This thesis is written in the context of the bachelor Marketing Management and in preparation of the master thesis. The choice for the topic search behavior consumers is based upon personal interest in this specific field. Via a literature review, earlier research regarding the use of nutrition labels is examined. A model proposed by Drichoutis, Lazardis and Nayga (2006) forms the basis of the study. Four variables are discussed in different chapters in order to present a conclusion and recommendations.

I experienced the process of writing a bachelor thesis as very instructive. In particular, I learned how to search for relevant papers, judge the quality and comprehend the content. Also, I became more competent in comparing studies and giving arguments for the support of specific findings.

Using this opportunity, I would first like to thank my supervisor drs. Annemieke van Gool. Her feedback and tips were of great value and I appreciate the time and effort taken to read my thesis. Secondly, my appreciation goes out to the fellow student from the bachelor thesis group topic 5. During the group sessions they provided me with useful feedback to improve my literature study. Last but not least, I would thank the co reader in advance for taking a critical look at my thesis.

With kind regards,

Roy Klaassen
Tilburg, 11 June 2010.

"The only way to keep your health is to eat what you don't want, drink what you don't like, and do what you'd rather not."

– Twain

Obesity is an ever growing problem in America (Kozup, Creyer, & Burton, 2003) and it is reasonable to assume that in other parts of the world more and more consumers also have bad diet practices. To help consumers make healthy food choices, nutrition labels (i.e., the Nutrition Facts panel) are placed on packaged food products. In order to stimulate consumer label use, it is of importance to elaborate on the determinants and consequences. Via a literature study, the label use model (Drichoutis et al, 2006) is critically examined since several contradictions are present. This thesis describes the relationships between health and nutrition claims, motivation, knowledge and consumer label use. Furthermore, the influence of label use on purchase intention and diet are discussed.

Results suggest that claims related to health and nutrition both have a negative effect on label use. It seems that consumers limit their search when a claim is expressed and not use the Nutrition Facts panel. However, claims affect purchase intention and diet in a positive way. Health and nutrition knowledge are positively related to consumer label use and vice versa, but social norms have to be taken into account. Regarding motivation, a positive effect is found. Although highly motivated tend to use current knowledge, it is suggested that they search for new information. Using nutrition labels positively affects purchase intention and diet. Food products containing higher levels of fat are not selected, indicating that consumers use labels to improve their diet.

It is recommended that information should be presented in a more easy to understand form. Too many consumers face difficulty when using nutrition labels to change their food choices. Moreover, governments must focus on informing consumers about the negative consequences of certain nutrients. Likewise, producers, supermarkets and governments should stimulate the search for nutrition information while shopping for food.

Future studies outside America are needed to examine if findings can be generalized. Additionally, research concerning the effect of label use on purchase behavior and the relationship between label use and knowledge are encouraged.

1.1 Problem background

Weight gaining and the effect on long-term disease risk is a current problem in America (Kozup et al., 2003). To stimulate healthier diets, the Nutrition Labeling and Education Act (NLEA) of 1990 increased the amount of nutrition information available on packaged goods in supermarkets (Balasubramanian & Cole, 2002).

According to Drichoutis et al. (2006) there are numerous antecedents (i.e., determinants, factors, variables) of consumer label use which lead to either purchase behavior or diet changes (see appendix 8.1). An example of label use is reading the Nutrition Facts panel before purchasing the item. One antecedent is the presence of a claim related to health or nutrition. Earlier research on health claims shows contradicting findings. Garretson and Burton (2000) found that health claims have a weak effect on disease risk perception. In addition, no changes in consumer awareness of the diet-disease relation occurred. However, Kozup et al. (2003) concluded that when a health claim is expressed, consumers perceive risks of heart disease and stroke to be lower.

Silverglade (1991) explained that nutrition claims refer to a specific nutrient in food. Keller et al. (1997) and Garretson and Burton (2000) report that claims do not affect product evaluations or purchase intentions. In contrast to these studies, Roe, Levy and Derby (1999) mention that healthiness and purchase intentions of a product are positively influenced when either a health claim or nutrition claim is expressed.

No consensus concerning the effect of claims is present. Therefore, a motivation is found to examine the relationship between claims and label use (e.g., what is the effect of a “low fat” claim on the search for nutritional information on the package). However, two other variables that influence label use are also discussed.

1.2 Problem statement

Regarding the research topic, the following problem statement is formulated.

- *To what extent do claims, knowledge and motivation affect consumer label use and influence purchase intention and diet?*

1.3 Research questions

In order to correctly answer the problem statement, research questions are presented.

- *What are claims related to health or nutrition and how do they affect consumer label use?*
- *To what extent does consumer knowledge influence label use and vice versa?*
- *To what extent does consumer motivation influence label use?*
- *How is consumer label use related to purchase intention and diet, and what are the implications for marketing activities?*

1.4 Academic relevance

Although previous research on claims is available, the findings are contradictory (Garretson & Burton, 2000; Kozup et al., 2003; Roe et al., 1999). It is important to clarify why these studies differ before the relationship between claims and label use can be described. Hence, claims have an effect on label use, purchase intention and diet.

With regard to Drichoutis et al. (2006), knowledge and motivation are examined. Studies on knowledge resulted in conflicting conclusions. Research conducted by Nayga (2000) shows that nutrition knowledge and label use are not related, but Kim, Nayga and Capps (2001b) did find a positive relationship. But does more knowledge increases label use? Furthermore, the effect of label use on nutrition knowledge is reviewed. Earlier research also linked motivation to claims and labels (Keller et al., 1997; Moorman, 1990). With respect to this, it is important to examine the relationship between different levels of motivation and label use. Does higher motivation leads to an increase in label use? Are low motivated consumers capable of understanding nutritional information? The effects of motivation on label use and claims have to be examined in order to understand the relationship between the variables. Demarcations regarding the other determinants of label use are presented in appendix 8.1.

1.5 Managerial relevance

From a managerial perspective, this paper is useful in several ways. First of all, results of this study can be useful in the decision whether to place nutritional information on a product or not. Drichoutis et al. (2006) stated: "from a firm's point of view, provision of nutritional information on food packages is desirable if it can generate more revenues" (p. 1). When the presence certain aspect (e.g., claims) is not beneficial, management can choose to put another kind of expression on the package.

Referring to Derby and Levy (2001), Drichoutis et al. (2006) report that label use affects purchase intentions. To stimulate purchases, it is important to understand if the effect of claims, knowledge and motivation on label use is positive or negative. When this is clear, marketing activities can be developed in order to stimulate label use.

Considering governments, producers and supermarkets, insights are provided regarding consumers and their understanding of nutrition information. With this, they can improve label use which may lead to healthier diets.

1.6 Framework of relationships

Based on the antecedents and consequences of label use, a conceptual model is developed.

Figure 1: Framework of relationships
Source: Drichoutis et al., 2006

1.7 Structure of the thesis

This first chapter of the literature study presents an introduction to the research topic. It contains the background and problem statement. Based on the label use model proposed by Drichoutis et al. (2006), a conceptual model is developed. Academic and managerial relevance motivate this study. Chapter 2 up to and including chapter 5 form the theoretical part of the thesis and focus on the research questions. The conclusion and recommendations are presented in chapter 6. Finally, references are summarized in chapter 7 and chapter 8 contains the appendix.

A framework of the thesis can be found is appendix 8.2, which contains the basic structure of each research question.

2.1 Background

This chapter discusses existing literature on claims related to health and nutrition and their effect on label use. As mentioned in section 1.1, research conducted in the past led to contradicting findings. It is therefore that a critical review is needed.

2.2 Definitions

In order to better understand the theory that is presented, several definitions are presented.

A *nutrition claim* relates to the nutrient content of a food product (Kemp, Burton, Creyer, & Suter, 2007), e.g., "low fat" or "low fiber".

Health claims refer to the relationship between a nutrient and disease-risk (Garretson & Burton, 2000), e.g., "It does your heart good" (Mitra, Hastak, & Ford, 1999). In addition, Silverglade (1991) mentions that health claims have a preventive purpose.

The *Nutrition Facts panel* (i.e., nutrition label) is a table which provides information concerning calories, amounts per serving and important nutrients like carbohydrates and fats (Garretson & Burton, 2000). With this information, consumers are able to evaluate the product based on nutritional values. An example of a label can be found in appendix 8.3.

The usage of nutritional information (e.g., claims, the Nutrition Facts panel) by consumers is referred to as *label use*. Because of the central role of label use in the thesis, it is important to understand this definition.

2.3 Demarcations

Claims in advertising are beyond the scope of this literature study. This is due to the fact that in advertisements, more often consumers do not have the possibility to see the Nutrition Facts panel (Andrews, Netemeyer, & Burton, 1998). Label use is restricted to information in the ad, so therefore it is assumed that results cannot be generalized to packaged food products.

2.4 The restrictive effect of claims

Drichoutis et al. (2006) indentified multiple antecedents of label use, including the use of claims. Purpose of this section is to elaborate on earlier studies. Since literature shows overlay between health claims and nutrition claims, the most important results are combined together.

Health claims are expressed to inform consumers about disease prevention. Ippolito and Mathios (1991) found that the diet-disease knowledge of consumers increased when health claims are available. This positive relationship was later confirmed by Szykman, Bloom and Levy (1997). Another result of their study, which is also recognized by Roe et al. (1999), is that diet effectiveness is positively related to the use of claims or labels.

Moreover, health and nutrition claims have a positive influence on the perceptions of product healthfulness (Ford, Hastak, Mitra, & Ringold, 1996; Kozup et al., 2003; Mitra et al., 1999; Roe et al., 1999). Available nutrition information (e.g., the Nutrition Facts panel) is another factor that affects perception. Nutrition information seems to be more important in evaluation of a product than a claim (Garretson & Burton, 2000; Levy, 1995). Kemp et al. (2007) support this, they found that the Nutrition Facts panel has a greater effect when evaluating fat and carbohydrate content. No interaction between the two items has been found (Ford et al., 1996; Roe et al., 1999). Hence, consumers can evaluate the healthfulness of a food product when both health claim and nutrition information are available, even if the claim is contradicting (Mitra et al., 1999). This is supported by Roe et al. (1999), they suggest that consumers use the information source that is most accurate in their own opinion.

In contrast, when a nutrition claim is not consistent with the information provided in the Nutrition Facts panel, there is less trust and the credibility of the producer is negatively influenced. (Garretson & Burton, 2000; Keller et al., 1997). On the other hand, when a health claim is expressed this may generate a positive attitude towards health attributes not present in the claim (i.e., halo effect). Hence, the nutrition label is seen as more accurate (Levy, 1995). In particular, skeptical consumers more often use nutrition labels.

Wansink (2003) and Wansink, Sonka and Hasler (2004) explain that the power of a health claim is determined by length. A shorter claim is more persuasive and prevents the loss of consumers' interest. Secondly, absolute claims (e.g., "high fiber") have a positive effect on label use when the specific product is bought for the first time. Relative claims (e.g., "healthy") affect the change of a purchase decision after reading the Nutrition Facts panel (Szykman et al., 1997). Thus, absolute claims have a pre label use effect, whereas relative claims cause a post label use effect. In contrast to these studies, results from an international internet survey conducted by Van Trijp and Van der Lans (2007) show that the type of a claim (content, structure-function, product, disease-risk reduction and marketing claim), which relates to the length of the expression, has little effect on consumer perception of overall healthiness. Conversely, the type of health benefit in the claim (cardiovascular, stress, infections, fatigue, weight and concentration) has a strong effect on overall healthiness.

Although health claims affect the perception about healthfulness, there is no positive relationship regarding purchase intentions (Garretson & Burton, 2000; Keller et al., 1997). This is not confirmed by Roe et al. (1999), they explain that both health and nutrition claims cause a higher purchase intention. When interpreting these findings, it has to be taken into account that the research conducted by Garretson and Burton (2000) and Keller et al. (1997) did not take place in actual store settings. Roe et al. (1999) though, used a store environment, interviewing shoppers in a mall (n = 1.403). Another interesting finding of their study is that a negative relationship appears between claims and the use of nutrition labels. A possible explanation for this is that consumers focus their search for information to the front panel instead of the Nutrition Facts panel when claims related to health or nutrition are presented (i.e. truncated search).

2.5 Discussion

Derived from section 2.3, multiple relationships between claims and other items (e.g., healthfulness and product evaluation) are described. With respect to the conceptual model, the discussion focuses on health and nutrition claims related to label use.

Szykman et al. (1997) conducted research on nutrition claims. Results indicate that nutrition claims are positively related to label use for first-time purchases. Caution is needed, since Roe et al. (1999) found a negative effect between claims and label use. Hence, the presence of a claim leads to a limited search for information (i.e., truncated search). Consumers tend to use the front panel of the package and not look at the Nutrition Facts panel. This is not in line with the study of Szykman et al. (1997), they explain that consumers use the information source they think is most accurate and easiest to understand. Depending on the consumer, this could either be a claim or the Nutrition Facts panel. The type of claims does not play a role in this decision (Van Trijp & Van der Lans, 2007). Levy (1995) questions this balancing for information, and concludes that consumers tend to use the Nutrition Facts panel. Yet, the limited search proposed by Roe et al. (1999) seems to be more reliable due to the fact that this study took place in an actual store environment.

2.6 Conclusion

All in all, after investigating earlier research it can be concluded that when a health or nutrition claim is available, most consumers use these to evaluate the product and not necessarily search for the Nutrition Facts panel. This does not depend on which type of information is seen as more accurate. Also, claims have a positive effect on purchase intentions.

Besides claims, other factors need to be considered that have a more direct link to consumers in order to understand label use. As a result, in chapter 3 the relationship between nutrition knowledge and consumer label use is clarified.

3.1 Background

Subsequent to health and nutrition claims, consumers' nutrition knowledge is a different factor that has a function within the label use model (Drichoutis et al., 2006). Although it is reasonable to believe that nutrition knowledge is positively related to label use, an analysis of existing literature is needed to confirm this assumption.

3.2 Definitions

In consideration of the theoretical part of this chapter, several concepts are defined.

Nutrition knowledge can be described as the expertise and familiarity with nutrient content in food products. Referring to Alba & Hutchinson, (1987); Brucks, (1985), Moorman (1996) explains "familiarity is the number of nutrition-related experiences, expertise is the ability to perform nutrition-related tasks successfully" (p. 31).

Nutrition is directly linked to diet and health, so nutrition knowledge and health knowledge are both related to label use.

According to Kim et al. (2001b), *health knowledge* is "knowledge about linkage between diet and disease" (p. 11). Moorman and Matulich (1993) explain that this involves continuing health-related cognitive structures.

3.3 Demarcations

Kim et al. (2001b) conducted an important study in this field of interest. Several relationships between knowledge (i.e., health knowledge and nutrition knowledge) and other variables were examined. Among these variables are effects of income, age, sex, race and health status and education. This study does not include these factors, as the main focus lies on examining the relationship between knowledge and the use of labels.

3.4 More is not always better

Prior to evaluating a product using nutritional labels, knowledge of a consumer determines to what extent this is possible. Hence, nutrition knowledge and health knowledge play a vital role in this process. Due to this relationship, findings regarding both types of knowledge are presented collectively as is done in earlier research.

Moorman and Matulich (1993) hypothesized and found that a high degree of knowledge in combination with high motivation positively affects health behavior (e.g., label use). Later, Kim et al. (2001b) validated the relationship. Other research shows that knowledge can lead to a better understanding of information and has a positive effect on the acquisition (Alba & Hutchinson, 1987; Brucks, 1985; Brucks, Mitchell, & Staelin, 1984; Johnson & Russo, 1984; MacInnis, Moorman, & Jaworski, 1991). However, consumers with high knowledge may decrease search for information as they think that additional information is not necessary (Bettman & Park, 1980; MacInnis & Jaworski, 1989). Moorman and Matulich (1993) suggest that motivation is an important factor in the decision of acquiring more information or not. This is supported by Rogers (1983), concluding that health behavior increases when consumers have high knowledge and motivation. Yet, compared to knowledge in combination with motivation, knowledge alone has an effect on more factors (e.g., alcohol moderation).

Hence, health and nutrition knowledge are positively related to label use (Drichoutis et al, 2006; Guthrie, Fox, Cleveland, & Welsh, 1995). Research conducted by Szykman et al. (1997) resulted in similar findings, they tested effects of nutrition knowledge using the following indicators: blood pressure, heart disease and cancer. First of all, blood pressure and cancer knowledge have a positive effect on the use of nutrition labels when making a first-time food purchase. Secondly, cancer and heart disease knowledge are positively related to consumers deciding not to buy a product after reading a nutrition label. It is worth mentioning that consumers with highers level of diet-disease knowledge more often perceive a diet effective in the prevention of disease. Subsequently, this perception affects label use and purchase positively.

Understanding the consequences of nutrition content is crucial in determining the value of nutritional information. If one is not informed sufficiently, labels can be seen as less valuable (Kim et al., 2001b). With respect to Burton, Biswas and Netemeyer, (1994); Jacoby, Chestnut and Silberman, (1977); Levy, Fein and Stephenson, (1993); Petty and Cacioppo, (1986), Andrews, Burton and Netemeyer (2000) explain that even if consumers are interested, they do not have sufficient knowledge and lack ability to utilize nutrition information. Consumers find it difficult to interpret numerical information (Daly, 1976; Jacoby, Chestnut, & Silberman, 1977; Levy, Fein, & Stephenson, 1993). They may not understand the meaning of grams per serving in relation to health. Also, detailed information concerning disease-risk is mainly used by knowledgeable consumers (Andrews et al., 1998). Inadequate knowledge causes difficulties consumers find when shopping for healthy products (Putler & Frazao, 1993). But "simply raising public awareness about diet-disease relationships may not be effective in achieving the desired nutritional goals, since even aware consumers have difficulties translating awareness into effective diet changes" (Putler & Frazao, 1991, p. 16).

In contrast to the studies above, Nayga (2000) did not find a significant relationship between nutrition knowledge and label use. Consumers that possess more knowledge do not automatically utilize this and change their behavior (Stepherd & Stockley, 1987). Sapp (1991) explains that nutrition knowledge is not directly related to intentions, behavior and attitudes. With respect to Attitude-behavior model (Fishbein, 1975), which in short holds that attitude and subjective norms lead to intention and behavior, knowledge is correlated with social norms. These norms can create a social pressure to perform or avoid certain behavior. A person's own perception and beliefs from relevant others influence the norms (see appendix 8.4). For an example, if your parents always tell you to limit fat intake, chances you actually do this are higher opposed to getting no advice about food consumption. Stepherd and Towler (1992) found that nutrition knowledge has a smaller impact on buying healthy food than attitude or specific beliefs, this is line with the results of Sapp (1991).

In addition to the relationship between knowledge on label use, label use may affect knowledge in a positive direction. Drichoutis, Lazardis and Nayga (2005) describe that when consumers use nutrition labels and information related to ingredients, vitamins and minerals, they acquire nutrition knowledge. Conversely, other nutrient types (i.e., sugar and calories) do not relate to knowledge. It is not clear why only ingredients, vitamins and minerals have a positive effect since research is limited to the study by Drichoutis et al. (2005).

3.5 Discussion

The several studies discussed in section 3.4 show contradicting findings on topics related to health and nutrition knowledge. These contradictions are delineated in this part so a conclusion can be drawn.

Moorman and Matulich (1993) hypothesized and found a positive relationship between high knowledge and search for health related information (e.g., the Nutrition Facts panel). Also, consumers with more knowledge are more likely to search for and understand information available (Alba & Hutchinson, 1987; Brucks, 1985; Brucks et al., 1984; Johnson & Russo, 1984; MacInnis et al., 1991). Motivation has some influence (Rogers, 1983), but health and nutrition knowledge have a greater effect (Moorman & Matulich, 1993). It is suggested that consumers with high levels of knowledge may reduce their search for information (Bettman & Park, 1980; MacInnis & Jaworski, 1989). On the other hand, with respect to the ever growing number of people with obesity and increasing importance of health and nutrition, it is logical to conclude that more information is not rejected. Hence, knowledge is positively related to consumer label use and understanding nutrition information (Drichoutis et al., 2005; Guthrie et al., 1995; Kim et al., 2001b; Szykman et al., 1997). Compared to these outcomes, other studies did not find a positive relationship between knowledge and label use (Nayga, 2000; Stepherd & Stockley, 1987; Stepherd & Towler, 1992). It seems that knowledge is not always translated into behavior (i.e. label use), an individual's perception on social norms and pressure from relevant others determines this. This is reasonable, many decisions are not made individually.

Worth mentioning is that consumers find it hard to interpret numerical information (Daly, 1976; Jacoby et al., 1977; Levy et al., 1993), and specific diet-disease information requires more knowledge (Andrews et al., 1998). Regarding this, raising awareness about health and nutrition is not the key to success. Focus must lie on teaching consumers to comprehend and use nutrition labels (Andrews et al., 2000; Putler & Frazao, 1991).

3.6 Conclusion

After reviewing previous findings it becomes clear that health and nutrition knowledge affect label use in a positive way. More knowledge makes it easier to understand and use information, but does not automatically lead to changes in behavior when social pressure and individual norms about health-related consequences of nutrition are absent.

Already mentioned in section 3.4, knowledge in combination with motivation affects the search for information. More interesting is to examine the direct effect of motivation on label use. For that reason, chapter 4 expands on this variable.

4.1 Background

With respect to the label use model proposed by Drichoutis et al (2006), motivation to process nutrient information affects consumers' use of labels on food packages. For a better understanding of this variable, this chapter consists of an elaboration of earlier research.

4.2 Definitions

Due to fact that motivation is a complex construct, some definitions are presented.

Referring to Bloch and Richins (1983); Burnkant and Sawyer (1983); Cohen (1983); Greenwald and Leavitt (1984); Houston and Rothschild (1978); Lastovika and Gardner (1979); Mitchell (1981); Petty and Cacioppo (1986); Wright (1974); Zaichkowsky (1985), Celci and Olsen (1988) state "*motivation to process information* has been conceptualized by most researchers in terms of consumer's involvement with the information stimuli" (p. 210).

Moorman (1996) defined *motivation to process nutrition information* as "an enduring disposition or willingness to attend to nutrition information reflecting a goal-directed arousal" (p. 31).

Knowledge about nutrition and health (see section 3.2) is the indicator for a*bility to process nutrition information* (Moorman, 1996).

According to Moorman (1996), *health motivation* stimulates consumers to perform healthy behavior (i.e. buy "light" products).

4.3 Demarcations

This study limits itself to consumers; motivation to process nutrition information. The role of health motivation is beyond the scope of this study. It is suggested that motivation to process nutrition information has a more direct link to label use. As a result, this demarcation is set. Nevertheless, for those interested research is available (Fletcher, Morgan, O'Malley, Earp, & Degnan, 1989; Gelb & Gilly, 1979; Moorman & Matulich, 1993; Zweig, LeFevre, & Kruse, 1988).

4.4 Motivation and search for information

Motivation to process information related to nutrient content differs among consumers. Petty and Cacioppo (1986) developed the Elaboration Likelihood Model (ELM, see appendix 8.5). The model holds that consumers are able to process information in varying degrees. Referring to Kemp et al. (2007), "it proposes a dual means to attitude change, the central route and the peripheral route. Central route processing is based on relatively extensive and effortful information processing, whereas peripheral route processing requires less cognitive effort" (p. 50). Regarding the ELM, differences in motivation influence the perception, processing, use and evaluation of nutrition information (Keller et al., 1997; Kemp et al., 2007; Moorman, 1996).

Multiple studies have been conducted concerning the effect of motivation to process information. Bettman and Park (1980) tested the effect of different levels of prior knowledge and experience on the processing of available information. Consumers in the high group mostly use prior information or attitudes, the low group prior attitudes or evaluations, the moderate group currently available information. Where consumers with low knowledge and experience find it hard to process information and often end up with a brand they heard of, the high group does not find it necessary to acquire new information and rely on prior experiences. Celsi and Olson (1988) validated the link between motivation and information processing. Consumer motivation is positively related to attention and taking more effort in the understanding of product-related information. Results of these studies are relevant, given that outcomes may be generalized to the processing of nutrition information.

Regarding Bettman and Park (1980), not only motivation but ability to process information needs to be considered. Consumers with low knowledge and experience may also not have the ability to comprehend information. Because of the difficulty they meet with, search for information may be rejected. The moderate and high groups on the other hand have enough ability and consequently are more likely to take more effort in understanding information (Petty & Cacioppo, 1979; Petty, Unnava, & Strathman, 1991). Caution is needed, as earlier studies show consumer ability to process information primarily has an effect on comprehension and not acquisition of nutrition information (Alba & Hutchinson, 1987; Johnson & Russo, 1984; Moorman, 1990).

Motivation to process nutritional information does influence the acquisition of information and the elaboration (Moorman, 1990). Thus, where ability mainly facilitates the comprehension, motivation has a direct link to the acquisition. Noteworthy is the nonsignificant effect of familiarity (with nutrients) on motivation, but the significant effect on ability. It seems that when familiarity is present, consumers find themselves able of processing information but do not see the need for actual acquisition.

Keller et al. (1997) suggest that low motivated consumers tend to search and use information that is most easy to access. Thus, nutrition and health claims on the front of a package are preferred above the Nutrition Facts panel on the back of a package. However, the truncated search theory (Roe et al., 1999) explains that when a claim on the front package is expressed, consumers limit their search and do not look for labels on the back. Hence, when consumers only use claims this is because of limited search and not motivation. After hypothesis testing, Keller et al. (1997) agree with this since the relationship between low motivation and use of claims was nonsignificant.

Kemp et al. (2007) examined the effect of low versus high motivation on nutrition claims. Consumers with low motivation perceive the likelihood of heart disease, stroke and weight gaining lower when a low in carbohydrate claim is expressed. For a low in fat claim, no significant differences between low and high motivation were found. Besides health and nutrition claims, Keller et al. (1997) show that motivation has an effect on attitude and purchase intentions considering different levels of nutrition value. When the nutrition value is "medium" or "good", consumers with high motivation have a more favorable nutrition attitude, overall product attitude and purchase intentions. When nutritional value is "poor", consumers with low motivation give more positive ratings. It is suggested that people with low motivation are more positive towards "poor" nutritional value and run more risk of disease. This is somewhat dissimilar with other studies that explain consumers find consequences from negative ingredients (e.g., fat) more relevant in comparison with positive ingredients (e.g., vitamins) (Heimbach & Stokes, 1982; Russo, Staelin, Nolan, Russell, & Metcalf, 1986). A possible explanation for this is that low motivated consumers may find it hard to understand negative effects of non-healthy food products although they are interested.

4.5 Discussion

Subsequent to section 4.4, this discussion elaborates on important findings derived from other multiple studies.

Early research tested the effect of prior knowledge and experience on the processing of information. Bettman and Park (1980) conclude that consumers with moderate or high knowledge and experience have the ability and motivation to process information. It is suggested that these consumers take more effort in understanding information (Petty & Cacioppo, 1979; Petty, Unnava, & Strathman, 1991). However, ability to process information primarily has an effect on comprehension and elaboration (Alba & Hutchinson, 1987; Greenwald & Leavitt, 1984; Johnson & Russo, 1984; Moorman, 1990; Petty & Cacioppo, 1986), where motivation has an effect on acquisition of nutritional information (Moorman, 1990). Hence, when a consumer has the ability but not the motivation to process information relation to nutrition, this does not lead to label use. But it is rational to think that they are willing to learn how to use labels. Highly motivation consumers do not automatically acquire more information. Reason for this is that they tend to rely on prior experiences and do not see the need to search for more information (Bettman & Park, 1980). However, since it is suggested that health nowadays influences consumers to a greater extent (e.g., people on a special diet) and consumers face more social pressure this finding should be interpreted with some caution.

Other studies further examined the relationship between motivation and label use. Keller et al. (1997) found that low motivated consumers do not prefer to use health of relation claims compared to nutrition labels. Thus, consumers do not necessarily search for information that is most easy to access and motivation does not have an influence on this. Moreover, Kemp et al. (2007) state that low motivated consumers perceive the likelihood of heart disease and stroke lower when a low in carbohydrates claim or no claim at all is present. Hence, consumers with low motivation are more likely to perceive disease-risks lower.

4.6 Conclusion

With respect to earlier research, it can be concluded that motivation does lead to the acquisition of health related information. However, more is not necessarily better. Highly motivated consumers are able to process and spend more time on understanding nutrition information, but they are more likely to rely on information they already obtained in prior experiences and that may prevent the search for additional information.

The previous chapters described the relationships between three variables and consumer label use. How label use is related to purchase intention and diet is explained in the next chapter.

5.1 Background

The choice of food products being bought is partly influenced by maintaining or improving personal health (Variyam, Blaylock, & Smallwood, 1996). In order to make a healthy choice, consumers should search for information related to health and nutrition. Referring to Caswell and Mojduszka (1996), Kim et al. (2001b) state "nutritional labels make it practicable for consumers to judge the nutritional quality of a food product before purchasing" (p. 11). Where the previous chapters focused on variables that influence label use, this chapter elaborates on the effect of label use.

5.2 Definitions

With respect to the following paragraphs, it is of importance to delineate the main concepts.

Purchase intention can be described as the extent to which consumers are willing to purchase a certain product (Ajzen, 1991).

Diet or *dietary* refers to the consumers' specific nutrient (e.g., fat and cholesterol) or food (e.g., fruit and vegetables) intake (Kim, Nayga, & Capps, 2000). Next to their own choice of nutritional intakes, there are numerous diets which explicitly prescribe what to eat and drink (e.g., the Atkins Diet and the South Beach Diet).

5.3 Demarcations

Although Drichoutis et al. (2005) proposed a model in which label use leads to purchase behavior, this thesis examines the relationship between label use and purchase intention. Reason for this is the fact that earlier studies measured purchase intentions and not behavior (Bower, Saadat, & Whitten, 2003; Cranage, Conklin, & Lambert, 2005; Garretson & Burton, 2000; Kemp et al., 2007).

Secondly, regarding the theory of planned behavior Ajzen (1991), intention leads to behavior. The model proposes that behavior is determined by intention, and intention is determined by attitude towards the behavior, subjective norms and perceived behavioral control (see appendix 8.6). Therefore, it is important to explain the relationship between label use and purchase intention prior to purchase behavior.

5.4 Buying healthier products

Already mentioned in the demarcations, the effect of label use on purchase intention and diet is discussed in this chapter. These two consequences are described separately in this paragraph, starting with purchase intention.

Garretson and Burton (2000) compared the Nutrition Facts Panel with health and nutrition claims and tested their effects on consumers (e.g., product evaluations and trust of the claims). Fat and fiber were the specific nutrients used in the measurement. It appears that claims referring to fat and fiber (e.g., low fat/low fiber) have a nonsignificant effect on brand attitude, nutrition attitude and, more important, purchase intention. In contrast, Nutrition Facts information does have a significant, positive effect on the variables mentioned. Noteworthy is that when consumers use the Nutrition Facts Panel, only fat has an influence on the evaluation variables. Hence, when evaluating a product, consumers use the Nutrition Facts and look for the amount of fat.

Bower et al. (2003) also conducted research on the effect of information on purchase intention. When consumers are shopping for food, they are aware of the nutrition information on products. This information and liking of sensory aspects (e.g., taste) have influence on purchase intention, price and health benefits have a less direct effect. But when consumers like the sensory aspects of a product and a health benefit is present, they are willing to pay a higher price. Regarding the study of Garretson and Burton (2000), it can be concluded that information and not claims mostly affects purchase intentions.

Since the use of claims can influence purchase intentions, Kemp et al. (2007) focused their study on the effect of nutrition claims. Compared to low in carbohydrate and no claims, low in fat claims affect purchase intentions in a more positive way regardless of motivation. Only when low carbohydrate claims are expressed motivation does play a role. Consumers with low motivation tend to give higher ratings to purchase intentions than consumers with high motivation. Possible explanation is that consumer with low motivation have more trust towards such claims. Another important result for the low motivation group is that their purchase intentions are not affected by the Nutrition Facts panel.

In addition to the studies concerning packaged food products, Cranage et al. (2005) conducted research in a restaurant. When information about specific nutrients is displayed, this results in higher repurchase intentions. Furthermore, providing consumers with information may lead to more healthy food selections. Because of this, selection of entrees with higher fat and calories dropped, selection of entrees with lower fat and calories raised.

The effect that label use has on diet was tested by Kim et al. (2000). Consumer label use is positively related to healthier food choices. The percentage of consumers with a low cholesterol intake increased after using a nutrition label. An increase was also found for fiber, where low fiber intakes decreased from 95.47% to 32.54% and medium intakes increased from 4.34% to 67.46%. In line with Garretson and Burton (2000), products containing high fat were not selected after reading the label. In sum, when consumers use nutrition labels there is a decrease in the intakes of calories from total fat, saturated fat and cholesterol. The positive effect of label use, and claims, on quality of diet is confirmed by Kim, Nayga and Capps (Kim et al., 2001a).

Kreuter, Brennan, Scharff and Lukwago (1997) conclude that using nutrition labels affects consumers with specific dietary practices. A positive effect was found for diets lower in fat and diets higher in fruits, vegetables and fiber. Neuhouser, Kristal and Patterson (1999) validated the relationship between label use and low fat diets. Moreover, Satia, Galanko and Neuhouser (2005) state that “participants who usually/often read nutrition labels and specific label nutrient information reported statistically significantly higher fruit and vegetable intakes and lower fat, saturated fat, and fat-related behaviors” (p. 399). Hence, consumer label use is positively related to dietary intakes. Labels are used to select products lower in fat.

5.5 Discussion

Prior to the conclusion, this discussion examines central conclusions from earlier research.

When shopping for food products, consumers can use nutritional labels. These labels are positively related to purchase intentions (Garretson & Burton, 2000; Bower et al., 2003). It appears that the amount of fat has the most influence. Bower et al. (2003) state that in some cases consumers are willing to spend more when a product is healthy, depending on how important the price aspect is (Nayga, 2000). In addition to labels, Kemp et al. (2007) examined the role of nutrient content claims. Low in fat claims have a more positive impact on purchase intentions in comparison with low in carbohydrate and no claims. This is not in line with Garretson & Burton (2000) since they found that claims do not have a significant effect purchase intentions. However, regarding the truncated search theory (Roe et al., 1999) presented in chapter 2 it is suggested that claims do have a significant effect. Hence, nutritional labels and claims have a positive effect on purchase intentions (Kim et al., 2001a).

Besides purchase intention, nutrition labels affect nutrient intakes. Making more healthy food choices is a consequence of consumer label use. In general, selection of products with higher levels of fat decreased (Kim et al., 2000, 2001a; Kreuter et al., 1997; Neuhouser et al., 1999) and intakes of fruit and vegetables increased (Kreuter et al., 1997; Satia et al., 2005). On the other hand, in cannot be stated that consumers only look for the amount of fat. A specific diet can influence the search for nutrients and ingredients (Kreuter et al., 1997).

5.6 Conclusion

In sum, studies regarding label use show that nutritional labels and claims are positively related to purchase intention, particularly when a product contains low levels of fat. Thus, when consumers are shopping for food the purchase decision is mostly affected by fat in comparisons with other nutrients. Opposed to purchase intentions, diet changes are not mainly influenced by fat.

Since all the research questions are discussed now, chapter 6 contains a general conclusion answering the problem statement, recommendations for managers, limitations of this literature study and suggestions for future research.

6.1 Conclusion

Where the previous chapters examined the relationships between the variables, this part presents the main conclusions.

Packaged food products can contain claims related to health and nutrition. Both types of claims have a positive effect on the perception of product healthfulness (Ford et al., 1996; Kozup et al., 2003; Mitra et al., 1999; Roe et al., 1999). Remarkable is that when a Nutrition Facts panel is also available, it seems that consumers tend to use the label (Garretson & Burton, 2000; Levy, 1995; Kemp et al., 2007). Roe et al. (1999) question this as consumers use claims above labels. This theory is more realistic, because the research was conducted via interviews in a shopping mall. Thus, claims related to health and nutrition have a negative effect on label use. Even so, they do have a positive effect on purchase intentions (Roe et al., 1999) and diet changes (Kim et al., 2001a).

Health and nutrition knowledge have a great influence on the evaluation of a product. Knowledge is positively related to label use (Drichoutis et al, 2006; Guthrie et al., 1995; Szykman et al., 1997), but label use can also lead to more knowledge (Drichoutis et al., 2005). However, more knowledge may not always be positive (Nayga, 2000) because this is not necessarily translated into label use (Stepherd & Stockley, 1987). Sapp (1991) explains that relevant others influence purchase intention and behavior. Hence, knowledge has a positive effect on nutritional label use, but this depends on social norms.

Consumer motivation influences the perception, processing, use and evaluation of nutrition information (Keller et al., 1997; Kemp et al., 2007; Moorman, 1996). Motivation and information processing are positively related (Bettman & Park, 1980; Celci & Olson, 1988), and ability to process information also plays a role (Bettman & Park, 1980). But motivation influences acquisition of nutrition information opposed to ability which primarily affects comprehension (Moorman, 1990). Worth mentioning is that Bettman and Park (1980) found that highly motivated consumers rely on prior experiences instead of searching for new information. Yet, with the ever increasing importance of health this may not hold for food products. In sum, motivation is positively related to consumer use of labels.

Nutrition labels mainly influence purchase intentions and diet (Drichoutis et al., 2005). Labels have a positive effect on purchase intentions (Garretson & Burton, 2000) and consumers are aware of their presence (Bower et al., 2003). Especially the levels of fat affect purchase intentions (Garretson & Burton, 2000). This is in line with the fact that consumers are most interested in effects of negative ingredients (Heimbach & Stokes, 1982; Russo et al, 1986). Moreover, fat is a nutrient that often causes diet changes (Kim et al., 2000). Hence, labels have a positive influence on healthier diets (Kim et al., 2001a; Kreuter et al., 1997; Neuhouser et al., 1999; Satia et al., 2005). All in all, nutritional labels have a positive influence on purchase intentions and consumers use these to improve their diet.

Regarding the conclusions, an answer to the following problem statement can be formulated.

- *To what extent do claims, knowledge and motivation affect consumer label use and influence purchase intention and diet?*

After answering the research questions, it can be concluded that consumer knowledge and motivation are positively related to label use. Health and nutrition claims have a negative effect on label use, but a positive effect on purchase intention and diet. Furthermore, label use has a positive influence on both purchase intention and diet changes.

6.2 Managerial recommendations

Since label use affects purchase intentions, recommendations for managers are described in order to increase the sales of healthy products.

With respect to Levy, Matthews, Stephenson, Tenney and Schuker (1985); Muller, (1985); Russo et al., (1986); Scammon (1977), Moorman (1990) suggests that "consumers utilize more nutrition information when it is presented in an easily processed form" (p. 362). It is therefore that the need for easy to understand information arises. A possibility is the use of marks on food products that give an indication for the healthiness. An example is the 'Ik Kies Bewust' mark (see appendix 8.7), that shows Dutch food shoppers which products are healthier compared with other in the same category via a simple logo (Stichting Ik Kies Bewust).

Bettman and Park (1980) found that highly motivated consumers do not automatically search for information. Moreover, familiarity with a certain nutrient is not positively related to acquiring nutritional information (Moorman, 1990). Because of this, it is recommended that consumers have to be stimulated to acquire and use information related to health and nutrition. Producers of food products, supermarkets and governments can influence this via promotional cues (e.g., information displays). It must be made clear that one can never have enough information about health in relation to nutrition.

Consumers with low motivation may find it difficult to understand the negative effects of unhealthy diet practices. Research shows that they are more positive towards unhealthy food in comparison with highly motivated consumers (Keller et al., 1997). Given that consumers are more interested in the consequences of negative ingredients (Heimbach & Stokes, 1982; Russo et al, 1986), a suggestion is given that governments should provide more information about the negative consequences of certain nutrients.

A final recommendation worth mentioning is that producers of food products, supermarkets and governments have to provide information on how to use nutrition labels. This is of great importance because many consumers have problems with using nutrition information to change their diet (Andrews et al., 2000; Putler & Frazao, 1991).

6.3 Limitations

Numerous studies have been discussed in this thesis via a critical review, but some limitations are present.

First of all, conclusions in this thesis are mainly drawn upon existing literature. Although earlier research is academic and shows key findings, these cannot always be generalized. For example, different measurements are used (e.g., interviews versus questionnaires, specific groups of respondents) and many studies only examined consumers in America.

Another remark is that not all determinants of label use are taken into account. Referring to appendix 8.1 a choice is made to focus on three variables: claims, knowledge and motivation. Due to this, it is not possible to fully delineate label use regarding variables as individual characteristics and product involvement factors.

Also, the costs of label use are not discussed in this thesis. With respect to the cost-benefit approach (Stigler, 1961), consumers only use nutritional labels (i.e., search, comprehend and utilize) when the benefits outweigh the costs. It is reasonable to suggest that when reading a label takes too much time, a consumer will settle for a less healthy product.

6.4 Suggestions for further research

Although numerous studies took place, the need for future research exists.

A large majority of the studies regarding label use is conducted in America. For this, additional research outside America is needed. It is logical to believe that consumers in other countries react diverse to nutrition labels as factors like obesity and nutritional information provided by the government differ. Also, culture has an important effect on behavior of people (Hofstede & Hofstede, 2004).

The relationship between knowledge and label use is examined by Drichoutis et al. (2005). A remarkable conclusion is that label use relates to an increase in nutrition knowledge. Given that other studies only tested the effect of knowledge of label use, the research by Drichoutis et al. (2005) is the first to examine the relationship the other way around. Additional research is desirable, assuming that when consumers use labels their knowledge about nutrition related to health increases.

Referring to Drichoutis et al. (2006), label use affects purchase behavior and dietary changes. Earlier research indicates that label use is positively related to purchase intentions (Garretson & Burton, 2000; Bower et al., 2003; Kemp et al., 2007). The effect on the actual purchase was measured by Cranage, Conklin and Lambert (2005) in a restaurant. Research on the purchase (not purchase intention) of food products in supermarkets is needed, consumer behavior may differ from a restaurant setting given the wide assortment of products opposed to a menu with limited dishes.

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8.1 Label use model

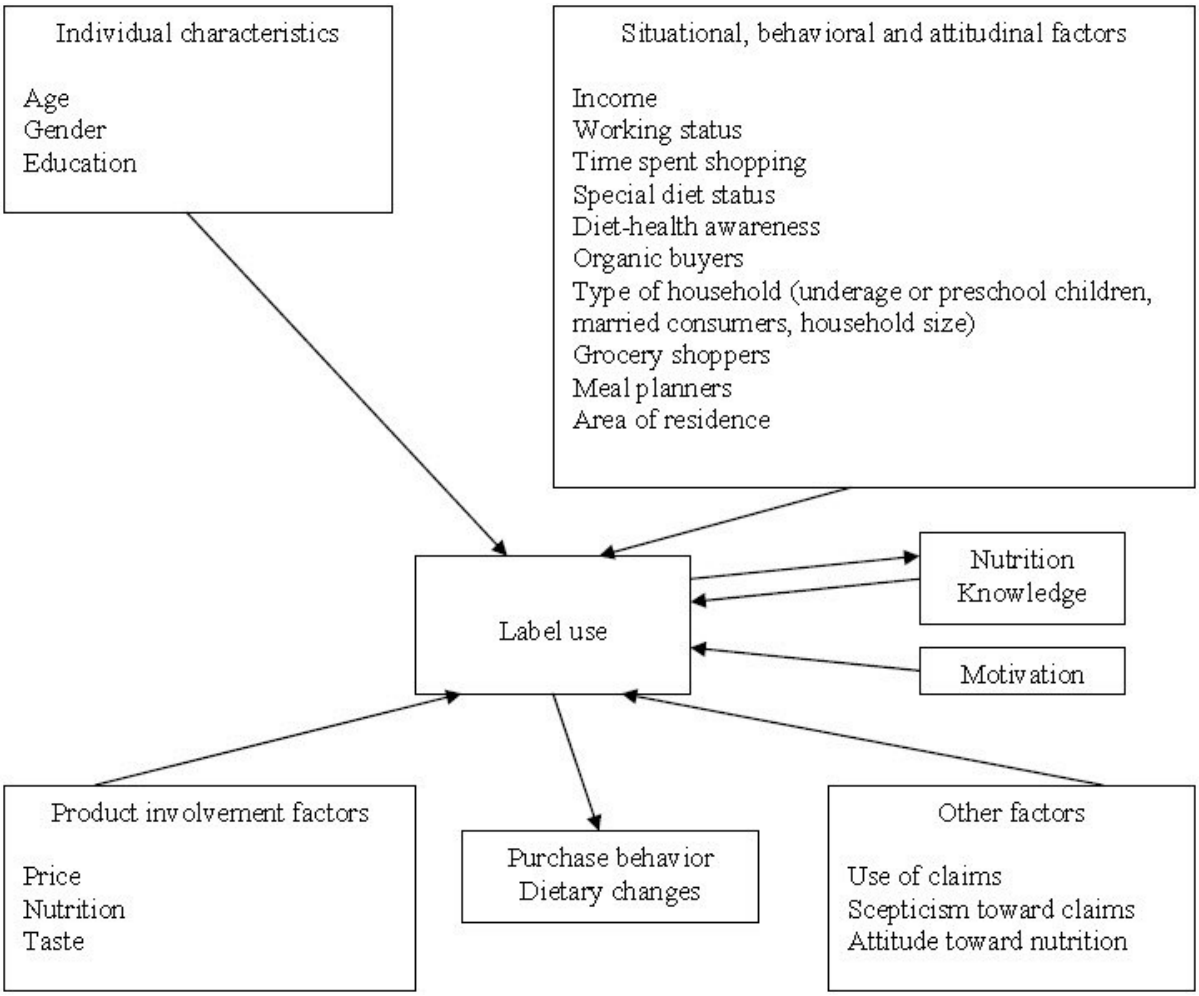

Figure 2: Antecedents and consequences of label use

Source: Drichoutis et al. (2006)

The label use model presented by Drichoutis et al. (2006) consists of six antecedents. However, three variables are beyond the scope of this thesis.

Situational, behavioral and attitudinal factors

How situational, behavioral and attitudinal factors are related to label use is not translated in the study. Numerous studies tested the effect on information search (i.e., label use) and generally have comparable results (Drichoutis et al., 2006).

Individual characteristics

Several researchers tested the effect of individual characteristics on label use. In general, findings are alike and therefore this determinant is excluded from further research.

Product involvement factors

Product involvement factors are divided into three dimensions: price, nutrition and taste. Consumers that focus on price are less likely to search for nutritional information, but when they view nutritional content as important this has, as expected, a positive effect on the use of nutrition labels. For taste, findings are not similar (Drichoutis et al., 2006). Despite the importance, this study does not include the effect of taste on label use since there are time constraints.

8.2 Framework of the thesis

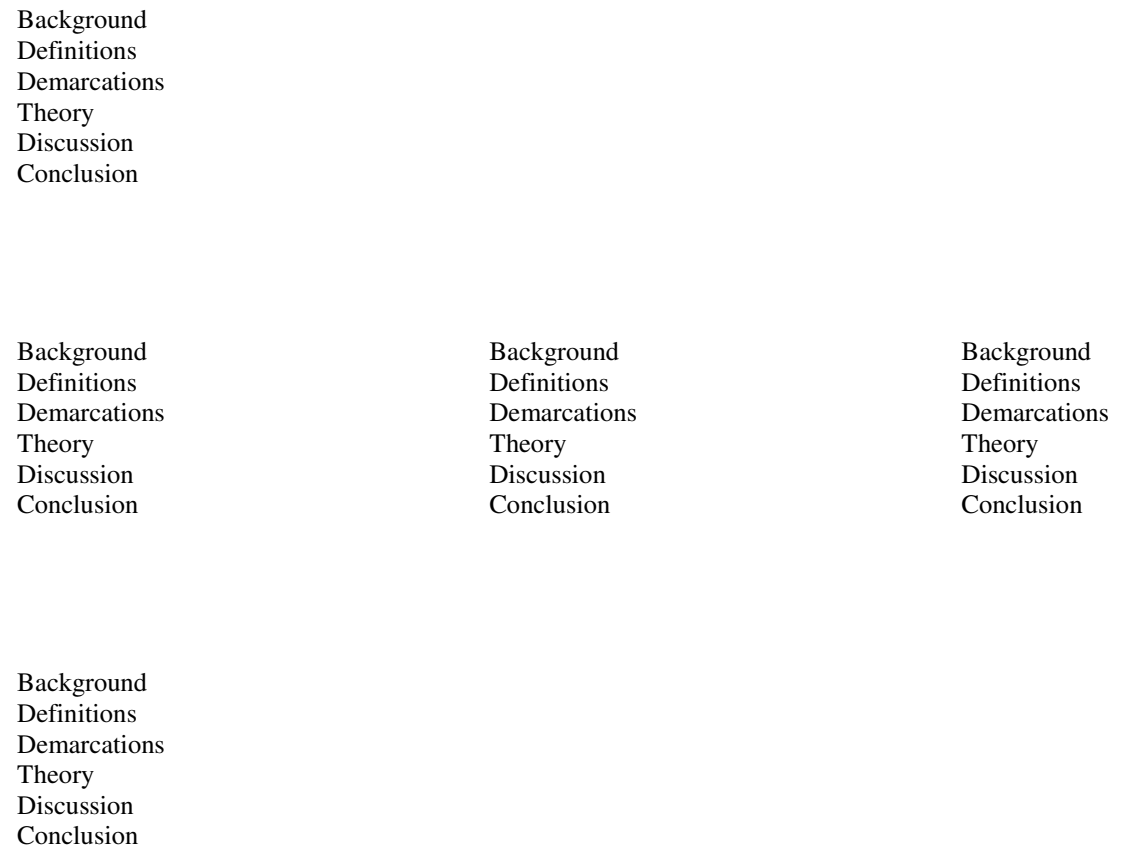

Figure 3: Framework of the thesis

Source: Drichoutis et al. (2006)

The following problem statement and research questions are derived from the framework:

- *To what extent do claims, knowledge and motivation affect consumer label use and influence purchase intention and diet?*

- *What are claims related to health or nutrition and how do they affect consumer label use?*
- *To what extent does consumer knowledge influence label use and vice versa?*
- *To what extent does consumer motivation influence label use?*
- *How is consumer label use related to purchase intention and diet, and what are the implications for marketing activities?*

8.3 The Nutrition Facts panel

Serving Size
This tells you what amount equals one serving of the product. Every other nutrient value listed on the label is based on this amount.

Calories
Calories are a unit of energy. Calories in food come from carbohydrates, protein, and fat. Because calories give us energy, we need them to be able to think and be active.

% Daily Value
This tells you the percentage of the recommended daily value for a nutrient that you get in one serving. A food that has more than 20% of the Daily Value of a certain nutrient is a good source of that nutrient.

Cholesterol
Cholesterol is a substance found only in animal products. Eating too much cholesterol is not healthy for your heart.

Total Carbohydrate
Carbohydrates give your muscles and brain energy. Certain types of carbohydrates are sometimes listed on the label.

Fiber: Helps with digestion and keeps you full between meals.

Sugars: Give you instant energy, but eating too much added sugar can be unhealthy.

Nutrition Facts

Serving Size
Servings per Container

Amount per serving

Calories Calories from Fat

% Daily value*

Total Fat
- Saturated Fat
- *Trans* Fat
- Polyunsaturated Fat
- Monounsaturated Fat

Cholesterol

Sodium

Total Carbohydrate
- Dietary Fiber
- Sugars

Protein

Vitamin A — Vitamin C

Calcium — Iron

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your caloric needs:

	Calories	2,000	2,500
Total Fat	Less than	65g	80g
Sat. Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrates		300g	375g
Dietary Fiber		25g	30g

Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4

Footnote
This reminds us that all of the Daily Values come from the recommendations for a 2,000-calorie meal plan. Your needs may be higher or lower based on your height, genetics, and activity level. Keep in mind this is just an average, these daily value percentages (%) are not for everyone.

Servings Per Container
This tells you how many servings you can get from one package. Some containers have a single serving, but most have more than one serving per package.

Calories from Fat
This is the number of calories that come from fat. It is not the percent of fat in the food.

Total Fat
Fat is essential in our bodies. There are 4 kinds of fat. Mono-unsaturated and polyunsaturated fat are the kinds of fat that are heart healthy. These kinds of fat may not be included on the food label. Saturated fat and *trans* fat are unhealthy for your heart, and should be limited.

Sodium
Sodium tells you how much salt is in the food. People with high blood pressure are sometimes told to follow a low sodium diet.

Protein
This nutrient is used to build muscle and fight infections.

Vitamins/Minerals
This tells you the percent Daily Value for vitamin A, vitamin C, calcium, and iron you are getting from this product. Other vitamins and minerals may be included in this section.

Figure 4: The Nutrition Facts panel (i.e., nutrition label)

Source: http://www.youngwomenshealth.org/nutrition_label (Children's Hospital Boston)

8.4 Attitude-behavior model

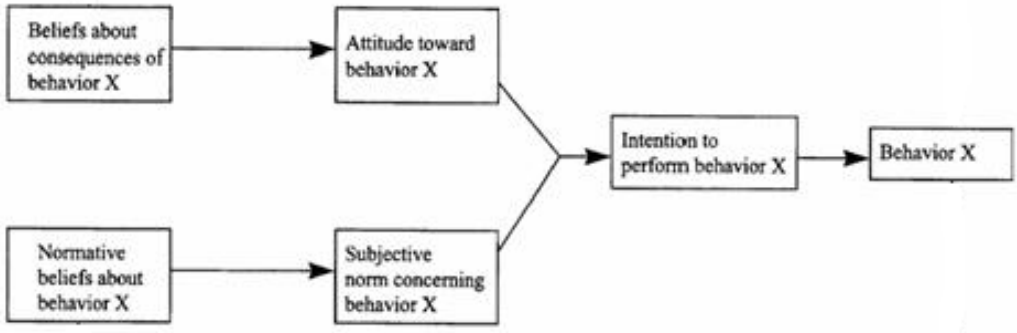

Figure 5: Attitude-behavior model

Source: Fishbein (1975)

8.5 Elaboration Likelihood Model

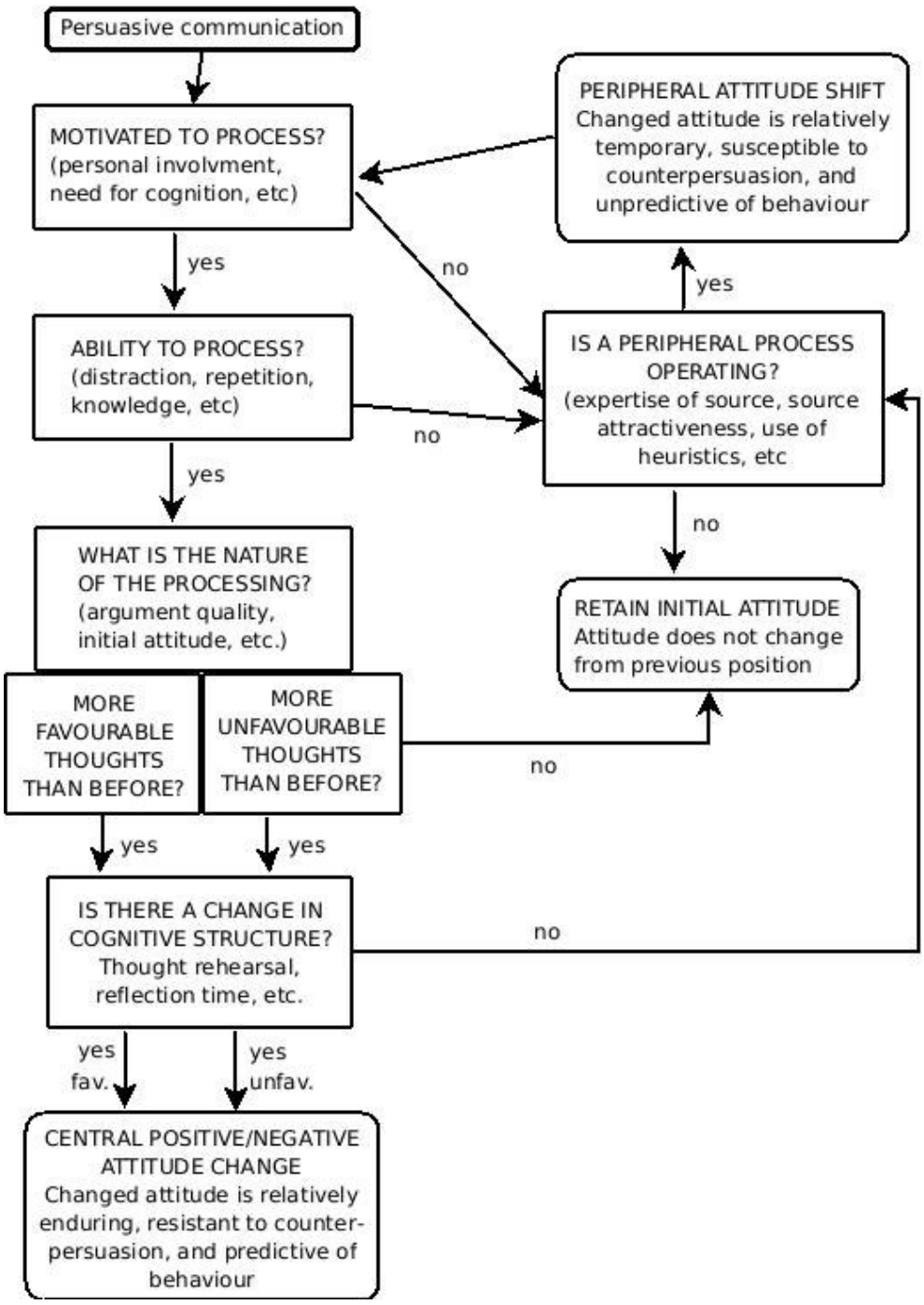

Figure 6: The Elaboration Likelihood Model

Source: Petty and Cacioppo (1986)

8.6 Theory of planned behavior

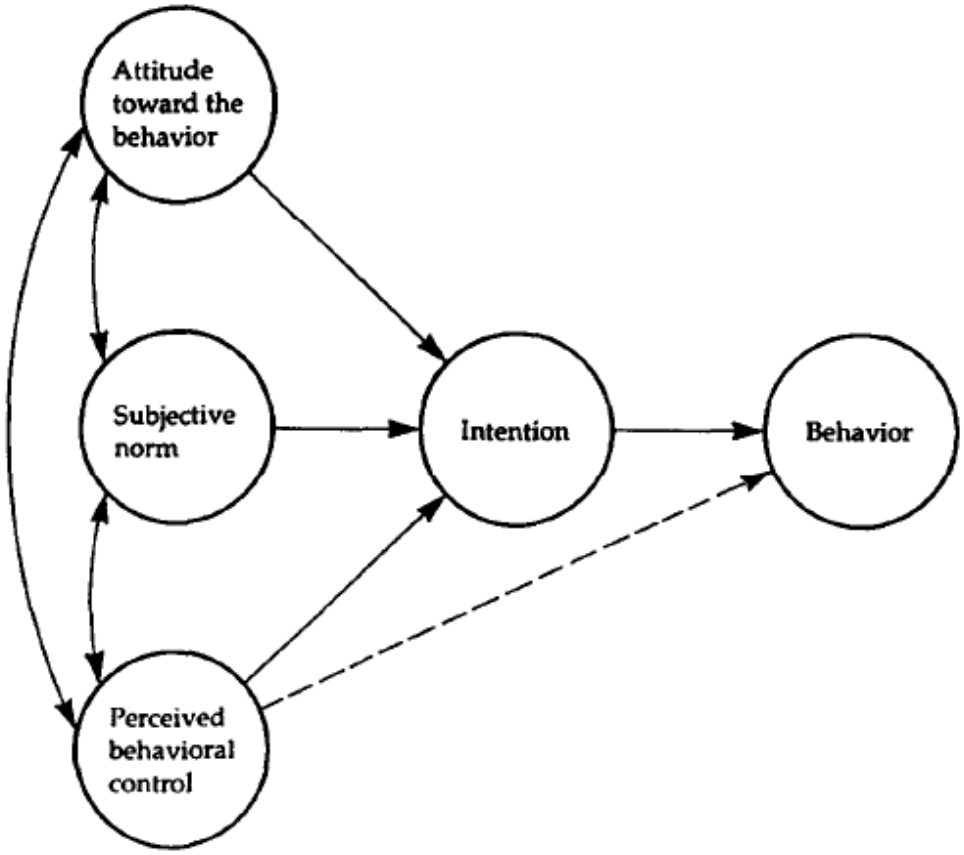

Figure 7: The theory of planned behavior

Source: Ajzen (1991)

8.7 'Ik Kies Bewust' mark

Figure 8: 'Ik Kies Bewust' mark

Source: http://www.ikkiesbewust.nl (Stichting Ik Kies Bewust)