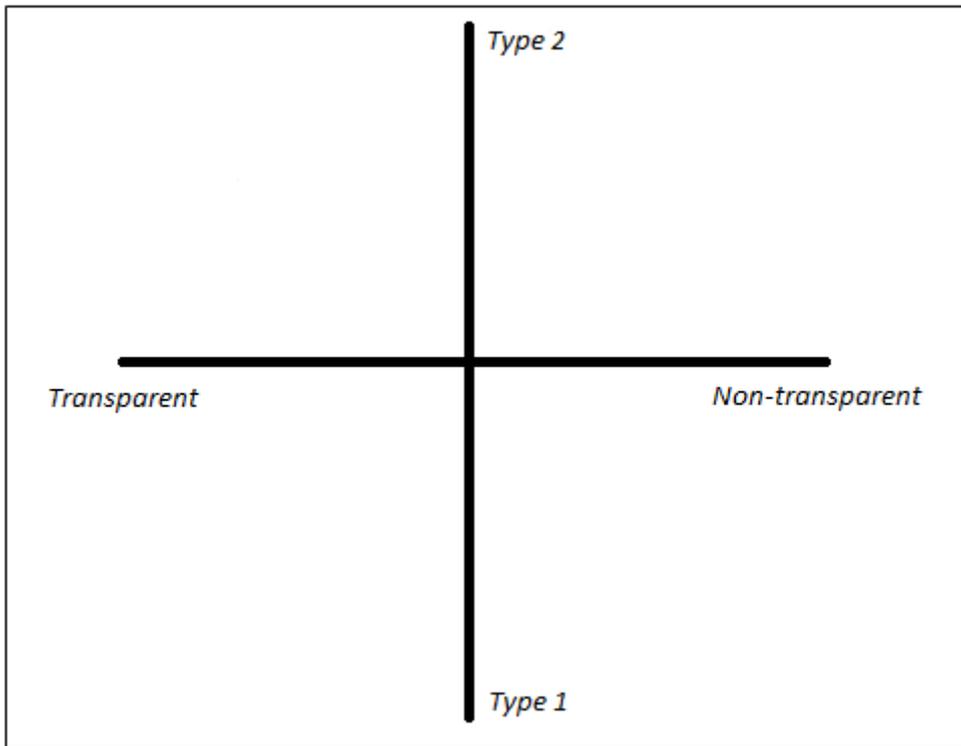


Figure 1. Mapping of different types of nudges

3. Method

A literature research was used to collect the necessary data. Due to the fact that nudging sustainable products is a relative new topic it was not achievable to do a systematic review, because not enough studies on this topic were available. The research data in this thesis was drawn from four main sources: Scopus, Web of Science, WUR library and Google Scholar. To obtain the literature key terms as nudging (push, incentive, steer), sustainable (durable, local, regional, eco-friendly) supermarket (store, grocery, convenience store, retail) and food (product, nutrition, groceries) were combined and searched for to find information with regard to answering the first sub question about nudging in the supermarket. To obtain literature with regard to answering the second sub question about routes people take to speciality stores the key terms nudging (push, incentive, steering), routes (pedestrian, directions, pathways) and speciality stores (farmers markets, farm shops, local stores, retail) were used and combined.

It was hard to find the articles which were connected to the topics of the research question. When using specific search terms mentioned above, it happened that, besides no articles at all, less than ten usable articles showed up per search. On the other hand, using broad search terms gave hundreds of articles but the result lacked on articles on the right topic. Therefore many different search terms and combinations of these search terms were used. The studies chosen for this literature research were the articles that appeared more than ones using different search terms.

Furthermore, the references and citations of relevant articles were hand-searched. Both ways were used since by looking at references older studies about the topic were found and by looking at citations the most recent data was found.

When selecting the literature the focus was on suitability, authority, publication year and the source of the found literature. Publications were only included in the review if they met the quality standards. The studies had to be peer reviewed and had to be written in English or Dutch to be included. Furthermore, to ensure quality the study sample had to be large enough, the method had to be relevant and the article had to be published in a proper journal. To analyse the conducted data the most important and relevant sections were selected. The first author, publication year, study sample, way of nudging, type of nudge and outcomes of the included studies are presented in table 1 of the results.

4. Results

The literature describes a lot of different ways to nudge people toward more sustainable choices. In table 1 the characteristics of every included study are presented and the most important results of every included study are summarized. The way of nudging that was used in the included studies could be categorized in four main ways; positioning, social norm, labels and routing. Every way of nudging is similar in type of nudge and level of transparency. The presentation of the results is based on these four categories.

Table 1. Characteristics of the included studies

First author (year)	Study population or sample	Way of nudging	Type of nudge	Outcomes
Chandon (2009)	348 adult shoppers	Positioning	Type 1, non-transparent	Number of facings positively influences attention and evaluation. Shelf position vertical influences evaluation. Shelf position horizontal influences attention.
Keller (2014)	60 male and 60 female students	Positioning	Type 1, non-transparent	Positioning in the middle increased choice.
de Wijk (2016)	Supermarket shoppers of two stores	Positioning	Type 1, non-transparent	Accessibility of the position of bread had no significant effect.
van Herpen (2012)	Supermarket shoppers of sixty stores	Positioning	Type 1, non-transparent	Number of facings has positive association with market share. Shelf position vertical (eye level) influences market share. Shelf position horizontal no significant influence on market share. Clustering sustainable brands has positive influence and arrangement on brand has positive influence.
van Herpen (2015)	187 Dutch students	Positioning	Type 1, non-transparent	At intermediate price levels a separate display of intermediate sustainable food products positively influences choice
Demarque (2015)	122 French students	Social norm	Type 1, transparent	Presenting a social norm positively influences the sales of green products.

Melnyk (2013)	110 Dutch students	Social norm	Type 1, transparent	The combination of a promotion focus (regulatory focus) and a descriptive norm is more likely to positively influence attitude and buying intentions for sustainable products.
Thogersen (2016)	137 respondents	Labels	Type 2, transparent	Traffic-light colours in emission labels positively influence the effect of emission labels and make them more understandable.
Sharp (2013)	455 respondents	Labels	Type 2, transparent	Carbon labels in traffic-light colours scored higher than other labels in comprehensibility, helpfulness and likeability.
Vlaeminck (2014)	150 participants	Labels	Type 2, transparent	Extending information on food labels with colours positively influences the eco-friendliness of consumption.
van Dam (2014)	Ex1: 81 students, Ex2: 170 students, Ex3: 177 students	Labels	Type 2, transparent	Negative one sided labels are more effective than positive one sided labels. Negative one sided labels has the same effect as two sided labels.
Binnekamp (2008)	39 Dutch students	Labels	Type 2, transparent	No 'spin-off' effect from sustainable food products onto regular food products was found.
Kalnikaite (2011)	18 participants	Labels and social norm in technology	Type 2 and type 1, transparent	Display on shopping trolley handle showing food miles and social norm positively influences the eco-friendliness of consumption.
Nikolopoulou (2016)	Pedestrian in public places	Routing	Type 1, transparent	Floor marking and mirrors were successful in changing pedestrian routing behaviour.
Van Nieuw-Amerongen (2016)	Students and employees of the university	Routing	Type 1, transparent	The use of prompts increased stair use. The results remained the same in the four weeks after the intervention.

4.1. Positioning

The first way of nudging is through positioning; the vertical and horizontal position of products on the shelf can have influence on the sales according to Chandon, Hutchinson, Bradlow, and Young (2009), van Herpen, van Nierop and Sloot (2012) and Keller, Markert, and Bucher (2015). The vertical position of a product is how high or low the product is placed on the shelf (figure 2). Placing products on eye level positively influences the evaluation of products. Products on eye level get evaluated more positive by people than products on the shelves below (Chandon et al., 2009; van Herpen et al., 2012). Attention and evaluation can be positively influenced when a product is on the top of the shelf or negatively influenced when a product is on the middle of bottom of the shelf.

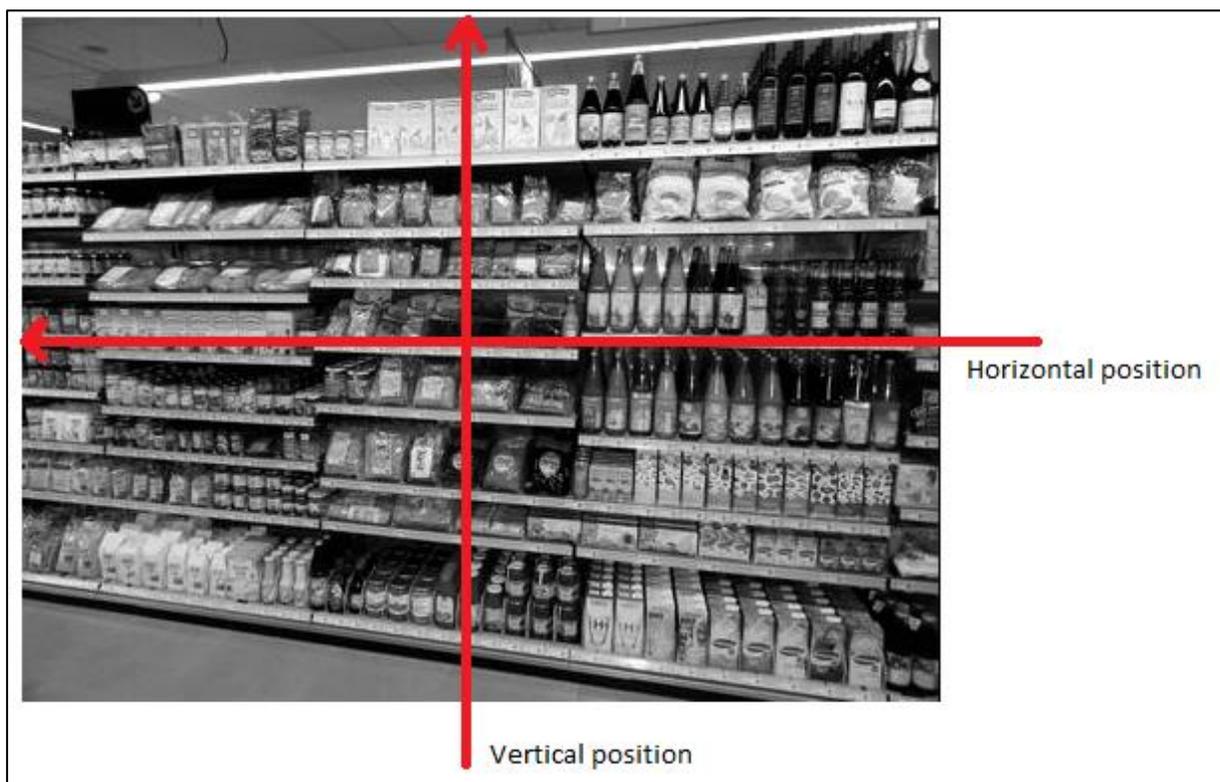


Figure 2. Horizontal and vertical shelf positioning

The horizontal position of a product can differ from a place right, left or in the middle of a shelf (figure 2). Results about horizontal placement were not consistent between the articles. Van Herpen et al. (2012) found no significant relationship between placing sustainable products at the middle of the shelf and sales. In addition, the research of de Wijk, et al. (2016) found no influence of the positioning of bread. Placing the whole grain bread on the left shelf were costumers walked by first made no difference with placing the bread on the right side were costumers walked by in a later stage. However, Keller et al. (2015) found that positioning the healthy snack bar in the middle of the shelf increased the choice of this snack bar in comparison to placing the snack bar on the left or right side of the shelf. Supporting this findings, Chandon et al. (2009) found that placing products in the horizontal middle of the

shelf was positive for the attention of the product, although not significantly for the evaluation of the product.

The amount of facings of a product can also positively influence the attention and evaluation of the products (Chandon et al, 2009), however there are differences between organic and fair trade products. People have personal benefits by buying organic products because they think organic products taste better than regular products and therefore people are more willing to search for organic products than for fair trade products, were there are no personal beneficial side effects. An increase in amount of facings is therefore more beneficial for fair trade products than for organic products according to van Herpen et al. (2011). Furthermore, the research of van Herpen, Fischer and van Trijp et al. (2015) and the research of van Herpen et al. (2012) suggests that clustering and how clusters are defined can influence the sales of sustainable food products in a way that organic and fair trade products placed together can increase the sales of these products (van Herpen et al., 2012). In the research of van Herpen et al. (2015) they looked at the display of intermediate sustainable products, these are products in between regular and fully organic products. Placing intermediate sustainable food products at a separate display positively influences the choice of these products. However when intermediate sustainable food products are placed together with regular products, only a lower price of intermediate sustainable food products resulted in an increase in choice.

4.2. Social norms

The second way of nudging is by using social norms. Demarque, Charalambides, Hilton and Waroquier (2015) found that using social norms increased the sales of eco products. Both weak and strong social norms positively influenced the sales of eco products compared to the control condition where no social norm was presented. A weak social norm was for example that 9% of other consumers had chosen the product and a strong social norm was that 90% of other consumers had chosen the product.

In addition to these findings Melnyk, van Herpen, Fischer and van Trijp (2013) found that descriptive norms have a more positive influence on attitude and buying intention than injunctive norms, especially when consumers had a promotion focus. A descriptive norm was defined as behaviour that we see performed by others around us (social proof), and an injunctive norm as the behaviour we think is expected of us (a request) (Melnyk, 2013). An example of a descriptive norm would be 'all Wageningen students recycle' and an example of an injunctive norm could be formulated as 'all Wageningen students should recycle'.

Next to different social norms there are two different ways of how people approach a goal; promotion or prevention (Melnyk et al., 2015). Together promotion focus and prevention focus are both called regulatory focus. Consumers with a promotion focus pay attention to gaining and improving their situation, while with a prevention focus people tend to avoid losses. An example of a promotion focus is 'I want to be vegetarian because it is better for the environment that I live in' and a prevention focus is 'I want to be a vegetarian because I want to avoid environmental problems'. According to Melnyk et al. (2015) a promotion focus creates a more positive attitude towards fair trade products than a prevention focus.

A descriptive norm shows people what others do and what is beneficial for them, so the combination of a descriptive norm and a promotion focus created in the research the largest positive influence on buying intentions of sustainable products. An example of the combination of a descriptive norm and a prevention focus is: ‘Wageningen students buy organic cheese (descriptive norm) for a better environment’ (promotion focus). There was no significant influence of a promotion or prevention focus on the case with the injunctive norm (Melnyk et al., 2015).

4.3. Labels

The third way of nudging is performed using informational labels on food products. The research of Vlaeminck, Jiang and Vranken (2014) on labels showed that just giving consumers raw information does not create much influence on the shopping behaviour of consumers. Using colours in a label increases the influence on eco-friendly consumption (figure 3). There are labels in many different colours and shapes but according to the studies of Thøgersen and Nielsen (2016) and Sharp and Wheeler (2013) using traffic-light colours in labels is most effective.

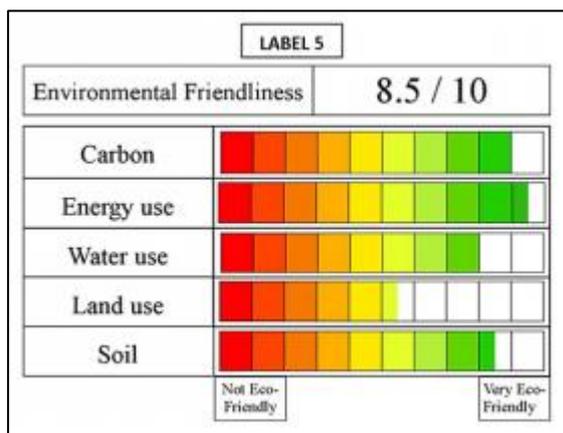


Figure 3. Example of environmental information labels (Vlaeminck et al., 2014)

Traffic-colours make labels understandable, helpful and likeable for consumers (Sharp & Wheeler, 2013). Not only positive labels but also negative labels have influence on eco-friendly consumption. The research of van Dam and van Trijp (2013) showed that negative labels have more influence on consumer behaviour than positive labels. Instead of placing a label on a product that show that the product is eco-friendly or fair trade, a negative label showing a product is not eco-friendly, fair trade etcetera is placed on the product (figure 4). When a store uses only negative labels this has more effect on buying sustainable products than when a store only uses positive labels. The effect of only using negative labels has the same impact as when a store uses negative and positive labels at the same time. In addition, the study of Binnekamp and Ingenbleek (2008) found that positive eco-friendly labels have no negative ‘spin-off’ effect on regular products. In other words, products with an eco-label do not make regular products look less attractive, therefore negative labels could have more impact on the eco-friendliness of consumer behaviour.



Figure 4. Example of negative labelling

In the research of Kalnikaite et al. (2011) labels and social norms were combined. A shopping trolley was equipped with a display showing either a happy or a sad smiley representing the social norm. When the content of the trolley was more sustainable than the social norm a happy smiley was shown, when the content of the trolley was less sustainable than the social norm a sad smiley was shown (figure 5). Besides, led lights with the colours green, orange and red were equipped on the handle of the trolley giving an indication on the eco-friendliness and the food miles of the product the consumer scanned to put in the trolley (figure 5).



Figure 5. Example of shopping trolley handle with social norm and led lights to provide information about the eco-friendliness of the chosen product

4.4. Routing

Studies on nudging strategies that can increase the choice of costumers for speciality stores with sustainable foods were not found. However, two studies were found were pedestrian routes were influenced by the means of nudging. In the research of Nikolopoulou, Martin and Dalton (2015) floor markers and mirrors were used to change pedestrian flows. According to this study using floor markers and mirrors was a successful intervention for changing

pedestrian routing behaviour. People would start following the floor markings on the ground and changes their usual pathway. Mirrors as well created interruption of the usual pathways. Likewise, in the research of van Nieuw-Amerongen, Kremers, De Vries and Kok (2009) the use of prompts changed pedestrian behaviour. Prompts in the shape of footsteps were placed as a path towards the staircase (figure 6). The prompts increased the use of the staircase and in the four weeks after the intervention the behaviour changes remained stable.



Figure 6. Example of nudge which shows the routing to the staircase.

5. Discussion

A couple of nudging strategies that could increase the sales of sustainable foods in the supermarket were found by the means of a literature study. These strategies differ from each other in type and level of transparency (figure 7). Figure 7 is an analytic framework where the different kind of nudges that were found in this research are placed into.

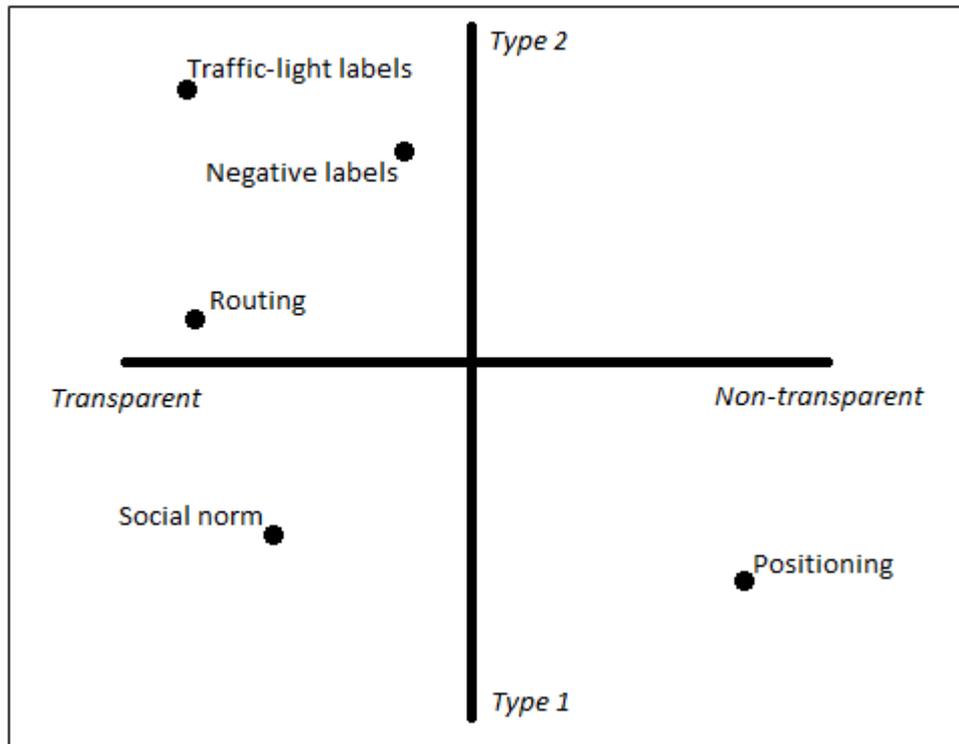


Figure 7. Mapping of different types of nudges of the included studies

There is no nudge defined as type 2 non-transparent. This kind of nudges are not obvious but the reflective system has to be engaged. Examples are how risks are clever framed in a patient-doctor consultant so a treatment looks more positive, subtle hints of scarcity like placing many people in front of a store or leaving the lid of the ice cream freezer in the supermarket closed which makes sure that less people take the effort to open it and actually buy the ice cream. The reason that this kind of nudging was not found has probably to do with the fact that these kind of nudges are hard to use concerning sustainable products.

The kind of nudge that could be considered as preferable is type 2 nudges which are transparent. Type 2 nudges can be preferred over type 1 nudges due to the fact that when people create attitudes through system 2 the attitude changes will last longer (Aarts & van Woerkom, 2008). The attitude that is formed will be more resistant against contradictory information and the attitude created through system 2 will sooner result in behaviour change compared with an attitude created through system 1 (Aarts & van Woerkom, 2008). Nudges that are transparent can be preferred over non-transparent nudges because of ethical reasons. People do not want lose autonomy and do not want to get the feeling that they are manipulated by interventions.

Often with nudging people get a push to encourage them to choose the ‘better’ option. On the other hand negative labelling shows that it is also possible to discourage people to choose the ‘worse’ option. Not only negative labels suggests this but also other aspects of labelling like the red colours and sad smileys. How positive or negative information influence consumers depends on their regulatory focus, this can be a promotion or prevention focus (Melyk et al., 2015). With a promotion focus people aim at approaching positive effects and with a prevention focus people try to avoid negative effects. Therefore a balance should be found in using encouraging nudging strategies and discouraging nudging strategies. Although negative labels stimulate the purchasing of more sustainable products it is difficult to get companies to cooperate. No producers will voluntarily put a negative label on their products, which can make the use of negative labelling more difficult than positive labelling.

Studies on nudging people towards stores specialized in sustainable products were not found. Two articles on similar subjects were used as results for the second sub question: ‘Which nudging strategies can increase the amount of customers choosing speciality stores with sustainable foods?’. The aim of the article of Nikolopoulou et al. (2015) was to control and shape pedestrian behaviour in crowded public spaces to create more safety and security. The study is about nudging pedestrian behaviour but the situation is not similar to nudging people towards a store. The article of Van Nieuw-Amerongen (2016) about nudging routing was performed in a school and had the purpose to change the habitual behaviour of taking the elevator and making behaviour more healthy by nudging people towards the stairs. Again pedestrian behaviour is nudged however it is hard to know if this is comparable to nudging people towards a store. Therefore, it is hard to say if floor marking, mirrors and prompts could increase the amount of customers in speciality stores where sustainable food products are being sold. Nevertheless, the two studies that were found show that there are ways to nudge pedestrian routing. This could be interesting for further research on nudging people towards sustainable stores or nudging people in stores to the shelves with the more sustainable products.

The method used for collecting data could have created bias conclusions. The references of articles that fit the research topic were further hand searched. It is possible that the references were approving to what was stated in the article and were not critical enough with regard to possible different outcomes. Furthermore, no systematic review was performed so it is possible that studies are left out for this study.

The theoretical framework confirmed that people do not act fully rational all the time. According to the dual process theory people are not always aware why they act in a certain way and also use system 1 which is unconscious, fast, automatic and based on habits. Doing groceries and pedestrian behaviour are seen as habitual behaviour for a large part of the time (Thøgersen et al., 2012; Hill, 1982) and for that reason seen as behaviour created by system 1. Therefore, the theory confirms that nudging strategies can influence people by targeting system 1 to change eco-friendly consumption behaviour. Despite that the theory fits well, it is possible that by using only one theory the research was limited. Other theories could have fitted as well and could have created another way of interpreting the results.

6. Conclusion

The review presented here indicates that there is evidence that nudging strategies can increase the sales of sustainable foods in the supermarket and in stores with sustainable products. Nudging strategies that can increase the sales of sustainable foods in the supermarket are positioning, social norms and labels. First, positioning can increase the sales by placing sustainable products on eye level, by using clustering to display the products and there is a chance that placing products in the middle of the shelves instead of left or right could also increase the sales of sustainable products. Secondly, placing social norms around sustainable products could increase the sales of these products. A weak social norm and a strong social norm will both increase the choosing of sustainable products. Furthermore, a descriptive social norm has more influence on the sales of sustainable products than an injunctive social norm and a promotion focus can increase the effect of a descriptive norm. Thirdly, the effect of labels on choosing sustainable products can increase by using traffic-colours in the labels. Using green for a sustainable products, orange for a mildly sustainable product and red for a product that is not sustainable, makes it more obvious and understandable for consumers. Next to using colours, negative labels are more effective than positive labels on the choice of sustainable products. Only using positive labels has a smaller effect than using negative labels, but when positive and negative labels are combined in a store this has the same amount of effect on the choice of sustainable products as using only negative labels in a store. Finally, social norms and labels can be used in combination, by equipping a display that show the social norm and led lights that show the sustainability of a product on to a shopping trolley handle. In conclusion, all these different mechanisms of nudging, like the location of a product on the shelves and adding colours in labels, can increase the sales of sustainable products in the supermarket.

If nudging strategies can increase the amount of costumers choosing speciality stores with sustainable foods is hard to answer, by the fact that no data was found on this sub question. There are some possible nudges that could influence pedestrian routing behaviour like floor marking, mirrors and prompts. These nudges could disturb the habitual routing patterns, and influence the pedestrian behaviour of people. Further research should be done to see if the nudging strategies that are found are possibilities to influences routing in and toward stores.

7. Reference list

- Aarts, N., & van Woerkom, C. (2008). *Strategische communicatie*. Uitgeverij Van Gorcum.
- Binnekamp, M., & Ingenbleek, P. (2008). Do “good” food products make others look “bad”? Spin-off effects of labels for sustainable food production in the consumer perception. *British Food Journal*, *110*, 843-864.
- Chandon, P., Hutchinson, J. W., Bradlow, E. T., & Young, S. H. (2009). Does in-store marketing work? Effects of the number and position of shelf facings on brand attention and evaluation at the point of purchase. *Journal of Marketing*, *73*, 1-17.
- Clark, G. (2007). Evolution of the global sustainable consumption and production policy and the United Nations Environment Programme's (UNEP) supporting activities. *Journal of cleaner production*, *15*, 492-498.
- Van Dam, Y. K., & De Jonge, J. (2015). The Positive Side of Negative Labelling. *Journal of Consumer Policy*, *38*, 19-38.
- van Dam, Y. K., & van Trijp, H. C. (2013). Relevant or determinant: importance in certified sustainable food consumption. *Food Quality and Preference*, *30*, 93-101.
- Demarque, C., Charalambides, L., Hilton, D. J., & Waroquier, L. (2015). Nudging sustainable consumption: The use of descriptive norms to promote a minority behavior in a realistic online shopping environment. *Journal of Environmental Psychology*, *43*, 166-174.
- Dunlap, R. E., & Jorgenson, A. K. (2012). Environmental problems. *The Wiley-Blackwell Encyclopedia of Globalization*.
- Evans, J. S. B. (2006). The heuristic-analytic theory of reasoning: Extension and evaluation. *Psychonomic Bulletin & Review*, *13*, 378-395.
- Evans, J. St. B. T., Over, D. E., & Handley, S. J. (2003). A theory of hypothetical thinking. *Thinking: Psychological perspectives on reasoning, judgement and decision making*. John Wiley and Sons Ltd, Chichester.
- Hansen, P. G., & Jespersen, A. M. (2013). Nudge and the manipulation of choice: A framework for the responsible use of the nudge approach to behaviour change in public policy. *The European Journal of Risk Regulation*, *3*.
- van Herpen, E., Fischer, A. R., & van Trijp, H. C. (2015). How to position ‘mildly sustainable’ products: The joint impact of assortment display and price setting. *Food Quality and Preference*, *46*, 26-32.
- van Herpen, E., van Nierop, E., & Sloot, L. (2012). The relationship between in-store marketing and observed sales for organic versus fair trade products. *Marketing Letters*, *23*, 293-308.

- Hill, M. R. (1982). Spatial structure and decision-making aspects of pedestrian route selection through an urban environment. *Ph.D. Thesis*, University Microfilms International.
- Kahneman, D. (2011). *Thinking, fast and slow*. Macmillan.
- Kalnikaite, V., Rogers, Y., Bird, J., Villar, N., Bachour, K., Payne, S., ... & Kreitmayer, S. (2011). How to nudge in Situ: designing lambent devices to deliver salient information in supermarkets. *Association for Computing Machinery, 1*, 11-20.
- Keller, C., Markert, F., & Bucher, T. (2015). Nudging product choices: The effect of position change on snack bar choice. *Food Quality and Preference, 41*, 41-43.
- Kollmuss, A., & Agyeman, J. (2002). Mind the gap: why do people act environmentally and what are the barriers to pro-environmental behavior? *Environmental education research, 8*, 239-260.
- Marteau, T.M., Ogilvie, D., Roland, M., Suhreke, M. and Kelly, M.P (2011). Juding nuding: can nudging improve population health? *British Medical Journal, 342*, 263-265.
- Melnyk, V., van Herpen, E., Fischer, A. R., & van Trijp, H. C. (2013). Regulatory fit effects for injunctive versus descriptive social norms: Evidence from the promotion of sustainable products. *Marketing Letters, 24*, 191-203.
- Moser, A. K. (2015). Thinking green, buying green? Drivers of pro-environmental purchasing behavior. *Journal of Consumer Marketing, 32*, 167-175.
- Nemecek, T., Jungbluth, N., i Canals, L. M., & Schenck, R. (2016). Environmental impacts of food consumption and nutrition: where are we and what is next?. *The International Journal of Life Cycle Assessment, 21*, 607-620.
- van Nieuw-Amerongen, M. E., Kremers, S. P. J., De Vries, N. K., & Kok, G. (2009). The use of prompts, increased accessibility, visibility, and aesthetics of the stairwell to promote stair use in a university building. *Environment and Behavior, 43*, 131-139.
- Nikolopoulou, M., Martin, K., & Dalton, B. (2015). Shaping pedestrian movement through playful interventions in security planning: what do field surveys suggest? *Journal of Urban Design, 4*, 1-21.
- Ohtomo, S. (2013). Effects of habit on intentional and reactive motivations for unhealthy eating. *Appetite, 68*, 69-75.
- Petty, R. E., & Cacioppo, J. T. (1986). The elaboration likelihood model of persuasion. In L. Berkowitz (Ed.), *Advances in experimental social psychology*, New York: Academic Press.
- Quigley, M. (2014). Are health nudges coercive?. *Monash bioethics review, 32*, 141-158.
- Scheibehenne, B., Miesler, L., & Todd, P. M. (2007). Fast and frugal food choices: Uncovering individual decision heuristics. *Appetite, 49*, 578-589.

- Sint, W. (2011). Vers uit de regio; Een onderzoek naar de potentie van streekproducten in Noordwest-Holland. Kamer van Koophandel Noordwest-Holland & Agriboard Noord-Holland Noord.
- Sharp, A., & Wheeler, M. (2013). Reducing householders' grocery carbon emissions: Carbon literacy and carbon label preferences. *Australasian Marketing Journal (AMJ)*, *21*, 240-249.
- Shiffrin, R. M., & Schneider, W. (1977). Controlled and automatic human information processing: I. Detection, Search, and Attention. *Psychological review*, *84*, 1-53.
- Stanovich, K. E. (1999). *Who is rational?: Studies of individual differences in reasoning*. Psychology Press.
- Strack, F., & Deutsch, R. (2004). Reflective and impulsive determinants of social behavior. *Personality and social psychology review*, *8*, 220-247.
- Sunstein, C. R., & Thaler, R. (2008). *Nudge. The politics of libertarian paternalism*. New Haven.
- Thøgersen, J., Jørgensen, A.K., & Sandager, S. (2012). Consumer decision making regarding a “green” everyday product. *Psychology & Marketing*, *29*, 187-197.
- Thøgersen, J., & Nielsen, K.S. (2016). A better carbon footprint label. *Journal of Cleaner Production*, *125*, 86-94.
- Tilman, D., & Clark, M. (2014). Global diets link environmental sustainability and human health. *Nature*, *515*, 518-522.
- Todd, P., Rogers, Y., & Payne, S. (2010, September). Nudging the chart in supermarkets: How much is enough information for food shoppers. In *NIDM, Proceedings of the first International Workshop of Nudge & influence through mobile devices*.
- Vermeir, I., & Verbeke, W. (2006). Sustainable food consumption: Exploring the consumer “attitude-behavioral intention” gap. *Journal of Agricultural and Environmental ethics*, *19*, 169-194.
- Vlaeminck, P., Jiang, T., & Vranken, L. (2014). Food labeling and eco-friendly consumption: Experimental evidence from a Belgian supermarket. *Ecological Economics*, *108*, 180-190.
- de Wijk, R. A., Maaskant, A. J., Polet, I. A., Holthuysen, N. T., van Kleef, E., & Vingerhoeds, M. H. (2016). An In-Store Experiment on the Effect of Accessibility on Sales of Wholegrain and White Bread in Supermarkets. *Public library of Science one*, *11*, 1-8.
- Wilkinson, T. M. (2013). Nudging and manipulation. *Political Studies*, *61*, 341-355.