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ANALYSIS OF CONSUMER INFORMATION SEARCH BEHAVIOUR ON FOOD PACKAGING

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Ph.D. dissertation

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"The most valuable commodity I know of is information." Gordon Gekko – character of the movie "Wall Street

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1 INTRODUCTION

'You do not win your reward when you start something but only and exclusively if you persist in it.' St Catherine of Siena – Tertiary of the Dominican order

⁶Abraham Lincoln walked for several miles to borrow books and so open up the world's information channels. He lived in a society, where information was scarce and cherished. Even the smallest fragments of information were considered valuable and one had to memorise them if it was possible.' (Simon, 1982, in Markovics, 2006). As opposed to the troublesome ways of seeking information in the 19th century, nowadays it is not the scarcity of information but an information oversupply that is characteristic of our society (Malhotra, Jain, Lagakos, 1982), and that is encountered daily by an average consumer when making their food purchases.

Have you ever stood in front of a shelf deep in your thoughts about which product should get in your trolley? *There are about 15 types of cottage cheese*¹, and you are welcome to choose. You take one in your hand, turn it, look at which producer has made it, then look at the country of origin on another packaging, to finally settle for a third one since that one contains no artificial colours. How does, in fact, a consumer make a decision while they are out shopping? How much and what type of information are they in possession of when doing so? A reply to these questions comes from an investigation of consumer information search behaviour, which is the topic of this dissertation.

The antecedent of a purchase decision is information search, which is of key importance for marketing science from both a practical and a scientific point of view (Bettman, 1979). And although it has been the subject of studies since the 1920s, (Copeland, 1923), it has not lost it significance, on the contrary, it is a hotter issue than ever due to the free movement of goods, the ever faster turnover and larger merchandise, the large amount of information provided by the Internet and media and the changing trends of consumer behaviour (Guo, 2001). Consumers make their decision before purchase based on information from internal sources (stored in memory) and external sources (advertisements, in-store information, friends, experts) (Bauer, Berács, 2006). When purchasing food labels on packaging is an extensively used source of external information (Dörnyei, 2010), as they

¹ http://homar.blog.hu/2010/04/15/jo nagyot hazudik a cimken a veszpremtej

display a description of the product's attributes. Labelling is a source of information and apart from being useful for consumers, its presence is an obligation stipulated by law. A proactive corporate behaviour requires the conscious design of the informative function of packaging as it is the basis of consumers' purchase decisions (*Figure 1*).



Figure 1 – Illustration of label use embedded in the society Source: <u>http://www.gocomics.com/calvinandhobbes/</u>

Nowadays 'you must be a conscious buyer'²: food consumers orientate themselves in order to make an informed decision therefore an investigation of information search with food products has a high relevance and is an interesting research topic (Moorman, 1990; 1996). Furthermore, the purchase of food is considered to be a high involvement decision, due to food industry, veterinary health, labelling scandals, health-conscious diets and environmental considerations (Lehota, 2001; Hofmeister, 2007; Simon, 2009).

Consumer information search research has most frequently centred upon the investigation of information sources. Along with that, from a marketing point of view the factors affecting consumer information search are also of scientific interest. Earlier research has identified marketing environment, individual differences (attitude, involvement), risk, experience and knowledge as primary factors. However, the relationship between information search and several of these factors has not been elaborated on sufficiently (Newman, 1977, Guo, 2001), therefore the examination of the relationship between information search and its antecedents is also a relevant research topic.

² <u>http://homar.blog.hu/2010/06/08/gyumolcslenek_alcazott_lengyel_lonyal</u>

Research goals and significance of the thesis

1.1 Research goals and significance of the thesis

The aim of the research is threefold. First, an **academic goal**, is to better understand consumer information search behaviour with the help of a literature review, preliminary studies and primary research. Second, there are a number of factors, which have been known to affect information search as borne out by earlier studies, but which have not been researched in depth in connection with information search, or the research was carried out using old-fashioned methodology, or it came to controversial conclusions. This thesis wishes to establish the exact impact which these factors, listed below, have on information search:

- product category
- assortment depth
- number of product attributes
- involvement
- prior knowledge and experience
- demographic factors.

The **practical aim** of the research is an understanding of labelling on packaging through the eyes of consumers, making it possible for corporate managers to plan packaging more easily and position products more accurately. Based on interviews with industry experts we can say that the informative function is dwarfed by design in practice in corporate decision-making despite being essential for informing consumers at points of sale. After completing this research we will be able to perfect the informative function of packaging and give practical advice on how to create effective product packaging.

The research also has a **social-welfare goal** insofar as it helps understand consumers' information seeking behaviour. Creating the necessary legislation for informing consumers and promoting access to product information is a task of the state. Consequently, the knowledge of consumers' information seeking behaviour is an essential precondition for legislators. Through a better understanding of behaviour patterns it becomes possible to make decisions about compulsory and voluntary information items and draw up recommendations.

Although information search behaviour has extensive international literature (Newman, 1977; Srinivasan, 1990, Guo, 2003), information seeking on packaging has not been studied yet, and has not been studied in Hungary in great detail at all. Another novelty of this research is the application of computer administered laboratory research, a relatively new methodology. The advantage of this method is that it makes information seeking behaviour accurately recordable, so far unprecedented in literature. This study is also original from a scientific point of view since it regards packaging and labelling as sources of information. Whilst design has been the focus of ongoing scientific interest the informative function of packaging has been an unfairly neglected area in marketing literature. In spite of being a component of the marketing mix and a key factor in decision-making, few scientific works have been devoted to the informative function of packaging.

1.2 Structure and schedule of the thesis

Following the Introduction (**Chapter 1**) the thesis starts with the presentation of international and Hungarian literature (**Chapter 2**) in the area of information search. First information search as a scientific field in general is introduced then based on Stiegler's (1961) information typology the questions of 'why', 'how', 'when', 'what' and 'where' search takes place are elaborated on in detail. When presenting factors affecting information search, two factors, involvement and prior knowledge are studied more in depth, both from a theoretical and a measurement point of view, followed by an introduction of certain aspects of the marketing environment. Then, along with information search models and frameworks and marketing literature on food, come the explanations of how consumers use nutritional information. Finally, the source of information used in this thesis, i.e. packaging is examined, showing its significance and functions with a special emphasis on the informative function.

After the presentation of the theoretical framework, three preliminary studies follow (**Chapter 3**), which have been written to answer questions emerged during the analysis of literature and to prepare a foundation for the main research. The qualitative research uses the method of netnography to explore general label use behaviour, the self-administering questionnaire survey quantifies the topic, and finally the scale testing of two relevant theoretical constructs, involvement and prior knowledge closes Chapter 3.

Structure and schedule of the thesis

The chapter on the research concept (**Chapter 4**) contains the introduction of the theoretical model, the research questions and hypotheses, presents the methodology of the main research and experiment along with the operationalisation of variables involved. The last chapter is devoted to presenting the results of the main research (**Chapter 5**): research questions are answered, the correctness/wrongness of the hypotheses is established and conclusions are formulated. The thesis, unfortunately, must observe limitations in terms of volume, therefore there is some further reading in the Appendix, which help a better understanding of the topic but are not necessarily an integral part of the research.



Figure 2 – The stages and schedule of the thesis Source: edited by the author

The research was started in 2007 with an examination of the literature and carrying out the preliminary studies. A draft thesis was submitted in the autumn of 2010, which was, with some adjustments, adopted. The main research took place in spring 2011 (*Figure 2*).

1.3 Note to the choice of the topic and acknowledgements

The structure of the thesis does not entirely reflect the logical order in which the author got acquainted with theoretical constructs and other authors' concepts, since the thesis started out as the extension of the investigation of organic food consumption habits (Dörnyei, 2007), but it ended up a theoretical framework in its own right. Therefore some thoughts should be noted here about how the topic evolved.

Consuming organic food generally requires consumers to spend considerably more time on choosing products at points of sale since they have to stop in front of the shelves in stores and look for the organic label or certification on the packaging. The attribute 'organic' is a product attribute consumers will only be informed of when reading the label on packaging. After studying the topic more in depth, it became clear that it is not only organic consumers who stop and read labels at points of sale but those too, who want to live and purchase products in a conscious way. The majority of these consumers have been known to take the trouble and get informed before purchasing food, and a very likely source for doing so is packaging. Labelling may indicate whether the product has been genetically modified, whether it is environment-friendly, what its place of origin is, about all of which there are a significant number of studies written in marketing literature. From there, it a straight path led to studying the literature of packaging. One function of packaging is informing its readers, which is made possible by labels. That was followed by studying the literature on regulations concerning food, and finally information search within the purchase process was examined, which explained how the informative function of packaging is used. That is how the focus of this thesis, i.e. information search has been finalised, serving as the theoretical background to the literature of label use.

I am greatly indebted to a number of people, without whom this thesis would never have been born. I thank:

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2 LITERATURE REVIEW

'We are not solving problems with the help of new information but through creating a system of what we have known for a long time.' Ludwig Wittgenstein, Austrian philosopher

2.1 Information search

Traditionally, the place for information search has been the library, the one in charge of information has been the librarian and the science of information has been called library science (Rédey, Neumann, Sütő, 2007). Although the methods of information search are still strongly linked to conventional technologies, this exclusiveness has been loosened since the appearance of information technology. Nowadays, in information science there are two specific fields to be distinguished. One is **information retrieval** (IR) whose questions are dealt with by computing science, in a way that it uses information technology to develop information retrieval, methods, tools, algorithms and systems. Its subject is the retrievability, representation and storage of potential information and the technology of searching, filtering and imaging. **Information search** (IS) researchers, on the other hand, usually like to describe themselves as belonging to social sciences and use a library science approach. Their goal is to explore human information behaviour taking cognitive structures and a task-oriented context into account.

The primary framework of this study is that of information search instead of information retrieval. The word 'information' is of Latin origin and means 'notification', 'news', 'message', 'announcement'. The concept started to change as of the 1950s as several areas of science started to use it, such as cybernetics, biology, psychology, communication theory, linguistics, semiotics, game theory, coding theory, management theory and system theory. In our definition, *information is the basic unit of information search* and *means the data and news which for us reduces lack of knowledge*. Consequently, *information search means an activity whereby relevant data in connection with a problem emerged are explored*.

Information search

2.1.1 Information search as a scientific area

Information search as a **scientific area** was introduced in 1948 at a conference hosted by the Royal Society entitled *Scientific Information Conference* (Wilson, 1999). The drive behind this conference was a need to develop reliable methods which lead to directly applicable results in the practice of library and information science. The novelty of this approach was that it explored information search behaviour through research into attitudes, character types and real-life situations.

In library and information research literature there are a number of information search studies and researchers. First and foremost the names of Wilson (1999), Ellis (1989) and Kuhlthau (1991) must be mentioned.

While earlier research focused on *how* users search for information instead of *why* they do so, Wilson's (1999) model – considered to be a pioneering theoretical construction – defined and distinguished the concept of information need from information search. In Wilson's view, an information user must be regarded as an individual unit and the role information plays in a user's everyday life and work must be looked at. The model highlights information related behaviour in the context of the individual's environment, social standing, physiological, emotional and cognitive needs. This model, although based on earlier empirical research, is still *a priori* a theoretical construction identifying essential elements, i.e. information need, information search, information exchange and information use. Based on the model, in the broadest sense communication theories also have a role to play in information research, in a narrower sense information research studies the questions of general information search behaviour, while in its narrowest sense it models one single situation. According to the model, when studying the narrow sense the environment in which it is embedded in has to be taken into account.

The other model, whose novelty is that it explores common information seeking patterns, focuses on the subprocesses of information behaviour (Ellis, 1989). Ellis' work is significant also from a methodological point of view as he applied the well-established inductive method to develop his theories and models in social sciences. He distinguished six characteristics of information seeking activities:

- (1) starting,
- (2) chaining (references from an initial source are followed),
- (3) browsing (semi-directed or structured search),
- (4) differentiating(filtering sources and contents),
- (5) monitoring (information search in order to be up-to-date),

(6) extracting (identifying, selecting and checking relevant materials, finishing search).

Kuhlthau's (1991) model of Information Search Process – based on empirical research of two decades – is also a process of six stages. The model introduces users' experience during information seeking along three realms: affective (feelings), cognitive (thoughts) and physical (actions). Using these realms makes it easier to get a fuller picture of human information seeking behaviour.

	Initiation	Selection	Exploration	Formulation	Collection	Presentation	Assessment
			Confusion				
Feelings	Uncertainty	Optimism	Frustration	Clarity	Sense of direction	Satisfaction or	Sense of accomplishment
			Doubt		Confidence	Disappointment	
Thoughts	vague		→	focused	Increas	ed interest	Increased self- awareness
	Seeking	relevant inf	ormation	Seeki	ng pertinent in	formation	
Actions		Exploring		→	Documenting	-	-



According to the model, thoughts which are unclear and vague become more specific and certain at the end of the process. Feelings of anxiety and doubt transform into certainty, while on the level of action as the seeking process develops, more and more topic specific results are found (*Figure 3*). The search process is made up of the following six stages:

- (1) Initiation: a person first becomes aware of a lack of knowledge. Their task at this point is simply to recognize a need for information. Thoughts focus on contemplating the problem, understanding the task ahead and linking it to earlier experience and personal knowledge. The dimension of action means talking over the possible solutions of the problem. Uncertainty and apprehension are feelings often experienced at this stage.
- (2) Selection: the task is to identify the general area, topic or problem and select the method of study. Recognising the area results in increased optimism and an urge to in fact start search process. If, however, selection is delayed, feelings of anxiety are likely to intensify, until selection is made. A characteristic action at this stage is discussing it

Information search

with others, identifying alternative areas in order to make the searched area comparable.

- (3) Exploration: the task is specific information search in order to enlarge individual knowledge in the area. It is the most challenging stage of information search. Thoughts point to one specific direction within the general field and the sufficient amount of information starts to be amassed, which may result in forming a personal opinion. On the level of actions, new information is identified, read and related to prior knowledge. Many a times it entails the collision of different and incompatible information. Feelings of uncertainty are frequent while doubt and a feeling of inadequacy for search increases. A lot of users give up on the search altogether at this point.
- (4) Formulation: it is frequently a turning point in the search process. The task is to create a focused perspective out of the information accumulated. Search becomes increasingly personalised. Thoughts point to establishing a common denominator, a focus e.g. a general pattern or a guideline. The four criteria ("What am I trying to solve?"; "How much time do I have for it?"; "What am I personally interested in?"; "What information is available to me?") predominant at the selection stage may surface again. During this process, at level of feelings uncertainty fades and confidence increases.
- (5) **Collection**: information search is at its most efficient at this stage. The task is to gather information in this specific topic as the general area is no longer of interest. Interest grows, uncertainty disappears.
- (6) Presentation: The task is to finish the search and to shape knowledge in a way that is easy to use and explain to others. Feelings of satisfaction and relief are common. Thoughts proceed on to formulating a personal conclusion while going to look for information relevant for introducing the topic and increase reliability

2.1.2 Information search in psychology

Understanding information search has been most extensively studied by cognitive psychology amongst social sciences (Eysenck, Keane, 2003). Cognitive psychology studies human individuals as systems processing information and describes the mental processes of perception, memory and information processing

in order to explore how individuals acquire information, make plans and solve problems.

Information search is generally understood as part of problem-solving thinking, or as a problem-solving process. This cognitive process involves thinking, perception, memory, identification and problem-solving skills (Ingversen, 1996). The individual's psychological attitude is highly relevant in the search process. Everybody has their strong individual character which defines their own mass of emotions and knowledge. It is debatable, still, somewhat likely that personal traits may be linked to the ways information is searched (Pajor, 2006).

Research into information search has been highly popular with psychologists for over two decades and this popularity resulted in the creation of several models. These models have reflected the worldview, research field and skills of their respective researchers and contain the components they thought most relevant from an information search point of view. All this has resulted in the creation of models with emphases on cognitive, social, socio-cognitive or organisational aspects. Social models, for instance, treat a user as a member of society and a group and they attribute user questions and information needs to the user's social environment. Organisational models, on the other hand, underline the fact that the one who asks works within an organisation, therefore the type of information needed will be closely related to the type of organisation.

According to Solomon (1997) and Kuhlthau (1991) information search is both a cognitive and an emotional activity and since individuals' search patterns vary, the two may not manifest themselves to the same extent. Those who attribute an excessive import to their own personality will search for little information and will be confident enough to draw conclusions based on very few facts. On the other hand, others will draw up a search strategy, or make a spontaneous search (Pajor, 2006).

Cognitive psychology identifies seven key factors (sensation, perception, attention, memory, learning, imagination and thinking) which are essential in human information processing (Eysenck, Keane, 2003). Information search starts out of the individual's initial subjective opinions and expectations, or initial knowledge as it is also referred to. Perceiving information launches the process, which means information is picked up from the memory or from the external environment. The problem's appropriate import and assumed solvability is also needed. The individual must be able to gather, process, store and code all the information. If they are committed and motivated enough, then information search may ensue.

Information search

Then comes perception, interpreting the information, followed by attention in order to filter relevant information out of the large amount of information amassed. In order that the information can be used later, it is important to store and retrieve it in the decision making process, which will be a memory task. The mass of information is processed by the short-term and long-term memory. Short-term memory makes it possible to remember an item of information without repeating it for a couple of seconds. Long-term memory has a practically infinite capacity, both in terms of the amount of information and the time of storage. It is primarily repetition that makes it possible to store a message and retrieve it consequently, where repetition is constantly remembering the information and linking it to prior knowledge. Coding is also of key importance since storing the symbolic meaning of the data makes long-term associations possible. But all this cannot happen without learning. Storing means giving structure to and elaborating on the knowledge acquired so that it is retrievable at a later point in time. Learning is essential when storing, assessing and categorizing information. It is important to note that information stored by the brain is not fixed but it modifies through time in which imagination has a part to play. Finally, retrieval refers to the transformation of a long-term memory item into a short-term one, in order that it can be used in decision-making. Information is of no real consequence without thinking, or the process of conclusions and problem-solving. The level of information acquired until decision-making as expressed by real knowledge is all the information one in actual fact possesses at the moment of decision-making.

2.1.3 Information search in marketing

Deciphering the behaviour of individuals or consumers has long been a goal of the science of economics and of marketing science more precisely. A consumer behaviour research and marketing oriented company's main goal is to explore consumers the best possible way since they want to know how consumers will behave, what they will think and what the course of their future action will be. It is vital for them to be in possession of thorough knowledge about consumers' product choice in order to serve consumer needs the most perfect possible way and so maximise profits and achieve a competitive advantage.

Consumer information search is the basis of all decision to purchase and all choicerelated behaviour. Information search as part of the purchasing decision-making process has been in the spotlight in marketing literature since the early 20th century

and has been extensively studied in books on consumer behaviour (Copeland, 1923; Katona, Mueller, 1954). On this topic a number of analyses have been published (Newman, 1977; Guo, 2003).

In the definition of consumer behaviour *information search is the type of* consumer behaviour in which relevant data are gathered about a product and its usage in order to satisfy a need in the best possible way.

Consumers conduct a reasonable amount of information search and choose the alternative which seems the most advantageous – the most appropriate for their goals, preferences and means – from among the options their search has resulted in. Despite the need from the consumer side to have access to the most possible information, **perfect consumer knowledge** – which means knowledge of all information needed to make each decision whilst bearing one's own preferences and financial means in mind – is, unfortunately, only a theoretical option. Consumers may endeavour to achieve it but in fact their decisions will be made in possession of a limited amount of information, and uncertainty will prevail in some variables relevant to their decision. The reason for it is that information relevant for making a decision cannot be regarded as free of charge: it requires time, money and a mental and physical investment, too.

AIDA I	Model - Strong	(1925)	Lavidge, Steiner Model (1961)	DAGMAR Model - Colley (1961)	McGuire Model (1969)
ATTENTION	ATTENTION	ATTENTION	AWARENESS	UNAWARENESS	EXPOSURE
\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
INTEREST	INTEREST	INTEREST	KNOWLEDGE	AWARENESS	PERCEPTION
\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
DESIRE	DESIRE	EVALUATION	LIKING	COMPREHENSI ON	COMPREHENSION
\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
ACTION	CONVICTION	DESIRE	PREFERENCE	CONVICTION	AGREEMENT
	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
	ACTION	ACTION	CONVICTION	ACTION	RETENTION
			\checkmark		\checkmark
			PURCHASE		RETRIEVAL
					\checkmark
					DECISION
					\checkmark
					ACTION

Figure 4 – Early illustrations of purchasing decisions in marketing Source: chart edited by the author Information search

Information search is thought to be a part of the purchasing decision process in marketing science (Bauer, Berács, 2003). Several theoretical constructions have been created in marketing theory to model purchasing decision processes (Figure 4). The first such model is **AIDA** (Strong, 1925) with strong roots in psychology introducing purchasing decisions with special reference to how consumers are influenced. It is about attention raising interest, which raises a desire to possess which then is linked to a decision through will, which results in action, i.e. purchasing. To put it simply: raise attention, maintain interest, arouse desire and generate action. A key factor of this process is to raise attention in a way that it interprets desire as the most important drive of action, through the rousing of which purchases are easily facilitated. This model is commonly used in advertising to explain how purchases can be influenced. This desire-focused approach, however, does not entirely explain purchases any more as several researchers have demonstrated. Purchasing decisions have become more intricate and products more complex: therefore the model no longer served to explain purchasing decision processes and emphasis was placed from emotions to the whys. In DAGMAR (Colley, 1961, Defining Advertising Goals for Measures Advertising Results) and Lavidge and Steiner's (1961) model a purchase is arrived at through understanding and persuasion. The aim of the model is to make consumers understand what important features the product has and why it is worth purchasing. The goal is to stress product advantages, to emphasise consumer advantages and meet preferences according to needs. Other than these two models, there exist some more theories (see McGuire, 1969) to understand purchasing decisions. These early theories are more of a help to advertising and sales experts so that they transmit products and information about them to consumers in an appropriate manner. They do describe some affective components of the purchasing process but miss out on identifying key factors.

A widely accepted model of understanding purchasing decisions is a theoretical framework describing the decision-making process which focuses on consumer actions instead of emotions. A purchasing decision involves (following the order of mainstream consumer behaviour literature) problem recognition, information search, evaluating options, choice and post purchase experience (Hofmeister-Tóth, 2003). According to the model consumers must recognise a need or a problem to be satisfied or solved, search for information involving internal and external search and selecting stores and products before making their purchasing decision. After that they evaluate options, make their choice (purchase) and then comes feedback, the post purchase experience. This theory is widely appreciated due to its easy-to-understand nature but fails to give a proper description of the purchasing process.

Engel, Blackwell and Kollath (1973, cited by Bauer, Berács, 2003) in their **consumer decision model**, as opposed to earlier models, define the process as a feedback system, thus all subprocesses affect the eventual purchasing decision, which in turn influences individual subprocesses (*Figure 5*). The model is closer to reality than hierarchical approaches, and it is clearer and more applicable in practice than some theories created in the 1970s (see Hofmeister-Tóth, 2003).



Figure 5 – Engel, Blackwell and Kollath's (1973) consumer decision-making model Source: Bauer, Berács, 2003

2.1.3.1 External information search

In marketing literature information seeking has two phases: internal and external information seeking. *While internal information search is about gathering all relevant information stored in the memory, external information seeking means gathering information from external sources, other than the memory,* which may be an advertisement, friends or data displayed on product packaging etc. (Bettman, 1979).

Although a clearly distinctive line cannot be drawn between the two types of information seeking, this study will limit its research to the topic of external information seeking since – as opposed to psychology – it is a more interesting field for marketing science and a more practical area in real life for the information provision practices of companies.

2.1.3.2 The dimensions of information search

Information search

Information seeking research provides various solutions for operationalising information seeking (Newman, 1977). Researchers have developed several methods to express the measure of seeking. They have measured the number of stores visited, how many times a customer has looked around a store before purchasing, the number of visits to the place of purchase before the date of purchase, time spent in a shopping mall, the length of time spent on making a decision, the number of brands evaluated as alternatives by consumers, the price range contemplated and the number of information types used. To explore information seeking a number of research **methods** have been used, the most frequently used ones have been surveys, field experiments, laboratory experiments, interviews and protocol analyses (Guo, 2001).

The operationalisation of information search is easily conducted when based on Stiegler's (1961) information seeking paradigm. In the four dimensions of replies given to questions of what, when, where and how, information seeking becomes measurable and comparable. A fifth dimension, "why" may be added to the first four (*Figure 6*):



Figure 6 – The dimensions of information search based on Stiegler (1961) Source: based on Stiegler (1961)

The question of "where?" is answered by identifying information sources frequently in the focus of information seeking research. According to this research consumers' information sources involve the media (magazines, newspapers,

television, radio), other people (friends, store assistants, experts), stores (stores, catalogues) and personal experience (trying a product) (Peterson, Merino, 2003). The answer to the question of "**what is being sought**?" may be on the one hand the information itself, or the product about which the information is sought. Research into the type of information sought includes research into positive and negative information contents. On the other hand, if the object of search is the product itself, research varies from looking at brands or products and durables or FMCGs. **How** consumers seek for information has also been studied from a number of aspects: information seeking may be a leisurely activity and a long-term interest in a product or service (Holbrook, Hirschman, 1982; Bloch, Sherrell, Ridgway, 1986).

2.2 Theoretical models explaining information search

The most widespread theory for explaining the **whys** behind consumer information seeking is that of the economics of **Information Approach Model** (Stigler, 1961; Nelson, 1970; Avery, 1996). According to this model consumers will look for information up to a point until which their benefit remains higher than the cost of information seeking. If, for instance, protein content is important for a consumer, they will make a much bigger sacrifice when choosing a product and will be willing to read the product information on packages.

The costs incurred are studied by **Information Seeking Cost Theory** (Guthrie et al., 1995; Russo et al., 1986). Russo et al. (1986) in their research list three types of costs. In order to reduce those, they suggest summary charts to be used as using them results in the lowest possible information seeking cost:

- (1) **Collection effort**, as understood by the time and effort while collecting relevant information, which in practice means collecting the information found on products in-store.
- (2) Computation effort and arranging, categorising and evaluating collected data.
- (3) **Comprehension effort** is needed to interpret the pile of arranged data and convert them so that they can be used.

Consumers tend to assign different relative importance to different information contents. **Prospect Theory** explains this, studying how the negative/positive

Theoretical models explaining information search

outcome of a choice is evaluated. According to research the assumed value of loss is higher than that of gain (Kahneman, Tversky, 1979). In this case it means that in the case of a potential negative outcome consumers will look for information more intensively than in the case of a potential positive outcome (Burton, Andrews, 1996). If a label says that a harmful disease can be evaded using the product, it will raise more attention and consumers will go on looking for information longer than if the label only highlighted the product's advantages.

However, it is not enough to notice it, but input information must be processed. The **psychological models of information processing activities** consist of attention, getting information and coding it (Cole, Gaeth, 1990; Cole, Balasubramian, 1993; Moorman, 1990; Moorman, 1996). Research has shown that information seeking is not only influenced by attitudes and preferences but also the skills to decode received information. Consequently, it is suggested that consumer information surfaces should be as user-friendly as possible.

Consumers' information seeking is explained by the Elaboration Likelihood Model (ELM), or the theory describing the relationship between information processing and attitude change (Petty, Cacioppo, Schumann, 1983), in which two routes to consumer persuasion are presented. A central route of attitude change is when consumers deliberately gather and use all information available then evaluate products and brands and develop or change their attitudes. Peripheral route processes, however, do not involve elaboration of information but attitude is developed and changed without consideration. Consumers are not motivated and/or are unable to process information, but their attitudes change due to peripheral signs. Communicating with consumers using the first option requires targeting cognitive structures, while using the latter route requires an emphasis of seemingly unimportant signs (Bauer, Berács, 2003). When providing information and using both routes, it must be taken into account that consumers are not in possession of the same information. What is more, with certain product categories buyers apparently prefer one route to the other and this may influence the way companies provide information. ELM can be expanded to involve label usage (Davies, Wright, 1994; Wright, 1997) and then its advice is that consumers persuaded in the central or in the peripheral route need different types of information displayed on food packages.

Information is at the same time a characteristic of products, on the basis of which **Characteristics Theory** has been created. Instead of looking at a product's usefulness directly, consumers look at the usefulness of a product's characteristics (Lancaster, 1991; Anderson, de Palma, Thisse, 1992; Nelson, 1970). The authors

assume that these characteristics involve search and experience attributes, while Darby, Karni (1973) suggest a credence attribute be added for use, then Bodenstein, Spiller (1998) (cited by Jahn, Schramm, Spiller, 2004) suggest the same be done with Potemkin information (*Figure 7*).

	ATTRIBUTES OF FOOD PRODUCTS					
Z	SEARCH	Attributes are known before purchase	>			
OL	ATTRIBUTES	etc.: Freshness, appearance	netr			
LAJ	EXPERIENCE	Attributes become known after purchase	simr			
RM	ATTRIBUTES	etc.: Taste, date of expity	n a:			
ē	CREDENCE	Due to cost efficiency reasons attributes are only	latic			
Z	ATTRIBUTES	traceable by third party members	form	\mathbf{V}		
OF		etc.: Nutrition	g in			
Ē	POTEMKIN	Attributes can not be detected by anyone at the point of	asin			
ΥP	ATTRIBUTES	purchase only during the production process	ncre			
H		etc.: Animal welfare, fair trade.				

Figure 7 – Information content as a function of the amount of information asymmetry Source: edited by the author based on Jahn, Schramm, Spiller (2004)

One product characteristic of foods is label, transforming experience and credence attributes into search attributes according to Caswel and Mojduszka (1996). Nutrition information is most of the time credence information, and displaying it on the product makes it search information, thus enabling consumers to compare the nutritional values of various products in-store and make an informed decision.

2.3 Factors influencing information search

Information seeking research literature has also studied in depth the factors which influence information seeking. Beatty and Smith (1978) and Guo (2001) set out to gather the relationships between antecedents and information search in a review article summarizing information processing (*Figure 8*). Based on it, seven antecedents affecting information search are differentiated. All of them have been evaluated in terms of the direction of the effect on information search:

- marketing environment,
- situational variables,

Factors influencing information search

- product importance,
- knowledge and experience,
- individual differences,
- conflicts and conflict resolution strategies and
- cost of search.

Bivariate Constructs Bivariate relationship with search Bivariate Constructs Bivariate relationship with search MARKETING ENVIRONMENT KNOWLEDGE AND EXPERINECE Complexity of alternatives + Objective knowledge + / 0 Perceived product differences + Subjective knowledge + / 0 Information availability + Perceived knowledge + / 0 Information accessibility + Perceived knowledge 0 Store distribution - Prior usage of product class purchased 0 Store distribution - Usable prior knowledge 0 Time availability + Prior product class nowledge 0 Time pressure + Past experience - /0 / U alakfu Time pressure + Past experience - Financial pressure 0 Positive experience - Financial pressure + / 0 Satisfaction - Store loyalty/preference - Discrepancy - Price + / 0 Ability - /+ <tr< th=""><th>BIVARIATE RELATIONSHI</th><th>P BETWEEN</th><th colspan="3">N EXTERNAL SEARCH AND CONSTRUCTS</th></tr<>	BIVARIATE RELATIONSHI	P BETWEEN	N EXTERNAL SEARCH AND CONSTRUCTS		
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CONFLICT AND CONFLICT Age - / + Personality - Perceived role (household role) +			Income	- / +	
Personality - Perceived role (household role) +	CONFLICT AND CONFLICT		Age	- / +	
Perceived role (household role) +			Personality	-	
			Perceived role (household role)	+	

Figure 8 – Factors influencing information search Source: Guo (2001)

For example price and information accessibility are clearly in a **positive relationship** with information search, the reason for which may be the increase in

the benefit of search. When the searched product's has a higher price, finding a lower priced product will result in larger saving. Secondly, a more intensive information search will occur as a result of decreasing search cost. For example information accessibility does not increase benefit of search but decreases cost of search therefore consumers search more. The third reason is the first two together, increased benefit of search and decreased costs. It happens when there is enjoyment in the search, which is a benefit as enjoyment decreases the inconveniences of search (Guo, 2001). Negative relationships arise for example from satisfaction with a product or brand loyalty since consumers have no benefit from search as long as they are happy with an earlier choice. A U or an inverted U relationship is found with customers with experience and product knowledge and it shows that search has a maximum (minimum) value. Consumers reduce search effort after a certain level of product knowledge. However, relatively few U relationships have been found between the variables and information search, which may be explained by the fact that in many cases only two levels of the variables were identified.

Guo (2001) arrived at several conclusions after studying the literature of earlier research concerning information search. Search is not only influenced by the above variables, so far unexamined factors may also affect search, such as product category, which explains the differences between research results. In Guo's (2001) view the exploration of further factors could be a future research direction.

2.3.1 Involvement

Several intricate theories and concepts have been created to explain and estimate consumer behaviour, whose basic premise is that consumers actively seek and use information to support their purchase decisions (Bettman, 1979; Engel, Kollath, Blackwell, 1978). However, even if the decision is regarded important, many times purchasing decisions fail to be underpinned by any external information search activity (Olshavsky, Granbois, 1979; Kassarjian 1978, 1981). To resolve this contradiction, the concept of involvement has been introduced, known as an antecedent to information seeking.

Studying involvement was started in the late 1960s (Higie, Feick, 1989), and it continues to be the most researched theoretical concept in the field of consumer behaviour to this day with a still unquestionable relevance. The first step is

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definition (Churchill, 1979), which is far from being an easy task in this topic: there is no single widely accepted definition in literature as yet. The concept of involvement first appeared in social psychology (Sherrif, Cantril, 1947), where it describes *the relationship between I (ego) and an object as a group of beliefs related to the individual*. Later it was understood as *a concept similar to motivation affecting purchasing decisions* (Howard, Sheth, 1969). Within this concept, many regarded it as *the intensity of information processing* (Krugman, 1965). But it has also been put as *the activation level of an individual at a certain point in time, irrespective of stimuli affecting them* (Cohen, 1983, Beatty, Smith, 1987). Others have used it to describe *a general level of interest taken in an object* (Day, 1970). Still others have defined it as an *external state variable raising a certain amount of interest due to a stimulus or a situation* (Mitchell, 1979).

The relationship between motivation and involvement has been widely studied (Gyulavári, 2006), highlighting that the above descriptions will also hold for motivation although motivation is the broader concept. While motivation describes drives affecting independent behaviour which potentially move an individual from a present state into a desired one (Bettman, 1979), with involvement these drives only start to operate and effect change because of a certain stimulus.

According to one of the most widely used definitions of involvement it is "a person's perceived relevance of the object based on inherent needs, values and interests" (Zaichkowsky, 1985). Highlighting perceived relevance is important as it does not mark actual involvement but it is the respondent's general subjective feeling or personal relevance. The advantage of this definition is that apart from objects it also applies to advertisements, products and purchase decisions relevant for marketing.

Andrews, Durvasula and Akhter (1990) broaden their definition. Involvement in their position is "an individual, internal state of arousal with intensity, direction and persistence properties", in whose centre is the consumer. In the authors' understanding an individual is not directly involved in objects, advertisements or situations but their internal state of arousal results in a reaction to stimuli which may be an ad, a product or an activity.

In this thesis the following definition of involvement is found the most appropriate: an individual, internal state of arousal, perceived relevance based on inherent interests, values and needs with intensity, direction and persistence properties and in whose centre is the consumer.

2.3.1.1 Types of involvement

The first categorisation of involvement comes from Houston and Rotschild (1978), who differentiated it on the basis of its **intensity**. In their view involvement can either be situational (or momentary) or enduring.

Situational involvement points at something irrespective of the direction of interest, which increases interest only temporarily or only in a certain situation (Houston, Rotschild, 1978). Even though the importance of situational involvement has been highlighted several times (Belk, 1974), emphasising that it is a mistake to arrive at any conclusion concerning consumer behaviour without taking situational factors into account except if the consumer's characteristics are so dominant that they exclude any situational effect, situational involvement has remained a relatively neglected field (Quester, Smart 1998). There are three types of situations affecting consumer decision (Lai, 1991): communicational situation, purchasing situation and consuming situation. Nevertheless, the impact of the situation may vary from research to research (Quester, Smart 1998, Belk, 1974), which can be explained by the methodological problems of situational research. Frequently, situation has no precise definition (Hornik, 1982). Secondly, in an actual purchasing situation researchers are not in control of each and every variable so they create fictitious situations in most research, which can vary from one-sentence to paragraph long descriptions, explaining the mood, plans and goals of consumers (Bonner, 1983). The general view is that using situational factors on their own is sometimes inadequate and that they should be combined with something else.

Enduring involvement is related to an individual's past experience about a product and the values they attach to a product. Extending the concept, (Bloch, 1981) enduring involvement is a stable and constant phenomenon, present for the individual on day-to-day basis, which means an ongoing and long-term interest. Higie and Feick (1989), based on their earlier research, regard enduring involvement a variable differing through individuals, which means belonging to an object or an activity (*personal relevance*). Enduring involvement basically shows the extent of an individual's self-image linked to an object or activity or that of joy gained from that object or activity. Numerous studies have examined enduring involvement (Higie and Feick, 1989). Some studies have looked at involvement linked to product categories, e.g. for cars (Bloch, 1981) or clothes (Tigert, Ring, King, 1976). Others have investigated extreme enduring involvement or to put it another way, fanaticism, in topics such as jazz music (Holbrook, 1987), weightlifting (Lehmann, 1987) and horse riding (Scammon, 1987). A comprehensive analysis of this latter research allows the conclusion that the

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components of enduring involvement include self-expressive and hedonistic features among others (Higie, Feick, 1989), which lets us assume that many times objects are used to establish and express self-esteem (Csikszentmihalyi, Rochberg-Halton, 1981).

When categorised according to its **direction**, it may apply to the individuals themselves, the object or the activity and some may wish to add response involvement based on the outcome of involvement, which may not only designate a purchase decision but information search or rumour (Richins, Bloch, McQuarrie, 1992).

Personal involvement means attached interest, value or need motivating the individual towards something. An example for that is Lastovicka and Gardner's (1978) research, in which they prove that the same product evokes a different level of involvement in each person.

Physical involvement as an umbrella term means an attachment to an object or brand which receives a greater interest or distinction by a consumer. The object can be an advertisement where high involvement would mean the relevance of the advertisement, i.e. that the recipient is directly affected by the message and therefore is motivated to respond to it (Petty, Cacciopo, 1981). Another type of physical involvement is **product involvement** (Howard, Sheth, 1969; Hupfer, Gardner, 1971), which results in a more thorough perception of the relevance of the product and its different properties. What follows form that is that high level of involvement will go hand in hand with deeper commitment to brand for instance. Product class research tended to put the emphasis on the product and the extent to which it satisfies consumer needs or matches consumers' values.

Purchase involvement means involvement in making a purchase decision and it describes the level of information search and time spent when making the appropriate decision (Clarke, Belk, 1978; Greenwald, Leawitt, 1984). Purchase involvement and product involvement are two different approaches: buyers little interested in washing machines would show high involvement when purchasing a washing machine, which allows us to conclude that product involvement is the herald of purchase involvement (Mittal, 1989).

To sum it up, involvement has several widely recognised types (Drichoutis, Lazardis, Nayga, 2007), out of which the most widely used ones are PDI (purchase decision involvement), AMI (advertising message involvement), SI (situational



involvement), PCI (product class involvement) and RI (response involvement) (*Figure 9*).

Figure 9 – Types of involvement Source: edited by the author

2.3.1.2 Framework for involvement

In the literature of involvement besides discussing the individual involvement types, the concept of involvement is systematically introduced, too, as a whole. Houston and Rotschild (1978) are amongst the first to make a model, in which they group the consequences of involvement in the pre-, in- and post-search phase using the **Stimulus-Organism-Response (S-O-R) theory** from psychology. The model analyses involvement in terms of its direction and intensity, presented below with Gyulavári's (2006) illustrative examples (*Figure 10*).

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	DIRECTION OF INVOLVEMENT					
		PRODUCT CATEGORY	SHOPPING			
VOLVEMENT ME	ENDURING	"Books mean a lot to me () if I could not read my life would be much emptier () I regularly visit book fairs."	"I like buying books () the process itself, when I choose books on the shelves and I sit down to dip into books () I prefer old fashioned book shops where the scent of books can give shopping a unique atmosphere."			
CHANGE IN IN' IN TI	SITUATIONAL	"I do not read so much, as I simply do not have time for it, but I have had a partner who was a book worm and when I wanted to buy a book to him for his birthday, I did not want to make a fool of myself buying a poor or unsuitable novel."	"I do not like shopping, but as he was with me I enjoyed every minute of it and I wished it could have lasted for hours."			

Figure 10 – Examples for types of involvement Source: Gyulavári (2006)

Andrews, Durvasula and Akhter (1990) offer a broader conceptual framework of involvement, describing it in terms of intensity, direction and persistence (*Figure 11*).

By involvement **intensity** the authors mean the degree of arousal with respect to the goal-related object. Low, high and moderate levels of involvement can be distinguished, but these are not very often used in experimental research (Krugman, 1965). The **direction** of involvement refers to the target (issue, product, advertisement), which is dissimilar to cognitive or behavioural activities followed by a stimulus as that will be a consequence of involvement. Involvement **persistence** refers to the duration of the involvement intensity, i.e. how long an individual is interested in a certain area. A 'ski-bum' or a 'health-nut' will be involved longer in their respective issue than those who just want to purchase a pair of skis or a carton of healthy yoghurt. Situational, short-term involvement is expected to decline after the goal has been achieved or the situation has changed. The novelty of the model is the inclusion of antecedents and consequences in the framework. Involvement does not occur without any **antecedents** (needs, goals, values, purchase opportunity, personal involvement, risk), which help identify the direction and the object of a consumer's involvement.

High involvement is more likely if high risks, high costs, or social pressure is associated with the decision or it is related to self-image (Verbecke, Vackier, 2003). The **consequence** of involvement is a cognitive or behavioural change affected by involvement. This may be a change of behaviour, information search or persuasion. The consequence of enduring involvement is ongoing information
seeking in connection with an object or activity (Verbecke, Vackier, 2003). Consumers with an enduring involvement in a product will usually follow advertisements, newspapers in that topic, listen to all relevant information and forward it. Consumers with a high involvement level will often become opinion leaders in a certain product category or activity because of the high level of information they possess.



Figure 11 – A framework for involvement Forrás: Andrews, Durvasula és Akhter (1990)

2.3.1.3 Measuring involvement

Numerous **methods** have been developed for measuring involvement (Sheth, Venkatesan, 1968; Lastovicka, Gardner 1979; Wright, 1974), including:

- rank-ordering,
- assessment on a concentric scale, when respondents rank dozens of products according to perceived relevance,
- measuring the responses 'I don't know' related to how much a brand is known,
- Likert statements, referring to a certain topic. E.g. a five-point scale measuring attention paid to an advertisement.

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Scales measuring enduring involvement specifically, include those developed for a given product category, e.g. for cars (Automobile Involvement Scale, Bloch, 1981) or fashion (Fashion Involvement Index, Tigert, Ring, King, 1976), which are hard to use in other areas, still, they form the basis of developing a more general, and a reliable and valid scale to measure enduring involvement. There exist, however, more general indices applicable to any product category, e.g. one named *Components of Involvement (CP)* (Lastovicka, Gardner 1979) assessing the dimensions of familiarity, commitment and normative importance. Laurent and Kapferer (1985) have created a construct defined by four dimensions (product importance, perceived risk when purchasing a product, symbolic value and the hedonistic values of the product).

However, these **measurement methods are controversial**, and it is difficult to pinpoint if that is caused by the various measurement or behavioural differences (Zaichkowsky, 1985). Several single-item measures have a low validity and fail to show the full concept of involvement, whereas the internal reliability, stability and validity of multi-item scales remain frequently untested. To resolve this issue, Zaichkowsky (1985) established a Personal Involvement Inventory (PII) scale, in which consumers can directly evaluate the perceived importance of a product on a 20-item semantic differential scale. This scale is the most popular amongst involvement scales and has the highest citation count.

More than one researchers have worked on developing Zaichkowsky's (1985) PII scale. McQuarry and Munson (1987), when creating their RPII (Revised Product Involvement Inventory) and OPII scales concluded that several items on the PII scale measures attitude instead of involvement; that some statements' wordings are too complicated and that there are no items related to self-expression and risk, with which they completed the scale. Higie and Feick's (1989) scale (Enduring Involvement Scale) is basically built on the RPII and PII scales and its characteristic feature is that it focuses on the motivation, self-expression and hedonism components of enduring involvement, which may be the predictors of opinion leading and information seeking.

Mittal (1989) argues that the PII scale refers more to product involvement and is not suitable for measuring purchase involvement, so Mittal developed a purchase development involvement (PDI) scale to measure purchase involvement. It contains four statements concerning purchase which respondents evaluate on a semantic differential scale.

Goldsmith and Emmert (1991) compare the different measurement scales and opine that Zaichkowsky's (1985) scale shows excellent internal cohesion, Laurent and Kapferer's (1985) scale is valid, but has low internal cohesion and Mittal (1989) fares well in terms of both length and validity.

2.3.2 Knowledge and experience

The drive of information search is the dataset stored in the memory, or prior knowledge (Brucks, 1985). Supposedly because the topic seems to be of a simple nature, literature offers relatively few definitions for it (Flynn, Goldsmith, 1999). The definition for prior knowledge used here, in accordance with Engel, Blackwell and Miniard (1993) is **a mass of information stored in the memory**.

2.3.2.1 Levels of knowledge

While knowledge was earlier considered to be a unidimensional variable, later it was described as a complex system depending on the information content stored in the memory (Brucks, 1986), which resulted in the differentiation of various knowledge types. An early typology of knowledge comes from educational psychology (Bloom et al., 1956), where the authors distinguish the '**knowledge of specifics**' (terminology and data), knowledge of **methods** (how to use knowledge on specifics: rules, categorisation, methodology) and **general**, abstract knowledge (principles, generalisation, theory).

Later a widely recognised **dichotomy model** distinguished declarative knowledge from procedural knowledge. Declarative knowledge refers to concepts, objects, or events, procedural knowledge means rules for taking action (Anderson, 1976).

Brucks (1986) in her article entitled 'A Typology of Consumer Knowledge Content' describes the following knowledge areas based on declarative and procedural knowledge:

- 1. **Terminology** the knowledge of terms used within a domain.
- 2. **Product Attributes** the knowledge of product attributes needed for evaluating a brand. It includes attributes that a person would use in making a decision and also those that they would not use but are aware of their existence.
- 3. General Attribute Evaluation overall knowledge of attribute levels.

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- 4. **Specific Attribute Evaluation** knowledge of attribute levels needed for making a decision.
- 5. **General Product Usage** knowledge on how to use a product including the rules of its usage.
- 6. Personal Product Usage memories of earlier usage experiences.
- 7. Brand Facts knowledge on how a brand performs on an attribute.
- 8. **Purchasing and Decision Making Procedures** includes personal experience and normative rules concerning the purchase process.

Knowledge categorisations in marketing literature most frequently include those along the lines of knowledge depth, type, or area. Not surprisingly, in terms of knowledge **depth** expert and novice levels are differentiated. Sometimes a moderate level is added to that, indicating a level in between the first two. Varying levels of knowledge depth will result in varying consumer behaviour, e.g. when it comes to information processing, experts' processing of basic issues is fuller, as they make better use of their prior knowledge and are able to link new information better to that (Chi, Glaser, Rees 1981).

Knowledge used in marketing is usually related to products, product classes or brands. The concept of product knowledge (long in the focus of research in the 1980s) is considered to be an important factor of information processing (Raju, Lonial, Mangold, 1993), and four levels of it are distinguished (Peter, Olson, 1996):

- product class or category knowledge,
- product form knowledge,
- brands knowledge and
- models knowledge, summarising consumer knowledge about attributes and benefits.

In a study on the level of product knowledge (Russo, Johnson, 1980), knowledge was categorised in terms of being linked to brand or attributes. Based on this, a distinction can be made between **generic product knowledge** referring to the ability to recognise a product and identify attributes, dimensions relevant when choosing a product, and **individual product knowledge**, meaning the knowledge of the attributes of a certain product (e.g. price, taste or durability) (Hastie, 1982).

According to the most popular and most widely accepted view three types of consumer knowledge are to be distinguished (Brucks, 1985; Raju, Lonial, Mangold, 1993; Park, Lessig, 1981; Kanwar, Olson, Sims 1981; Marks, Olson 1981).

- (1) **Subjective** knowledge a consumer's perception of their own knowledge.
- (2) **Objective** knowledge the actual amount, type and organisation of knowledge.
- (3) Usage experience, also known as self-perceived knowledge referring to purchase or usage experience.

These three types of knowledge have been interpreted and measured in various ways. In one concept subjective knowledge is a combination of knowledge and self-confidence, thus it affects information processing differently than objective knowledge does (Park, Lessing, 1981). Raju, Lonial and Mangold (1995) argue that both subjective and objective knowledge are a consequence of experience therefore it plays an important role in making a purchase decision. In their study, wherein they compare the three types of knowledge they prove a correlation between knowledge types, which partly underpin earlier research. They explain differences by the product categories examined, as for instance with non-durables purchased very often usage may increase objective knowledge and self-confidence and so subjective knowledge, too. With durables such as VCRs usage does not significantly increase objective knowledge and therefore there is no strong connection between the two.

2.3.2.2 How knowledge affects purchase decision process

The influence knowledge has on information search has been investigated by numerous researchers (Raju, Lonial, Mangold, 1995), but because of their different research results it is hard to establish the actual impact of knowledge. Bettman and Park (1980) and Johnson and Russo (1984) assume there was an inverted U relationship between information seeking and knowledge where those with both a low and a high level of knowledge show a higher external search rate than those with a medium level knowledge who make do with less amount of search.

Raju, Lonial, Mangold (1995), although assuming a positive monochronic relationship between subjective knowledge and information seeking, do not find a significant relationship between the two in their study. When examining the relationship between decision and knowledge they conclude that consumers with a high rate of subjective knowledge are less confident in their decisions. Their conclusion springing from the lack of relationship between objective knowledge and decision is that decision primarily originates in self-confidence instead of actual knowledge. According to a theory, though empirically not yet supported, subjective knowledge gives more of an insight into decision-making processes,

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since it does not only show levels of knowledge but levels of self-confidence, which also affect the decision-making process (Park, Lessing, 1981). In another study comparing subjective and objective knowledge authors conclude that lack of self-confidence causes insecurity and results in less information seeking (Rudell, 1979).

Park and Lessing (1981) have proved that the degree of knowledge affects product evaluation and that consumers with a low level of knowledge rely on functional attributes more than price for example. Others (Rao, Monroe, 1988) also assume that knowledge is in connection with evaluation and similarly to the study quoted above confirm that consumers with a low level of knowledge use extrinsic attributes (e.g. price), while consumers with strong product knowledge use both intrinsic and extrinsic attributes for making a decision. A characteristic example is that novice users use price as the indicator of quality while experts use more, intrinsic attributes for their decisions. Raju et al., (1995) examining the three knowledge types and product attribute importance conclude that the relative importance of intrinsic attributes increases parallel with the increase of all three types of knowledge. As the importance of extrinsic attributes is high with all three knowledge types, extrinsic attributes are used differently by each group with different knowledge levels. Consumers with a low level of knowledge base their conclusions in connection with intrinsic attributes upon extrinsic attributes ('high price goes hand in hand with high quality'), while consumers with a high level of knowledge do not take this for granted and make their decisions with much more consideration. Thus we can say that both novice and expert users identify characteristic attributes and process that information when wanting to purchase a certain product category, though experts do it faster and more fully. Experts know better which product is worth purchasing in a certain field, find it easier to use that product and are able to tell the relevance each attribute and type represents.

2.3.2.3 Measuring knowledge

Various **product categories** have been used for measuring knowledge, including microwave ovens (Bettman, Park, 1980), sewing machines (Brucks, 1985), cars (Johnson, Russo, 1984), VCRs (Raju, Lonial, Mangold, 1995), female jackets (Rao, Monroe, 1988) and camcorders (Sujan, 1985).

The most important **difference** between subjective and objective knowledge and usage experience is that they can be operationalised in different ways. Relatively few researchers set out to decide if measuring objective or subjective knowledge is

more useful (Brucks, 1985). Measuring knowledge is usually done with the help of a self-administering scale, in which the perceived knowledge of a certain product category or area is evaluated. Objective knowledge is measured by a multiplechoice questionnaire where the number of correct answers is indicative of actual knowledge. Usage experience is also measured on a self-administering scale, measuring the opinion of respondents instead of their actual actions, in which usage, ownership and information seeking related questions are answered.

Subjective knowledge may be measured by a single-item (Denisi, Shaw, 1977; Rao, Monroe, 1988), or a multi-item scale (Newman and Staelin, 1972; Raju, Lonial, Mangold, 1993; Selnes and Gronhaug, 1986), most of which consist of 2-4 items and have been reported reliable. Their disadvantage is that they can only be used for one product category and therefore were little used in later research. Johnson and Russo (1984) for example measure information seeking in connection with cars where respondents answer questions about usage, ownership and knowledge on a five-point Likert scale. Brucks (1985) uses sewing machines to measure both subjective and objective knowledge. The author uses two scales respectively. She measures objective knowledge in two steps: first she uses an open question, then a more structured one. Besides, she measures the different types of knowledge (terminology, related attributes) separately. Raju, Lonial and Mangold (1995) measure objective knowledge, subjective knowledge and usage experience with VCRs by multiple-choice questions compiled by an expert for them. Moorman et al. (2004) measure knowledge about food nutrients where subjective and objective knowledge is measured by a scale.

Flynn and Goldsmith (1999) have developed a scale for measuring subjective knowledge. In their view earlier measurements are not reliable as all of them used improvised scales. In their study they recommend a **Subjective Knowledge Scale**, which they test on five product categories for use and which is reliable, has a high level of internal consistency and may be applied for several product categories.

2.3.3 Marketing environment

2.3.3.1 In-store environment

When looking at in-store information seeking one must not forget to take in-store environment and factors into account. Agárdi (2010) distinguishes three factors, i.e.

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store layout, product display type and store atmosphere, which may influence consumer behaviour during purchase.

Store layout affects the route consumers will walk, so it influences their in-store behaviour. Three types of floor plans are mentioned here, one is a *straight* floor plan, which is the most efficient and most frequently used layout in retail stores selling food and FMCGs. This is a method to lead a consumer through a store. As products are displayed in masses, the display opportunities of individual articles are limited which store owners try to make up for through secondary display. A *racecourse* floor plan consists of loops which start at the entrance and lead customers back to the store's entrance. Customers are faced with the most products by this solution. Thirdly, the simplest form of store layout is an *asymmetric* arrangement, which endows stores with a pleasant atmosphere since customers have no fixed routes to follow.

When creating their **in-store product display**, stores aim at serving consumer needs as fully as possible. An article-based concept refers to placing articles targeting the same needs to the same place. Complementing this, stores may use a price-based arrangement. Often there is a vertical product display based on the natural movement of the eyes, where market leading products are usually put at eye-level, while store brands are put lower. This is the most frequently applied practice in food retail. Colour-coded arrangements are more typical for clothes retail stores. Thematic arrangements present a situation or an idea, while with mass product display an extremely high number of goods are amassed in one place.

Store **ambience** has numerous elements such as visual communication, lighting, colours, music and smells in order to stimulate consumers' sensory and emotional reactions and affect their purchase behaviour in a retail space (Agárdi, 2010:293) and is usually the result of the combination of several of those elements. Lighting and light itself affects consumers' mood and makes people want to get closer to a product — a better lit product is more likely to be taken in their hands. Warmer colours also have a friendly effect and encourage consumers to touch the product. Music, apart from being a source of entertainment for them, affects the length of purchase, mostly if it is slow and relaxing. Smells, in addition, promote positive associations with the store.

2.3.3.2 Assortment

When creating an assortment, stores decide on the amount and assortment of articles they want to house based on consumers. Establishing an assortment involves decisions about the **width/range of assortment**, referring to the number of product categories on sale at a retail point and **depth of assortment**, which means the number of articles sold within one product category (Levy, Weitz, 2004). Retail firms optimise their assortment and try to achieve a width and depth of assortment ensuring a higher sales rate, a higher inventory turnover, higher margins and consequently higher profits (Agárdi, 2010).

It is important to look at assortment depth insofar as consumers only know before purchase that they wish to purchase a certain product category but have not settled for a specific brand. **Larger assortments** will result in **stronger preferences**, and increase consumers' sense of utility, since it leaves them with the freedom to choose and reduces feelings of uncertainty if they have looked at all possible alternatives while making their choice and that there is no better option. (Chernew, 2003).

A large selection has numerous advantages for consumers as it offers them an opportunity to find the right product whilst incurring relatively low search costs (Betancourt, Gautschi, 1990). Besides, their feelings of uncertainty are reduced and they are provided with appropriate information. A large assortment makes it possible for consumers to purchase all the products needed in a household in one place while hedonistic and enjoyment values of shopping increase (Babin et al., 1994) and customers are provided with an opportunity of non-purchase activities such as acquiring new information and familiarising themselves with new products.

Research has shown that purchase decisions are negatively influenced by an information oversupply (Malhotra, 1982), and consumers make worse decisions under such circumstances. Other authors have put it more gently, saying information oversupply does not provide that many extra advantages (Jacoby, 1977).

2.4 Information search during food purchase

Food industry is a good example for investigating information seeking, since consumers pay increasingly more attention to what they purchase and consume

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(Lehota, 2001). The fact that consumers care about the type of food they purchase is explained in countries with a higher living standards by a need to stay healthy, health consciousness and an increase in the demand for quality food. Nutrition marketing (Szakály, 2004), the fashion of quality and functional food (Szakály, 2008; Piskóti, Nagy, Kovács, 2006), a long-term concern for the Earth's resources, or environment consciousness as topics exist side by side. Research in this field (carried out with public, scientific and private cooperation) does not only give an account of how consumer behaviours have changed but also gives consumers an increasingly fuller overview of food and eating since the 1970s.

Purchasing food is an activity resulting from biological, social and cultural processes related to self-preservation influenced by biological, psychological, sociological, anthropological, demographical and economic factors. Food consumption patterns vary because of cultural differences: consumers consume food in various ways and for various reasons. While in some societies food is chosen out of a need to preserve heath, in others eating is a way of cultural expression (Wansink, 2005).

Pilgrim's food consumption model (Pilgrim, 1957) is one of the first studies looking at the relationships between food consumption and consumer behaviour, and how consumers evaluate perceived information. The physical, chemical and nutritional attributes have physiological effects, while attitude is formed through economic factors (price, availability, brand), sensory properties (taste, smell, colour) and psychological features (personality, mood, opinions) all serving as the basis of purchase. Lehota (2001) criticises the usage of the time factor, as the model makes limited use of it and argues that relations between the factors are not elaborated enough. **Stepherd**'s model (Stepherd, 1990) focuses on the decision-making process of consumption and looks at the other factors affecting it and it is regarded the improved version of this earlier model. It defines the factors affecting decisions in terms of sensory attributes (sensation, physical effects) and cultural factors (marketing) (Lehota, 2001; Lehota, 2004, Sipos, 2009)..

2.4.1 Types of food and product attriubutes

Foods fall into two categories, i.e. the categories of **cognitive** and **emotional** products (Cleays, Swinnen, Abbeele, 1995; Lehota, 2001). Cognitive products are recognised by their functionality, the motivation to purchase one of them is the

degree of utility. When seeking information and making a decision, the main role is played by quantifiable properties, and this information is processed logically and following rational conclusions. With emotional products the motivation for purchasing a product is emotions, intellectual encouragement and social acceptance, therefore the evaluation of a product is purely subjective, based on invisible attributes. Information processing in this case will be holistic, synthetic, or based on imagery. With rational decisions the attributes of price, ingredients, availability, packaging, selection, health and nutritional values and food safety of food play a prominent role, whereas with emotional decisions status, youthfulness, sportiness and lifestyle may be decisive factors (Lehota, 2001).

INTRINSIC QU	EXTRINSIC QUALITY INDICATORS AND CUES	
FOOD SAFETY ATTRIBUTES foodborne pathogens heavy metals and toxins	PROCESS ATTRIBUTES animal welfare authenthicity of process place of origin traceability biotechnology/biochemistry	TEST/MEASUREMENT quality management systems certification records labeling
pesticide and drog residues soil and water contaminants food additives, preservatives phisical hazards	organic/environmental impact worker safety other	minimum quality standards occupational icensing other
spoilage and botulism irradiation and fumigation other	VALUE/FUNCTION ATTRIBUTES compositional integrity size style	CUES price brand manufacturer name
SENSORY ATTRIBUTES taste and tenderness color appearance freshness	preparation/convinience package materials keepability other	stire name packaging advertising country of origin distribution outlet warraty reputation past purchase experince other
softness smell/aroma other	NUTRITION ATTRIBUTES calories fat and cholesterol content sodium and minerals carbohydrates and fiber content protein vitmaines other	



Caswell (2006) has collected food product attributes and categorised them in a more complex way (*Figure 12*). The author distinguishes two main categories: extrinsic and intrinsic. Intrinsic attributes can be search, experience or credence

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information, while extrinsic information may only include search attributes by nature.

2.4.2 Consumer behaviours in connection with food

In literature models have been created to present information about nutrition and food attributes due to the topic's special nature, but these all differ when it comes to identifying key factors. Researchers use earlier results and various factors from the applied scientific area to explain the processes of information seeking and processing.

Information seeking models for food products include that of Grunert and Wills' (2007), who highlight interest, knowledge, demography and label shape as factors influencing information search (*Figure 13*). In their model the information search phase is introduced with the help of terms from cognitive psychology, i.e. search, find, sense and use. Their model, unfortunately, is too specific, is not empirically underpinned and contains only few factors of nutritional information search.



Figure 13 – A model for nutritional information search Source: Grunert, Wills (2007)

Moorman's (1990) information processing model for nutrition information differentiates skills, on the basis of which understanding may occur (*Figure 14*). No details of factors affecting information seeking are given, only a list of sensory and consumption attributes. This model being not empirically supported, either, gives a rough theoretical framework for understanding information seeking and processing.



Figure 14 – A model of processing nutritional information Source: Moorman (1990)

Whilst exploring food purchase, and realising the importance food has, researchers have lately focused on the issue of involvement (Bell, Marshall, 2002). High level of involvement was earlier considered to be the antecedent of information search of a complicated decision-making situation, yet, everyday food purchasing routine appears to follow a different pattern (Lastovicka, Gardner, 1978, Winter, Rossiter 1989, Foxall, 1993). The reason for this is the low cost of food and the small share it represents in a household's income. If we, nevertheless, take the social and health risks of food purchase into account, involvement will be high for certain consumer segments.

Several studies centre upon measuring involvement with foods. Bell and Marshall's (2002) Food Involvement Scale measures consumers' attitudes to food in a way that the authors reveal processes closely connected to food purchase to consumers (waste management, health, social norms and lifestyle). The scale is valid and reliable but its weakness is that it offers a glimpse into mainly the eating ritual (e.g. how a table is laid) and cannot be generalised for several situations in connection with food. Based on their results we can conclude that consumers differ in their food involvement. Older and female respondents scored more highly on this scale.

Beharrel and Denision (1995) measured involvement with food product categories using Mittal's (1989) PDI scale. In accordance with the results of earlier research

Information search during food purchase

each of the products in the research (jam, bakery products, cereals, dairies, soups, household materials and meat) had a high involvement value.

Verbecke and Vackier (2003) measure involvement for fresh meat products. They apply Laurent and Kapferer's (1985) scale in their research to measure involvement, whose five dimensions, in their view, appropriately covers the construct (*Figure 15*). In spite of the fact that the scale hardly explains 60 % of the variation and has a low Cronbach's alpha, they conclude that meat purchasing is not a purchase of either clearly high or clearly low involvement and consumers cannot be identified as being of high or low involvement



Figure 15 – Verbecke and Vackier's (2003) food involvement model Source: Verbecke and Vackier (2003)

Drichoutis, Lazaridis and Nayga (2007) measure product category involvement related to food purchase behaviour. They look at the relationship between PCI and consumer attributes (price, taste, nutrients, preparation, brand) (*Figure 16*). To measure involvement they formulate attitude statements in connection with food. Their results show that several antecedents of involvement affecting decisions can be identified, which can be useful for marketing decision-makers when establishing their segmentation and marketing strategies.



Figure 16 – Drichoutis, Lazaridis and Nayga's (2007) food involvement model Source: Drichoutis, Lazaridis and Nayga (2007)

2.5 Packaging as source of information search

Several researchers are in unison as far as the increasing importance of packaging is concerned (Ampuero, Vila, 2006; Underwood, 2003, Underwood, Klein, Burke, 2001), also attested by the spread of self-service stores (Bauer, Agárdi, 2000) and constantly growing product assortments – on average there are 67 products allocated to one square metre (Kiss, 2007). The product differentiating and identifying role of packaging is becoming more and more relevant: the only way to stand out from a homogenous mass of products is to have a proper package. Moreover, companies increasingly frequently are faced with a limited marketing budget and are forced to use in-store sales promotion or POS communication tools instead of classic mass media tools. An aspect not to be overlooked is that the

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number of purchase decisions made in-store is on the increase, it is estimated to be around 73 % (Rettie, Brewer, 2000), and there is a tendency of more and more impulse, or unplanned purchases, which has been described by several authors (Welles, 1986; Phillips, Bradshaw, 1993). On many occasions the first and only marketing tool a consumer is faced before purchasing is packaging, therefore instead of advertising it is thought to be the most important communication tool (Behaegel, 1991; Peters, 1994). Packaging reaches every consumer, it is an active player of purchase and is present at the critical moment. Consumers touch it, take it and return home with it, it is present in their everyday lives at the point of sale, on the way back home, and while the product is stored, opened, applied, re-closed and disposed of (Deasy, 2000). Since consumers usually appreciate a hands-on experience more, using packages a more intimate relationship can be built between brand and consumers (Lindsay, 1997).

2.5.1 Functions of packaging

Although the literature enumerates several categorisations of the functions of packaging, most of the sources agree that the main tasks of packages are logistical, marketing and managerial (Robertson, 2006; Prendergast, Pitt, 1996; Sándor, 2006; Rundh, 2005). This study presents a marketing oriented categorisation, elaborating first on logistical and managerial functions followed by marketing ones (*Figure 17*).



Figure 17 – The functions of packaging The functions of packaging

The aim of **storage** is to hold a product together in time and space. The function of **protection** refers to protecting both the environment and the product from environmental impacts such as water, vapour, air, microorganisms, pollution, being hit, shaken or pressed. A package, furthermore, does not only have to meet consumer and store demands but all the needs of the actors of the supply chain. Good packaging helps **distribution**, storage and making better use of floor space while being at the same time practical, cost-efficient and economical.

Western households have become smaller and more independent these days, with more mobile and languid consumers, who are looking out for the easiest possible solutions. Packaging industry must respond to these changes and this is met by the managerial function including **innovation potential**, which often leads to **competitive advantages**. Following a managerial decision the appropriate amount must be sold in the appropriate form thus helping a **relaxed** use. An example for this is the innovative packages of ready-to-eat foods or portions for one. As well as that, society requires **environmentally friendly solutions**, which is about applying recyclable, reusable or self-disintegrating packaging, and the decision about them also supposes management level competence.

In marketing literature, although its importance is starting to be recognised, there are relatively few theoretical works available on the topic of packaging. Early studies focus primarily on the general features and roles of packaging design (Cheskin, 1971; Faison, 1961; 1962; Schucker, 1959), its communicational role (Gardner, 1967; Lincoln, 1965), or how it influences a brand (Banks, 1950; Brown, 1958; McDaniel, Baker, 1977; Miaoulis, d'Amato, 1978). Other studies regard packaging an extrinsic cue such as price or brand and have measured its impact on the quality perception of products (Bonner, Nelson, 1985; Rigaux-Bricmont, 1982). Results show that consumers are more likely to use packaging as an extrinsic features are unknown to them (Zeithaml, 1988). Still other research has concentrated on how consumer attention is raised and evaluated (Garber, Raymond, Jones, 2000; Plasschaet, 1995; Pieters, Warlop, 1999) by packaging size (Wansink, 1996) and the impact of the visual appearance and design of packaging (Mitev, Horváth, 2003).

The marketing function of packaging is communication. Often referred to as the silent salesman, packaging is a means of 'eye-contact communication' as it communicates with consumers through shapes and colours (Sándor, 2006). The consequence of the communication function is to gain consumer **trust**, as they will only purchase the products which communicate product qualities properly and are

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authentic. Packaging is at the same time a **promotion and sales stimulating** tool suitable for transmitting offers and advertisements promoted in other channels — it may be the source of game rules, contacts, and presents. Catching **attention** is key with mass products as they must stand out from the massive merchandise somehow. This is not solely the function of packaging, but product display and shelf arrangements are also responsible for it. The elements of packaging which raise attention have been categorised in a number of studies (Hine, 1995; Ampuero, Vila, 2006; Underwood, Klein, Burke, 2001; Silayoi, Speece, 2007), enabling readers to differentiate graphic and structural; visual and verbal elements. Visual elements include shape and structure, size, colour, graphics, material, typography and text.

Consumers do not only want to purchase a product, but obtain information about them as well, for which the **informative** function of packaging is responsible including both compulsory and voluntary information content found on product covers.

2.5.2 The informative function on food packaging

Product packaging is the source of a range of information about food. The information displayed is governed by legislation and it includes information about ingredients, nutritional and energy values as well as certifications, organisations' logos environment and health related statements, country of origin (Papp-Váry, 2007), and country of destination (Malota, Nádasi, 2007). Besides this essential information enabling them to choose the right food, consumers more and more frequently make their purchase decisions on impulse based on point of sale advertisements (Józsa, Keller, 2008) and packaging. If we regard the informative function (signs, symbols, colours and information) as a decisive source of consumer decision-making, it is important in the marketing and corporate management tool inventory, provided consumers understand background information and do not find it misleading (D'Souza, 2004).

2.5.2.1 Adequate labelling

Ideally for a consumer, the right label is simple and familiar, possibly uses adjectives or images, does not use technical terms, or specific vocabulary. The quality and quantity of information on products' packaging may not be suit each

and every consumer's palate but the general direction is that information displayed should be easy to use and understand for an average consumer and it should help the choice of food (Byrd-Bredbenner, Wong, Cottee, 2000). According to an organisation specialising in environmental labels the basic principles of a good label are: easy to understand, low information cost, voluntary certifications, authenticity, scientific background, abolishing unnecessary commercial barriers, an entire life cycle attitude, support for innovation, keeping administration to the minimum and open discussions looking to agree (GEN, 2004).

From the corporate point of view product packaging and labels should achieve several aims (D'Souza, 2004; Rotherham, 1999; Gulbrandsen, 2006; Jahn, Schramm, Spiller, 2004). First of all it should help the brand to an advantage over competitors, as the appropriate packaging and information content can be a source of competitive advantage. When introducing a new product the label of the right shape and with the right information may present extra costs but it pays back as it reduces salespeople's and consumers' uncertainty regarding quality. At the same time corporate performance improves, an interest of both shareholders and the market. If, for example, a company displays the amount of carbon-dioxide generated in the process of manufacturing the product (if this is a low amount) that product will be a more advantageous product for interested buyers and business partners as that of the company's competitors. Secondly, a label is also a marketing tool affecting demand, stimulating sales and boosting image. A wider range of market can be addressed with its help, a new niche market can be explored and a mark-up can be applied for supplying extra information. For instance companies by displaying the statement 'no experiments on animals' do not only reach a market which they otherwise, without this statement could not have, but they can achieve through consistent and conscious communication policy that the company be assessed in light of this statement. Customers may identify with the statement promoting the formation of an animal friendly corporate image. As soon as competitors start using this statement on their labels, it will function by way of a device for comparison of products: not only does a user become comparable but business partners too become possible subjects for evaluation without any extra cost. It will also be possible to monitor suppliers' business policies and selection from a certain aspect and categorisation will be easier. Based on the amount of protein written on a food label consumers are enabled to compare products. Finally, labels also serve as regulatory tools, which can be used when publishing information within the industry or covering the entire industry. Using labels makes it possible to create pressure, and they also act as voluntary market regulatory tools without state intervention instead of compulsory and possibly stricter regulations.

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2.5.2.2 The definition of types of labelling

As Article 10 of Act XLVI of 2008 on Food provides: '(1) On the packaging of a food to be placed on the market, the labelling necessary for information intended for the consumer – as provided for in specific legislation on the labelling of food – shall appear in Hungarian, in an easily legible, understandable and clear manner'. Moreover, in Article 10 (2) it is stipulated that 'The presentation of the food and the labelling providing information for the consumer shall not mislead the consumer.'

According to the Food Standards Agency in the UK the term food label 'refers to all information on the packaging', including statements, ingredient lists and best before dates (FSA, 2007). According to the Food and Agriculture Organization of the United Nations, one of the biggest specialised organisations of the UN, Food labelling is 'the primary means of communication between the producer and seller of food on one hand, and the purchaser and consumer on the other (FAO/WHO, 2007). Labelling on packaging refers to, from an **advertising** point of view, a communication tool between producer or seller and consumer including all compulsory and voluntary information found on product packaging, which may be brand name and sign and descriptive or classification information.

In **scientific** publications the first definition of labelling is found in Dameron (1944). He differentiates between informative, descriptive and grade labels.

- Informative/Information labelling is 'the practice of marking merchandise, the tags attached to it or the containers in which it is packed for sale at retail with names, marks, descriptive materials, grade designations or other symbols indicating quality (...) and use of the merchandise'. Part of it is a descriptive label, with written or illustrative material designed to inform prospective purchasers about some or all of the characteristics of the product, giving details of quality, desirability and conditions and methods of use.
- Grade labels make it easier for consumers based on some product attribute to compare and categorise a product and usually and a mark, a symbol given by a responsible organisation certifies that the product or company meets certain conditions established out of a specific goal.
- A third type of label is a brand label, including names and symbols which indicate a product's origin, identify producer or distributor and indicate quality in a general sense. Brand label is not presented in this dissertation in greater detail due to the extensive literature there has been written about it.

Using earlier definitions in this thesis the following definition is proposed: information content found packaging, also *known as labelling is a communicative tool between producer/distributor and consumer, including all compulsory and voluntary information content on or next to product packaging, amongst which a brand name and sign, descriptive or grade information can be distinguished.*

		OBLIGATION OF WHAT TO DISPLAY OBLIGATORY VOLUNTARY			
	BRAND NAME	Name	Branding		
		Name and address of	"Fancy name"		
- 1		manufacturer/distributor			
3	DESCRIPTIVE	Storage and usage conditions	Claims		
T		Country of Origin	Special offer - Flag		
		Expiry Date	Marketing terms		
	GRADE	Net weight and volume	Certification		
		Ingredients	Nutrition Panel		



Labels may be grouped according to the obligation of what to display (*Figure 18*). Compulsory information includes facts of ingredients, amount, sell-by date, special conditions, name of producer, distributor, origin, nutrition facts and energy value (Hungarian Ministry of Agriculture and Rural Development, 2004). Nutrition Facts Labels, whose stricter regulation was started in the early 1990s when Directive 90/496/EEC on nutrition labelling for foodstuffs was adopted in the European Union, is one of the most researched compulsory element. Several studies have experimented with the different layouts of nutrition facts labels trying to find an optimal layout (Humphries, 1998; Sadler, 1999; Shannon, 1994; Williams, 1993). According to US regulations a nutrition facts panel must be displayed, which became mandatory when the National Labelling and Education Act (NLEA) in 1990 entered into force (Shank, 1992; Petrucelli, 1996). Using labelling, although a bigger effort from companies, has long-term benefits through quality improvement because of health preservation, compulsory information display and comparability (Silverglade, 1996).

There is also a possibility to display voluntary information on packaging, and literature mostly deals with claims concerning nutrient content and health as their EU level regulation is an ongoing procedure at present (Biacs, 2009). Voluntary information includes all statements or illustrations (such as images, graphics or

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symbolic illustrations), which are not compulsory by any Community or national legislation and which state, or suggest that the food has special attributes. There are two types of it, one is nutrient content claims, stating that the food will have certain specific favourable properties from a nutrition point of view. The other group is that of health claims, which may be a functional attribute, a relationship between an ingredient and health or a statement connected to a disease.

There is some more voluntary information, to which, if they do not belong to any of the above categories, apart from general provisions of regulations nothing further applies, although there have been steps in the EU to regulate them as well (FSA, 2006). These include special offers or promotions, marketing expressions/statements (e.g. 'new formula' or '2in1'), recommendations, marks of companies approving the product, and certifications (see for example the signs of organic foods, or Fair Trade labels).

2.5.2.3 The reason and method of using labelling

A range of research has studied the role of labels and the impact they make on consumers (Feick, Herrmann, Warland, 1986; Mueller, 1991; Caswell, 1992). When asked about it, consumers say that half of them often read labelling, a large proportion of them sometimes read it. Food labels, as sources of information about food fare well (11%) when it comes where consumers obtain information about food from. Other such sources include school (34%), newspapers, magazines, books (20.3%), parents (13%) and the media (8.8%) (Abbott, 1997, Byrd-Bredbenner, Wong, Cottee, 2000). Most studies describing labelling use argue that consumers need labels on products (Lenahan et al., 1973; Daly, 1976; Bender, Derby, 1992), and judge products without nutrition facts information unfavourably (Frieden, 1981; Huber, McCann, 1982; Dick, Chakravarti, Biehal, 1990; Zarkin, Anderson, 1992; Burke, 1996). 55.5% of consumers would like to see more extensive and detailed information on packaging (Abbott, 1997).

The main reason for using labels is that consumers want to avoid negative effects. They want to know what they eat, they want to make the most of the selection available, or they follow a certain diet. 40% read labels to get information about what the product contains and what nutritional value it has, while 24% read it to make the most of the food. 9% are forced to do so due to following a specific diet, 7% use it for comparing different brands, 3% read it when purchasing new products and 1% expect the reinforcement of information heard earlier (Shine, O'Reilly, O'Sullivan, 1997). Reading labels affects purchase decisions, as 89% are

willing to change their decisions after having read the label (Shine, O'Reilly, O'Sullivan, 1997). Other sources say that 26% are always, 66% are sometimes and 8% are never affected by labelling (Byrd-Bredbenner, Wong, Cottee, 2000).

The types of information looked for include nutritional value (37%), artificial additives (28%), ingredients (17%), sell-by date (12%), price and brand (4%), place of origin and amount (3%), suggestions for use and environmental information (1-2%). Somehow contradictory to that when choosing food the following factors play a role in this order: habit, brand, price, nutritional value, taste and quality (Shine, O'Reilly, O'Sullivan, 1997).

Consumers on numerous occasions do not use labelling as it is sufficient to read it once and they remember it later (Kreuter et al., 1997; Miller, Probart, Achterberg, 1997). Besides, its use is complicated (Wandel, 1999), or the format is conducive to misinterpretation (Levy, Fein, Schucker, 1991; Levy, Fein, 1998; Burton, Andrews, 1996), technical terms make is more difficult to use (Eves et al., 1994), time is too little, or an inappropriate display and label may also hinder reading labelling (Miller, Probart, Achterberg, 1997). Besides, knowing a product and the frequency of purchasing certain products is in inverse proportion to reading frequency.

Studies comparing types of labelling show that consumers tend to pay more attention to information warning for negative, or harmful consequence than positive (Burton, Biswas, 1993; Moorman, 1990). If there is a statement on nutritional value displayed on the product, it may seem a time-saving and easy to read solution, but consumers may regard it a marketing ploy (Reid, Hendricks, 1993). Researchers widely agree on the usefulness of a nutritional fact label and suggest that it is of great help for consumers when choosing healthier food options (Kreuter et al., 1997; Neuhouser, Kristal, Patterson, 1999) and affects the relationship between diet-oriented consumption and purchasing (Ippolito, Mathios, 1990; Jensen, Kesevan, 1993), although there exist some research results contradicting this (Ford et al., 1996; Keller et al., 1997; Mazis, Raymond 1997; Szykman, Bloom, Levy, 1997). If there is a panel with specific details available, statements are not used (Ford et al., 1996; Garretson, Burton, 2000), but others argue that statements motivate consumers to have them proved so they do read the panel too (Roe, Levy, Derby, 1999).

53% of Hungarian consumers attend to the information about ingredients and nutritional values displayed on food packaging but almost half of them (48%) only partially understand it (quoted by Rácz, 2008). When purchasing a certain product

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category for the first time, 29% read the information on the label as opposed to the global average of 37%. Hungarian consumers regard time of manufacturing, ingredients, being free from preservatives and artificial additives important, while they are little concerned by brands, place of origin and trademark (Horváth, 1997). Other research suggests that for consumers the most relevance is born by preservatives (53%), additives (47%), artificial colours (41%), sugar (40%), calories (33%), carbohydrates (33%), fat (31%), fibres (29%), trans fatty acids (25%), protein (18%), salt (18%) and gluten (15%) (quoted by Rácz, 2008).

2.5.2.4 How labelling is used





Although counter-arguments exist (Skuras, Dimara, 2005), it is a generally held view that labelling affects perception, preferences, expectations and evaluation after trying a product, parallel with other factors in turn, influencing label use such as a consumer's individual characteristics (demography, product knowledge, product awareness, trust, scepticism, motivation, state of health), situational factors (time available, attention and interest) and the form and content of information (length, potential for misinterpretation, comparability with other products)

(Wansink, Sonka, Hasler, 2004). Several studies have listed factors affecting label reading both from an academic (Drichoutis et al., 2006; Baltas, 2001) and an organisational point of view (EdComps, 2007; Harper et al., 2007) (*Figure 19*).

A number of studies have identified demographic factors influencing label use. Most studies agree that labels are more viewed by women, who read them carefully and do so several times paying special attention to the amount of vitamins, minerals and calories (Mueller, 1991; Guthrie et al., 1995; Mangleburg, Grewal, Bristol, 1997; Nagya, 1997; Govindasamy, Italia, 1999). Men give less consideration to the relationship between nutrients and healthy food, and when they do look at a label, they read mostly about product ingredients (Bender, Derby, 1992; Horváth, 1997). The elderly find labels hard to understand, more difficult to interpret and difficult to read small print (Burton, Andrews 1996; Kim, Nayga, Capps, 2000; Moorman, 1990; Cole, Gaeth, 1990), but the opposite is also born out by research results, i.e. labels are more read by the elderly (Nayga, 1996; Coulson, 2000; Drichoutis, Lazaridis, Nayga, 2005). Qualifications have a positive correlation with label use. Those with higher qualifications are more likely to read a label since they have more previous knowledge, find it easier to interpret it but are not necessarily certain if they make a better food purchase decision on its basis (Klopp, McDonald, 1981; Moorman, 1990; Guthrie et al., 1995; Nagya, 1997; Drichoutis et al., 2005). Income is, according to some studies, also in a positive relationship with label use (Piedra, Schupp, Montgomery, 1996; Wang, Fletcher, Carley, 1995), while others have concluded its opposite (Drichoutis, Lazaridis, Nayga, 2005; Schupp, Gillespie, Reed, 1998). Household size seems to affect it, too: the more people co-habit in a household and the higher the number of children is, the more labels are read (Nayga, 1996; Wang, Fletcher, Carley, 1995; Drichoutis, Lazaridis, Nayga, 2005). In terms of place of residence non-city dwellers are more likely to look at labels (Govindasamy, Italia, 1999; Piedra, Schupp, Montgomery, 1996; Wang, Fletcher, Carley, 1995). Furthermore, religion and ethnicity also matters, particularly if some kind of dietary rules must be observed.

Attitude and knowledge is the second most researched influencing factor. Purchase time is seen as an important factor as with less time on their hands consumers will not be very likely to spend time reading labels on a point of sale (Moore, Lehmann, 1980; Beattie, Smith, 1987; Nayga, Lipinski, Savur, 1998; Feick, Herrmann, Warland, 1986; Park, Iyer, Smith, 1989). **Major grocery shoppers** and meal planners will be more likely to read information content on packaging as they are responsible for the diet of the others in the household (Drichoutis, Lazaridis, Nayga, 2005). An important factor influencing label use positively is when the

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rules of a special diet are followed, be it forced, owing to a disease, or voluntary (Bender, Derby, 1992; Drichoutis, Lazaridis, Nayga, 2005; Nayga, Lipinski, Savur, 1998; Schupp, Gillespie, Reed, 1998). Food and health awareness also promote label use and motivate committed consumers to base their purchase decisions on label information (Nayga, 2000; Szykman, Bloom, Levy, 1997). In accordance with this consuming organic food and vegetarianism determines label use too (Govindasamy, Italia, 1999; Dörnyei, 2008). Consumers having a certain food knowledge or belief will be more likely to read a label as they want to prove or simply check their beliefs (Bender, Derby, 1992; Moorman, Matulich, 1993; Moorman, 1998).

The preference for certain food attributes which most affect label use has been widely examined. If product safety is more important than taste, a label is more likely to be read (Guthrie et al., 1995), but if the relevance of price prevails then consumers will be less likely to do so. No uniform relationship has been found between taste and labels (Drichoutis, Lazaridis, Nayga, 2005; Nayga, Lipinski, Savur, 1998). Although **mathematical skills** have become less relevant since the introduction of unified panels, earlier, with non-unified format nutritional labelling, it has been found to influence label use (Babcock, Murphy, 1973; Geiger et al., 1991; Levy, Fein, Schucker, 1991; Mohr, Wyse, Hansen, 1980; Rudd, 1986).

2.6 Summary and critical analysis of the literature

Research aiming to explore information seeking behaviour has been highly popular for several decades with information experts, library scientists and psychologists. It is cognitive psychology that has studied information search the most extensively, describing the mental processes of perception, memory and information processing in order to discover how individuals obtain information, make plans and solve problems.

In the literature review section we introduced some aspects of the literature on information search. What was written in that section is far from being complete as the topic is a multidisciplinary one and has been extensively studied. Consequently, the topic was narrowed down and we only presented theories relevant to us. Information search was examined exclusively from a marketing point of view.

Marketing and consumer behaviour as one of its fields only deal with a small segment of information processing, i.e. information search connected to purchase decisions. Consumer information search has been the subject of constant interest since the mid-19th century and forms an essential part of every book on consumer behaviour. Understanding it is of key importance for corporate actors in order to maximise the market performance, achieve competitive advantages and serve consumer needs to the best of their capacities.



Figure 20 – Factors affecting information search Source: edited by the author

Information search is part of the purchase decision making process (*Figure 20*). Consumers conduct a reasonable amount of information search activity resulting in alternatives and choose the option seeming the most advantageous – the most appropriate for their goals, preferences and means. The definition of information search used here is the following for this consumer behaviour: information search

Summary and critical analysis of the literature

is the type of consumer behaviour in which relevant data are gathered about a product and its usage in order to satisfy a need in the best possible way. Information search, according to marketing literature, has two stages, internal and external information search. While internal search refers to the retrieval of information stored in the memory, external search means search outside the memory. The scope of this dissertation includes external information search only. Further, our investigation was limited to information search in connection with food and only with labelling on packaging as sources of information.

To structure the literature on information seeking, we used Stiegler's (1961) information search paradigm, suggesting that information search has four dimensions: 'why', 'when', 'what' and 'where'. The responses to these questions form the basis of measuring and comparing information search activities. In our view there is a fifth dimension to be included, i.e. the dimension of 'why', which we also used when summarising the literature.

A number of theories have been created to explain the whys of consumer information search. The most popular ones are the economics of information approach, information seeking cost theory, prospect theory, the psychological model of information processing, Elaboration Likelihood Model and characteristics theory. According to the latter, instead of looking at a product's usefulness directly, consumers look at the usefulness of a product's characteristics. Four types of information are to be distinguished when we talk about information seeking: search, experience, credence attributes and Potemkin information. Caswel and Mojduszka (1996) argue that labelling transforms experience and credence attributes into search attributes thus consumers are able to compare different products at points of sale and base their decisions on that comparison.

The literature has extensively studied the factors influencing information search, or, as they are referred to more commonly, the antecedents of information search. Seven such antecedents are to be listed (Beatty, Smith, 1978; Guo, 2001): marketing environment, situational variables, product importance, knowledge and experience, individual differences, conflicts and conflict resolution strategies and cost of search. The authors described how each of these factors influences information search. In this thesis three groups of factors affecting information search have been examined in detail, i.e. involvement, prior knowledge and marketing environment: their effects on information search has been controversially or little researched in literature.

Studying involvement started in the late 1960s (Higie, Feick, 1989), and it has emerged as one of the most researched theoretical construct in the field of consumer behaviour research with an unquestionable relevance that still prevails. This study defines involvement as an individual, internal state, perceived relevance based on inherent interests, values and needs with intensity, direction and persistence properties and in whose centre is the consumer. Houston and Rotschild (1978) were the first to categorise involvement differentiating between situational and enduring involvement. Andrews, Durvasula and Akhter (1990) present a more extended concept of involvement, describing involvement in terms of its intensity, direction and persistence. Those with a high involvement level will be more strongly committed to the object of their involvement and their information search behaviour will differ from that of low involvement consumers.

One of the drives of information search is the mass of data stored in the memory, or prior knowledge, defined here in accordance with Engel, Blackwell and Miniard (1993) as a mass of information stored in the memory. The concept, long in the focus of research in the 1980s, is considered to be an important factor of information processing. Marketing literature most often categorises knowledge in terms of its depth, type and area, generally related to products, product groups, or brands. Several researchers have looked at how knowledge affects information search, yet it is difficult to establish the actual influence of it, since research results vary to such a great extent (Raju, Lonial, Mangold, 1995).

When investigating point of sale information seeking, in-store environments, and all the factors which may be influenced by points of sale must not be overlooked. Agárdi (2010) lists three factors: store layout, the type of product display and store ambience, which all affect both consumer behaviour and information search at the same time. However, how exactly these factors influence information seeking is an area which the literature has failed to answer.

Food industry is thought to be a good example for studying information search, as consumers tend to pay more and more attention to what type of food they purchase. Food purchase is an activity resulting from biological, social and cultural processes related to self-preservation, influenced by biological, psychological, sociological, anthropological, demographical and economic factors. Food consumption patterns and explanations vary, which may arise from cultural differences. Foods belong to either of two groups, cognitive or emotional products (Cleays, Swinnen, Abbeele, 1995; Lehota, 2001). While with emotional products consumers rely little on information search, with cognitive products it is the opposite, information search is more extensive. In countries where living standards are higher, the need for health

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preservation, health consciousness and the increase in the demand for quality food has resulted in more massive information seeking. Research in this field (carried out with public, scientific and private cooperation) does not only give an account of how consumer behaviour has changed but has also been giving increasingly better quality and fuller range of information since the 1970s to consumers. Due to its specific nature, several models have been created on how nutrition and food attributes information is processed, whereby information search is explained in terms of different factors which relying on the earlier results of the applied discipline.

The source of information search is labelling on packaging. Oftentimes, packaging is the first and only marketing tool consumers encounter before a purchase, therefore it is considered to be the most important communication tool instead of advertisements (Behaegel, 1991; Peters, 1994). Marketing literature, although starting to recognise its relevance, has relatively few theoretical works in the field of packaging. Early studies focused on the general features, roles and communication roles of packaging design along with how it affects brands but seem to entirely neglect its informative function. Consumers, nevertheless, do not only want to purchase a product but obtain information about it, whose means is labelling. The definition of information content found on packaging, i.e. labelling is the following: *a communicative tool between producer/distributor and consumer, including all compulsory and voluntary information content on or next to the product packaging, of which a brand name and symbol, descriptive or grade information can be distinguished.*

Even though from the point of view of information search it is hard to study labelling on its own, independently from other sources of information, due to its growing significance it should still be studied in its own right. Numerous studies examine the role and effect of labelling during purchases, giving summaries of factors affecting label reading from an academic (Drichoutis et al., 2006; Baltas, 2001), or from an organisational aspect (EdComps, 2007; Harper et al., 2007). They all agree on the increasing importance of labelling. Although counter-opinions exist (Skuras, Dimara, 2005), it is a generally held view that labelling affects perception, preferences, anticipations and after trying a product, evaluation. Along with that, individual characteristics of consumers (demography, product knowledge, product awareness, trust, scepticism, motivation, state of health), situational factors (time available, attention and interest) and form and content of information (length, potential for misinterpretation, comparability with other products) also affect label use (Wansink, Sonka, Hasler, 2004).

Even though information search is considered internationally a widely research and published area, while studying its literature some weaknesses and inaccuracies may be identified and correcting them is an important research task. Inserting information search into a consumer purchase decision making process is overly simplistic and cannot be applied in practice. Information search is wrongly thought to be an antecedent of decision, since it depends on many factors and often, the present-day information overload does not require active consumer information seeking. Another weakness is that marketing literature does not apply the information search categorisations of other scientific fields (e.g. Kuhlthau, 1991) and the phases of the process, but refers to it merely as an external and internal process. The psychological explanations of information search used in marketing have become dated and need rethinking, although this is beyond the scope of the this thesis.

Methods used when studying information seeking, including questionnaires, focus groups and observation most often measure a presumed reality instead of reality itself, which is wrong and unsuitable for studying the construct. There is no single methodology in literature which would identify the amount and characteristics of consumer information search while controlling, or at least recognising the most possible external factors. This gap also needs to be bridged.

Summarising the antecedents of information search is accurate work, yet, there are antecedents which literature discusses just briefly or fails to discuss at all despite being significant ones and can therefore provide both academics and market actors with relevant knowledge. One such factor is the marketing environment and within it product category, the amount of information and assortment depth. Besides, much researched concepts such as involvement, or prior knowledge (where there are a number of controversial results) should be revisited with the help of appropriate methodology.

Although a delicate task, examining the topic in its entirety within the framework of a doctoral dissertation is impossible and needs to be narrowed down, since information search is an intricate and multi-dimensional process. Narrowing down the study of information search to using food as a product category seems logical enough, as the relevance of the product is high, consumer involvement is high; there are non-emotional decisions, and consumers often only look for information at points of sale during their purchases. The thesis has also been narrowed down to looking at a certain type of information searched by consumers. Since consumer trends highlight labelling as an important source of information, and product

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attributes displayed on them are easy to measure, they are worth being used for the purposes of this research.

Consumer information search, packaging and label use has been relatively little studied in Hungary on an academic level and the few existing studies are not complete, therefore the present research has a high relevance in Hungary and is considered to be a pioneering work. Internationally, there are a number of similar studies, although the topic has not been narrowed down in this way in them

3 PRELIMINARY STUDIES

'as if a door opened silently, and you got a glimpse of where important things are being born' Éva Ancsel, poet, philosopher, essay writer

In this chapter three preliminary studies are presented with the aim of giving a foundation to the theoretical model, and testing and pre-examining a few elements of the empirical research. The first preliminary study is a qualitative analysis carried out using an exploratory methodology, followed by a quantitative questionnaire survey and thirdly, a questionnaire scale testing.

3.1 Qualitative research using netnography

We have wanted to find an answer to how the informative function of packaging (design being undeservedly more in the spotlight) affects the purchase decision making process. Our **research questions** included:

- (1) Do consumers use labels when purchasing food?
- (2) If yes, why and how do consumers use labels on packaging when purchasing food?

3.1.1 Research methodology

Netnography has been chosen as the research method, which adapts ethnography research techniques to the examination of the culture of online communities (Kozinets, 2002). This method can be effectively used in this area since there are plenty of data available on the Internet to make the identification of behaviour patterns possible and to understand the way consumers use labels on packaging. A detailed review of the advantages, disadvantages and applicability of the method is found in Dörnyei and Mitev (2010).

Qualitative research using netnography

As the **source of information** Hungarian posts and related online forum comments and posts and related comments on a Hungarian consumer protection blog published between December 2009 and June 2010 were used ³. Comments were about purchase experiences of consumers and their opinions. Data collection took place in June 2010. After selecting the relevant sections of sources (42,000 characters) they were labelled and sorted in order that the patterns can be explored with the help of a qualitative analytical program (Nvivo 7 Program Package).

3.1.2 Research results

Presenting the results was done as usual with qualitative research, by using quotes. The examples are given only for illustration as (due to the nature of the method, i.e. comments coming from anonymous individuals) we were not able to establish what kind of consumer a statement belongs to, therefore it is only patterns that can be observed.

3.1.2.1 Conscious and non-conscious consumer behaviour

It is not an easy task for consumers to select the right food during their purchase, since assortment is both becoming wider and is undergoing continuous change. On the one hand it is good as it gives an opportunity for selecting the best possible product, on the other hand it may be a burden as sometimes you have to be very smart to have the right food in your basket in the face of the assortment and all the marketing ploys.

MARKET ENVIRONMENT

'There are about 15 types of cottage cheese on the shelf. Help yourself.' 'Like this, everybody had a chance to decide if they'd eat it or not.' 'so what, marketing is a profession and slowly so is shopping'

In order to make an optimal decision consumers use different decision making mechanisms. Beharrell and Denison's (1995) earlier research suggests that consumer food purchase is a low involvement decision. It still holds for a number of consumers nowadays as they do not regard meals and food purchases an

³ <u>http://www.hoxa.hu/</u>

http://forum.index.hu/Topic/showTopicList

http://homar.blog.hu/

important task just something unavoidable, and incidentally, essential for survival. Juhl and Poulsen (2000), however, argue that food purchase is a high involvement decision for consumers and it is underpinned by numerous consumer opinions saying that sufficient time and energy should be devoted to selecting food as it is one of the most important decisions in life. Both consumer attitudes could be identified on the basis of our source text. Conscious consumption leads to increased information hunger, something not at all characteristic of non-conscious consumers.

CONSCIOUS PURCHASE				NON-CONSCIOUS PURCHASE	
'a	conscious	purchase	is	'there are people for whom food is not a central issue	
obligatory'			[]. some people will just eat because they're hungry and		
'being a conscious shopper [] '		,	take pleasure in other things than that'		

Conscious shoppers argue that they are entitled to purchasing quality food. Nevertheless, they often have a low self-confidence along with prior knowledge and beliefs from unauthentic sources. They need information and unless they get it in the appropriate form and manner they give an emotional response together with a sense of helplessness, disappointment and strong feelings.

HELPLESSNESS, DISAPPOINTMENT, STRONG FEELINGS

'you have be like a detective if you want to find food that may be authentic. And there are less and less of those. Bread is plastic, milk is plastic, meat is plastic. Even ham isn't real, although it sometimes appears to be. The larger portion of all food is plastic. And they even explain to you that they put all that shit in so it's better. Bullshit.'

'I'm so fed up with having to spend the larger part of shopping with decoding the small print labels of all that shit.'

Not everybody is in the position to be able to be a conscious shopper; sometimes you just do not have the possibility to think about which excellent product to put in your basket. The reason for non-conscious purchases is mostly lack of time, the result of hard work and a hectic lifestyle. For others conscious purchases would not be worth even if they had the time since their decision is defined by other preferences, e.g. taste or the look of the product. If the assumed quality of the product is low then there may not be a conscious decision, either, as it is not worth obtaining information about food products failing to meet needs.

LACK OF TIME	'Conscious shopping is for time millionaires and the unemployed'
OTHER	'you leave home in the morning, have no time for shopping, come home
IMPORTANT	in the evening, pop in that supermarket close to your route for home,
FACTOR	open 24 hours a day and selling not very shitty stuff and staff are not that
	rude and the whole thing is not that dilapidated and get what they sell

Qualitative research using netnography

there.'

UNNECESSARY ACTIVITY

'It's not worth for me. Whatever tastes good, get it and goodbye.'

3.1.2.2 Explanations and characteristics of information search behaviour

The reasons for reading labels can be divided into four groups. Consumers have a general antipathy towards new and seemingly 'unnatural' products. They have no specific counter-argument but express their contempt mostly towards the ingredients of a product. Also, they are afraid that the product will cause a disease, or they obtain information out of prevention. In a small number of cases labels are read out of patriotism and protecting local farmers, meaning that these consumers will primarily purchase products of Hungarian origin.

GENERAL ANTIPATHY AND FEAR	THE POSSIBILITY OF DEVELOPING A DISEASE
'Why buy some shit polluted by stabilisators and	'your child could get ill from it'
guar gum?'	'well, you may develop liver cancer
'it'd be so great if u didn't have to go around scared	or leukaemia in a few years' but who
of what shitty additives they put in your food'	cares, there're so many of us right?'
PATRIOTISM	EXISTING ILLNESS
'Those who want to buy Hungarian products, want	'I haven't really bought anything
to do so because it is genuinely Hungarian, because	containing too many suspicious "E"
it's not being transported there from 7000 miles and	letter stuff so far either, but now on
Hungarian farmers make a living out of it and do	the recovery from a serious illness I
not have be on the lookout for the benefits'	pay even more attention to what I

Label use can be differentiated in terms of its way and its place. There are consumers who regard label reading as part of the purchase process and never buy anything without first having read the label. Reading is, however, more frequent when purchasing a product or product category for the first time, consumers tend to get informed more thoroughly then. Those who want a secure bet and have a possibility to do so will use several sources of information not just the label on the packaging but other in-store sources, e.g. product displays, shop assistants. There are some 'at-home', 'leisure' label readers who take a better look at products before starting to cook, eat or whenever they have the time to do so. Conditional label use is frequent, meaning an interest taken only in one certain product attribute or category, or looking at the front of packaging only or reading only easy-tounderstand content (marketing texts or big emblems). Labels are quite frequently read superficially. Accidental reading or a casual glimpse is often followed by

eat.
surprise on the part of consumers who then recognize their incomplete knowledge about the product.

	WAY		PLACE
ENJOYMENT	'well, I always look at what comes from where, even out of fun'	POINT OF SALE	'Please turn the product around while it is still on the shelf and if the ingredients are right, go on to look at its price. Brand name is only good for knowing which box to turn around next time and read again. The rest is just decoration.'
BY CHANCE	'I was just putting them in the bag when my partner says these were not home-grown 'cause they're too big and nice and out of season. So I look at the box and bingo, Morocco.'	NEW PRODUCT	'I always check the ingredients when trying something new, so I'm not surprised at home.;)' 'It's not that demanding to read when you buy something new. 30 seconds of your life.'
SUPERFICIAL	'We've got used to them being sold with different signs, and didn't read the ingredients. The big lettered 100% sign reassured us.'	AT HOME	'At home – luckily before dinner – my wife noticed its sell-by date expired three months ago' 'I often read something while having my sandwich, if nothing else, then the boxes of products lying in front of me.'

3.1.2.3 Preferred products and types of label

In order to establish which products are preferred by consumers we have collected the expressions consumers use for 'good' and 'to-be-avoided' products in our analysis. To sum it up, technical terms are rarely used and products are more often described with the slang and standard terms of informal language use. The expressions consumers use, refer to the general features of the food, its ingredients or its origin. Among those the most important ones are the latter two, i.e. origin and ingredients but it very often depends on the product category what exactly consumers will read. 'Good' food is described as healthy, natural, fresh, authentic, traditional and originating from Hungary, while 'bad' food is thought to be unnatural, of low quality, of low nutritional value and imported.

There are expressions in the source text referring to ingredients, marketing notices, fantasy names and places of origin. Also, there are accurate expressions and general everyday vocabulary, sometimes slang words (a characteristic of online environment). This varying language use is explained by the different levels of prior knowledge and involvement. Consumers with more accurate knowledge or

A survey using self-administered questionnaires

higher involvement will use more accurate and more technical terms, while those with a low level of knowledge will use general expressions and slang terms. Label use is noted in both groups. Oftentimes umbrella terms are used, when the exact content meant is not clarified.

3.2 A survey using self-administered questionnaires

Since there are only a limited number of studies in Hungary about analysing labels (Rácz, 2008; Horváth, 1997), our research goal was to quantify qualitative results.

3.2.1 Research methodology

The survey was conducted with the help of an **online**, **self-administered questionnaire** in May 2009, allowing respondents a greater amount of freedom and flexibility and resulting in a higher response rate. The questionnaire was modified after the lessons learnt from a pilot test. Response was voluntary and anonymous and respondents included the students of the subject 'Introduction to Marketing Studies' at Corvinus University in Budapest. They were motivated to take part in the research by extra class points. The scope of our investigation included 630 questionnaires after data cleansing. Our sample in no way meets the conditions of representativity. Compared to the 2008 data of the Central Statistics Office the sample differs from the total population in terms of gender, place of residence and financial situation. Women, those residing in Budapest and of a good financial situation are overrepresented. On the other hand, those living in country municipalities and of a poor financial situation are underrepresented.

The structure of the questionnaire was the following:

- demography; e.g. gender, age, place of residence, food purchases, diet, sport, organic food consumption
- the channels of information about food (9 7-item scale); e.g. newspaper, magazine, product packaging, commercials, advertisements

- the amount of information required for product categories (9 7-item scale); e.g. cereal/bakery products, finished products, canned products, dairies
- general attitude questions related to label use (23 7-item scale)
- label preferences (32 7-item scale); e.g. brand, product of Hungary, organic

3.2.2 General descriptive results

3.2.2.1 The source and amount of information



Figure 21 – The sources of information about food Source: author's research; n=630, May 2009

Our preliminary hypothesis was justified, labels are among the sources of information used (*Figure 21*). 84.05% use the opinion of family and friends and 60.03% refer to traditions. As far as classic channels are concerned, moderately preferred ones include offline media (44.22%), commercials, advertisements (40.76%), the news (40.29%) while scientific sources (30.37%) and the point of sale (25.16%) tend to lag behind. **Labels on pac**kaging are used at a point of sale by 59.68% of respondents while 35.03% look at them after purchase. Labels are more often read by women, who purchase food more often, are frequently on a diet, consume organic food, committed to environment protection in both theory and practice —all in accordance with what has been found in the literature.





Figure 22 – Information required by consumers across product categories Source: author's research; n=630, May 2009

Respondents need varying amount of information depending on product category (*Figure 22*): they demand the most information about dairies (82.72%), meat (80,89%) and fruit and vegetables (72.45%). Fruit juices lag behind (50%), followed by cereal/bakery products (49.6%), and even less information is required about alcoholic drinks (45.77%), frozen and ready-made food (43.24%), canned food (42.35%) and the least about puddings and snacks (33.75%). The reason for this is that the first categories are known to be important in a balanced diet, thus consumers are more involved in acquiring information about them while the items at the end of the list are not very basic in a good diet and tend to be rather unhealthy. Conscious consumption is connected to the food categories purchased. Conscious shoppers need a wider range of information and they are at the same time the ones who purchase the above food categories, which can also explain this distribution.

3.2.2.2 Consumer behaviour and preferences

Reading nutritional information is thought to be useful but not enjoyable (77.38%), respondents are able to interpret it (66.66%) and it is in their interest to have as much public information available as possible (62.14%). Its goal is to help consumers' purchase decisions (56.23%), but they are not necessarily able to decide on its basis (45.93%), although they did not agree with being confused by

the high amount of information (70.49%). They prefer to avoid harmful, bad ingredients rather than find the best food underpinned by the fact that they seem to be insecure about the trustworthiness of the source (*Figure 23*).



Figure 23 – Product information on packaging Source: author's research; n=630, May 2009

Although respondents do not always check labels, *not* reading them at all has not proved correct, either. They are not interested in *all* types of nutritional information, but they need more of certain types of it. Information search depends more on product category (69.65%) than time available (59.14%). There is no need of a thorough revision of how labels should look like as almost half of the respondents thought it intelligible (47.92%) and about the same number of respondents think it is enough to read labels once to remember them later (46.83%). A good label should be legible, familiar and should contain more symbols and figures (42.99%) than accurate numbers and values (34.23%). Respondents rejected not changing their decision on the basis of information on labelling (77.06%), i.e. the majority do take information on labels into account when making their decision (*Figure 24*).

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Figure 24 – The evaluation of label content Source: author's research; n=630, May 2009

Not all label content has the same relevance (*Figure 25*). When purchasing food it is mostly sell-by dates (85.20%) that matter, followed by functional properties such as 'healthy' (82.48%) 'high vitamin content' (81.73%), 'immune boosting' (71.88%) and last, 'free from artificial colours and preservatives' (64.06%). Expressions requiring more substantial nutritional knowledge such as 'probiotic' (50.20%), 'contains omega-3 fatty acid' (46.06%) fare worse. Then comes the importance of brand (65.65%). The label 'Hungarian product' achieved a high score (62.2%). Other label types attract relatively less interest, although international literature study these label contents, too. 'Ingredients' (44.87%), 'nutritional values' (30.99%) and 'calorie chart' (21.06%) fared quite badly. A statement concerning the manufacturing procedure such as 'organic' (41.15%) is of high importance but 'fair trade' (40.87%) achieving a similarly high score is a surprising finding as the concept is so little known in Hungary. The reason for it may be the special composition of our sample.



Figure 25 – The importance of labels in purchase decisions Source: author's research; n=630, May 2009

3.2.3 Multidimensional statistical analysis

In order to identify the latent variables behind labelling the method of Multidimensional Scaling (MDS) was chosen.

Consumers make their decisions in their 'heads', i.e. on either a cognitive or an emotional basis, which dimensions often remain hidden even from themselves, but which can be explored with the help of the appropriate method, factor analysis or the method of MDS. In contrast to factor analysis, MDS does not assume the linear combination of individual factors (often not underpinned in any way in practice). The aim of MDS analysis is to create a geometric representation, which will reflect the relationships of variables in a geometric space of a given number of dimensions in the most accurate way, in a model easily understood also by non-professionals (Virág, Kristóf, 2009). The output of the model is a spatial figure containing the

A survey using self-administered questionnaires

geometric shape of variables similarly to a map, which helps identify how data are related to one another (Füstös et al., 2004).

			DIMENSIONS				
			PRIOR KNOWLEDGE	INTERES T	RELIABILITY		
			conscious (+)	public interest (+)	reliable (+)		
			spontaneous (-)	self interest (-)	unreliable (-)		
		2 in 1	-1,81	-0,38	0,01		
	υ	Design	-1,68	0,14	0,74		
	ISS	Package size	-1,73	0,19	0,21		
	TΑ	Sell-by date	-1,62	-0,01	-0,05		
	0	Brand	-1,76	-0,14	0,18		
		New formula	-1,53	-0,58	0,74		
		State guaranteed quality	-0,02	0,66	-1,3		
	د	This product has not been tested	0.55	0.00	1.05		
	CAJ	on animals	0,55	0,98	-1,05		
	Ē	Fair Trade	0,46	1,29	-0,98		
	E	Eco friendly	0,05	1,65	-0,33		
		Hungarian product	-0,98	1,17	-0,77		
S.		Country of origin	-0,46	1,62	0,06		
ER	IENT	Low cholesterin	1,42	-0,56	0,86		
E		With sweeteners	0,19	-0,5	1,76		
Ŋ	TR	Energy chart	0,95	0,17	1,75		
ວ	N	Light	0,29	-0,88	1,75		
		Nutritional values	1,22	-0,14	1,44		
	ICAI	GM-free	1,43	1,07	-0,11		
	DOT	Organic	1,27	0,81	-0,5		
	NO	Ingredients	1,27	1,04	0,28		
	ECH	Free from artificial colours and					
-	I	preservatives	1,43	-0,08	-0,4		
	L	Contains antioxidants	0,82	-1,28	-0,78		
	NA	Healthy	-0,14	-1,38	-0,91		
	TIO	Immune boosting	0,01	-1,43	-1,04		
	NC	High vitamin and mineral content	-0,2	-1,2	-1,22		
	FU	Contains omega-3 fatty acid	1,21	-1,08	-0,42		
		Probiotic	0,85	-1,21	-0,85		

Figure 26 – The three dimensions defining labels

Source: author's research; n=630, May 2009

The basic data of scaling were the dataset of scaled subjective opinions relating to information content on packaging, i.e. 32 different types of information – containing attributes, statements, affirmations, certifications. Respondents were asked to evaluate them on a 7-item scale. Evaluation was based on the items' importance for a purchase decision. A control variable was incorporated and there was a possibility to mark the answer 'I dont't know what it means.' As a preparation for the analysis we selected the cases to be included in the analysis

based on control questions, responses were smoothened with means, therefore data were free from systematic error and had an approximately normal distribution. We made a proximity matrix from the correlation matrix of variables and created a model using the ALSCAL procedure (Young, Null, 1978). Based on the results labels can be grouped and placed along dimensions. From the two-dimensional (Stress=0.27209; RSQ=0.60310) and three-dimensional (Stress=0.11344; RSQ=0.89131) models examined the latter was selected because of its less error. The selected model is appropriate, the mapping of the 28 variables included in the analysis in three-dimensional space can be done with an error rate of 11.3%; the model explained 89.1% of variance.

3.2.3.1 Multidimensional scaling

Information on packaging can be placed along three dimensions based on our analysis, prior knowledge, involvement and reliability (*Figure 26-27*).

Prior knowledge the first and of the most explanatory power showing that the understanding and usage of certain types of information necessitates prior knowledge, and in turn, it affects how information is understood and processed. The dimension is bipolar, at one end there is no need for prior knowledge, the other where there is. At the first end there are expressions such as '2in1', 'high vitamin and mineral content', 'Hungarian product', 'healthy', while at the other end expressions requiring prior knowledge are found such as 'nutritional values', 'GM-free', 'contains omega-3 fatty acid'. The nutritional values chart, for instance, requires prior knowledge: those who are not familiar with the recommended daily allowance amounts or how to use a piece of information, will not be able to use it, and it will be irrelevant for them when making their decision. In contrast 'sell-by date' is understood without prior knowledge if a consumer reads it on the packaging.

Involvement refers to the type of interest the information is serving through label use. Two types are to be distinguished, i.e. self-interest and public interest. Self-interest is behind all attributes and information content that affects the consumer, e.g. functional attributes ('contains antioxidants', 'immune boosting', 'light', 'with sweeteners', 'new formula'), while public interest includes environment protection, protectionalism, animal protection, such as 'environment friendly packaging', 'fair trade', 'state guaranteed quality' and 'this product has not been tested on animals'. There are neutral characteristics, e.g. 'brand', 'sell-by date', 'nutritional values', which can serve both types of interests.

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Rreliability shows how authentic the information displayed on packaging is for consumers. The content of the information 'energy chart' and 'light' is reliable and does not have to be cross-checked using an external source, its authenticity is not doubted by consumers, while statements like 'state guaranteed quality', 'high vitamin and mineral content' and 'fair trade' are inauthentic, much harder to use during purchase since they are imprecise, or not properly defined. For example the statement 'high vitamin and mineral content' specifies neither quality nor quantity and fails to give any information concerning the effects the product will have on the consumer



Figure 27 – Map of MDS Source: author's research; n=630, May 2009

3.2.3.2 Cluster analysis

Labels, apart from being placed along dimensions, form five homogenous groups generated with the help of cluster analysis (Hierarchical Cluster Analysis; Squared Euclidean Distance; Ward Linkage) on the basis of their distance from one another, place in space and pattern: classic, nutrient, functional, technological and ethical

information. The groups can be compared on the basis of where they are located in space and their distance from one another.

Classic information includes 'brand' and along with other information content organically related to it, i.e. 'design' and 'package size' complemented with general statements such as 'new formula', '2in1' and 'sell-by date'. This group cannot be described in terms of involvement or self- vs. public interest. No prior knowledge is needed to understand these pieces of information since they are easy to recognise and interpret. A slight differentiation must be made within the group between the statements 'brand', 'sell-by date', 'package size' and '2in1' vs. 'new formula" and 'design'. The first ones are not reliable while the latter group is considered to be represent more reliable content.

Nutrient information includes 'calorie chart', 'nutritional information' and any explanations of those, e.g. 'with sweetener', 'low cholesterol', and 'light'. These pieces of information are considered reliable and authentic and require little prior knowledge. Some statements of the group assume less prior knowledge, e.g. 'light' and 'with sweetener', while information such as 'nutritional information' and 'calorie chart' require more advanced knowledge. The most prior knowledge is assumed by the attribute 'low cholesterol'.

Functional information includes 'contains antioxidants', 'healthy', 'immune boosting', 'high vitamin and mineral content', 'contains omega-3 fatty acid', 'probiotic', all typically assuming a high level of prior knowledge, especially 'contains omega-3 fatty acid', 'probiotic' and 'contains antioxidants'' require the most prior knowledge. Further, these statements are not reliable and it is hard to understand them exactly. For instance food which 'contains omega-3 fatty acid', may contain it but not an accurately specified amount of it, and consumers may doubt why it is beneficial to have.

Technological information includes 'organic', 'ingredients', 'GM-free', 'free from artificial colours and preservatives', which are often the markers of conscious consumption. These elements require the most prior knowledge, without which these attributes make little sense. This type of information differs from the other groups mostly in terms of involvement; consumers look for it more out of public interest rather than self-interest, the attribute 'free from artificial colours and preservatives' being an exception here.

Ethical information includes 'country of origin', 'Hungarian product', 'fair trade', 'this product has not been tested on animals', 'state guaranteed quality' and 'eco

Scale testing

friendly'. It refers to attributes related to environmental and social interests. These statements are hard to grasp and prove (Potemkin information), therefore in their present form do not seem to be very reliable and need confirming. It is especially true for attributes 'state guaranteed quality' and 'this product has not been tested on animals', as there are currently no widely accepted and generally known regulations for them. There is a difference between 'country of origin' and 'Hungarian product': while respondents tend to accept 'country of origin', they will doubt the statement 'Hungarian product' more.

3.3 Scale testing

Scales introduced earlier in the literature review section were tested in the food theme, translated into Hungarian and with Hungarian participants. The two topics tested were involvement and prior knowledge in order that they can be used in the upcoming research.

3.3.1 Research methodology

Scales need to be tested on the merits of their reliability – expressing the level of consistent results in the case of repeated measures (Malhotra, 2001; Churchill, 1979). First the unidimensionality of the scales, meaning that scale items refer to one latent construct, must be checked. Then the item-to-total correlation coefficient of scale items must be measured and scale items, where the correlation coefficient is lower than 0.3 must be deleted (Gerbing, Anderson, 1988). Then using **factor analysis** it can be checked whether the items theoretically belonging to the construct are in fact unidimensional. If they fall into one factor, the scale will be unidimensional therefore the Cronbach Alpha, the coefficient of reliability can be applied. Its value is acceptable over 0.6. Another (stricter) measurement method of the unidimensionality of scales is **confirmatory factor analysis** i.e. factor analysis with the inclusion of all the statements (Brown, 2006). The subject of our examination is whether the variable in fact belongs to the latent construct in question and how strongly the variable is related to the factor in question. If the variable is not related to the assumed latent construct, or is not related to it strongly

enough (<0.5), the statement needs to be deleted and the scale's reliability recalculated (Keszey, 2003). In order to decide if two latent constructs in fact possess different contents, the correlation of factors must be examined. If the correlations are low, the criterion of discriminant validity is fulfilled (Bagozzi, Phillips, 1982). In the opposite case another factor analysis should be carried out using second order factor analysis pertaining to the dimensions. If the outcome of the second factor analysis is only one factor – and factor analysis is an appropriate procedure based on statistical indicators – then it can be safely said that it is about one construct and items can be merged.

3.3.2 Scale testing findings

We tested involvement and subjective knowledge scales for the theme of food in the research. We used an online questionnaire with 255 university students in May 2010 for scale testing. Filling in the questionnaire was anonymous and voluntary and participation in the research was rewarded with extra class points.

3.3.2.1 Involvement

Zaichkowsky's (1990) scale discussed earlier in detail is a 20-item semantic differential scale we tested after translating it into Hungarian and adapting it to food. Translating the scale into Hungarian was quite a challenge in itself due to the insufficient number of Hungarian synonyms. Also, the construct of involvement behaves differently with food than with products used before.

During scale testing first we examined the items of correlation coefficients where all the items of the scale performed well, the correlation of items was higher than 0.3 all through. However, the negative comments of participants, discussions with experts, the number of items, their similarities in meaning and language difficulties made us deem several items unnecessary and remove them, resulting in a reduced number of items in our scale.

The scale is not a unidimensional one according to sources from literature (Mittal, 1989), which was reinforced by our test too. Factor analysis revealed 3 dimensions which we examined one by one and judged appropriate on the basis of their KMO values, explained variance and Cronbach Alpha values (*Figure 28*).

Scale testing

	PR SCALE ITEM	ODUCT CLASS INVO KOMPONENS	LVEMENT FAKTOR NAME	КМО	SD (%)	Cronbach Alpha
z_3_i	relevant	0,89				-
z_2_i	of concern to me	0,844	Involvement	0,82	72,456,	0,87
z_10_i	interested	0,83				
z_15_a	fascinating	0,835				
z_16_a	interesting	0,802				
z_13_a	unappealing*	0,799	Attitude	0,793	64,71,	0,816
z_1_i	unimportant*	0,84				
z_18_a	desirable	0,781				
z_11_s	insignificant*	0,913				
z_20_s	needed	0,877	Need	0,688	75,845,	0,835
z_12_s	superfluous*	0,82				
z_4	means nothingto me*					
z_5	useful					
z_6	worthless*					
z_7	fundamental					
z_8	not beneficial*	Ite	Items excluded from factor analysis			
z_9	doesn't matter*					
z_14	exciting					
z_17	nonessential*					
z_19	unwanted*					
	-	* items reverse sco	red			

Figure 28 – The dimensions of the involvement scale

Source: edited by the author based on Zaichkowsky's (1990) scale

The factor marking a need, treating food as an essential concept does not tell us a lot about the food purchase habits of a consumer, therefore can be omitted from the analysis. Attitude does not contain statements in accordance with the definition of involvement, either, it does not necessarily mean a high involvement level, thus can be omitted, too. As opposed to that, the third dimension expresses importance, relevance in accordance with the definition of involvement. Leaving out on item of the scale resulted in a higher Cronbach Alpha value therefore we decided to omit that item and resolved to use this three-item scale later.

3.3.2.2 Subjective knowledge

For measuring subjective knowledge in connection with food we used the general subjective knowledge scale of Flyn and Goldsmith (1999). The scale contains 5 items and had to be translated into Hungarian, too and adapted to food before applying it in the research.

The items of the subjective knowledge scale are found along one dimension, with appropriate values from explained variance, the KMO and the Cronbach Alpha

(*Figure 29*). By leaving out two items of the scale the Cronbach Alpha value became higher therefore we decided to use a three-item scale.

SUBJECTIVE KNOWLEDGE SCALE						<i>a</i>
	SCALE ITEM	KOMPONENT	FAKTOR	КМО	SD	Cronbach Alpha
f_5	When it comes to food I really don't know a lot.*	0,884				
f_1	I know pretty much about food	0,877	Subjective	0.802	72 710	0.878
f_4	Compared to most of the people, I know less about food. $\ensuremath{^*}$	0,845	knowledge	0,802	73,719	0,070
	Among my circle of friends, I'm one of the					
f_3	"experts" on food Items excluded from factor analysis					
f_2	I do not feel very knowledgeable about food. *					
* items reverse scored						

Figure 29 – The scale of subjective food knowledge

Source: edited by the author based on Flyn and Goldsmith (1999)

3.4 The summary of the preliminary studies' results

	QUALITATIVE STUDY	QUANTITATIVE STUDY	SCALE TESTING
METHODOLY	Netnography	Self-report study	Self-report study
SUBJECTS	Online sources (blogs,	630 undergraduate	255 undergraduate
	chat rooms, forums)	students	students
TIME OF THE	June 2010	May 2009	May 2010
RESEARCH			
AIM OF THE	How do consumers use	How do consumers use	Which involvement and
RESEARCH	food labels?	food labels? What are	subjective knowledge
		the latent motives	scale is adequate for
		behind label use?	further research?
SOFTWARE USED	Nvivo 7	SPSS 17	SPSS 17
METHOD OF ANALYSIS	Text analysis	Variance analysis,	Faktoranalysis,
		multidimensional	variance analysis, scale
		scaling, Cluster	testing
		analysis	

Figure 30 – The summary of preliminary studies Source: edited by the author

PRELIMINARY STUDIES

The summary of the preliminary studies' results

In this chapter three preliminary studies are presented, whose goal is to build a basis of the theoretical model, test and pre-examine some items of the empirical research. The first preliminary study is a qualitative analysis conducted with exploratory methodology, followed by a quantitative questionnaire survey, and finally a questionnaire scale testing is presented (*Figure 30*).

Labelling on packaging plays an important part in the information search stage of a purchase decision process (although hard to separate from other information seeking activities) and affects the purchase decision itself, too. Based on the three preliminary studies (netnography, self-administered questionnaire and scale testing) we can conclude that labelling is needed, consumers use it both during their point of sale information search and home product use.



Figure 31 – The summary of the results of the exploratory qualitative research Source: edited by the author

Through the use of the method of **netnography** we aimed at exploring the general use of labelling on packaging and related consumer behaviours. The results of the exploratory research are limited due to both the nature of the method and its application: the outcome reflects the opinion of an active online population. Also,

the results do not make the exact values of behaviours and patterns identified clear, and fail to show how often and with which consumers these patterns surface. Nevertheless, we identified market factors in our exploratory research which result in label use. A widening assortment and increasing consumer choices, involvement in food and the fashion of conscious purchases are the factors due to which point of sale consumer information seeking is on the increase and consequently, labels on packaging are read and used in the decision making process.

Based on our results, two large consumer segments were identified: conscious and non-conscious consumer behaviours. Conscious behaviour strongly correlates with label use and reading the information displayed on packaging, while the non-conscious segment ignores labelling, explaining it with lack of time, disappointment and preference for other food attributes. Reading information on packaging can be classified in two ways, according to method of use (superficial, conditional, incidental) and place (home, or point of sale) (*Figure 31*).

We aimed at quantifying qualitative results using a **self-administered online questionnaire**. Our results suggest that respondents confirm their need for labelling and that they use them while choosing food.

In conclusion of our research we argue that labelling is an important factor in the purchase decision. Not every consumer reads labelling though, label use is also characterised by demographic and situational factors. Types of labelling differ in terms of their usage frequency and strong relationship was found between label use and gender, organic food consumption and vegetarianism. Product category is an important factor of label use, for consumers will look for different amount of information in different product categories. Consumers may be categorised by the type of information they want when purchasing a product as label types have varying relevance for them. Our research reveals that functional properties connected to health have higher priority for respondents than brand. In addition, origin (mainly if it is from Hungary) and the sell-by date are of interest out of compulsory label contents. If an expression is not familiar or advertised enough, consumers do not regard it important and ignore it when making their purchase decision.

A **new classification of labelling** has been introduced as a result of multidimensional scaling, which means a redefinition resulting from a consumer questionnaire. It is useful since consumers do not make their decision affected by compulsory components or descriptive or grading properties but are influenced some other, latent dimensions. Three such latent dimensions have been discovered.

The summary of the preliminary studies' results

First, prior knowledge, which is needed to interpret information. Second, involvement (which may be self-interest or public interest) also affects label use. Third, trust in labelling also influences the way labels are used. Another finding of our research is the grouping of labels resulting from cluster analysis. This classification includes so far little emphasised but increasingly searched factors by consumers such as nutrient information, functional, technological and ethical information as well as classic information types (on shape and brand). These are homogenous groups which can be described in terms of the three dimensions.

Finally, the **scales** of the two antecedents identified in the literature and in the preliminary research, i.e. the constructs of prior knowledge and involvement were **tested** in Hungarian, with Hungarian participants. Both scales were defined as unidimensional and have three items.

4 RESEARCH CONCEPT

'Learn from yesterday, live today and put hope in tomorrow. Most importantly though, never stop asking questions.' Albert Einstein - theoretical physicist

4.1 Theoretical model and hypothesis

Our endeavour has been to look at consumers' information seeking behaviour, i.e. how and why consumers seek information from external sources before their purchase decisions. Added to that, we also examine what factors affect the amount of information search, since information search is intertwined with the decision making process, they are difficult to investigate on their own, it is therefore important to examine these affecting factors, too. Beatty and Smith (1978) and Guo (2001) summarised the antecedents of information search and named marketing environment, knowledge, experience, individual differences, situational factors, product relevance, conflict resolution strategies and search cost as such. Out of these antecedents we are looking at individual differences (comprising variables of demography, diets and attitude), knowledge and experience (meaning prior knowledge and experiential knowledge) and marketing environment (involving product category and amount of information available - assortment depth, number of product attributes). The choice of these factors is based on the recommendations of the relevant literature (Guo, 2001) and the conclusions of our preliminary studies.

The topic is highly complex, therefore we need to apply limitations in this research. Information search is looked at through the purchase of **food**, the choice being underpinned by the high involvement of the products and changes seen in legislation, market environment and consumer attitude (Lehota, 2001; Verbecke, Vackier, 2003; Beharrel, Denision, 1995; Bell, Marshall, 2002; Drichoutis, Lazaridis, Nayga,2007). Second, the product attributes **found on packaging** are used, since they often constitute the primary and only source of information about food (Dörnyei. 2010a; Dörnyei, 2010b; (Ampuero, Vila, 2006; Underwood, 2003, Underwood, Klein, Burke, 2001).

Theoretical model and hypothesis

In the theoretical model which is about the relationship between information search and its antecedents, information search is a dependent variable while information supply (the number of product attributes, assortment depth), product category, individual differences and prior knowledge are independent variables. The dependent variable is one we wish to measure and which is assumed to be influenced by independent variables, having a causal effect on the dependent variable, i.e. information search. Research hypotheses mainly concern the relationship of the dependent and independent variables, the relationship of antecedents and information search. Finally, the differences between measured and assumed information search are analysed. Based on the theoretical model, the hypotheses to be examined are discussed below (*Figure 32*).



Figure 32 – Measurement model Source: edited by the author

How do individual differences affect information search? Demographic characteristics and diets have been found to be antecedents of information search in numerous studies in literature (Beatty, Smith, 1978; Guo, 2001). In this study it is considered important to examine these relationships for reasons of comparability with other studies and the reliability of the research. In this study, within individual

differences gender, income and a special diet are assumed to affect information search.

Earlier research suggests that it is primarily the task of **women** to provide their families with food. Consequently, they buy food more often (Mueller, 1991; Guthrie et al., 1995; Nagya, 1997; Govindasamy, Italia, 1999). It is therefore assumed that they look for more information since they are faced with more products while making their decisions. Further, men are less likely to give credit to the link between nutrients and a healthy diet, therefore they read labels less (Bender, Derby, 1992; Horváth, 1997). They are more likely to consume ready made food, and to purchase and consume food comfortably and fast, hardly conducive to looking for a lot of information.

 H_{1a} : Before making their food purchase decisions, female consumers look for information longer than male consumers. H_{1b} : Before making their food purchase decisions, female consumers look for more product attributes than male consumers.

Literature suggests that **income** also affects information search. Both a positive relationship (a better financial situation triggers more extensive information search) (Piedra, Schupp, Montgomery, 1996; Wang, Fletcher, Carley, 1995) and a negative relationship between the two variables have been established (Drichoutis, Lazaridis, Nayga, 2005; Schupp, Gillespie, Reed, 1998), therefore, because of the different results, the influence of income on information search should be examined. It is assumed that those in a better financial situation can afford to pick and choose whichever food they like, are less price-conscious and have the opportunity to consider other factors concerning a product, not merely its price, therefore they will look for more information about products.

 H_{2a} : Before making their food purchase decisions, consumers of higher income look for information longer. H_{2b} : Before making their food purchase decisions, consumers of higher income look for more product attributes.

Different **diets** are considered to be important information search antecedents (Bender, Derby, 1992; Drichoutis, Lazaridis, Nayga, 2005; Nayga, Lipinski, Savur, 1998; Schupp, Gillespie, Reed, 1998; Govindasamy, Italia, 1999; Dörnyei, 2008). A special diet followed by a consumer (for whatever reasons, e.g. losing weight, cleansing, health or religious) will define and limit the choice of products and make careful search and selection more probable during purchases. It is assumed that

Theoretical model and hypothesis

those following a special diet (slimming, cleansing, vegetarian, or organic) will look for more information, as they can not put just any food in their baskets.

 H_{3a} : Before making their food purchase decisions, consumers following a special diet look for information longer than those not following any special diets.

 H_{3b} : Before making their food purchase decisions, consumers following a special diet look for more product attributes than those not following any special diets.

How does product category involvement affect information search? Involvement refers to the increased attention consumers pay to an item (Clarke, Belk, 1978; Greenwald, Leawitt, 1984). Its correlation with information search has been an area of thorough research in literature (Durvasula, Akhter, 1990; Dörnyei, 2010b), and it has been unanimously found to have a positive relationship with that (Guo, 2001). Consumers tend to be increasingly conscious about food purchases (Lehota, 2001), and earlier studies have identified an exceptionally high level of involvement in the case of food (Verbecke, Vackier, 2003; Beharrel, Denision, 1995; Bell, Marshall, 2002; Drichoutis, Lazaridis, Nayga, 2007). Out of the different types of involvement, **product category involvement in the case of food** is examined here, referring to a higher level of attention in relation to food. This correlation is assumed to be positive, i.e. high involvement are in a position to make the best possible decision, so information search will receive more emphasis.

 H_{4a} : Before making their food purchase decisions, consumers with a high level of product category involvement look for information longer. H_{4b} : Before making their food purchase decisions, consumers with a high level of product category involvement look for more product attributes.

How does prior knowledge affect information search? Another widely studies area in literature is the relationship between prior knowledge and information search (Raju, Lonial, Mangold, 1995; Dörnyei, 2010b). Based on our preliminary studies we can confirm that knowledge is an important information search antecedent. Marketing literature distinguishes between objective, perceived (subjective) and experiential knowledge. Our study focuses on only the latter two as objective knowledge is difficult to measure. More precisely, product group purchase frequency and product category consumption frequency are investigated as the characteristics of experiential knowledge, along with perceived product group knowledge. Greater experience is clearly seen in literature to be in a positive

correlation with information search, for the justification of which major grocery shoppers as the experienced actors of food purchases were examined (Drichoutis, Lazaridis, Nayga, 2005). However, a negative correlation is assumed here between **purchase frequency** and information search. Those who make purchases frequently – as compared to those who have less purchase experience – will be more likely to look for information on an ongoing basis, therefore they will need less and less information with each new purchase as they will know the products and their attributes: there will be no need for them to study those attributes all over again each time.

 H_{5a} : Before making their food purchase decisions, consumers purchasing a certain product category more frequently will look for information for a shorter time.

 H_{5b} : Before making their food purchase decisions, consumers purchasing a certain product category more frequently will look for less product attributes.

Another source of experiential knowledge is the **consumption of a product category**. Similarly to purchase frequency, a negative correlation is assumed here. If consumers consume a type of food on a regular basis, they will have sufficient knowledge to feel experienced and go without information search during any subsequent purchase.

 H_{6a} : Before making their food purchase decisions, those who consume a certain product category more frequently will look for information for a shorter time.

 H_{6b} : Before making their food purchase decisions, those who consume a certain product category more frequently will look for less product attributes.

Raju, Lonial and Mangold (1995) assumed a positive monochronistic relationship about **perceived knowledge** but their hypothesis was not justified, no significant relationship was identified. Here a negative correlation is assumed between perceived product category knowledge and information search, since those with high perceived product category knowledge will make do with less information search, as they are self-confident, think they know enough and will make less effort in search of information for a shorter period of time.

 H_{7a} : Before making their food purchase decisions, consumers of higher perceived product group knowledge will look for information for a shorter time.

Theoretical model and hypothesis

H_{7b} : Before making their food purchase decisions, consumers of higher perceived product group knowledge will look for less product attributes.

How does product category affect information search? A weakness of information search studies is explicitly recognised by literature, i.e. there has been no research on examining information search in terms of product categories (Beatty, Smith, 1978; Guo, 2001). Although the assumption that different products will induce different information seeking behaviour, is obvious, it has not been supported by evidence. As in our preliminary studies an association between product category and information search was found, the examination of this association seems justifiable. In this research measurements are only taken within the product group of food, differences between certain product categories are assumed concerning the amount of information search. Information search differences are studied within the product group of food, with products suitable to meet the same consumer needs and substitute one another in similar product categories.

 H_{8a} : Before making their food purchase decisions, consumers look for information about substitute products which can satisfy the same consumer need for various lengths of time.

 H_{8b} : Before making their food purchase decisions, consumers look for various numbers of product attributes about substitute products which can satisfy the same consumer need.

How does information supply affect information search? Information oversupply does not provide consumers with extra advantages (Jacoby, 1977). It affects purchase decisions negatively as consumers make worse decisions (Malhotra, 1982). Since consumers aim at making the best possible decision, oversupply does not mean less information search, on the contrary, it triggers a bigger effort for the right decision. Consequently, information seeking will be more intensive. It is assumed that the more information consumers are faced, the longer time the will spend on information search. Assortment depth referring to the horizontalness of search and the number of product attributes referring to the verticality of search are used as two factors of information supply.

Assortment depth is assumed to be in a positive correlation with information search. If there are few number of products within a certain product category, information search will be lower, while if there are more numerous products, their comparability will be more difficult, resulting in information search requiring more time and energy.

 H_{9a} : Before making their food purchase decisions, consumers look for information longer if product assortment is deeper. H_{9b} : Before making their food purchase decisions, consumers look for more product attributes if product assortment is deeper.

Product attribute number has a similar effect on information search; if a product is described by few product attributes, then there is no need for lengthy information seeking as opposed to products defined by a number of product attributes.

 H_{10a} : Before making their food purchase decisions, consumers look for information longer if the number of product attributes is higher. H_{10b} : Before making their food purchase decisions, consumers look for more product attributes if the number of product attributes is higher.

Also, it is assumed that there is a positive, continuous, functional relation between **information supply** (defined as the product of the number of product attributes and product supply) and information search. The more information a consumer is faced, the more the amount and time of their information search will increase.

H_{11a} : Before making a food purchase decision, there is a positive functional correlation between the duration of information search and information supply.

 H_{11b} : Before making a food purchase decision, there is a positive functional correlation between the number of product attributes looked for during information search and information supply.

Do perceived and actual information search differ? Literature has measured information search by the means of several methods. One subtype of information search is perceived information search, which defines the amount of information search on the basis of what consumers admit to, including the methods of questionnaires (Baltas, 2001) or focus groups (Wright, 1997). The other subtype, actual information search is measured via the observation of consumer activities, including laboratory experiment (Rawson, Janes, Jordan, 2008) and point of sale observation (Russo et al., 1986; Cliath, 2007). Perceived results are higher than actual ones, since consumers want to comply with the stereotype of a conscious consumer and tend to acknowledge more information search than their actual efforts. Besides, more extensive information search is strenuous and complicates decision making therefore only works in theory (Russo et al., 1986). It is assumed

Research variables and their operationalisation

that perceived information search results will be higher than measured ones due to reasons presented above.

 H_{12} : Perceived information search size based on consumers' self-assessment aimed at measuring consumers' information search before making their food purchase decisions, indicating the number of product attributes used in making the decision, consistently overestimates the numbers of product attributes viewed during information search measured with the research methodology.

4.2 Research variables and their operationalisation

After creating the research model the factors of the model are made analysable i.e. operationalised, then variables used in the hypotheses are defined, followed by finally the presentation of the measurement methods.

Information search refers to an activity of consumers whereby relevant data in connection with a product and its usage are explored, in order to meet a need emerged in the most satisfactory way. The **SIZE** of in information search is the amount of data collected. The size of information search is the dependent variable of the research, which is measured in this research with the usage of product attributes on food packaging before purchase decisions: through looking at which product attributes were searched before making a decision. The size of information search, the amount and the type of information required. Information search can be operationalised in two ways: either through the measurement of actual information search habits.

Measurement is taken through observation, in the course of which consumers' information search behaviours are observed and recorded in a real or artificial buying decision situation. For quantification purposes it has to be clear which type of information is looked for, for how long and how frequently so. **The measured size of information search equals therefore the total number of attributes**

looked for by product category, or the time spent on looking for that given attribute. This way, through the appropriate transformations information search becomes definable by an indicator and comparable across individuals, across products and across product attributes.

Another way to measure information search is to measure the **acknowledged amount** of consumers' information seeking behaviour. By doing so, it is not the actual behaviour of consumers which is observed. Based on this type of measurement **the total number of attributes by product category** can be defined, which, through the appropriate transformations, can also be described as an indicator and made comparable across individuals, across products and across information types.

Product category *is a group of products perceived by the consumer to be in connected with their need and whose individual elements can substitute one another in satisfying that need.* Product category is an independent variable in the model. In order to establish the effect product category has on information search, within the food product group several product categories should be used which can substitute one another and see if there is a difference in information search behaviour. When choosing between categories, it is important to select a cognitive product instead of an emotional one (Lehota, 2001). With cognitive products selection is more likely to take place based on rational information instead of habits or emotions. After discussions with experts, the selected product categories within non-alcoholic soft drinks comprised **orange juice, carbonated mineral water** and **elderflower syrup**.

Fruit juice is the fermentable but unfermented product obtained from fruit which is sound and ripe, fresh or preserved by chilling, of one or more kinds mixed together, having the characteristic colour, flavour and taste typical of the juice of the fruit from which it comes⁴. Three types of it may be distinguished; juice, nectar and drink, which differ in their respective amounts of fruit content. Annual fruit juice consumption was 13.21 l/capita in 2007 with orange juice (20%) being the second most popular flavour after mixed flavours. Mineral water is certified drinking water meeting strict criteria of water quality. Based on its CO₂ content, the carbonated variety is the most popular (60%)⁵. Mineral water consumption was 110 l/capita on average in 2009. Fruit syrup is a viscous product produced from fresh or conserved fruit juice, concentrated fruit juice, fruit pulp, or a mixture of

⁴ <u>http://www.fvm.gov.hu/doc/upload/200704/19_2007_fvm.pdf</u>

⁵ http://www.asvanyvizek.hu/old_site/fogyasztok/adatok/index.html

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Research variables and their operationalisation

those with the addition of sugar and additives⁶. On the basis of their fruit content, fruit syrup and fruit flavoured syrup are to be distinguished between. Elderflower syrup was selected as it is a typical Hungarian flavour, in the fruit juice market several brands have introduced products with elderflower flavour (e.g. 'Fütyülős' Elderflower Lemonade, Fanta Elderflower, or Apenta Elderflower).

The three products can substitute one another, and are considered cognitive products rather than emotional ones. All of them have a deep assortment, large product variety and are sold in all types of packaging. Besides, their markets are innovative and have many actors, include both domestic and international, small and multinational producers and distributors.



Figure 33 – Images of the products included in the research Source: edited by the author - (participants didn't see them)

⁶ http://www.omgk.hu/Mekv/2/233 3.pdf

Depth of product assortment refers to the number of similar products available within a product category, able to substitute one another. It was not studied earlier in detail therefore it is reasonable to examine this variable. In this research it is included as an independent variable. Assortment depth is used as the horizontal variable of information supply. The effect of assortment depth can be examined by comparing several assortment levels. In this research 3 levels are investigated: narrow assortment (2 products), medium assortment (4 products) and deep assortment (6 products). The level of assortment depth was determined after point of sale observations; while corner stores had a narrow assortment, deep assortment was typically found in hypermarkets. The 6 products of the individual product categories were identified in the course of a point of sale visit'. An important aspect when choosing products for inclusion in this research was that they should differ in terms of their properties and both market leader and marginal (diabetic) products should be present in it. The selection of products for each assortment level was based on discussions with experts and the market share of the products similarly to the category management decision of points of sale: we tried to optimise assortment, and include products of different properties in the experimental groups (Figure 33).

ORAN	GE JUICE, ELDERFLOWER	MINERAL WATER			
	Name				
	Brand				
	Price (HUF)				
7 PRODUCT ATTRIBUTES	Net weight and volume				
	Place of origin				
	Name and address of manufacturer/distril	butor			
	Ingredients				
	Average energy value in 100 ml product	For mineral water: total mineral content dissolved			
10 PRODUCT ATTRIBUTES	Average nutritional value and vitamin	For mineral water: mineral			
	content in 100 ml product	content dissolved			
	Storage and usage conditions				
	Type of packaging				
13 PRODUCT ATTRIBUTES	Claims concerning health, the ingredients of the product and manufacturing				
	Certifications, guarantees, other information				

Figure 34 – Product attributes in the research Source: edited by the author

⁷ Point of sale visit took place in Auchan Óbuda on 17 May 2011 (<u>http://aquincum-obuda.auchan.hu/).</u>

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Research variables and their operationalisation

Number of product attributes refers to the number of attributes describing a product, i.e. how many product attributes consumers use to be able to compare products within one product category. This variable has not been studied in connection with information search. It is included here as an independent variable. The number of product attributes is used here as the vertical variable of information supply. The influence of the number of product attributes can be measured by comparing the different levels of the variable. In this research the attributes found on packaging are used. The values of those product attributes were defined on the basis of information on packaging about products identified in the course of the above mentioned visit to a point of sale. Three levels of product attributes and 13 product attributes, decision about which attributes referred to compulsory or voluntary information content (*Figure 34*).

Perceived product group knowledge and experience *both refer to dataset stored in the memory.* Both are important antecedents of information search and are included in the research as dependent variables. Perceived (product group) knowledge concerning food is measured with the 3-item, 7-degree semantic differential scale presented and tested in the preliminary studies. Consumers' knowledge is compared on the basis of factor values drawn from the scale in terms of three levels often used in literature, too, i.e. being of **low, medium, or high level**. Product group purchase frequency and product category (orange juice, mineral water, elderflower syrup) consumption frequency were measured using categorical variables.

Product group involvement an individual, internal state, perceived relevance based on inherent interests, values and needs with intensity, direction and persistence properties and in whose centre is the consumer. It is an important antecedent of information search, and is included in the research as an independent variable by comparing three levels of it. Out of involvement types product group involvement is used in relation to food products, measured with the 3-item, 7-degree semantic differential scale presented and tested in the preliminary studies. Consumers are described and compared on the basis of factor values drawn from the scale along three levels often used in literature, too, i.e. being of **low, medium, or high level**.

Demography and diets are the dependent variables of this research, the antecedents of information search. The variables examined included gender, financial situation and special diets such as vegetarianism, slimming diets, diets

prescribed by doctors and cleansing diets can be operationalised as categorical variables.

Other descriptive variables are variables suitable to describe the sample, including mainly demographic (profession, place of residence, age, type of household) and attitude (environment consciousness, health consciousness) details (*Figure 35*).

DEMOGRAPHY				
Gender?	Categorical			
How do you judge your financial situation?	Categorical			
NUTRITION HABI	TS			
How often do you go on a cleansing diet?	Categorical			
How often do you go on a diet on medical advice?	Categorical			
How often do you go on a slimming diet?	Categorical			
Do you consume organic food?	Categorical			
Are you a vegetarian?	Categorical			
PRODUCT CATEGORY INV	OLVEMENT			
Food interests me.	7-item semantic differential scale			
Food is important to me.	7-item semantic differential scale			
Food has great significance to me.	7-item semantic differential scale			
PERCEIVED PRODUCT GROU	P KNOWLEDGE			
I feel well informed about food.	7-item semantic differential scale			
I feel informed when it comes to food.	7-item semantic differential scale			
I really know a lot about food.	7-item semantic differential scale			
EXPERIENTIAL KNOW	LEDGE			
How often do you buy food for your household?	Categorical			
How often do you consume mineral water?	Categorical			
How often do you consume orange juice?	Categorical			
How often do you consume syrup?	Categorical			
OTHER DES CRIPTIVE VARIABLE				
What is your job?	Categorical			
What is your place of residence where you spend most of the year?	Categorical			
How old are you?	Categorical			
What is your household type?	Categorical			
I am health conscious.	7-item semantic differential scale			
I am environment conscious.	7-item semantic differential scale			

Figure 35 – Descriptive and independent variables

Source: edited by the author

Research methodology: experiment

4.3 Research methodology: experiment

In literature several methods have been used for studying external information seeking. These included questionnaires (Baltas, 2001) to explore label use, qualitative methodology, for example focus groups (Wright, 1997), laboratory experiment, for example eye tracking (Rawson, Janes, Jordan, 2008) and point of sale observation and research (Russo et al., 1986; Cliath, 2007).

When selecting the research method it needs to be taken into account that it is a complex phenomenon, whose exploration greatly depends on the methodology itself. The disadvantage of questionnaires, earlier the most popular method, is that they show perceived information search by consumers instead of actual information seeking behaviour. Through point of sale observation information search may only be monitored at a certain point in time and in a certain situation, and it fails to take the prior knowledge of consumers into account, and on the whole it does not reflect reality. Our preliminary studies proved that consumers do not only look for information at the point of sale but at home, too. Besides, those who often purchase a product, are probably already in possession of a given piece of information and in the course of routine shopping trips will look for information more rarely. The eye tracking experiment is a suitable means to identify the impact of visual stimuli but does not satisfactorily explain information search; and although the direction of attention can partially be measured, this method leaves several information search related questions open.

Russo et al. (1986) draw attention to the difference between the methods of questionnaires and observation. In questionnaires consumers often overestimate the size of their information search which has not been underpinned by point of sale observation. The authors argue that questionnaire based studies about consumers' information seeking behaviour paint a much more favourable picture since consumers say they need a wider range of information but at the same time information search is tiring and makes decision making more difficult.

The methodology selected for this study is the **multivariate computer administered laboratory experiment**. The experiment is a research strategy in which independent variables whose effect we wish observe are systematically varied while other factors are kept at the same level (Keppel, 1991), which seems to be the appropriate method for examining the associations of the hypotheses. The

laboratory experiment takes place under monitored conditions therefore variables are highly controllable and distracting conditions can be filtered out, ensuring high internal reliability to results. Its disadvantage is that it becomes hard to generalise to a multitude of situations in life from one artificial situation, which jeopardises external reliability but it can be minimised through the right execution of the experiment. A multivariate experiment is applied here as we want to examine the effect of several independent variables. On a computerised surface with the help of experimental methodology using software, participants can search the surface similar to an online store for information about products. Obviously, in an experiment store environment and packaging cannot be perfectly imitated, but we argue that this software based solution imitating online purchase situations is appropriate for measuring information search if participants are familiar with the online environment resembling an actual store even if it is virtual.

Using this method enables us to record the entire information search process, to identify search patterns and specialities, to observe and measure required product attributes and time spent with the help of this computer software. In this way information seeking behaviour patterns become comparable and we will be able to get new information in connection with point of sale information search. This is the methodology with which information search can be documented to its most accurate and light can be shed on tendencies which have not yet been identified in literature.

4.3.1 Description of the experiment

The research consisted of three parts. In the first part participants filled in a 20question questionnaire aiming at measuring descriptive and measured independent variables. After that a pilot test was carried out, then respondents were asked to actually test products, where they were to select a product within the three product categories offered. They were provided with the opportunity to look for any information necessary for their decisions. Thus we were able to accurately document the product attributes subjects wanted to know about a certain product. Information search, the dependent variable of the experiment, was measured by a click count and the exact duration of information search.

In the course of the experiment three independent variables were manipulated as without it our best estimation would be the mean of the sample, but in this way,

RESEARCH CONCEPT

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instead of using the mean of the entire sample, we took the grouping created by the independent variable into account. Where the means of the two groups notably differed, the independent variable became a useful predictor variable. One independent variable was product category whose three levels (orange juice, mineral water and elderflower syrup) were used. Participants were shown all the products (variable levels) one after the other, meaning that in the experiment each participant was to decide which product they will purchase in three food product categories (in-between subject). The other independent variable was assortment depth with also three levels: participants could see 2, 4 or 6 products at any one time but this was manipulated with each participant while everything else was kept at a constant level (between subject). The third independent variable was the number of product attributes with again three levels. 7, 10, or 13 product attributes were at participants' disposal in connection with each product which they could check by clicking on a certain button. Participants were free to look at the information for any length of time but were allowed to open only one product attribute at any one time. If they wanted to see a product attribute they clicked on it, if another, then by clicking on the next one, the previous window automatically closed. This could be repeated with every type of information and participants were free to decide how long they spent on information search. Pictures of products were not shown to bypass the impact of visuality.

In the experiment subjects were divided into groups based on independent variables. Measurements were carried out *between subjects* along with repeated measurements *within subjects*. This resulted in a 3x3x3 **mixed research design** (*Figure 36*). 9 research groups were identified based on the 3 variable levels of the two independent variables manipulated between participants. In the experiment to rule out any other influences, all participants, product categories and product attributes were randomly assigned to groups and products were shown randomly to rule out possible distortions arising from order.



Figure 36 – Mixed research design Source: edited by the author

We applied **deception** in the research as participants were not fully informed: they were asked to choose between products instead of specifically looking for information. The research task was formulated in a way that it is plausible, so that participants do not conjecture and that their answers should not be determined by their speculations concerning the goals of the experiment. Even though manipulation involves some ethical concerns, its application was unavoidable since it would have distorted participants' replies if they had known the real goal of the experiment, i.e. the exploration of information seeking behaviour.

Information search was measured in this research with OPTEST (Online Product Test), a software specifically developed for this purpose⁸. The software chose products from the elements of the product set through test case generation

⁸ The software was developed by 1x1 Webdesign applications development group (<u>http://1x1webdesign.hu/</u>).

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according to the parameters prescribed in the research. When defining the test series, the number of test cases (3 test cases), assortment depth appearing on one screen (2, 4, 6) and the numbers of product attributes (7, 10, 13) were recorded (*Figure 37*).



Figure 37 –User interface of the research software Source: software screenshot (projects.1x1webdesign.hu/optest)

The program distributed parameters evenly among test cases. Based on the parameter number the program determined the minimum number of test cases to be carried out. It was important that assortment and product attributes should be independent from their location on screen therefore they appeared randomly on screen. During a test case the program recorded a test case identifier, a test subject identifier (anonymously, with a number), the number of research group, data about clicks (click location and the time of clicking) and the identifier of the product purchased. The data revealed the number of clicks for any given test case (how many times a subject clicked on a test case screen before selecting a product), the order of clicks and the time between each click. After the experiment measurement results were obtained in a format accessible for SPSS.

4.3.2 Main analysis methods
Analysis methods offering themselves due to the nature of this experiment included frequencies, contingency tables and variance analyses, and as a modelling procedure we applied regression analysis (Malhotra, 2001; Hunyadi, Vita, 2002; Sydsaeter, Hammond, 2000; Keppel, 1991). Also, the two scales tested earlier were described. As they were already introduced they will not be discussed here in detail.

One-way analysis of variance, or ANOVA is used for examining the differences between average values of dependent variables together with the influence of controlled variables, taking the influence of uncontrolled independent variables into account. In this method the dependent variable is metric, while independent variables can be categorical or metric. The aim of the method is to test the null hypothesis, that there is no difference between the means, and groups are identical in all samples in terms of target variable means. If the significance level of test statistic is lower than 0.05, the null hypothesis is discarded, meaning that means are not equal. If, however, significance level is higher than 0.05, the null hypothesis is retained, the means are equal. The analysis of variance can be carried out if its preconditions are met, i.e. the dependent variable is of high measurement level (at least interval level), the dependent variable has a more or less normal distribution, in the groups examined the item number is roughly identical and the deviation of the dependent variable does not correlate with the group mean. In our research the analysis of variance is an appropriate method for comparing the means of groups created on the basis of the experiment groups generated by the manipulated independent variables across participants and the values of categorical variables.

Paired sample t-test compares the means of variables of high measurement level (at least interval level) in one group or two groups belonging together. Its null hypothesis is that means will be identical. If the significance level of test statistic is lower than 0.05, the null hypothesis is discarded, meaning that means are not equal. If, however, significance level is higher than 0.05, the null hypothesis is retained, the means are equal. Normal distribution is a precondition of the test, as the test is robust, a distribution slightly differing from normal will not distort results considerably. In our research paired sample t-tests are appropriate methods for comparing the means of manipulated independent variables across participants.

In **regression analysis** in statistics the functional relation between two or more variables is modelled. Through regression analysis, based on a representative survey and considering general correlations any concrete value about a population can be calculated concerning an element examined belonging to the population. Based on the properties of the regression model, linear and nonlinear regression is

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distinguished. The main indicator of regression analysis is R^2 , marking the explanatory power of the model and the strength of the correlation insofar as to what extent independent variable(s) predict the dependent variable. With the F-test the null hypothesis, i.e. R^2 is zero, meaning no relationship between the variables, can either be underpinned or discarded. If the significance level of test statistic is lower than 0.05, the null hypothesis is discarded, i.e. there is relationship between dependent and independent variables. In our research regression analysis is used for analysing the association between the dependent and independent variable to establish if there is a functional relation between them.

5 RESEARCH RESULTS

'If your results justify your hypothesis, you have carried out a measurement. If your measurement contradicts your hypothesis, you have made a discovery.' Enrico Fermi – Italian-American physicist

5.1 Recording the data

A general observation concerning experiments is that the principle of randomness and representation can only be approached but never entirely attained when identifying the subject sample. Therefore our aim as to sampling was to get as homogenous a sample as possible, i.e. for subjects to have similar properties and by doing so, that external variables do not influence results (Szokolszky, 2004). A **convenience sample** was used for this experiment where target population involved university students. The research was carried out at the Economic Science Faculty of Corvinus University in Budapest⁹ with the participation of several student groups (BSc, MSc and PhD). Participation in the research was anonymous and voluntary but students were motivated with extra class points to take part. The experiment took place between 11 and 24 March 2011 on an online surface¹⁰.

A reason behind using a student sample was that we were using an online computer software and using it required computer skills and familiarity with online surfaces. Although the distortions arising from the novelty of computerised methodology were removed through product pilot testing, general computer skills proved essential, which university students, in our earlier experience, have. Besides, the target group often purchase each and every one of the product categories used in this research (mineral water, orange juice and elderflower syrup). Consequently, the sample is considered appropriate for the purposes of this research.

The software OPTEST generated a database file (extension 'csv') of 762 columns and 393 rows of a configuration described earlier. It contained all the variables of the questionnaire and the product test. The SPSS software was used for analysis. As replying to all the questions was compulsory, we had no missing items and only

⁹ 1093 Budapest, Fővám tér 8.

¹⁰ The experiment is available at <u>http://projects.1x1webdesign.hu/optest/</u>

Recording the data

fully administered product tests were included in the evaluation. Inconsistent respondents were excluded with the help of our filter questions during data cleansing.

Finally 393 valid responses were included in the research and this number meets the criterion of doctoral dissertations¹¹. In order to enhance the validity and reliability of the experiment, participants were randomly divided into experiment groups by the software, thereby increasing the probability that these groups would, on average, be similar in all their relevant characteristics and only differ when it came to independent variables. Besides, the order of the three product categories, including the order of individual products and the order of product attributes used in the research were all generated in a random manner, thus removing distortions arising from order. The number of participants of an average group was 44, the least populous group counted 44, while the largest group had 53 participants (*Figure 38*).

A	LLOCATION	OF PARTICI	PANTS IN EXP	PERIMENTAL O	GROUPS
	TOTAL				
		7 attributes	10 attributes	13 attributes	TOTAL
ict Jent	2 products	43	43	48	134
rodi	4 products	45	49	30	124
P	6 products	53	50	32	135
,	TOTAL	141	142	110	393

Figure 38 – Allocation of participants in experimental groups Source: edited by the author

In order to explore possible distortions arising from the software surface, the mouse use of participants (recorded by the software) was examined. By placing the image of mouse movements on screenshots the activity of participants was looked at during product testing in all subject groups. Based on the results it is argued that both this computer software and the research methodology are appropriate as the availability of products and product attributes were not distorted: all products and product attributes were visible and used to the same extent. Based on click counts and mouse use participants looked at side and middle products and top and bottom product attributes to the same extent during the information search process: participants' information search was not affected by either the horizontal or the

¹¹ The number 393 well exceeds the 180 accepted in the draft thesis.

vertical position of products or product attributes. Also, a respondent remained at the same place for a longer time only in few cases, showing that in the research respondents made full use of the space available for them (the screen) and were relatively active in clicking and moving the mouse.

The example below shows how the subject group of 6 products and 10 product attributes moved the mouse. Mouse position is marked in the coloured spots in the screen: the warmer the colours of the spots are, the longer time respondents spend in one place without another clicking, i.e. not clicking on another product attribute. Spending 15 seconds in one place means a dark blue spot, whereas spending 979 seconds there results in a red spot, which is relatively rare. The characteristic of the image is that participants clicked on the middle of the button the most, and not on its sides, so the six products are markedly delineated by the narrow lines between the products (*Figure 39*).



Figure 39 – Screen usage Source: edited by the author, n=393, March 2011

5.2 General descriptive results; introducing the sample

General descriptive results; introducing the sample

In the first part of the analysis the general characteristics of the sample are presented, along with the general description of the variables of the hypotheses.

5.2.1 Individual differences and attitudes

The subjects of the research were undergraduate students, their representative demographis were not available, we intend to use demographics of the hungarian population to compare our sample.

33% of respondents were male and 76% female, which, compared to the 47/53% ratio of the Hungarian population on 1 January 2011, is a slight distortion in favour of women¹². As far as their perceived financial situation was concerned, 54% said they had a very good or a good financial situation, 43% said it was average while only 3% of participants admitted to a poor or very poor financial situation. With reference to their age, they were 23 years of age on average, with a relatively low deviation (3.71). Most of them were university graduates (59%), undergraduates (38%), or postgraduates (3%). Compared to the distribution according to education levels of the 15-74 year-old segment of Hungarian population, where 28% has completed primary or lower education, 55% have a secondary and only 17% have a tertiary education degree, it is considered to be a homogenous sample ¹³. Respondents largely included students (84%), employees (11%) and managers or freelancers (3%). There were 370331 students enrolled in Hungarian tertiary education in the academic year 2009/2010, constituting 3.7% of the total population, therefore our sample is considered homogenous from this aspect, too. In terms of place of residence 80% lived in the capital, 15% in towns and 5% in country villages in most of their time. The total Hungarian population's distribution is the following: 17% live in the capital, 52% reside in towns and 30% in villages¹⁴, therefore this variable also confirms the homogeneity of our sample. Relating to their household type, 7% live on their own, 16% live in a relationship without a child, 3% live in a relationship with a child, 42% live at home with parents and 30% live in rented accommodation or student halls. According to

¹² http://portal.ksh.hu/pls/ksh/docs/hun/xstadat/xstadat_eves/i_wnt001b.html

¹³ http://portal.ksh.hu/pls/ksh/docs/hun/xstadat/xstadat eves/i qlf015.html

¹⁴ http://portal.ksh.hu/pls/ksh/docs/hun/xstadat/xstadat eves/i wdsd001b.html

Central Statistics Office data the average number of people sharing accommodation was 2.6 people per household in 2008 in Hungary¹⁵.



Figure 40 – Special diets

Source: edited by the author, n=393, March 2011

As far as **eating habits** are concerned 8% of participants go on a cleansing or liquid diet several times a year, 21% on special occasions, while 71% never have a cleansing or liquid diet at all. For the motive of losing weight 9% are constantly on a diet, 19% diet several times a year, 34% diet on special occasions, and 38% never go on a diet. Hardly any of the respondents adhere to a diet for medical advice, 84% never do so, whereas 16% follow diets prescribed by doctors on special occasions, which is a consequence of their young age and confirms their general good state of health. Consuming organic foods¹⁶ or being a vegetarian also means a special diet, therefore we also looked at the frequency of those. Only 20% is the ratio of those who never consume organic food, whereas 3% eat organically daily, 12% several times a week, 22% several times a month and 42% on special occasions. 10% are partially and 2% are wholly vegetarians, while 88% do not follow a vegetarian diet (*Figure 40*). A high proportion of respondents said they were health conscious (73%), 16% could not decide and only 12% did not consider themselves so. Environment consciousness had lower values than health

¹⁵ <u>http://portal.ksh.hu/pls/ksh/docs/hun/xstadat/xstadat_eves/i_zhc001.html</u>

¹⁶ Organic foods are foods produced following strict rules on organic foods, without the addition of chemicals, artificial or genetically modified ingredients. The whole production process is closely monitored and only foods certified suitable for this purpose by an independent certification agency may be marketed as organic foods (Dörnyei, 2007).

General descriptive results; introducing the sample

consciousness, 67% are environment conscious, 18% cannot decide and 16% think they are not environment conscious.

5.2.2 Prior knowledge and involvement

Our experience suggests that the sample is considered appropriate concerning **the frequency of product category purchases**: 92% of respondents go shopping for food, either alone for their household (17%), or together with those in the same household (74%). 8% do not purchase food at all. Those who never purchase food, typically live with their parents. Those who live alone or in a student hall usually go shopping for food on their own, those who live in a relationship, with children, normally go shopping with the members of their household (*Figure 41*).



Figure 41 – The relationship between shopping and household type Source: edited by the author, n=393, March 2011

On the basis of the other indicator of experiential knowledge, i.e. **product category consumption**, the sample is also considered appropriate, since mineral water is consumed by two thirds of the respondents (66%) every day, 21% drink it several times a week, 13% less times than that and 1% never consume it. Orange juice is drunk less: 6% drink it daily, 27% several times a week, 46% several times a month, 18% on special occasions, and 3% never drink it. Syrup consumption is even less widespread, as 26% of respondents never drink it, 34% consume it on special occasions, 40% drink it regularly, 25% monthly, 11% weekly and 4% daily. Consequently, in connection with mineral water and orange juice we can generally speak about significant experiential knowledge, while elderflower syrup is a less frequently consumed product (*Figure 42*). There is no demographic variable which significantly affects the consumption of any of these products, therefore it must be assumed that consumption is primarily defined by taste and personal preferences.





The third variable of prior knowledge is **perceived product group knowledge**, for which we used the three-item perceived knowledge scale tested in the preliminary studies. Respondents felt they knew the type of food as a product and thought they knew a lot about it. Individual scale items received average values between 3.15 and 3.66 (*1 Absolutely true for me; 7 Not at all true for me*). The scale had an

General descriptive results; introducing the sample

appropriate reliability value (Cronbach Alpha: 0.865), so through a confirmatory factor analysis we received a factor having high explanatory power (variance 79.7%) and a high KMO value (0.714), confirming its appropriateness for our further examinations.

The three-item **product group involvement scale** tested in our preliminary studies was used for measuring food involvement. The results show that food has a high involvement level, the mean values of individual items ranged from 2.47 to 2.39 (1 *'Absolutely true for me'; 7 'Not at all true for me'*) with a low standard deviation of scale items. The scale has a suitable reliability value (Cronbach Alpha: 0.879) so through a confirmatory factor analysis we received a factor having high explanatory power (variance 80.72%) and a high KMO value (0.736), confirming its appropriateness for our further examinations (*Figure 43*).

	MEAN	STANDARD DEVIATION	CRONBACH ALPHA	COMPONENT MATRIX	КМО	EXPLAINED VARIANCE				
		FOOD II	NVOLVEMENT	ſ						
		(1 'Absolutely true for	r me'; 7 'Not at all tru	ue for me ')						
Food interests me.	2,47	1,332		0,896						
Food is important to me.	2,34	1,265	0.870	0,917	0.726	80 72%				
Food has great significance to me.	2,29	1,407	0,879	0,882	0,750	80.72%				
	PE	RCEIVED KNO	WLEDGE ABC	OUT FOOD						
((1 'Absolutely true for me'; 7 'Not at all true for me')										
I feel well informed about food.	3,17	1,567		0,848						
I feel informed when it comes to food.	3,15	1,284	0,865	0,919	0,714	79.70%				
I really know a lot about food.	3,66	1,364		0,91						
	- /									



Variance analysis (ANOVA) showed that involvement and knowledge was significantly related to several demographic factors (p<0.001). Women have higher involvement levels in the area and have higher perceived knowledge. Those who go on a slimming, cleansing or liquid diet, have higher involvement levels and higher levels of knowledge. Those who consume organic food have higher levels of perceived knowledge. Health consciousness and environment consciousness showed strong correlation with both factors: health conscious consumers had significantly higher levels of perceived knowledge and involvement in food.

5.2.3 Product choice

Depending on their subject group, participants could see 2, 4, or 6 products at the same time, out of which they were supposed to select one. With the product category of **mineral water** in case of two products Nestlé Aquarel was chosen in 63% while Ave in 37%. With four products Nestlé retained its first place although with only 52%. Balfi came in second with 21%, Lillafüredi got 10% and Ave fall back to 16%. Among six products Nestlé Aquarel remained at 52%, Ave increased its share to 20%, Balfi's decreased to 13%, while Jamnica (5%) and Hargita Gyöngye (3%) came in last. Within the product group of mineral water, Nestlé Aquarel fared as a leading product, and was by far the most popular product on all product supply levels during product choice. As there are no marked differences between mineral waters, what we find here is a strongly branded product and therefore a brand-based choice.

With the product category of **orange juice**, when participants were to choose between two products they mostly chose Cappy (72%), while Hey-Ho received only 28%, probably due to Cappy's 100% fruit content as opposed to the 12% fruit content of Hey-Ho. When choosing from four products Hohes-C came in first with 59%, Cappy second with 24%, followed by the own brand Alley (9%) and lastly Hey-Ho (8%). Selecting from six products still meant that Hohes-C was first, although its share decreased somewhat (to 56%), Cappy was second again (22%) with the remaining 22% being divided by and large to the same extent between Hey-Ho (7%), Alley (7%) Pascual (5%) and Top-joy light (2%). Similarly to mineral water, a leading brand, Hohes-C, was identified within the orange juice product category: it was chosen in the largest proportion on all product supply levels, which is understandable considering that it is a functional product that has been present on the orange juice market for the longest time. Besides, the manufacturer is carrying out strong marketing activities.

Within the **elderflower syrup** product category out of two products Yo and Auchans' own brand syrup got approximately equal share (55-45%). But when choice was made from four products, their share decreased and Piroska became the first with its 45%, followed by Sio (27%), and the two earlier products came only after them with 14% each. Finally out of six products Piroska increased its share to 47%, Sio's slightly decreased (20%), Zümi achieved 15%, Yo decreased to 8%, Auchan's own brand fell back to 6% and d'arbo Diabetiker came in last (4%). With elderflower syrup the facts that Piroska was the first and it was also able to increase its share even when product supply widened are both surprising. The reason for it is that participants do not consume the product category on a daily basis, they have no usual favourite brands and therefore they opted for the best value for money

products from the product supply where there were several similar products (*Figure 44*).



Figure 44 – Choice within product categories Source: edited by the author, n=393, March 2011

Interpreting the results would be improved if they had been compared to real market share data. Unfortunately, however, we were not able to do so, since producer and distributor companies refused to reveal their data.

We looked at how product choice related to demographic, attitude and eating habits using variance analysis (ANOVA), which showed a significant correlation (p<0.001) in some cases. Nestlé Aquarel was more chosen by women, which may originate in Nestlé's positioning: it connects its product with a healthy lifestyle and conscious eating habits. Hey-Ho was bought by men, supposedly because it did not have a 100% fruit content. In terms of qualifications, those with higher qualifications chose Alley orange juice and Balfi mineral water. The explanation for it may be that Alley was the same in terms of its ingredients as branded orange juices and that Balfi is a traditional Hungarian brand. The larger the population of a person's place of residence is, the more likely it is, that they drink Yo syrup and Nestlé Aquarel but reject Sio and Ave. Financial situation affects the consumption of Yo syrup and Pascual orange juice favourably since they were the most expensive products within their respective product categories.

Product choice was also affected by **eating habits**. Those on a slimming diet were more likely to consume the syrups Yo and Zümi (made with honey); those on a cleansing diet tended to choose Zümi and Pascual orange juice (not made from concentrate) and Jamnica mineral water; those on a diet for medical advice preferred Zümi and Lillafüredi mineral water (iron free and suitable for a low sodium diet). Vegetarians opted for Zümi, d'arbo Diabetiker, Hey-Ho (with a lower calorie content) and Jamnica, those on an organic diet did not choose Ave mineral water or Auchan syrup but opted instead for Lillafüredi mineral water.

Further, product choice depended on the **consumption frequency** of a certain product category. Those who consumed the given product category more frequently, were less likely to choose Lillafüredi mineral water, Zümi, Auchan's own branded syrup, or Alley. Frequent product category consumers chose Nestlé Aquarel mineral water and Piroska syrup.

5.2.4 Perceived information search

RESEARCH RESULTS

General descriptive results; introducing the sample

As part of the questionnaire participants were asked to mark relevant product attributes in their purchase decisions in connection with the three product categories, mineral water, orange juice, and elderflower syrup. Perceived information search was measured by adding up the number of product attributes marked. In order that it does not distort the responses, there was a possibility to mark the option that they do not consume this product category. This method was chosen because the preferences measured on Likert scales used in the preliminary studies slightly overestimated the numbers measured earlier in literature, which we wanted to avoid in this research. However, it led to data loss at the same time, since we used a yes/no question instead of a multi-item scale (dummy variable). The product attributes of the three product categories were identical except for two items: we also asked about mineral content and level of CO_2 content with mineral water, and about vitamin content with orange juice, which are compulsory pieces of information on labels.

Perceived information search by product category revealed that respondents required the same amount (number) of product attributes about orange juice and mineral water, 2.7 on average, while they needed less, 1.4 about the syrup. Comparing the standard deviations showed that mineral water had a more homogenous information search behaviour (standard deviation: 1.1), based on the higher standard deviation of orange juice (1.41) and syrup (1.34) participants seem to differ in their information seeking behaviour: there are some who think they barely need any information but others say they need numerous pieces of information prior their purchase decisions.

In the case of **mineral water** price was the most important consideration (28%), followed by brand (25%), CO₂ content (22%), mineral content (10%) and place of origin (10%). Package type was a negligible aspect as mineral water is bottled almost exclusively in disposable PET bottles, and so was certification (1%). When purchasing **orange juice** brand (24%) overtook price (22%), and important product attributes apart from these included statements concerning product ingredients (18%) and vitamin content (17%). Nutritional value (6%), calorie content (4%), packaging type (4%) and certification (1%) lagged behind. When purchasing **syrup**, the most important aspect was price (29%), then brand (28%) and statements concerning product ingredients (19%). Country of origin and packaging type were the most important attributes when purchasing syrup (6%), which can be explained by the varying levels of these two product attributes. Calorie content and nutritional value were negligible in the case of syrup, too (4-4%), and certification had its usual 1% rate (*Figure 45*).





Figure 45 – Perceived information search by product attributes Source: edited by the author, n=393, March 2011

Examining it with variance analysis (ANOVA) several demographic variables had a correlation with perceived information search (p<0.001). Women, part of whom are vegetarians and of higher qualifications chose products after considering several product attributes. The nature of profession also affected the number of product attributes required: students needed more product attributes, while employees needed less and managers and freelancers needed the lowest number of product attributes, although this feature is likely to be a speciality of this particular sample, the association should be tested on a larger sample. Some product attributes had a relationship with food **involvement** and **perceived product category knowledge**. Those of higher involvement and more substantial knowledge will look for more information on origin, how many calories it contains, what its nutritional value is like when selecting a product. Consumers, on the other

General descriptive results; introducing the sample

hand, of lower involvement levels and food consciousness will spend less time on searching information in these aspects.

Perceived information search was also significantly related to **product choice** in some cases (p<0.001). In the elderflower syrup product category consumers for whom neither brand nor ingredients mattered chose Auchan's own branded product. Speaking about Piroska, a product of good value for money is outlined, as for those who chose it, both price and brand were important. In the case of Zümi, which is honey based and was considered an expensive product as compared to the other products price was unimportant, while in d'arbo's case (suitable for a diabetic diet and also a well-positioned product) neither price nor brand were of consequence when selecting these products. On the mineral water market the purchasers of Ave cared about price but brand was not a relevant consideration. With Nestlé Aquarel price did not matter but brand did. Balfi was the only product where country of origin mattered for respondents, while with Lillafüredi mineral content was relevant.

5.2.5 Measured information search

Participants' information search as the dependent variable of the research was measured in the product test part. In order to establish the size of information search we measured how long participants' information search lasted about one product attribute of a certain product and how many times they clicked on an item. In data analysis we established several derived indicators drawing on the data measured, information search was described in terms of participant, product category, product attribute and product (*Figure 46*).

VARIABLE	THE MEANING OF THE VARIABLE
INDICATORS OF	THE RESEARCH GENERATED BY THE INFORMATION SEARCH SOFTWARE
ta_dur_pcat_one	Information search time spent by one participant on a product attribute of a certain product
ta_click_pcat_one	The number of clicks by one participant on a product attribute of a certain product
THE GENERATED	D INDICATORS OF INFORMATION SEARCH IN THE RESEARCH
dur	Total time spent on information search by participant
click	The total number of clicks during information search
dur_pcat	Total time spent on information search in a certain product category by participant
click_pcat	The total number of clicks during information search in a certain product category
dur_att	Time spent on searching a product attribute by participant (when selecting the three products)
click_att	The number of clicks on a product attribute by participant (when selecting the three products)
click_pcat_att	Information search time spent on a product attribute within a certain product category (when selecting the three products)
dur_pcat_att	The number of clicks on a product attribute within a certain product category (when selecting the three products)
click_one	Time spent on information search about one product
dur_one	The number of clicks on one product

Figure 46 – The variables of information search Source: edited by the author

During information search the **number of clicks** and **time spent on information search** were measured. The number of clicks shows which product attributes attracted interest, therefore it is more of a dummy variable, whose value is 1 if they clicked on it and looked at it (or more if participants returned to that product attribute) and 0 in case they were not interested in that product attribute. The time spent on information search is a more sensitive indicator: apart from showing if that product attribute was looked for, it also highlights how long participants studied that piece of information. However, not all the product attributes were provided with the same amount of information content, hence it has to be taken into consideration when making comparisons. In our analysis of information search both indicators are used as both contribute to a better understanding of information seeking. Most of the time the two indicators give similar results, and are not separately analysed but what is pinpointed in this discussion is when they do differ.

The results show that participants spent 74.25 seconds on average on information search (st. dev.: 48.3) [*dur*] and clicked 34.51 times on average (st. dev.: 18.73)

General descriptive results; introducing the sample

[*click*], which means 24.7 seconds and 11,5 clicks on average by product category. The shortest time spent on selecting the three products was 4.9 seconds (1.6 seconds by product), and the lowest number of clicks was a total of 3. These respondents chose all the three products after clicking on a product attribute within each product category. Although an extreme, we did not exclude it from the analysis, since purchasing without any consideration or information search is a phenomenon observed in in-store environments, too. The longest time spent on information search was 254.5 seconds (4 minutes) and 99 clicks.



Figure 47 – The categorical frequency distribution of information search Source: edited by the author, n=393, March 2011

In terms of their categorical frequency both search duration [*dur*] and number of clicks [*click*] differ from normal distribution since they are left skewed (number of clicks skewness: 0.992; duration skewness: 0.718) and more peaked (number of clicks curtosis: 0.13), or flatter (search duration curtosis: -0,259). The mode of search duration is at 25 seconds, while with clicks the most frequent value was 50 (*Figure 47*).

We looked at the frequency of product attributes viewed. We used 13 product attributes per product in the research out of which 11 were identical in the three product categories. Compulsory information content includes mineral content and total mineral content in the case of mineral water, while with elderflower syrup and orange juice it is obligatory to display nutritional value and calorie content, so they were included in the experiment. Our results suggest that the averages of information search for product attributes examined with paired sample t-test differed significantly (p<0.05). The most popular product attribute were brand and price: these two product attributes accounted for half of the total information search on average, while the other half was shared amongst the other 11 product attributes. Before selecting a product, participants clicked 3.55 times on average on brand and viewed it for 6.44 seconds on average. Price attracted a similarly great interest: although with slightly lower number of clicks (3.25), but longer viewing (for 6.84 seconds) per product, which could be a result of comparing the numbers and information processing difficulties. The third most popular piece of information was ingredients, lagging behind the first two with 1.33 clicks and 4.9 seconds of average information search duration. Although less participants clicked on ingredients, those who did, generally spent a lot of time on reading and interpreting this item, since it contained a greater amount of information than price or brand. Then came the name of the product, place of origin, net weight and volume, producer and distributor with click values of between 0.99 and 0.85. Although identical to them in terms of click count, producer/distributor was viewed for the longest time. Click count suggests that the other product attributes (storage conditions, certification and guarantee and packaging type) were little considered in the course of selection. Looking at the length of information search, however, average nutritional value, calorie content and mineral content received remarkably high values: fewer participants were interested in these product attributes, but those who were, spent a long time on studying them (Figure 48).





Figure 48 – Information search by product attribute Source: edited by the author, n=393, March 2011

We analysed the relationships between the size of information search and **product choice** using paired sample t-tests (p<0.05). The averages of information search duration and click count [*dur_one, click_one*] differed depending on which product participants finally opted for. Comparing the averages of participants' information

search by product reveals that they looked for information for the longest and for the most product attributes in connection with the product they finally chose each time (except for Cappy orange juice). Information search, apart from differing through products will be the highest with products consumers finally purchase. To sum up, information search appears to be a type of self-justification: if one wants to purchase something one wants to know more about it.

5.3 Examining the hypotheses

5.3.1 Relationship between perceived and measured information search (H₁₂)

The size of information search was measured in two ways. In the self-administered questionnaire participants were asked which product attributes were relevant to them in each product category before making their purchase decision, which defined the size of their **perceived information search**. In the product testing phase of the experiment the product attributes viewed by participants prior their decision were measured, showing the size of **measured information search**. Four product attributes (price, brand, place of origin and ingredients – mineral content for mineral water) were available for every subject group during information search and perceived and measured information search were compared in terms of these four product attributes.

Perceived information search was measured as a dummy variable, whose value of 1 meant information search, while a value of 0 referred to the lack of information search. Information search was measured with the number of clicks on a product attribute [*click_pcat_att*], which was also converted into a dummy variable for the sake of comparability. When participants viewed that product attribute during the experiment, it received a value of 1, if they failed to do so, it received the value 0. Then we were able to examine the two dummy variables with the method of paired sample t-tests.

The results reveal that there was a significant difference between the pairs in 9 cases out of 12 pairs compared as far as perceived and measured information

Examining the hypotheses

search was concerned. In 3 cases (the price of mineral water, country of origin and the ingredients of orange juice) the means of perceived and measured information search size were identical (p<0.05). Out of the 9 significant differences in 6 cases perceived information search was higher than measured, i.e. more participants claimed that they would consider that product attribute than those who actually viewed it during the experiment. In 3 cases measured information search exceeded perceived information search (country of origin and the ingredients of elderflower syrup), meaning that even if these product attributes were not regarded relevant, participants nevertheless viewed them before making a decision. In summary the method is appropriate as it did not result in totally different values but in several cases the perceived values were higher than measured ones. The measured indicator estimates information search more accurately therefore it can be used instead of perceived values (*Figure 49*).





5.3.2 Relationship between information supply and information search (H₁₁)

Two variables together, the number of product attributes and assortment depth showed **information supply**. The product of the two variables indicates the total of product attributes participants came across in each product category, i.e. what the information supply was like when they carried out their information search. The co-examination of the two variables resulted in a total of 9 measurement levels, information search had a range of 14 (2 products, 7 product attributes) to 78 (6 products, 13 product attributes).

The correlations between the experiment groups' averages of information search and information supply were first looked at using variance analysis (ANOVA), which revealed significant differences for nine subject groups in terms of the averages of the length of information search (F=2.17; p=0.029) and the number of clicks (F=8.471; p<0.001). It indicates that information search reached its maximum value in the case of 60 product attributes (6 products, 10 product attributes), equalling 89 seconds and 44 clicks, showing the amount of sacrifice participants were willing to make on average before making their decision.



Figure 50 – The relationship between information supply and information search Source: edited by the author, n=393, March 2011

After that a functional relation was examined between information supply and the duration of information search [*dur*] and the number of clicks [*click*] using

Examining the hypotheses

regression. The logarithmic relation was selected from among linear and nonlinear relations since it was the line most fitting the set of all points whose result was the function to the least distance away from measurement points. The line of best fit was chosen on the basis of the explanatory power of the model (\mathbb{R}^2), the significance level of the test function (p) and our subjective decision as a researcher. (*Figure 50*).

The assumption that there is no correlation between the two variables was discarded in the case of the duration of **information search** (R^2 =0.74, p<0.001), since R^2 indicated a strong relationship; information supply predicted the duration of information search in 74%. The logarithmic relation shows that when information supply increases, the duration of information search increases in an accelerating manner first then the rate of increase falls back. There is a minimum value of information search, which is independent of information supply, and it equalled 12 seconds in this research. All further information search is added to it as the function of the logarithm of information supply.

 $Y(i)^{time} = 12,07 + 17,55 * \ln(i)$

On the basis of the **click count of information search** the assumption that there is no relationship between the two variables can also be discarded (R^2 =0.604, p<0.001). R^2 indicated a medium strong relation; information supply predicted the size of information search in 60.4%. The logarithmic relation shows that when information supply increases, the amount of information looked for, the click count of information search increases in an accelerating manner first then the rate of increase falls back. The function is more difficult to interpret than the one on the duration of information search as the minimum number of clicks, which is independent of information supply is negative. But the lowest value of information supply in the research was 14 units, which certainly gives a positive information search value.

$$Y(i)^{click} = -3,71 + 10,74 * \ln(i)$$

The examination of the correlation between the size of information search and information supply was not only carried out for the three **product categories** together, but also individually for **each** product category. In all three cases – although with different parameters – the logarithmic relationship had the most explanatory power.

The general interpretation of the function suggests that the increase in information supply leads to a lessening degree of increase of the size of information search (true for search duration, effort or money expended). The more information consumers are faced, the more their total information search will be but their information search effort will be less per unit. As it was explained in the literature each further unit of information (product attribute) will contribute to the benefit of the consumer to a lessening degree. The size of information search when confronted with very large information supply is not of an infinite size but it has a theoretical maximum, which consumers do not exceed since information search effort would then exceed the potential amount of benefit. Nevertheless, it also turned out that no decision can be made without information search before purchasing a product: a minimum amount of effort has to be devoted to information search. The relation explored thus shows that the general size of information search (Y) depends on the amount of information available (i). It also depends on the minimum value of information search (b_0) and the value of the information search constant (b_1) , which changes through products and consumers but what exactly influences it could only be laid down after further research.

$$Y(i) = b_0 + b_1 * \ln(i)$$

5.3.3 The analysis of main effects (H₁-H₁₀)

In most of our hypotheses the correlation of information search and its antecedents were examined. In the experiment measurements were taken between subjects grouped along independent aspects, and averages of groups generated on the basis of those variables were compared. Since a single-item or a multi-item variance analysis carried out across variables does not lead to proper results due to possible interaction effects, the method General Linear Model (GLM) will be used from this point onwards. The linear relations between the size of information search and several categorical variables were analysed using GLM (Field, 2005). The method is a combination of traditional variance analysis and linear regression analysis. The results of standard deviation analysis and regression analysis appear at the same time, and so it is suitable for the qualification and quantification of relationships between variables. In this way the measured and manipulated variables of the experiment can be analysed at the same time and establish how they affect information search.

Examining the hypotheses

5.3.3.1 Examining between-subjects effects (H₁ - H₇, H₉, H₁₀)

In the experiment the values of two variables (assortment and the number of product attributes) were manipulated, which became our fixed factors and which were complemented with the analysis of the effects of the other variables included as covariates (gender, financial situation, special diet, product group involvement and perceived product group knowledge).

ANALYSIS OF BETWEEN SUBJECT EFFECTS											
Number of clicks of information search [click]							Total duration of information search				
	Type III Sum of Squares	df	Mean Square	ц	Sig.	Type III Sum of Squares	df	Mean Square	ц	Sig.	
Corrected Model	59528,6	21	2834,69	4,34	0,00	259422	21	12353,4	1,62	0,04	
Intercept	680,29	1	680,29	1,04	0,31	343,12	1	343,12	0,05	0,83	
Gender	490,84	1	490,84	0,75	0,39	33987,9	1	33987,9	4,46	0,04	
Knowledge scale	2359,45	1	2359,45	3,61	0,06	8333,69	1	8333,69	1,09	0,30	
Involvement scale	5295,44	1	5295,44	8,11	0,00	15038	1	15038	1,97	0,16	
Product group purchase	3692,58	1	3692,58	5,65	0,02	17945,6	1	17945,6	2,36	0,13	
Organic food consumption	866,73	1	866,73	1,33	0,25	231,39	1	231,39	0,03	0,86	
Vegetarianism	2048,48	1	2048,48	3,14	0,08	10854,9	1	10854,9	1,42	0,23	
Slimming diet	446,34	1	446,34	0,68	0,41	7229,86	1	7229,86	0,95	0,33	
Cleansing diet	393,55	1	393,55	0,6	0,44	6,25	1	6,25	0,00	0,98	
Diet on medical advice	156,69	1	156,69	0,24	0,62	90,95	1	90,95	0,01	0,91	
Orange juice consumption	189,89	1	189,89	0,29	0,59	2633,01	1	2633,01	0,35	0,56	
Eldeflower consumption	1650,46	1	1650,46	2,53	0,11	18619,9	1	18619,9	2,44	0,12	
Mineral water consumption	32,55	1	32,55	0,05	0,82	23,36	1	23,36	0,00	0,96	
Financial situation	2203,76	1	2203,76	3,37	0,07	25207,6	1	25207,6	3,31	0,07	
Product assortment	34656,5	2	17328,2	26,53	0,00	53862,6	2	26931,3	3,54	0,03	
Number of product attributes	939,38	2	469,69	0,72	0,49	22724,4	2	11362,2	1,49	0,23	
Product assortment * Number of product attributes	1464,63	4	366,16	0,56	0,69	24616,4	4	6154,1	0,81	0,52	
Error	242358	371	653,26			2826081	371	7617,47			
Total	903859	393				6140549	393				
Corrigated total	301887	392				3085503	392				
R Squared = ,197 (Adjusted R Squared = ,152) R Squared = ,084 (Adjusted R Squared = ,032)								quared			

Figure 51 – Examining between-subjects effects Source: edited by the author, n=393, March 2011

First the total duration of information search and number of clicks were analysed (recorded during the entirety of the experiment task) [*click, dur*]. For both dependent variables the model used is appropriate (p<0.05) based on the goodness of the linear function (Corrected Model) estimated with a linear model and fitted to the data of the scatter plot. The explanatory power of the model is, on the basis of experiment studies, acceptable; 19.7% of the variance is estimated by the variables

on the basis of the number of clicks of information search ($R^2=0.197$, p<0.05) and 8.4% of it is estimated by them on the basis of the duration of information search ($R^2=0.084$, p<0.05) (*Figure 51*).

The number of clicks of information search is influenced significantly (p<0.001) by assortment depth out of the two manipulated variables, while the number of product attributes does not affect it significantly, and there is no interaction effect between the two variables. Product group involvement (p<0.001), financial situation (p<0.1), subjective product group knowledge (p<0.1), the purchase frequency of a product group (p<0.05) and vegetarianism (p<0.1) are in significant correlation with the number of clicks from among the covariates included. The duration of information search is in a significant correlation with gender (p<0.05), financial situation (p<0.1) and assortment (p<0.05).

Where we found significant relationship we wanted to know **how information search was influenced by the levels of variables**. One way of establishing the differences between the means of the levels of variables is variance analysis, whose precondition is homogeneous variance. In case the condition of variance homogeneity was not met (Levene's test, p<0.05), group averages were examined using tests assuming the heterogeneity of variances (e.g. Dunnet T3) in pairs (Levene; 1960; Dunnett, 1980). If in the case of heterogeneous variances a variable had only two levels (such as gender), differences were analysed using independent samples t-tests. In connection with product attributes looked for during information search the factors of assortment, financial situation, vegetarianism, food purchases, product group involvement and knowledge were examined, and gender, financial situation and assortment was analysed in connection with the duration of information search (*Figure 52*).

GLM showed a significant difference in the information search averages of the groups defined on the basis of **assortment** levels [*dur, click*] (p<0.05). When product selection widens, i.e. consumers see more products at the same time, the more product attributes they look for (Levene F=5.41, p<0.001, Dunnett T3 in pairs p<0.05) and the longer information search takes (Levene F=1.9, p>0.05; ANOVA F=3.7, p<0.05). When choosing between two products participants viewed 27.2, choosing from four products they viewed 36.6, while choosing from six products they viewed 42.5 product attributes on average, spending 71.4 seconds on this on average with two products, 97.7 seconds with four products and 96.5 seconds with six products. To sum up, a deeper assortment results in an increase of the number of product attributes viewed, nevertheless the duration of information search increases first then decreases slightly.

Examining the hypotheses

GLM reveals that there is a significant correlation between **product group involvement** and the size of information search [*click*] (p<0.001). When the aggregate values of scale data are examined on the basis of three involvement levels, it is seen that the increase in involvement levels correlates with the increase in the number of product attributes looked for during information search. Participants with high involvement levels viewed 35.6 product attributes on average, whilst those with low involvement levels viewed 30.5.

	NUMBER	OF CL	ICKS OF	INFOR	MATI	ION SEAF	СН		I -Test
Level	N	Mean	St. Dev.	Variance		ANOVA	Dunnett T3		(heterogen y of
				F	р	F p	Levels	р	t p
2 products	123.00	27.2	14.0			Due to	4 product	0,00	
2 products	125,00	27,2	14,0			homogen	t 6 product	0,00	
1 products	112.00	26.6	17.4	5 41	0.00	y of	2 product	0,00	
4 products	112,00	50,0	17,4	5,41 0,00	0,00	variance I	6 product	0,04	
6 producto	117.00	10.5	10.5			statistic	2 product	0,00	
o products	117,00	42,5	16,5			can not be	e 4 product	0,04	
High	93,00	37,74	19,59						
Medium	197,00	35,61	17,60	2,689 ,06	,069	3,185 ,04	3		
Low	62,00	30,50	15,00						
High	35,00	40,63	20,16						
Medium	170,00	35,72	16,77	2,503	,083	2,383 ,094	4		
Low	147,00	33,49	18,29						
On my own	67,00	33,13	19,80						
Together	291,00	39,62	28,34	2,22 0,11	0,11	3,269 ,039	9		
Never	34,00	47,71	33,64						
Vac	(20.17	0 40			Due to	Rarely	,054	
res	0	29,17	8,40			homogen	it No	,419	
D 1	27 42 5	40.51	1 04.20	7 407	,001	y of	Yes	,054	
Rarely	37	42,51	24,32	7,497		variance I	No	,165	
N	200	24.52	16.00			statistic	Yes	,419	
NO	309	34,53	16,88			can not b	e Rarely/ó	,165	
Good	210,00	35,98	26,60						
Average	170,00	43,04	29,19	2,17	0,12	3,11 0,0	5		
Bad	12,00	41,58	19,92						
	TOTAL	DURAT	ION OF I	NFORM	AATIO	ON SEAR	CH		_
					_	T-test			
Level	Level N		St. Dev.	Varia	ance	ANOVA	Dunnett	13	(heterogen
				F	p	Fn	Levels	n	t n
2 products	133	71.4	101.5	-	Р	• P	201015	Р	· P
4 products	124	97.7	93.4	1 91	0.15	374 00	2		
· products	147	06.5	66 2	1,71	0,10	2,71 0,0	-		
6 products	135	90.1							
6 products Good	135 210	78.2	68.7						
6 products Good Average	135 210 170	90,3 78,2 100.4	68,7 109 3	2.79	0.06	3.04 0.0	5		
6 products Good Average Bad	135 210 170 12	90,3 78,2 100,4 96.1	68,7 109,3 48.9	2,79	0,06	3,04 0,0	5		
6 products Good Average Bad	135 210 170 12	96,3 78,2 100,4 96,1	68,7 109,3 48,9	2,79	0,06	3,04 0,0	5		
6 products Good Average Bad Male	135 210 170 12 112	96,3 78,2 100,4 96,1 62,5	68,7 109,3 48,9 39,4	2,79	0,06	3,04 0,0 Due to	5 Due to less	that 3	
6 products Good Average Bad Male	135 210 170 12 112	96,5 78,2 100,4 96,1 62,5	68,7 109,3 48,9 39,4	2,79	0,06	3,04 0,0 Due to homogen	5 Due to less t levels post	that 3 hoc	-4.28 0.00
6 products Good Average Bad Male	135 210 170 12 112	96,5 78,2 100,4 96,1 62,5	68,7 109,3 48,9 39,4	2,79 8,74	0,06	3,04 0,0 Due to homogen y of variance I	5 Due to less levels post tests ar r	that 3 hoc not	-4,28 0,00
	Level 2 products 4 products 6 products 6 products High Medium Low High Medium Low On my own Together Never Yes Rarely Rarely No Good Average Bad Level 2 products 4 products	LevelNUMBER2 products123,004 products112,006 products117,00High93,00Medium197,00Low62,00High35,00Medium170,00Low67,00Together291,00Never34,00Yes6Rarely37No309Good210,00Average170,00Bad12,00TOTAL ILevelN2 products1334 products124	NUMBER OF CL Level N Mean 2 products 123,00 27,2 4 products 112,00 36,6 6 products 117,00 42,5 High 93,00 37,74 Medium 197,00 35,61 Low 62,00 30,50 High 35,00 40,63 Medium 170,00 35,72 Low 147,00 33,49 On my own 67,00 33,13 Together 291,00 39,62 Never 34,00 47,71 Yes 6 29,17 Rarely 37 42,51 No 309 34,53 Good 210,00 35,98 Average 170,00 43,04 Bad 12,00 41,58 TOTAL DURATI 2 products 133 71,4 4 products 124 97,7	NUMBER OF CLICKS OF Level N Mean St. Dev. 2 products 123,00 27,2 14,0 4 products 112,00 36,6 17,4 6 products 112,00 36,6 17,4 6 products 117,00 42,5 18,5 High 93,00 37,74 19,59 Medium 197,00 35,61 17,60 Low 62,00 30,50 15,00 High 35,00 40,63 20,16 Medium 170,00 35,72 16,77 Low 67,00 33,13 19,80 Together 291,00 39,62 28,34 Never 34,00 47,71 33,64 Yes 6 29,17 8,40 Rarely 37 42,51 24,32 No 309 34,53 16,88 Good 210,00 35,98 26,60 Average 170,00 43,04 29,19<	NUMBER OF CLICKS OF INFOR Number of CLICKS OF INFOR N Mean St. Dev. Varia 2 products 123,00 27,2 14,0 Image: colspan="2">Image: colspan="2" Image: colspan="2" Image: colspan="2" Image: colspan="2" Image: colspan="2" 4 products 117,00 42,5 18,5 Image: colspan="2" Colspan="2" <td>NUMBER OF CLICKS OF INFORMATI Level N Mean St. Dev. Variance 2 products 123,00 27,2 14,0 \overline{F} \overline{p} 2 products 112,00 36,6 17,4 5,41 0,00 6 products 112,00 36,6 17,4 5,41 0,00 6 products 117,00 42,5 18,5 </td> <td>NUMBER OF CLICKS OF INFORMATION SEAR ANOVA Level Variance I ANOVA P F p 2 products 123,00 27,2 14,0 Variance I Due to homogeni 4 products 112,00 36,6 17,4 5,41 0,00 y of variance I 6 products 117,00 42,5 18,59 Due to homogeni High 93,00 37,74 19,59 Medium 197,00 35,61 17,60 2,689 ,069 3,185 OU High 35,00 40,63 2,616 Medium 170,00 3,185 OU High 35,00 4,22 0,111 3,269 0,01</td> <td>NUMBER OF CLICKS OF INFORMATION SEARCHANOVADunnettLevelANOVADunnettPoint of the section of the</td> <td>NUMBER OF CLICKS OF INFORMATION SEARCH Level N Mean St. Dev. Variance ANOVA Dunnett T3 2 products 123,00 27,2 14,0 \overline{F} p E p Levels p 4 products 112,00 36,6 17,4 5,41 0,00 y of 2 product 0,00 6 products 117,00 42,5 18,5 o o o o y of 2 product 0,00 4 products 117,00 42,5 18,5 o <td< td=""></td<></td>	NUMBER OF CLICKS OF INFORMATI Level N Mean St. Dev. Variance 2 products 123,00 27,2 14,0 \overline{F} \overline{p} 2 products 112,00 36,6 17,4 5,41 0,00 6 products 112,00 36,6 17,4 5,41 0,00 6 products 117,00 42,5 18,5	NUMBER OF CLICKS OF INFORMATION SEAR ANOVA Level Variance I ANOVA P F p 2 products 123,00 27,2 14,0 Variance I Due to homogeni 4 products 112,00 36,6 17,4 5,41 0,00 y of variance I 6 products 117,00 42,5 18,59 Due to homogeni High 93,00 37,74 19,59 Medium 197,00 35,61 17,60 2,689 ,069 3,185 OU High 35,00 40,63 2,616 Medium 170,00 3,185 OU High 35,00 4,22 0,111 3,269 0,01	NUMBER OF CLICKS OF INFORMATION SEARCHANOVADunnettLevelANOVADunnettPoint of the section of the	NUMBER OF CLICKS OF INFORMATION SEARCH Level N Mean St. Dev. Variance ANOVA Dunnett T3 2 products 123,00 27,2 14,0 \overline{F} p E p Levels p 4 products 112,00 36,6 17,4 5,41 0,00 y of 2 product 0,00 6 products 117,00 42,5 18,5 o o o o y of 2 product 0,00 4 products 117,00 42,5 18,5 o <td< td=""></td<>

Figure 52 – **The analysis of group means as a function of product attributes looked for** Source: edited by the author, n=393, March 2011 GLM shows that **perceived product group knowledge** is also a significant antecedent of information search (p<0.1). The number of product attributes increases during information search if perceived product group knowledge also increases, participants with a low knowledge level viewed 33.5 product attributes, participants with a medium knowledge level viewed 35.7 product attributes, while 40.6 product attributes were viewed by participants with high knowledge levels.

GLM demonstrated that the **purchase frequency** of a product group as another indicator of knowledge also showed a significant correlation with the number of clicks of information search (p<0.05). Those who never make any purchases viewed the most product attributes, a total of 47.7, those who usually do their shopping with the member of their household wanted to check 39.6 product attributes, while those who always make their purchases alone viewed only 33.1 product attributes (Levene F=2.22, p>0.5; ANOVA F=3.27, p<0.05). The more purchases consumers make, the more familiar they are with products; supposedly have established their favourite brands they stick to and they do not need to read the information on the packaging about each product over and over again. However, those who rarely or never make a purchase needed information search before making their purchase decision, therefore they looked for more information.

Vegetarianism as a form of special diets was the single one being in a significant correlation with information search (p<0.1). Out of the three variable levels offered, those who were partially (or sometimes) vegetarians looked for significantly more information: a total of 41.4 product attributes, while those who were vegetarians viewed 29.1, and those who were not vegetarians viewed 34.5 product attributes (Levene F=7.5, p<0.01; Dunnett T3 partially/sometimes p<0.05).

GLM showed that **financial situation** affected both indicators of information search (p<0.1). Based on both the duration of information search (Levene F=2.17, p>0.1; ANNOVA F=3.4, p<0.05), and the number of product attributes looked for (Levene F=2.77, p>0.05; ANNOVA F=3.1, p<0.05) it is clear that those in an extreme financial situation looked for less information. Those who admitted to a poor financial situation viewed 41.6 product attributes for 96.1 seconds and those in a good financial situation viewed 36 product attributes for 78.2 seconds, as opposed to those in an average financial situation viewing 43 product attributes for 100 seconds.

RESEARCH RESULTS

Examining the hypotheses





Source: edited by the author, n=393, March 2011

To sum up, comparing the individual levels of the variables examined reveals that the most product attributes were viewed by those who never make their own food purchases, those faced with a high assortment level, those having high perceived knowledge and those partially vegetarian, while those faced with a low assortment level, vegetarians and those with a low product group involvement viewed the least product attributes. The search of men and those faced with a low assortment level took the shortest time, while those faced with a high assortment and those having an average financial situation looked for information for the longest. (*Figure 53*).

5.3.3.2 Examining within-subjects effects (H₈)

Along with carrying out measurements between subjects grouped according to an independent variable (between subjects) in the experiment, we also carried out repeated measures (within subjects). Repeated measure variance analysis was used for our investigation within GLM, which, as opposed to multivariate variance analysis, does not compare the means of independent samples to some dependent variable but examines the variances of differences of measurement outputs taken at several points in time on the same subject group. In this research participants were asked to choose products from three subsequent product categories, and information search was examined accordingly across product categories separately (Field, 2005). Our examination involved both the duration of information search and the number of product attributes looked for [*dur_pcat; click_pcat*].

First the **effect of product category on its own** was examined¹⁷. The sphericity of the duration of information search was significant (Mauchly's test W=.589, p<0.001), therefore we took the Greenhouse-Geisser's corrected value into account, which suggested no significant effect of the product category on the duration of information search (F=1.356, p=0.257). The sphericity of the number of product attributes looked for during information search was not significant (Mauchly's test W=.999, p=0.768), so we considered the uncorrected value (sphericity assumed), revealing no significant effect of product category on the number of product attributes looked for during information search (F=2,761, p=0.064). In summary, sample members looked for information in significantly different duration patterns between product categories but did not look for different amount of product attributes.

¹⁷ Before the analysis Mauchly's sphericity test was carried out whose significant (p<0.05) value was used along with Greenhouse-Geisser's corrections from the Univariate model, in any other cases (p>0.05) Sphericity Assumed values were used without correction.

Examining the hypotheses

After that the effect of product category was examined with the inclusion of the other variables (GLM Univariate), where assortment and the number of product attributes became our fixed factors, while the other variables (gender, financial situation, special diet, involvement and prior knowledge) were included as covariates. The test reinforced our earlier results as the number of product attributes looked for during information search across product categories did not differ (F=1.710. p=0.182), but the duration of information search differed across product categories (F=2.403; p<0.1). In the model product group knowledge, subjective product group involvement, financial situation, vegetarianism and gender were the factors being in a significant correlation with information search (p<0.1). Besides, there was no interaction effect between the two manipulated variables. On the basis of the correlations of between subjects and within subjects factors only cleansing diet indicated a weak correlation (F=2.835, p<0.1).

As a significant effect was found between product category and the duration of information search, the information search means of individual product categories were compared with a paired sample t-test. The paired comparison revealed a significant difference between mineral water and elderflower syrup (T=-2.81, p<0.038) and mineral water and orange juice (t=3.03, p<0.003) whereas no significant difference was identified between orange juice and elderflower syrup (t=-0.99, p=0.32). It suggests that mineral water differs from both other two product categories while orange juice and elderflower syrup were similar from the point of view of information search.

The examination of information search means of product categories shows that the most information was searched about **orange juice**: a mean of 13.52 product attributes were viewed (st. dev.: 11.1) and viewed them for 32.8 seconds (st. dev.: 59.9). The second most information was looked for in connection with **elderflower syrup**: sample members viewed 12.73 product attributes (st. dev.: 10.38) for 28.9 seconds (st. dev.: 33.77). Before selecting a bottle of **mineral water** participants viewed a mean of 12.89 product attributes (st. dev.: 11.2) for 26.54 seconds (st. dev.: 26.5) during their information search. The three product categories did not only differ in terms of the duration of information search but also in their standard deviations. Orange juice sharply divided the sample's information search activities while with the other two products lower standard deviation was observed, i.e. the habit of information search was more homogeneous (*Figure 54*).





Figure 54 – Information search by product categories Source: edited by the author, n=393, March 2011

5.4 Decisions about the research hypothesis

Three larger groups of hypotheses were defined in the research. We looked at the correlation between antecedents (individual differences, involvement, prior knowledge and marketing environment) and information search size; we assumed a functional relation between information supply and information search, and finally we compared two methods of measuring information search. *Figure 55* aggregates the results.

How do individual differences affect information search? First the influence of gender was examined from among individual differences. Similarly to most studies (Mueller, 1991; Guthrie et al., 1995; Nagya, 1997; Govindasamy, Italia, 1999), we assumed that women look for more information before their food purchase decisions both in terms of the amount of information search and its duration.

Decisions about the research hypothesis

 H_{1a} : Before making their food purchase decisions, female consumers look for information longer than male consumers. H_{1b} : Before making their food purchase decisions, female consumers look for more product attributes than male consumers.

The hypothesis was examined using GLM across the averages of the two groups' information search. Women typically spend significantly more time on information search (p<0.05), but they do not look for more information on average, **therefore** hypothesis H_{1a} is accepted while hypothesis H_{1b} is rejected.

The two genders look for similar amounts of information, but women are thought to read the information more thoroughly and spend more time on understanding and processing it. Besides, although no hypothesis was drawn up in this respect but it complements the interpretation of results, the information seeking behaviour of the two genders differ in terms of the type of information sought: women look for the place of origin product attribute more.

The other individual difference was **financial situation**, whose influence on information search was investigated. We saw contradictory results in literature: there were exploratory studies concluding there to be either a positive (Piedra, Schupp, Montgomery, 1996; Wang, Fletcher, Carley, 1995) or a negative (Drichoutis, Lazaridis, Nayga, 2005; Schupp, Gillespie, Reed, 1998) correlation between the two factors so the examination of this relationship seemed reasonable enough.

 H_{2a} : Before making their food purchase decisions, consumers of higher income look for information longer. H_{2b} : Before making their food purchase decisions, consumers of higher income look for more product attributes.

GLM was used again to compare the averages of the categorical variable across the groups, on the basis of which it is concluded that financial situation affects both the duration of information search (p<0.1) and the amount of information searched (p<0.1). An inverted U shape relationship was revealed between the two variables: consumers with an average financial situation look for more information while those of either good or dire financial situation look for less information, **therefore both hypothesis H**_{2a} and hypothesis H_{2b} are accepted.

The reason behind it is that those in a worse financial situation tend to be more price sensitive and other information than price is not really relevant for making

their decisions. Those, however, in a good or very good financial situation do not require a lot of information since they can afford to purchase whatever products taking relatively few risks: they are not forced into compromises due to their income. In contrast to them, consumers with an average income can afford a certain degree of freedom in their choices whose risk will then be higher than that of high income consumers. Financial situation also showed a significant relationship with looking for information on price as a product attribute: those in a better financial situation did not look for this product attribute.

The third important individual difference is following a **special diet**, which has been confirmed in literature several times (Bender, Derby, 1992; Drichoutis, Lazaridis, Nayga, 2005; Nayga, Lipinski, Savur, 1998; Schupp, Gillespie, Reed, 1998). In this research medical, slimming, cleansing, vegetarian and organic diets were asked about using categorical variables (Govindasamy, Italia, 1999; Dörnyei, 2008). It was assumed that those following a particular diet, or consuming more organic food, or being vegetarians will look for more information.

H_{3a} : Before making their food purchase decisions, consumers following a special diet look for information longer than those not following any special diets.

 H_{3b} : Before making their food purchase decisions, consumers following a special diet look for more product attributes than those not following any special diets.

The hypothesis was examined using GLM across the information search averages of the groups, both in terms of the number of product attributes looked for and the duration of information search. When comparing the averages of nutrition related variables, vegetarianism was the only one where we discovered a significant difference concerning the size of information search (p<0.1). Partially vegetarians looked for more information, therefore hypothesis H_{3a} is rejected while hypothesis H_{3b} is accepted.

Although the category 'partially vegetarians' may sound unusual, it was included in the research as a reaction to feedback from earlier studies. Partially vegetarian consumers supposedly eat only certain types of meat (e.g. chicken breast) and often only on special occasions. These self-imposed rules force them to lead a conscious lifestyle and require continuous attention from them, as a result of which they will look for more information. Partially vegetarians typically paid more attention to attributes such as place of origin and ingredients out of product attributes examined here than non vegetarians.

Decisions about the research hypothesis

How does product category involvement affect information search? The relationship between involvement and information search is an extensively studied area in literature (Durvasula, Akhter, 1990), with a growing relevance in the case of food product category (Lehota, 2001; Verbecke, Vackier, 2003; Beharrel, Denision, 1995; Bell, Marshall, 2002; Drichoutis, Lazaridis, Nayga, 2007), therefore their correlation was also investigated in this research. It was assumed that consumers of high involvement levels will look for more information, since being involved in the topic of food means more sophistication when selecting a product, therefore more emphasis will be put on information search before choosing the right food.

 H_{4a} : Before making their food purchase decisions, consumers with a high level of product category involvement look for information longer. H_{4b} : Before making their food purchase decisions, consumers with a high level of product category involvement look for more product attributes.

The hypothesis was examined using GLM based on the indicator generated from the aggregate value of the involvement scale both in terms of the number of product attributes looked for and search duration. Results showed that consumers of high or medium levels of involvement look for more information on average (but not for a longer time) than consumers of low involvement levels (p<0.001), **therefore hypothesis H**_{4a} is rejected while hypothesis H_{4b} is accepted.

The research confirmed the hypothesis that involvement and information search have a positive correlation and that those who show involvement in a product group want to know it more thoroughly, and a method for this is a more intensive information search activity.

How does prior knowledge affect information search? More experience, partly a result of higher purchase frequency of a product category, is said to be in literature in a positive correlation with information search. Major grocery shoppers responsible for the meals of others in the household will be more likely to read labelling information (Drichoutis, Lazaridis, Nayga, 2005). But if they are more likely to attend to it and information search is ongoing then our assumption was that those who go shopping more frequently will look for less information and for a shorter time during an average shopping occasion, for they are already familiar with the products and their attributes.
H_{5a} : Before making their food purchase decisions, consumers purchasing a certain product category more frequently will look for information for a shorter time.

 H_{5b} : Before making their food purchase decisions, consumers purchasing a certain product category more frequently will look for less product attributes.

The hypothesis was examined using GLM across the information search averages of the groups, both in terms of the number of product attributes looked for and the duration of information search. Our results show that purchase frequency significantly (p<0.05) correlated with the size of information search but did not correlate with its duration. Those who never go shopping looked for more information than those who do, **therefore hypothesis H**_{5a} **is rejected while hypothesis H**_{5b} **is accepted.**

Those who never go shopping wanted to obtain information about many more product attributes than those who always go shopping alone for their households. Frequent shoppers know the products on the market and do need to stop and read product information all over again during each time. They have also developed a taste for their favourite brands which they know and stick to. The fact that the duration of information search did not show a significant difference may spring from other factors, for example processing information or impatience, which influence the duration of information search more.

Another type of experiential knowledge is **consumption frequency**. Similarly to purchasing experience, we assumed that there is a negative correlation between consumption frequency and information search. Insofar as consumers consume a certain product frequently, they are already in possession of sufficient knowledge to feel familiar with it and do not have to look for a lot of information during purchase, therefore we assumed a negative relationship between these two factors.

 H_{6a} : Before making their food purchase decisions, those who consume a certain product category more frequently will look for information for a shorter time.

 H_{6b} : Before making their food purchase decisions, those who consume a certain product category more frequently will look for less product attributes.

We examined the hypothesis using GLM on the basis of the information search activities of those consuming the product category frequently but identified no significant differences either in terms of the number of product attributes looked

Decisions about the research hypothesis

for or the duration of information search. Therefore both hypothesis H_{6a} and hypothesis H_{6b} are rejected.

From the point of view of information search, purchasing a product and consuming a product seem to differ. Consumption does not necessarily mean having to look for information about a product because consumption follows the purchase decision process, when information is not needed. Information search is an antecedent of the purchase decision process and it is relevant when making the purchase decision but seems irrelevant for confirming consumption.

Raju, Lonial, and Mangold (1995) assumed there to be a positive monochronistic relationship between **perceived knowledge** and information search but have not identified it. We also assumed a correlation (a negative one) between the two theoretical constructs, meaning that those with high perceived knowledge will make do with less information search since they are confident enough, consequently, they will make less effort during information search and look for a less amount of information and will do so for a shorter time.

H_{7a} : Before making their food purchase decisions, consumers of higher perceived product group knowledge will look for information for a shorter time.

 H_{7b} : Before making their food purchase decisions, consumers of higher perceived product group knowledge will look for less product attributes.

The hypothesis was examined using GLM based on the aggregate values of the scale both in terms of the number of product attributes looked for and the length of search time. Our results show that consumers of high and low perceived product group knowledge look for less information on average than those with a medium level of perceived knowledge (p<0.1), therefore hypothesis H_{7a} is rejected while hypothesis H_{7b} is accepted.

Those with a low level of perceived knowledge did not look for information. Those with a high level of perceived knowledge did not look for information, either, since they admittedly know 'everything' and their benefit does not increase if they make more search effort. Those with a medium level of perceived knowledge do not feel informed enough and therefore acquire more information.

How does product category affect information search? Since literature argues that the relationship between **product category** and information search has not been studied extensively enough (Beatty, Smith, 1978; Guo, 2001), and our

preliminary study confirmed influence of product category we thought it important to examine their relationship. We assumed that information search will differ by product category both in terms of the length of search time and the type of information looked for. In order to be able to confirm this difference we investigated the size of information search within the food product category across products of similar product categories, able to satisfy the same consumer needs and substitute one another.

 H_{8a} : Before making their food purchase decisions, consumers look for information about substitute products which can satisfy the same consumer need for various lengths of time.

 H_{8b} : Before making their food purchase decisions, consumers look for various numbers of product attributes about substitute products which can satisfy the same consumer need.

The hypothesis was examined using GLM repeated measures across the information search averages of groups both in terms of the number of product attributes looked for and the length of search duration. Our results show that there are significant differences of the size of information search across product categories in terms of the duration of information search (p<0.1), therefore hypothesis H_{8a} is accepted while hypothesis H_{8b} is rejected.

Significantly the most information was searched about orange juice and was done so for the longest time. Participants searched information for the second longest time about elderflower syrup while they were the least interested in mineral water. This confirms that information search size differs across product categories. In addition, although no hypothesis was drawn up relating to it but it complements the interpretation of results, differences were experienced in terms of the product attributes looked for. In the case of orange juice price, brand and ingredients, in the case of mineral water brand, producer and price and in the case of elderflower syrup ingredients, price and brand were relevant factors (in these respective orders).

How does information supply affect information search? Even though information oversupply has been found to affect purchase decisions negatively (Malhotra, 1982), or not to provide any extra advantages (Jacoby, 1977), we assumed that this is not true for the size of information search. The more information consumers are faced, the longer time they will spend on information search. We assumed that the increase of assortment depth will lead to consumers looking for more information and for a longer time.

Decisions about the research hypothesis

 H_{9a} : Before making their food purchase decisions, consumers look for information longer if product assortment is deeper. H_{9b} : Before making their food purchase decisions, consumers look for more product attributes if product assortment is deeper.

The hypothesis was examined with the help of GLM across the information search averages of the manipulated group both in terms of the number of product attributes looked for and search duration. Our results show that the increase in the number of product attributes lead to a significant increase in both the duration of information search and size of information search (p<0.05), therefore both hypothesis H_{9a} and hypothesis H_{9b} are accepted.

It must additionally be noted that the rate of increase decreases: looking at information supply weighted information search, information search size (length and size) decrease per unit. Product assortment, nevertheless, was confirmed to be one of the most important information search antecedents: it significantly influenced information search whether we looked the information search duration or the number of product attributes looked for.

Similarly to assortment, we also assumed that there is a positive correlation between the **number of product attributes** and information search as it is also an indicator of information supply. Consequently, if a product is described by few product attributes, there is no need for lengthy information search as opposed to more complicated products defined by more numerous attributes.

 H_{10a} : Before making their food purchase decisions, consumers look for information longer if the number of product attributes is higher. H_{10b} : Before making their food purchase decisions, consumers look for more product attributes if the number of product attributes is higher.

The hypothesis was examined with the help of GLM across the information search averages of the manipulated group both in terms of the number of product attributes looked for and search duration. There was no significant difference found in the information seeking behaviour of consumers in terms of the number of product attributes; group averages were identical, **therefore both hypothesis H**_{10a} **and hypothesis H**_{10b} **are rejected.**

In addition, although no hypothesis was drawn up relating to it but it complements the interpretation of results, when studying how product attributes affect

information search, a significant difference was identified between information search and the number of product attributes in the cases of ingredients and place of origin. When the number of product attributes increased, the likelihood of viewing that particular attribute decreased, as opposed to for instance price and brand where no significant correlation was found. To sum up, although the correlation is not confirmed for the entire information search process, there are some product attributes whose search is influenced by the number of attributes. The fact that brand and price are always viewed independently of product attribute number explains the lack of correlation, but these two product attributes accounted for half of the total search size.

Also, it is assumed that there is a positive, continuous, functional relation between **information supply** (defined as the product of the number of product attributes and product supply) and information search. The more information a consumer is faced, the greater the amount of information search and the longer search time will be.

 H_{11a} : Before making a food purchase decision, there is a positive functional correlation between the duration of information search and information supply.

 H_{11b} : Before making a food purchase decision, there is a positive functional correlation between the number of product attributes looked for during information search and information supply.

The hypothesis was examined using regression, and as a result a logarithmic relation was identified between the length of general information search and information supply. The line of best fit was chosen on the basis of the explanatory power of the model (\mathbb{R}^2), the significance level of the test function and our subjective decision as a researcher. \mathbb{R}^2 indicated a strong correlation; information supply predicts the duration of information search in 74% and its size in 64%, *therefore both hypothesis* H_{11a} and hypothesis H_{11b} are accepted.

The size of information search increases to a less extent if information supply is increased. As the size of information available is increased (either through including more products, or more complex products described with more attributes) consumers will, on the whole, make more effort to find out about a product but their effort will still be less per unit. Each further product attribute (information unit) will contribute to the sense of benefit for the consumer to a lesser degree. As it is explained in literature every consumer has a maximum

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benefit of information search which we can approach through increasing the information supply.

Do perceived and actual information search differ? Literature measured information search using several methods. Two types of information search are to be distinguished. Perceived information search defines information size based on what consumers admit to, its methods include questionnaires (Baltas, 2001) and focus groups (Wright, 1997), while measured information search, e.g. through laboratory research (Rawson, Janes, Jordan, 2008) and in-store observation (Russo et al., 1986; Cliath, 2007) bases its conclusions on the observation of consumers' real action. The review of literature suggests that there is a difference between perceived and measured information search: self-administered methods and questionnaires consistently overestimate the results of in-store observation methods (Russo et al., 1986). Consequently, it was also assumed here that a significant difference would be identified between perceived and measured information search favouring the value of the perceived one.

 H_{12} : Perceived information search size based on consumers' self-assessment aimed at measuring consumers' information search before making their food purchase decisions, indicating the number of product attributes used in making the decision, consistently overestimates the numbers of product attributes viewed during information search measured with the research methodology.

The hypothesis was examined using a one-item paired sample t-test across the perceived and measured values of several product attributes. Our results show that there is a significant difference between perceived and measured information search in 9 cases. The difference was not significant in 3 cases out of the 12 pairs compared, i.e. the averages of perceived and measured information search were identical. Perceived information search was higher in 6 cases. Since perceived information search overestimated measured information search in half of the cases, **hypothesis** H_{12} is accepted.

RESEARCH QUESTION	HYPOTHESIS	ANALYSIS METHOD	ACCEPTANCE	EXPLANATION
How do individual differences affect information search?	H _{1a} : Before making their food purchase decisions, female consumers look for information longer than male consumers.	GLM (Univariate)	YES	There is a significant correlation between gender and the length of information search time (p <0.05): female consumers spend more time on information search
	H _{1b} : Before making their food purchase decisions, female consumers look for more product attributes than male consumers.	GLM (Univariate)	NO	There is no significant correlation between gender and the number of product attributes used during information search.
	H _{2a} : Before making their food purchase decisions, consumers of higher income look for information longer.	GLM (Univariate)	YES	There is a significant correlation between financial situation and the length of information search time (p <0.1): consumers of medium financial situation spent more time on information search than those either in a poor or a good financial situation.
	H _{2b} : Before making their food purchase decisions, consumers of higher income look for more product attributes.	GLM (Univariate)	YES	There is a significant correlation between financial situation and the number of product attributes used during information search (p<0.1): consumers of medium financial situation look for more product attributes than those either in a poor or a good financial situation.
	H _{3a} : Before making their food purchase decisions, consumers following a special diet look for information longer than those not following any special diets.	GLM (Univariate)	NO	There is no significant correlation between following a special diet and the length of information search time.
	H_{3b} : Before making their food purchase decisions, consumers following a special diet look for more product attributes than those not following any special diets.	GLM (Univariate)	YES	There is a significant correlation between vegetarianism and the number of product attributes used during information search in the case of vegetarianism (p <0.1) partially vegetarians look for more information than non vegetarians or vegetarians.
How does product category involvement affect information search?	H _{4a} : Before making their food purchase decisions, consumers with a high level of product category involvement look for information longer.	GLM (Univariate)	NO	There is no significant correlation between product category involvement and the length of information search time.
	H _{4b} : Before making their food purchase decisions, consumers with a high level of product category involvement look for more product attributes.	GLM (Univariate)	YES	There is a significant correlation between product category involvement and the number of product attributes used in information search (p<0.001): consumers of high and medium product group involvement look for more information on average than do those of low involvement.

Decisions about the research hypothesis

How does product category affect information search? How does prior knowledge affect information search?	H _{5a} : Before making their food purchase decisions, consumers purchasing a certain product category more frequently will look for information for a shorter time.	GLM (Univariate)	NO	There is no significant correlation between the frequency of buying a product group and the length of information search time.
	H _{5b} : Before making their food purchase decisions, consumers purchasing a certain product category more frequently will look for less product attributes.	GLM (Univariate)	YES	There is a significant correlation between the frequency of buying a product group and the number of product attributes used in information search (p <0.05): those who never go shopping look for more product attributes than those who go shopping more often.
	H_{6a} : Before making their food purchase decisions, those who consume a certain product category more frequently will look for information for a shorter time.	GLM (Univariate)	NO	There is no significant correlation between product category consumption and the length of information search time.
	H_{6b} : Before making their food purchase decisions, those who consume a certain product category more frequently will look for less product attributes.	GLM (Univariate)	NO	There is no significant correlation between product category consumption and the number of product attributes used in information search.
	H _{7a} : Before making their food purchase decisions, consumers of higher perceived product group knowledge will look for information for a shorter time.	GLM (Univariate)	NO	There is no significant correlation between perceived product group knowledge and the length of information search time.
	H _{7b} : Before making their food purchase decisions, consumers of higher perceived product group knowledge will look for less product attributes.	GLM (Univariate)	YES	There is a significant correlation between perceived product group knowledge and the number of product attributes used in information search (p <0,1): consumers of high and low perceived product group knowledge use less product attributes than those of a medium level knowledge.
	H_{8a} : Before making their food purchase decisions, consumers look for information about substitute products which can satisfy the same consumer need for various lengths of time.	GLM (Repeated measures)	YES	There is a significant correlation between product category and the length of information search time (p <0.05): the most information was searched about orange juice, than about elderflower syrup than about mineral water.
	H_{8b} : Before making their food purchase decisions, consumers look for various numbers of product attributes about substitute products which can satisfy the same consumer need.	GLM (Repeated measures)	NO	There is no significant correlation between product category and the number of product attributes used in information search.

	II. Defense mediae dhei C. J. J.	CIM	VEC	There is a significant completion between
How does information supply affect information search?	H _{9a} : Before making their food purchase decisions, consumers look for information longer if product assortment is deeper.	(Univariate)	TES	product assortment and the length of information search time (p <0.05): consumers spend longer time on information search if product assortment is deeper.
	H_{9b} : Before making their food purchase decisions, consumers look for more product attributes if product assortment is deeper.	GLM YES (Univariate)		There is a significant correlation between product assortment and the number of product attributes used in information search (p<0.05): consumers use more product attributes if assortment is deeper.
	H_{10a} : Before making their food purchase decisions, consumers look for information longer if the number of product attributes is higher.	GLM (Univariate)	NO	There is no significant correlation between number of product attributes and the length of information search time.
	$\rm H_{10b};$ Before making their food purchase decisions, consumers look for more product attributes if the number of product attributes is higher.	GLM (Univariate)	NO	There is no significant correlation between the number of product attributes and the number of product attributes used in information search. There are, however, some product attributes (place of origin, ingredients) where there is a significant correlation between the number of product attributes and the number of product attributes used in information search.
	$H_{11a} \mbox{:} Before making a food purchase decision, there is a positive functional correlation between the duration of information search and information supply.$	Regression analysis (logarithmic)	YES	There is a logarithmic correlation between information supply and the length of information search time. R2 shows a strong correlation; information supply predicts the length of information search time in 74%.
rch differ? How does	$H_{11b} {\rm :} \ {\rm Before\ making\ a\ food\ purchase\ decision,} \\ there is a positive\ functional\ correlation \\ between\ the\ number\ of\ product\ attributes \\ looked\ for\ during\ information\ search\ and \\ information\ supply. \label{eq:holescale}$	Regression analysis (logarithmic)	YES	There is a logarithmic correlation between information supply and the number of product attributes used in information search. R2 shows a strong correlation; information supply predicts the number of product attributes used in information search in 64%.
Do perceived and actual information search differ?	H_{12} : Perceived information search size based on consumers' self-assessment aimed at measuring consumers' information search before making their food purchase decisions, indicating the number of product attributes used in making the decision, consistently overestimates the numbers of product attributes viewed during information search measured with the research methodology.	Paired sample t test	YES	Out of the 12 cases examined perceived information search overestimates measured information search in 6 cases.

Figure 55 – Acceptance of hypothesis - summary Source: edited by the author

5.5 Supplementary analyses

Supplementary analyses

As some hypotheses were rejected it was thought to be important to pursue some further analyses to explore the background of those. The descriptive results showed that there were big differences in the role of product attributes in information search. Price and brand as product attributes had a strong dominance over other attributes (both as the number of product attributes viewed and the duration of search), accounting for almost the half of all information search activities. This leads us to conclude that the antecedents of information search also differ by product attributes. Therefore, without attempting to give a comprehensive overview, we also explored information search size across individual product attributes based on the number of product attributes looked for [*click_att*]. Information search for price, brand, ingredients and place of origin was included in this analysis as these were the four attributes used earlier with perceived and measured data. The analysis was carried out using the GLM method, looking at the four product attributes one after the other.

In the case of **price**, based on the goodness of the linear function (*Corrected Model*) estimated with a linear model and fitted to the data of the scatter plot the model used is appropriate (p<0.01). R^2 shows that price related information search is explained in 25.3% by the factors included. The search for price as a product attribute is significantly influenced by perceived product category knowledge (p<0.1), the frequency of purchasing a product group (p<0.1), the consumption of organic products (p<0.05), financial situation (p<0.001) and product assortment (p<0.001).

In the case of **brand**, based on the goodness of the linear function estimated with a linear model and fitted to the data of the scatter plot the model used is appropriate (p<0.01). R² shows that brand related information search is explained in 41.9% by the factors included. The search for brand as a product attribute is influenced by perceived product group knowledge (p<0.05), product group involvement (p<0.1) and product assortment (p<0.001).

In the case of **ingredients**, based on the goodness of the linear function estimated with a linear model and fitted to the data of the scatter plot the model used is appropriate (p<0.01). R^2 shows that ingredients related information search is explained in 16.5% by the factors included. The search for ingredients as a product attribute is influenced by product group involvement (p<0.01), vegetarianism (p<0.01), product assortment (p<0.05) and the number of product attributes (p<0.01).

Finally, in the case of **place of origin**, based on the goodness of the linear function estimated with a linear model and fitted to the data of the scatter plot the model used is appropriate (p<0.01). R^2 shows that place of origin related information search is explained in 11.6% by the factors included. The search for place of origin as a product attribute is influenced by gender (p<0.1), product group knowledge (p<0.05), product group involvement (p<0.05), vegetarianism (p<0.1), product assortment (p<0.1) and the number of product attributes (p<0.05) (*Figure 56*).

ANALYSOS OF BETWEEN SUBJECT EFFECTS [click]													
	P	RICE		BRAND			INGR	EDIEN	TS :	COUNTRY OF ORIGIN			
	Type III Sum of Squares	ц	Sig.	Type III Sum of Squares	ц	Sig.	Type III Sum of Squares	ц	Sig.	Type III Sum of Squares	Ц	Sig.	
Corrected Model	6108,43	5,99	0,00	7869,12	12,77	0,00	1604,59	3,49	0,00	721,95	2,33	0,00	
Intercept	133,73	2,75	0,10	122,72	4,18	0,04	32,79	1,50	0,22	36,13	2,45	0,12	
Gender	3,28	0,07	0,80	26,89	0,92	0,34	3,31	0,15	0,70	49,04	3,32	0,07	
Knowledge scale	177,85	3,66	0,06	133,47	4,55	0,03	20,29	0,93	0,34	62,35	4,22	0,04	
Involvement scale	34,61	0,71	0,40	84,32	2,87	0,09	199,17	9,09	0,00	97,23	6,58	0,01	
Product group	135.09	2 80	0.10	00 42	3 20	0.07	27 17	1.24	0.27	28.80	1.06	0.16	
purchase	155,50	2,00	0,10	, ,42	3,39	0,07	27,17	1,24	0,27	20,09	1,90	0,10	
Organic food	300 71	6 37	0.01	64.00	2 18	0.14	10 00	2.28	0.13	10.55	0.71	0.40	
consumption	309,71	0,57	0,01	04,09	2,10	0,14	49,90	2,28	0,15	10,55	0,71	0,40	
Vegetarianism	0,18	0,00	0,95	10,49	0,36	0,55	155,22	7,08	0,01	52,49	3,55	0,06	
Slimming diet	91,62	1,89	0,17	1,26	0,04	0,84	19,20	0,88	0,35	2,09	0,14	0,71	
Cleansing diet	35,44	0,73	0,39	31,15	1,06	0,30	0,63	0,03	0,87	1,44	0,10	0,76	
Diet on medical advice	55,59	1,14	0,29	27,17	0,93	0,34	13,66	0,62	0,43	6,77	0,46	0,50	
Orange juice consumption	79,80	1,64	0,20	64,76	2,21	0,14	8,80	0,40	0,53	2,48	0,17	0,68	
Eldeflower consumption	75,49	1,55	0,21	1,72	0,06	0,81	56,26	2,57	0,11	18,22	1,23	0,27	
Mineral water consumption	0,36	0,01	0,93	39,03	1,33	0,25	39,46	1,80	0,18	0,85	0,06	0,81	
Financial situation	598,64	12,32	0,00	56,97	1,94	0,16	0,58	0,03	0,87	17,44	1,18	0,28	
Product assortment	3357,44	34,54	0,00	6753,95	115,05	0,00	153,73	3,51	0,03	88,79	3,00	0,05	
Number of product attributes	54,11	0,56	0,57	4,88	0,08	0,92	484,69	11,06	0,00	129,17	4,37	0,01	
Product assortment * Number of product	42,68	0,22	0,93	241,41	2,06	0,09	102,59	1,17	0,32	179,38	3,03	0,02	
attributes													
Error	18029,6			10889,6			8129,41			5482,9			
Total	61483			63239			16022			9267			
Corrigated total	24138,1			18758,7			9734			6204,9			
	R Squa	red = ,23	R Squared $=$,419			R Squared = $,165$ R Squared = $,116$					16		
	(Adjusted R Squared =			(Adjusted R Squared =			(Adjusted R Squared =			(Adjusted R Squared =			
	,	,211) ,387)				,	118)		,066)				

Figure 56 – Examining Between-Subject effects Source: edited by the author, n=393, March 2011

Individual product attributes (price, brand etc.) are influenced by different variables in the information seeking process. The significant antecedents of the entire

Supplementary analyses

information search process identified earlier explain correlations better when we look at them across product attributes. Assortment was the only factor which repeatedly showed a significant difference with each of the four attributes looked at. Gender was significant with country of origin (p=0.069): women tend to look more for that product attribute. Involvement had a significant influence in the case of price, although it was not an important factor in the whole of the information search process. The frequency of consuming organic food, on the other hand, affected the product attribute of price: those who consume more organic food are less price sensitive. Price was the only attribute showing a significant correlation with financial situation, so the effect of financial situation demonstrated earlier on the whole of the information search process may be somewhat misguided.



Figure 57 – Information search by number of product attributes Source: edited by the author, n=393, March 2011

The effect of the other manipulated variable, the **number of product attributes** should also be highlighted, as although it was not a significant factor when looking at the total information search size, it showed a significant effect with ingredients (p=0.00) and place of origin (p=0.013). As it was one of the most important variables in the research we examine it in more detail here. When participants saw 7 product attributes, they clicked on ingredients 5.7 times on average during their entire research. When the number of product attributes rose to 10 they clicked only 3.4 times and the number of clicks sank further to 2.7 with 13 product attributes. In the case of country of origin a decreasing interest was seen, too, with the number of clicks in subject groups being 3.6, 2.6 and 2 respectively. The reason for this is that

during making a choice price and brand are considered to be the most important product attributes, therefore in the entire information seeking process the effect of the other two factors became negligible (*Figure 57*). Furthermore, in the case of brand (p<0.1) and country of origin an interaction effect is also revealed between the two manipulated variables, which could serve as a starting point for future research.



Figure 58 – Information search across product categories and attributes Source: edited by the author, n=393, March 2011

RESEARCH RESULTS

The summary of results. Conclusions

After that we looked at the effect of product category for the earlier four product attributes (price, brand, place of origin and ingredients using repeated measures GLM respectively. The results suggest that information search sizes significantly varied by product attributes in terms of the duration of information search and the number of clicks except for place of origin (Univariate Test p < 0.1). When we look at information search for product attributes across product categories [click_pcat_att; dur_pcat_att], we see that their order of importance for orange juice is price, brand and ingredients, for mineral water is brand, manufacturer and price, while for elderflower syrup is ingredients, price and brand. When participants expected big differences from individual product attributes within a product category, they looked for more information. When they, on the other hand, thought product attributes to be similar, they did not look for information long. It is interesting to note that while in the case of ingredients elderflower syrup was at the top of the list, in terms of click counts orange juice came in first. The difference is attributed to the fact that while orange juice has one ingredient most of the time (is made out of concentrate), the ingredient list of elderflower syrup is more complicated and contains more information therefore participants clicked less but viewed the information longer (Figure 58).

Consequently, information search, even in the case of a purchase decision situation of a simple product is too complicated to enable generalisable conclusions and so is worth taking a more thorough look. Also, the effects of information search antecedents are hard to identify, as the various product attributes neutralise the effect of antecedents. The effects can be further fine-tuned within general food purchase decisions and could be the subject of future research.

5.6 The summary of results. Conclusions

The dissertation is about examining consumers' information seeking behaviour. We relied upon Stiegler's (1961) information typology structure when we presented in the literature review section why and how consumers look for information prior their purchase decisions. We looked at the information search process during food purchases where labelling on packaging constituted the sources of information in the information search process. In order to more precisely identify the weaknesses explored as a result of the literature review we conducted three preliminary studies: one exploratory research using netnography, a self-

administered questionnaire (n=630) to quantify results and a scale testing. This served as the starting point to the empirical part of the dissertation, the computer-administered experiment.

The results of the dissertation are divided into four groups. First, a new type of methodology has been created to define the size of information search, making it possible to measure it more accurately than previous studies. Second, some information search antecedents have been examined here which have not yet been studied (as witnessed by the literature) but authors merely mentioned the lack of study as a fact. Third, packaging was used in this research as a marketing tool, which has not been thoroughly investigated in academic research yet. We have also made a contribution to a better understanding of the informative function of packaging, a role that has so far not been studied in detail.

5.6.1 New methodology

Researchers have created numerous methods to measure the size of information search, including the number of stores visited, the number of times a consumer looks around stores, the number of visits to points of sale, the time spent in department stores, the time of purchase decisions, the number of brands judged as alternatives by consumers, the price range contemplated and the amount of information types used (Newman, 1977; Guo, 2001). None of these methods, however, are considered reliable as they do not only measure information search but can be influenced by a number of external factors. The way the results of earlier methods differed was also problematic (Russo et. al, 1986), making their reliability somewhat doubtful. Therefore we used a computer administered laboratory experiment with the help of the software OPTEST specifically developed for the purposes of this study. Participants were asked to choose products on a surface similar to online shopping surfaces. The criticism that the experiment was not carried out in a real store environment could be justified but the ratio of online shopping is well on the increase in the case of several product categories, including food, and the personal presence and touch is less and less important, particularly when consumers purchase products they know and frequently purchase (Agárdi, Dörnyei, 2011). Also, experiment subject were experienced computer users, consequently, the methodological distortions were kept to a minimum.

RESEARCH RESULTS

The summary of results. Conclusions

The advantage of the software was that the size of information search could be measured accurately by showing participants the individual product attributes undisclosed but enabling them to view the piece of information they wanted before selecting a product. The research was similar to the conjoint technique (Louviere, 1988), since participants were shown products with different product attribute levels, and they were made to make their choice on the basis of that. However, this was only a manipulative experiment task: we obtained much more and deeper knowledge about their information search and product choice habits. The software recorded the location of all the clicks of participants and measured how many seconds they spent on reading individual product attributes. In this way all the parameters, search size and type of information looked for became accurately documented. Before the experiment each participant was made to fill in a questionnaire of demographic and attitude related questions.

In order for the reliability and validity of the experiment, on more than one occasion **randomisation was used**. Respondents were randomly divided into different subject groups. Also, product categories appeared to them in a random order. Products in a certain product category (horizontally) and their attributes (vertically) were also shown in a random order. This degree of randomness increased internal validity. Similar increase in internal validity could have only been achieved had a paper-based research method or fictitious products been used, but that would have incurred much higher costs and taken much longer.

In order to check the reliability of the method we **compared** the information search measured by the software to the traditional methodology, i.e. perceived information search based on the self-assessments of participants. Results showed that respondents often overestimate their information search size.

Using the methodology of the research will enable further investigations in the future as this software-based measurement has justified its efficiency: a valid and reliable methodology has been created.

5.6.2 A new approach to information search

The dissertation looks at consumers' information seeking behaviour during food purchase. Although literature recognizes multistage information search models (Wilson, 1999; Ellis, 1989; Kuhlthau, 1991), these often fail to be applicable to

consumer decision making situations. When studying information search prior product purchases a distinction must be made between durables and FMCGs (*fast moving consumer goods*). The information search process is longer with durables, requiring the use of more sources, while with FMCGs consumers most often use simplified decision making mechanisms, make routine purchases and frequently only look for information at the point of sale.

Information search is divided into two stages in marketing science, the stage of external search and the stage of internal search. While internal information search refers to the withdrawal of information from one's own memory, external information search means the collection of information from sources other than one's memory, i.e. advertisements, friends, or labelling on packaging etc. (Bettman, 1979). Although this dissertation is devoted to the study of external information search, based on our results it has become obvious that **dividing the** stages of external and internal information search is difficult and may only be approximated. Consumers look for information day by day, year after year when making their food purchases, and the knowledge and experience thus accumulated could not be excluded in an experiment. Consumers, when making their decisions, rely greatly on the information from the internal source as it simplifies and accelerates their purchases. Brand and price are the product attributes which promote internal information search. Brand simplifies consumers' search since products become clearly identifiable with it, and so does price. Although price is often displayed next to products instead of being put on the actual label, we included this attribute in the research in order to increase the external validity of results.

Consequently, among the **product attributes** offered price and brand were almost equally important, accounting for half of the total search activities. The next most important attribute was ingredients on packaging, followed by the name of the product, place of origin, net weight and volume, manufacturer and distributor. The differences suggest that when participants expected great differences from individual product attributes within a product category, they viewed the piece of information, but when they thought the products identical based on the product attribute, they did not look for the information.

5.6.3 The analysis of relationships

RESEARCH RESULTS

The summary of results. Conclusions

In the research information search and its **relationship with** several of its **antecedents** was analysed. Based on Beatty and Smith (1978) and Guo (2001) seven groups of antecedents affecting information search are distinguished: marketing environment, knowledge and experience, individual differences, situational variables, product importance, conflicts and conflict resolution strategies and cost of search. In the research variables of the first three groups were studied. Three variables of the marketing environment (product category, assortment depth and the number of product attributes) were systematically manipulated in the experiment. Product group involvement, perceived product group knowledge, purchase and consumption of product group, gender and special diet were included as independent variables. In this way through comparing the different levels of manipulated and measured variables enabled us to describe the effect they made on information search.

Three different product categories were used (orange juice, mineral water and elderflower syrup) widely available cognitive products with high penetration. Our results show that information search proved to be different across product categories. On average, information search took the longest in the case of orange juice, as the products were heterogeneous and more information was available about them than about elderflower syrup or orange juice.

When information search in each product category was looked at in terms of product attributes, there were significant differences to be identified between them, too. In the case of orange juice price, brand and ingredients, in the case of mineral water brand, producer and price and in the case of elderflower syrup ingredients, price and brand were relevant factors (in these respective orders). The orange juice market is a highly differentiated one in terms of price as branded and store brand products are equally found on the market, making price a strong differentiator. Orange juice is, moreover, a branded product category where consumers have their own favourite brands. It is also true for mineral water that it is a branded product category, there are no significant differences in price or other product attributes, either, making brand the most important product, consequently, brand had no real relevance, and compared to the other two product categories is a complicated multi-ingredient product, thus ingredients became a relevant product attribute.

Although the product categories were equally suited to meet similar consumer demands, significant differences were identified in the information seeking behaviour. We assume that using more heterogeneous product categories would have resulted in even more significant differences, not to mention durable goods

where information search may last for days instead of the 20-90 seconds registered here.

Unlike studies on packaging where packaging was examined on its own, we regarded packaging as part of the **marketing environment**, since product packaging is not put on shelves on its own but amongst thousands of products. Therefore we looked at how information search is affected by assortment depth, the number of product attributes and product categories.

Assortment depth was an important factor to influence information search as when more products were on offer, participants looked for more information. The increase in information search, however, was not even: the more information participants were faced, the less search they carried out per product, indicating that a deeper assortment is conducive to more superficial information seeking behaviour.

Based on general information search the **number of product attributes** did not show a significant association. But when the information search activities of individual product attributes were compared to one another, it became a significant factor in the case of place of origin and ingredients: when presented with more product attributes, participants were less likely to view these two product attributes. If there was little information available about a product, the few product attributes were carefully read, but when faced with a number of information, then search was limited to the search of price and brand product attributes.

After having looked at how assortment and the number of product attributes affect information search respectively, we examined their effect together, too by multiplying their values, enabling us to study the relationship on the basis of nine observation values. Logarithmic regression revealed a strong functional correlation between **information supply** and information search. This correlation shows that the increase in information supply leads to a larger total of information search effort but the effort will still be less per unit. As it was earlier presented in literature, every consumer has a maximum benefit of information search, therefore each further product attribute will contribute to the sense of benefit of a consumer to a decreasing degree. The logarithmic relationship can be generalised to the association between information search and information supply, since we concluded there to be a logarithmic relationship for not only the entire information search process but the information search measured by individual product categories.

The summary of results. Conclusions

Several studies identified the effect of gender on information search among individual differences (Mueller, 1991; Guthrie et al., 1995; Mangleburg, Grewal, Bristol, 1997; Nagya, 1997; Govindasamy, Italia, 1999). In this research female respondents tended to spend more time on information search but they did not look for more product attributes on average. Also, women checked brands more whereas men viewed storage conditions and sell-by dates. Literature suggests that a good financial situation is in a positive correlation with label use (Piedra, Schupp, Montgomery, 1996; Wang, Fletcher, Carley, 1995), but the opposite of it has also been stated (Drichoutis, Lazaridis, Nayga, 2005; Schupp, Gillespie, Reed, 1998). In our research those with either a poor or a good financial situation looked for less information, while those with an average financial situation were the ones to look for the most information. In addition, a significant difference was also identified on the basis of information search by product attributes: those of a better financial situation viewed the prices of products significantly less. From the point of view of nutrition related special diets our sample was a relatively homogeneous one since participants were young and healthy, in no need for a special diet. Partially vegetarians viewed more product attributes. Moreover, those who often go on a slimming diet looked for calorie content and storage conditions, those who go on cleansing diets, viewed producer/distributor and health statements whereas vegetarians paid the most attention to ingredients.

Product group **involvement** is considered to be an increasingly relevant factor (Lehota, 2001; Verbecke, Vackier, 2003; Beharrel, Denision, 1995; Bell, Marshall, 2002; Drichoutis, Lazaridis, Nayga, 2007) in food purchases. Our results confirm that those with a low level of involvement looked for less product attributes while those with high involvement levels looked for more product attributes about a product and consumers with high involvement levels were more likely to view ingredients and place of origin. Our results would have probably been more heterogeneous had we asked about product category involvement instead of product group involvement.

Prior knowledge was the most contradictory concept in the research. In accordance with literature it was defined as a mass of information stored in the memory (Brucks, 1985). But prior knowledge is an intricate theoretical construct with a complex structure, formed as a result of different types of knowledge. Marketing literature lists three types of it, objective, perceived and experiential knowledge (Brucks, 1985; Raju, Lonial, Mangold, 1993; Park, Lessig, 1981; Kanwar, Olson, Sims 1981; Marks, Olson 1981). Our research only focused on the latter two. The perceived prior knowledge scale helped us establish that respondents think they know these products as scale elements received high values.

92% of participants claimed to purchase foods therefore their experiential knowledge was also considerable. Our research results demonstrate that there was a difference in information seeking behaviour when perceived prior knowledge varied. Also, the frequency of food purchases significantly correlated with information search: those who never do any shopping wanted to see many more product attributes than those who always go shopping for their household needed the least information. But when information search was compared on the basis of individual product consumption frequencies, no significant differences were identified. An important finding is that in terms of its effect on information search purchase experience does not equal consumption experience. Consumption as the source of experiential knowledge does not require any information search since the product is consumed after having been purchased, i.e. choice is not part of it for which information search would be essential. Another finding of ours concerning knowledge is that purchases endow consumers with a kind of routine, making it the purchase process smoother and faster and more efficient. As revealed by a comment in our exploratory study ('I always check the ingredients when trying something new'), information search is often carried out only when purchasing a new product category; otherwise it is no use checking product attributes again and again but later decisions are based on earlier experiential knowledge ('Brand name is only good for knowing which box to turn around next time and read again.'). Therefore routine purchases must be separated from the more time-consuming exploratory purchases. Those who go shopping more frequently, are already in possession of the necessary familiarity with products and use their own methods (brand loyalty, store loyalty, colour and shape based choices) to avoid ongoing information search.

5.6.4 Results concerning product packaging

In this research information search was studied using the labelling found on packaging since packaging is becoming an increasingly relevant factor in corporate marketing due to the increasing supply, advertising avoidance and narrowing marketing budgets (Ampuero, Vila, 2006; Underwood, 2003, Underwood, Klein, Burke, 2001). The research is unique in Hungary as it focuses on the informative function of packaging looking at its role in the information search a decision making process.

RESEARCH RESULTS

The summary of results. Conclusions

Based on the results we state that for a growing number of consumers packaging is also a source of information, and oftentimes the only one in the case of foods. Consumers read the labelling, it influences their decisions therefore corporate actors should take care when creating it. Certain consumer segments, e.g. women, those living in a household with children, those following a special diet have been found to read labels more frequently. Men watch for simple preparation tips and storage recommendations, women are interested in brands and those living with children look for ingredients. Information search may be differentiated across products – which attributes of them consumers are interested in. Important product attributes included for example producer in the case of mineral water and ingredients in the case of elderflower syrup. In this way it was easy to map the types of information consumers look for about a product and its competitors and how long they do so.

In general we can say that too much information is confusing on packaging for consumers: when information supply increases they will pay less attention to a product and product attribute and make their decision based on less information. With a growing information supply producers and distributors should stop and think about their target group and its characteristics and adjust the information content and product attributes appearing on packaging accordingly. When establishing it, product supply should also be taken into consideration as it strongly influences information search.

Since consumers rely greatly on internal information search based on earlier knowledge, intervention in a consumer information search process is at its most efficient when a consumer is a novice. When a consumer purchases a product category for the first time then they look for all information relevant to them and make thorough mental notes about it which they will use later.

To create the informative function of packaging is the task of manufacturers and distributors, along with regulators since rules and regulations aim at the widest possible information service. However, because of the information oversupply the number of product attributes appearing on packaging should be given some thought. When there are two many compulsory elements displayed it impedes consumers' efficient information search. Alternative information solutions may be more practical than filling up packaging with information.

5.7 Limitations of the research and further topics of research interest

The research has several limitations. Information search has long been studied therefore the disadvantage of the **topic choice** is that it is difficult to come up with novelty in this area since well-known and recognized authors have researched it and published dozens of books and articles. With a history like this a topic tends to lose some of its scientific freshness and results are hard to publish. To counter this in this dissertation, new methodology was used to study so far unexplored factors which influence information search.

Only a **small piece** of information search was studied in the dissertation, i.e. product attributes on packaging as information source was examined on food products. Research literature indicates that it is a relatively neglected scientific field, therefore the choice is justified but the study omits significant information sources such as advertisements, experts, family etc. However, the exclusive use of product attributes found packaging enabled us to establish an order of importance of them, and see the degree of relevance of each of them in making a choice. Nevertheless, it would be interesting to repeat the research in a way that other sources of information are also included.

The study is limited to the examination of external information search related to the purchase process used in marketing. In real life, however, internal and external information search may not be separated as they are closely intertwined constructs. In the planning stage of the experiment we tried to eliminate distortions arising from the close connection of the two types of search by showing products to participants identically and made all necessary data available for them. But since we used real products in order to enhance external validity we were unable to fully eliminate all consumer prior knowledge and information search relying on internal sources. In the research - having made the necessary adjustments following advice from experts – price and brand product attributes were also included as they are important factors, but brand also meant a sort of prior knowledge. Participants were able to use the knowledge connected to a branded product thus the usage level of other product attributes remained low. We could not decide if it was due to the above mentioned factor or the fact that they do not use it anyway. Therefore it would be interesting to compare the result of choice in a branded and a nonbranded experiment group.

Limitations of the research and further topics of research interest

The **method** used in the dissertation, i.e. computer administered laboratory research does not map reality, but as our literature analysis suggested that none of the earlier methods were perfect, the application of a new method was justified. When compiling the experiment we bore the generalizability of results in mind so we used manipulation and created an environment similar to an online store's surface. Therefore the method is not only suitable for exploring the usage of product attributes found on packaging but also for the modelling of search in an online environment, which is not elaborated on here due to volume limitation issues, but which may be a subject of future research. In order to **develop the methodology** and test its reliability it would be worthwhile to use a control group with real products making it possible to compare information search in an online environment to that in a store.

The composition of the **sample** may also be seen as a limitation. A frequent mistake encountered in PhD dissertations is the lack of representativity. In the case of future studies there is a possibility of representativity with the help of the software OPTEST, as the research may be carried out again several times, and where it seems reasonable, with the inclusion of other products or variables.

In the course of the experiment sample members saw several variables in a **random order**. In the experiment because of the optimalisation of supply, products were allocated into experiment groups following a prior decision, which made it difficult to analyse the decision about products. When analysing the product attributes we were faced with the same difficulties. Future research should try to eliminate this effect.

When examining the effect of **information supply** on information search, information supply was defined as the product of the number of product attributes (2, 4, or 6) and the number of products (7, 10, or 13), which did not rise evenly, it should have been distributed in a more even manner.

Information search size as the function of information supply was described with a logarithmic curve. An interesting question for future research is whether it reaches its theoretical maximum in the case of an even larger product supply, or is a quadratic association the final result. Provided there is a maximum to it, it would be intriguing to know what else influences it apart from information supply. It is supposed that the complexity of information arrangement or availability may also modify its maximum, which is also an interesting line of further investigation.

In the research we looked at **product categories** suitable for meeting the same consumer needs. In order to boost knowledge about information seeking habits further it would be worth including other product categories such as emotional products (chocolate), or more complex products (frozen ready made foods). Other product categories than the products examined in this research may be found even within the soft drinks product group (e.g. fizzy soft drinks), whose information search will be likely to differ. In the case of non FMCGs various other factors will be at work and affect information search, which may also be a topic to look at.

The methodology has a huge **potential** to help researchers better understand information search, which we have been unable to elaborate on due to volume limitations. Information search patterns may be looked at, i.e. whether consumers prefer to look for information along the lines of products or product attributes. Whether consumers can be segmented on the basis of search patterns could also be an intriguing research area. These research directions may reveal so far unexplored layers of information seeking behaviour.

To sum up, the research has been carried out using novel methodology which has potential for further improvement and examination, but which appears to have a host of opportunities and whose first research has been now presented. The results have contributed to a better understanding of information search and have provided a number of opportunities for further studies. Hopefully, the dissertation will be of interest to not only researchers, but corporate experts will also benefit from its results and conclusions.

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Labels and certifications on food packaging

A P P E N D I X

Labels and certifications on food packaging



Source: http://csomagolas.blog.hu/



				Nutrition Fact Serving Sea 1 new (2016) Serving Sec Contense 7 Amount For Second	s	Minden adag az alábbiakat tartalmazza:					
				Colorina 200 Calorina tran 1 at 1 Balance 1 at 120 Talac test 120 Montest 1 at 12		Energia 139kcal	Cukor 6,0g	Zsír 3,6g	zsírsav 1,0g	Nátrium 0,07 g	
Serving Size Servings Per	tion 1 cup (22 Containe	Fa	cts	Teas for 20 Onderen Timp 10 Geden (Timp 10 Teas Carbonysten 21 Geden Fiber (2)		7% ányadó Naj	7% pi Beviteli Å	5% ték (INBÉ)	5% %-a feinőt	3% tek számára.	
Amount Per Ser	ving								out for	me!	
Calories 250	Ca	ories fron	n Fat 110		Per serving	LOW 7.78 pe	r serving	1	oot cal	fat	
Total Eat 100		% Daily	Value"	Fat	7.7g	LOW Satu	rates r serving	6	431	6.8g	
Intal Pat 12g			18%	Saturates	2.0g				total	sat fat	
Jaluraleu Fa	nog		13 /0	Sugars	42.20	HIGH 42.28 P	gars er serving		sugars	2.80	
Cholectorel 20	2000		10%	Calé	2.0-		1+		6g / 9	salt	
Cholesterol Solid 10%		20%	Jait	2.0g	2.0g MED 2.0g per serving 2.0g						
Total Carbohydrate 21a		10%		MELOW							
Dietory Elber On		0%									
Sugare 50	r vy		0.0								
Brotoin 5g											
Protein 5g			-							1	
Vitamin A 4%											
Vitamin C 2%			READYM	READY MEAL, 400g, CONTAINS 1 SERVING							
Calcium 20%			Each servir	Each serving contains							
Iron			4%		MED	MED	HIGH	LOW	MED		
* Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs.			calorie diet. epending on		360 CALORIES	13.2g FAT	8.0g SATURATES	10.8g SUGARS	2g SALT		
Total Fat	Less than	2,000	2,500 80g		18%	19%	40%	12%	33%		
Sat Fat	Less than	20g	250			OF YO	OUR GUIDELIN	E DAILY AMO	UNT		
Cholesteral	Less than	300mg	300mg								
Total Carbohydrale	Loss tian	2,400mg 300g	375g								
Dietary Fiber		25g	30g								

Design and packaging

Online sources of the netnographic research

Source: http://csomagolas.blog.hu/



Online sources of the netnographic research

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