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Attitudes and behaviour towards food attributes and organic food – a triangular methodological investigation of occasional organic consumers

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Declaration of originality

This PhD thesis contains a collection of papers that have been submitted to different peer-reviewed journals as follows:

- Chapter 4 contains paper 1, which was published in German language by the peer-reviewed journal 'Berichte über Landwirtschaft' as Stolz, H., Bodini, A., Stolze, M., Hamm, U. and Richter, T. (2009) Lebensmittelqualität aus der Verbraucherperspektive – eine Synthese qualitativer Studien zur Wahrnehmung und Beurteilung verschiedener Qualitätskriterien bei Öko-Produkten. Berichte über Landwirtschaft 87, 153-182.
- Chapter 5 includes paper 2, which has been submitted as Stolz, H., Janssen, M., Hamm, U. and Stolze, M. Preferences and determinants for organic, conventional and conventional-plus products – the case of occasional organic consumers. The paper has been accepted with major revisions, revised, and resubmitted to the peer-reviewed journal 'Food Quality and Preference' on May 26, 2011.
- Chapter 6 contains paper 3, which was submitted to the peer-reviewed journal 'Wageningen Journal of Life Science'. The paper has been accepted for publication in October 2010 as Stolz H., Stolze, M., Hamm, U., Janssen, M. and Ruto, E. (2010) Consumer attitudes towards organic versus conventional food with specific quality attributes. Wageningen Journal of Life Science, doi:10.1016/j.njas.2010.10.002.

Although I am the main author, several project partners and co-authors have contributed to the development of the three papers. In the following, a detailed list of my own contribution and the contributions of the project partners and co-authors to the three papers is provided.

The synthesis of empirical data presented in paper 1 originates from three qualitative studies. The first study (study 1-DE, cf. chapter 4) was designed, carried out and analysed on my own. The two other qualitative studies, which were identical in their approach, were part of the European Commission funded research project 'Improving quality and reduction of costs in the European organic and low-input food supply chains (QLIF)' and were conducted under the supervision of the task leader Martine François, GRET (Groupe de Recherche et d'Échanges Technologiques, Paris). The data collection and analysis of the first of these two studies was conducted on my own at the University of Kassel, Germany (study 2-DE, chapter

4). The data collection and a first analysis for the second study was conducted by Antonella Bodini and Toralf Richter at the Research Institute of Organic Agriculture, Switzerland (study 2-CH, chapter 4). The synthesis of the three studies and paper writing was done on my own, while the co-authors Antonella Bodini, Toralf Richter, Ulrich Hamm and Matthias Stolze provided feedback on the paper.

Papers 2 and 3, which are presented in chapters 5 and 6, contain the results of a quantitative empirical study, which was also part of the European Commission funded project QLIF. I developed the design of the quantitative study. The data collection in Germany was accomplished by the project partner and co-author Meike Janssen, while the data collection in Switzerland was done by me. I conducted the data analysis over the two countries and wrote papers 2 and 3. The project partners and co-authors Matthias Stolze, Ulrich Hamm and Meike Janssen provided feedback on paper 2. The project partners and co-authors Matthias Stolze, Eric Ruto, Ulrich Hamm and Meike Janssen provided feedback on paper 3.

I declare that I prepared the present dissertation on my own. Information derived from the published and unpublished work of others has been acknowledged in the text and a list of references is given. This PhD thesis has not been previously presented at any university or other institute of tertiary education or published elsewhere.

Hanna Stolz

Contents

LIST OF TABLES ..... **VIII**
LIST OF FIGURES ..... **IX**
LIST OF ABBREVIATIONS ..... **IX**
1 INTRODUCTION AND PROBLEM STATEMENT **1**
1.1 RESEARCH QUESTIONS AND OBJECTIVES 2
1.2 PROCEDURE 3
2 THEORETICAL FRAMEWORK **4**
2.1 ECONOMIC THEORIES 5
2.1.1 Overview of economic theories *5*
2.1.2 Random Utility Theory *8*
2.2 PSYCHOLOGICAL THEORIES 9
2.2.1 Overview of psychological theories *9*
2.2.2 Neobehaviouristic Theory and Stimuli-Intervention-Response models *10*
2.3 CLASSIFICATION OF MODELS 13
3 METHODOLOGY **14**
3.1 DATA COLLECTION 15
3.1.1 Qualitative data collection methods *16*
3.1.2 Quantitative data collection methods *19*
3.2 DATA ANALYSIS 24
3.2.1 Qualitative data analysis methods *24*
3.2.2 Quantitative data analysis methods *29*
4 FOOD QUALITY FROM THE CONSUMER PERSPECTIVE – A SYNTHESIS OF QUALITATIVE STUDIES OF CONSUMER PERCEPTIONS AND EVALUATION OF VARIOUS QUALITY CRITERIA FOR ORGANIC PRODUCTS **35**
4.1 ABSTRACT 35
4.2 INTRODUCTION 37
4.3 DATA COLLECTION 39
4.3.1 Focus group discussion *39*
4.3.2 Design of the individual studies *40*
4.4 DATA ANALYSIS 44
4.4.1 Qualitative content analysis *44*
4.4.2 Cross-case comparison analysis *46*
4.5 RESULTS 46
4.5.1 Product-specific quality criteria *47*

4.5.2 Assessment of organic production ... *61*
4.6 DISCUSSION OF RESULTS ... 65
4.7 CONCLUSIONS ... 69
4.7.1 For providers of organic food ... *69*
4.7.2 For decision-makers in the field of agricultural policy ... *71*
4.8 ACKNOWLEDGEMENTS ... 71
5 PREFERENCES AND DETERMINANTS FOR ORGANIC, CONVENTIONAL AND CONVENTIONAL-PLUS PRODUCTS – THE CASE OF OCCASIONAL ORGANIC CONSUMERS ... 72
5.1 ABSTRACT ... 72
5.2 INTRODUCTION ... 73
5.3 THEORETICAL FRAMEWORK ... 74
5.4 MATERIAL AND METHODS ... 76
5.4.1 Design of the purchase simulation ... *76*
5.4.2 Data collection ... *77*
5.4.3 Data analysis ... *78*
5.5 RESULTS ... 79
5.5.1 Composition of the sample ... *79*
5.5.2 Outcomes of the buying simulations ... *80*
5.5.3 Attitude scales ... *82*
5.5.4 Results of the multinomial logit models ... *84*
5.6 DISCUSSION AND CONCLUSIONS ... 87
5.7 ACKNOWLEDGEMENTS ... 89
6 CONSUMER ATTITUDES TOWARDS ORGANIC VERSUS CONVENTIONAL FOOD WITH SPECIFIC QUALITY ATTRIBUTES ... 90
6.1 ABSTRACT ... 90
6.2 INTRODUCTION ... 91
6.3 THEORETICAL FRAMEWORK ... 93
6.4 MATERIALS AND METHODS ... 94
6.4.1 Design ... *94*
6.4.2 Data collection ... *96*
6.5 RESULTS ... 97
6.5.1 Sample ... *97*
6.5.2 Consumer attitudes relating to food quality ... *97*
6.5.3 Observed buying behaviour ... *98*
6.5.4 Preference heterogeneity and prices effects ... *99*

6.6 DISCUSSION 101
6.7 ACKNOWLEDGEMENTS 102
7 SYNTHESIS 103
7.1 SYNTHESIS OF THE RESULTS 103
7.1.1 Results related to objective 1 and associated research questions 103
7.1.2 Results related to objective 2 and associated research questions 105
7.1.3 Results related to objective 3 and associated research question 106
7.1.4 Results related to objective 4 and associated research questions 107
7.2 REFLECTION ON THE THEORETICAL FRAMEWORK 108
7.3 REFLECTION ON THE METHODOLOGICAL APPROACH 109
8 CONCLUSIONS AND RECOMMENDATIONS 111
8.1 CONCLUSIONS 112
8.2 RECOMMENDATIONS FOR PROVIDERS OF ORGANIC FOOD 113
8.2.1 Communication strategy 113
8.2.2 Product mix strategy 115
8.3 RECOMMENDATIONS FOR DECISION-MAKERS IN THE FIELD OF AGRICULTURAL POLICY 116
8.4 RECOMMENDATIONS FOR FURTHER RESEARCH 116
SUMMARY 118
ZUSAMMENFASSUNG 120
ACKNOWLEDGEMENTS 124
REFERENCES 125
APPENDIX 137
APPENDIX I: FOCUS GROUP DISCUSSION GUIDELINES OF STUDY 1-DE PRESENTED IN CHAPTER 4 137
APPENDIX II: FOCUS GROUP DISCUSSION GUIDELINES OF STUDY 2-DE AND 2-CH PRESENTED IN CHAPTER 4 142
APPENDIX III: EXPERIMENTAL MINUTES AND QUESTIONNAIRE OF QUANTITATIVE RESEARCH PRESENTED IN CHAPTER 5 AND 6 149

LIST OF TABLES

TABLE 1: OVERVIEW OF MAIN CHARACTERISTICS OF QUALITATIVE AND QUANTITATIVE METHODS 15

TABLE 2: QUALITATIVE CONTENT ANALYSIS 26

TABLE 3: OVERVIEW OF QUALITATIVE CONTENT ANALYSIS TECHNIQUES 27

TABLE 4: CROSS-CASE COMPARISON ANALYSIS 28

TABLE 5: EXPLORATORY FACTOR ANALYSIS 30

TABLE 6: MULTINOMIAL LOGIT MODEL 33

TABLE 7: LATENT CLASS MODEL 34

TABLE 8: DESIGN AND CONTENT OF THE FOCUS GROUP DISCUSSIONS 43

TABLE 9: RELEVANCE OF INGREDIENTS SUMMARISED BY COUNTRY AND PRODUCT 47

TABLE 10: RELEVANCE OF INDIVIDUAL ADDITIVES SUMMARISED BY COUNTRY AND PRODUCT. 48

TABLE 11: RELEVANCE OF SENSORY PROPERTIES SUMMARISED BY COUNTRY AND PRODUCT ... 51

TABLE 12: RELEVANCE OF INDIVIDUAL ASPECTS OF PRODUCTION AND PROCESSING SUMMARISED BY COUNTRY AND PRODUCT 54

TABLE 13: RELEVANCE OF GEOGRAPHICAL ORIGIN SUMMARISED BY COUNTRY AND PRODUCT. 58

TABLE 14: RELEVANCE OF PRICE AND PRICE-PERFORMANCE RATIO SUMMARISED BY COUNTRY AND PRODUCT 60

TABLE 15: ASSESSMENT OF THE ORGANIC PRODUCTS IN TERMS OF INDIVIDUAL CRITERIA 61

TABLE 16: CHARACTERISTICS OF THE SAMPLES IN SWITZERLAND AND GERMANY AND OTHER CHARACTERISTICS 80

TABLE 17: SHARES OF PRODUCT ALTERNATIVES CHOSEN IN THE BUYING SIMULATIONS IN SWITZERLAND AND GERMANY 81

TABLE 18: COMPARISON OF ALTERNATIVES CHOSEN AND STATED USUAL PREFERENCES 82

TABLE 19: ATTITUDE SCALES AND CORRESPONDING ITEMS 83

TABLE 20: MULTINOMIAL LOGIT MODELS FOR MILK, FRUIT YOGHURT AND APPLES IN GERMANY WITH PARAMETERS OF THE EXPLANATORY VARIABLES (BASE CATEGORY: CONVENTIONAL ALTERNATIVE) 84

TABLE 21: MULTINOMIAL LOGIT MODELS FOR MILK, FRUIT YOGHURT AND APPLES IN SWITZERLAND WITH PARAMETERS OF THE EXPLANATORY VARIABLES (BASE CATEGORY: CONVENTIONAL ALTERNATIVE) 86

TABLE 22: ATTITUDINAL FACTORS RELATED TO FOOD PRODUCTION AND QUALITY 97

TABLE 23: RESULTS OF LATENT CLASS MODELS OF MILK, YOGHURT AND APPLES WITH PARAMETERS OF EXPLANATORY VARIABLES AND CONSTANTS 99

LIST OF FIGURES

FIGURE 1: THE STIMULI-INTERVENTION-RESPONSE-MODEL 11
FIGURE 2: TRIANGULAR METHODOLOGICAL APPROACH 23

LIST OF ABBREVIATIONS

BIC	Bayesian information criterion
cf.	confer (compare)
CH	Switzerland
DE	Germany
EC	European Commission
EU	European Union
EUR	Euros
€	Euros
IIA	independence of irrelevant alternatives
I	intervention
IP	integrated production
LCM	latent class model
LL	log-likelihood
MNLM	multinomial logit model
n	number of observations
n.a.	not assessed
%	percent
p	probability value
PhD	philosophiae doctor (Doctor of Philosophy)
POS	point of sale
QLIF	Improving quality and reduction of costs in the European organic and low-input food supply chains (Acronym for an EU research project)
β	regression coefficient (parameter)
R	response
RUT	Random Utility Theory
S-I-R	Stimuli-Intervention-Response
S	stimuli
USP	unique selling proposition
WTP	willingness to pay

1 INTRODUCTION AND PROBLEM STATEMENT

The European organic market has grown continuously during the past two decades and has experienced average annual growth rates of more than 10 % since 2005 (Willer, 2010; Padel et al., 2009; Padel et al., 2008; Willer and Yussefi, 2007). Germany was the country with the largest organic market turnover in Europe in 2009 at 5800 million EUR, followed by France at 3041 million EUR, and the UK at 2065 million EUR (Schaack et al., 2011). The highest market shares of organic products of approximately five % were found in Denmark, Austria and Switzerland (Schaack et al., 2011). Food scandals at the beginning of this millennium in particular, and a growing consumer awareness of sustainable food production and consumption have led to an increase in consumer demand for organic food (Zanoli et al., 2004).

With the continuous market growth, the organic market has left its niche existence since organic food is increasingly sold in conventional retail outlets (BÖLW, 2010). There, organic products are offered alongside with various other types of products and compete mainly with conventional and the so-called conventional-plus products. The latter are conventional products displaying particular quality attributes on the product packaging, such as ‘no artificial additives’, or ‘from animal welfare husbandry’. Often, these quality attributes also apply to organic products. Occasional organic consumers might prefer such conventional-plus alternatives that are perceived to be ‘between’ organic and conventional products. This is expected because this consumer group holds a certain awareness of food production and processing while being less committed either to organic or to conventional food. Furthermore, conventional-plus products are often cheaper than organic products and therefore might attract the attention of this consumer group.

Although regular organic consumers still hold higher shares of the organic market turnover (39 % in Germany) (Buder et al., 2009), occasional organic consumers are considered to be an important target group for the organic sector. The reason is that the group of occasional organic consumers is growing and holds an enormous potential for organic food demand. Therefore, it is important for the organic sector to get more information about the buying behaviour of this target group. Due to the strong competition between organic products and other types of food products in the conventional retail system, it is relevant to investigate occasional organic consumers’ perceptions, attitudes and buying behaviour towards organic,

conventional and conventional-plus products. It is important to analyse whether conventional-plus products are more preferred than organic products and to examine the price impact on occasional organic consumers' buying behaviour since conventional-plus products are often cheaper than organic products and therefore might be preferred.

1.1 Research questions and objectives

Against this background, the overall objective of this PhD thesis is to provide information about the segment of occasional organic consumers. In particular, the thesis focuses on consumers' perceptions and attitudes towards the quality of, and preferences for, organic, conventional and conventional-plus products in two countries: Germany and Switzerland. In the following, an overview of the objectives and corresponding research questions of this PhD thesis is provided.

Objective 1: Exploration of occasional organic consumers' perceptions and attitudes towards various quality criteria for organic products.

- Research question 1.1: Which product- and country-specific quality criteria are important when evaluating food?
- Research question 1.2: How do consumers assess organic production compared to conventional production?

Objective 2: Analysis of occasional organic consumers' buying behaviour towards organic, conventional and conventional-plus products.

- Research question 2.1: Which alternatives are preferred in a choice situation? What is the share of the 'in-between' conventional-plus products?
- Research question 2.2: Are conventional-plus products preferred by consumers who choose organic quality products in everyday-life more than by consumers who choose conventional products in everyday-life?
- Research question 2.3: What is the impact of varying price levels for organic, conventional and conventional-plus products on occasional organic consumers' buying behaviour?

Objective 3: Identification of determinants that explain occasional organic consumers' preferences for organic, conventional-plus and conventional products.

- Research question 3: Which variables determine consumers' preferences for organic, conventional or conventional-plus products?

Objective 4: Investigation of preference heterogeneity among occasional organic consumers regarding organic, conventional and conventional-plus products.

Research question 4.1: Are there different segments within the group of occasional organic consumers?

Research question 4.2: If so, what distinguishes consumers in different segments from each other?

The findings and conclusions are addressed to providers of organic food and will contribute to increasing the knowledge about the target group of occasional organic consumers. In addition, this thesis aims to support providers of organic food in developing marketing strategies targeted to occasional organic consumers' demand. Furthermore, the findings and conclusions are dedicated to decision-makers in the field of agricultural policy and will contribute to developing adequate policy instruments to support organic farming.

1.2 Procedure

A triangular methodological approach was chosen to achieve the objectives of this PhD thesis. To realise objective 1 (cf. chapter 1.1), qualitative studies were conducted to explore occasional organic consumers' perceptions of, and attitudes towards, various quality criteria for organic products. The studies are presented in paper 1 (cf. chapter 4). To achieve objectives 2, 3 and 4 (cf. chapter 1.1), a quantitative study was conducted. The quantitative study was a combination of a choice experiment (buying simulation) and a quantitative survey. The quantitative study was aimed at investigating occasional organic consumers' preferences and buying behaviour towards organic, conventional and conventional-plus products (objective 2). In addition, the quantitative study was aimed at identifying determinants of the observed buying behaviour (objective 3) and to segment occasional organic consumers according to their preferences for organic, conventional and conventional-plus products (objective 4). The quantitative research is presented in papers 2 and 3 (cf. chapter 5 and chapter 6).

Apart from study 1-DE (cf. chapter 4.3.2), the research conducted within this PhD thesis was part of the European Commission funded research project 'Improving quality and reduction of costs in the European organic and low-input food supply chains (QLIF)'. The overall objective of the consumer part of the project was to determine the actual and potential

evolution of consumers' buying behaviour. In particular, the project focussed on consumers' expectations, perceptions and actual buying behaviour towards different production systems to enable such farming systems to be developed 'in tune' with consumers' expectations.

This PhD thesis is structured as follows: after this introduction, the theoretical framework of the thesis is included in chapter 2. In chapter 3, the data collection and analysis methods are presented. Subsequently, the qualitative study presented in paper 1 is provided in chapter 4. The quantitative study presented in the papers 2 and 3 is included in chapters 5 and 6 respectively. Chapter 7 includes a synthesis of the results as well as reflection on the theoretical framework and the methodological approach. The PhD thesis closes in chapter 8 with conclusions and recommendations for providers of organic products and decision-makers in the field of agricultural policy as well as with recommendations for further research.

2 THEORETICAL FRAMEWORK

The quantitative study, which was conducted to investigate occasional organic consumers' buying behaviour, was based on a behavioural theoretical framework: the Random Utility Theory (RUT), extended by elements of Stimuli-Intervention-Response (S-I-R) models derived from Neobehaviouristic Theory. In contrast, the qualitative research that was conducted as an exploration was not theory-based. Since explorations – such as the exploration conducted within this thesis – are aimed at identifying *a priori* unknown structures or processes, they are usually not based on prior assumptions (Decker and Wagner, 2002). To illustrate how the RUT and S-I-R models were chosen, an overview of behavioural theories is provided, which were developed in the fields of economics, psychology and sociology. In this overview, the focus is on the economic and psychological theories in chapters 2.1 and 2.2 respectively. Sociological theories, in contrast, are not considered in this overview. The reason is that sociological theories emphasise social aspects of behaviour (Foscht and Swoboda, 2007), and particularly:

- Characteristics of society,
- Causes of social progress or stagnation, and
- Associations of behaviour of population members with societal structures (Treibel, 2006).

Given the strong focus on society and societal structures and phenomena, sociological theories were less suitable to serve as the framework for the research on consumer behaviour.

After the overview of economic and psychological theories, a classification of models is provided in chapter 2.3 since in this PhD thesis, several models were considered and applied.

2.1 Economic theories

Economic theories are mathematical approaches (Ben-Akiva and Lerman, 1985), which either belong to macroeconomics or microeconomics. Microeconomic theories focus on economic decisions of individuals, while macroeconomic theories refer to the aggregated behaviour of communities (Schumann et al., 1999). The following overview focuses on microeconomic theories because the aim within this thesis was to investigate the behaviour of individuals (consumers) rather than the behaviour of communities. Furthermore, the overview is focussed on neoclassical economics, since it is the dominant paradigm in economics (Novy, 2005).

2.1.1 Overview of economic theories

Koutsoyiannis (1979) distinguishes between three major groups of economic theories:

- Theory of Demand,
- Theory of Production, and
- Theory of Costs.

Theory of Production is described as the technical relationships that connect factor inputs and outputs, while Theory of Costs consists of functions that determine total costs by using a range of factors (Koutsoyiannis, 1979). Both approaches were not suitable as theoretical framework for this thesis, as the objective was neither to investigate relationships between in- and outputs of production nor to determine costs. In contrast, Theory of Demand (or Theory of Consumer Behaviour) attempts to explain consumer behaviour by using a range of determinants, such as product price, consumer income, price of other commodities, consumer taste, income distribution, total population, consumer wealth, credit availability, government policy, etc. (Koutsoyiannis, 1979).

Theory of Demand is underpinned by the following assumptions (Ben-Akiva and Lerman, 1985; Koutsoyiannis, 1979):

- Assumption of rationality: a consumer performs 'a consistent and calculated decision process in which the individual follows his or her own objectives […]' (Ben-Akiva and Lerman, 1985),
- Assumption of complete information: a consumer has complete information on all products, and
- Assumption of utility maximisation: a consumer attempts to achieve the highest possible utility from a buying decision.

As the Theory of Demand attempts to explain consumer behaviour (or demand) with determinants, such as price, consumer income, etc., it was a suitable approach to meet objectives 2, 3 and 4 of this thesis (cf. chapter 1.1). Furthermore, given that the aim was to investigate consumer behaviour quantitatively (cf. chapter 3.1.2), a mathematical theoretical framework was chosen.

However, to investigate consumer behaviour towards different types of products, another important precondition for the theoretical framework was its suitability to explain discrete choices between different product alternatives (organic, conventional and conventional-plus products). Therefore, a Discrete Choice Theory (Ben-Akiva and Lerman, 1985) was chosen from among the Theories of Demand as the suitable theoretical framework. Discrete Choice Theories are distinguished according to the underlying decision rule:

- Dominance,
- Satisfaction,
- Lexicographic rules, and
- Utility (Ben-Akiva and Lerman, 1985).

Utility Theory, which is based on the decision rule of utility,

> '[…] is most extensively used in the predictive models of discrete choice behaviour' (Ben-Akiva and Lerman, 1985).

The utility rule (and therefore Utility Theory) is commonly chosen as framework since it induces less complexity than other decision rules in cases where several attributes are relevant

for decision-making (Ben-Akiva and Lerman, 1985). Due to this strength, Utility Theory was chosen as the theoretical framework for this thesis.

An important step in developing Utility Theory was achieved by Lancaster (1966) who defined utility in terms of the attributes of the commodities. According to Lancaster,

> 'the chief technical novelty (of this extension) lies in breaking away from the traditional approach that goods are the direct objects of utility and, instead, supposing that it is the properties or characteristics of the goods from which utility is derived' (Lancaster, 1966).

This development allowed the investigation of the relationships between products and their attributes. However, a weakness of Utility Theory was the unsolved discrepancy between the observed behaviour and the behaviour predicted by the utility function (Ben-Akiva and Lerman, 1985). This gap was closed by the development of the Random Utility Theory (RUT). The theory accounts for such discrepancies between observed and predicted behaviour by including a random component in the utility function as defined by Manski in 1977 (Ben-Akiva and Lerman, 1985).

McFadden achieved another important development in 1977, by establishing a theory-based econometric model that was viewed as an econometric model for discrete responses (later called the multinomial logit model) (McFadden, 2001). In this model, the utilities are specified as a linear function of observed attributes of the alternatives. The model's function includes the measured attributes of the alternatives as well as the coefficients that reflect the tastes of the decision-makers (McFadden, 2001). This development was an important milestone in economics due to the model's direct linking of unobserved preference heterogeneity to a consistent description of the distribution of demands (McFadden, 2001).

Due to these strengths, the RUT provided a suitable framework to observe and explain consumer behaviour towards organic, conventional and conventional-plus products by using determinants, such as product attributes and the tastes of the decision-makers. By choosing this framework, the observed behaviour and relevant determinants could be directly transferred and operationalised in a multinomial logit model. At the same time, the theory was capable of dealing with a certain level of random behaviour towards organic, conventional and conventional-plus products. This capability was essential because only a limited set of

determinants could be considered, which led to a certain amount of not determinable (random) behaviour.

2.1.2 Random Utility Theory

According to the Random Utility Theory, individuals are assumed to prefer the alternative with the highest perceived utility. Hence, a consumer *n* will choose alternative *i* from a set of *j* product alternatives only if this alternative has the highest perceived utility U_{ni}.

The probability P_{ni} that a consumer will choose the product alternative *i* from a choice set *J* (in this thesis a choice set of three alternatives: organic, conventional and conventional-plus) is:

$$P_{ni} = P(U_{ni}) > P(U_{nj}) \; for \; all \; j \neq i$$

Utility U_{ni} is split into two portions, a systematic portion V_{ni} and a random component ε_{ni}, which captures unobserved variation:

$$U_{ni} = V_{ni} + \varepsilon_{ni}.$$

The systematic and measurable portion of the utility function V_{ni} is generated by measurable variables (Louviere et al., 2000). In the early Theory of Demand, the focus within the systematic and measurable portion of utility was on the measurable variables of income, taste, and wealth. Later, also taste and utility variation among consumers were considered by introducing socio-demographic characteristics of consumers (Ben-Akiva and Lerman, 1985). However, economic theories were particularly focussed on directly measurable, ‘economic’ variables, such as the price of a good as well as the income of the decision-maker (Mankiw, 2007). Given that psychological aspects are also relevant when explaining buying behaviour (Solomon, 2007; Kroeber-Riel and Weinberg, 2003), economic theories were enlarged by cognitive or mnemonic impacts on behaviour, derived from behavioural psychology, to take account of spontaneous, impulsive and emotionally affected purchases (Foscht and Swoboda, 2007). Similarly, the theoretical framework of this thesis has been extended by including components of psychological theories to explain consumer behaviour.

2.2 Psychological theories

2.2.1 Overview of psychological theories

Psychological theories trace back to Behaviourism, which was established by Watson and other psychologists at the beginning of the twentieth century (Wozniak and College, 1997). According to Wozniak and College (1997), Behaviourism was one of the first psychological theories that aimed at objectively measuring the behaviour of humans and animals by scientific methods. Kroeber-Riel and Weinberg (2003) describe Behaviourism as an attempt to explain behaviour as a response (R) caused by external and directly measurable stimuli (S).

However, S-R models of Behaviourism do not consider psychological processes within an individual and thus do not sufficiently explain complex decision-making processes (Foscht and Swoboda, 2007), such as buying behaviour. Neobehaviouristic Theory and the derived S-I-R models were introduced in the 1930s and closed this gap by focussing on psychological processes of intervention (I) (see Figure 1) in addition to stimuli and response (Kroeber-Riel and Weinberg, 2003). Apart from Neobehaviouristic Theory, five other main psychological theories are included in the overview given by Foscht and Swoboda (2007):

- In-depth psychological approaches,
- Biological approaches,
- Comparative behavioural approaches,
- Cognitive psychological approaches, and
- Social approaches.

In-depth psychological approaches are focussed on the unconscious parts of the personage, while biological approaches assume that physiological processes and heredity determine behaviour (Foscht and Swoboda, 2007). Neither of these approaches was chosen to add to the RUT because in-depth psychological approaches, focussing on sub-consciousness, are difficult to measure and therefore not practically applicable to this thesis. Biological needs at the perceivable human level are inherently satisfied by all of the products included in this study, so they were considered to be an irrelevant mechanism for product differentiation and therefore unsuitable for this study. Comparative behavioural approaches attempt to explain human behaviour by transferring principles of animal behaviour to human behaviour (Foscht

and Swoboda, 2007). Extrapolation of animal behaviour to explain buying behaviour is not suitable for this study since there is little evidence that animals are capable of considering the trade-offs that are necessary for making rational buying decisions.

Cognitive approaches focus on cognition as a mental process (Brandimonte et al., 2006), and particularly focus on perception, memorising and learning processes as well as on knowledge (Foscht and Swoboda, 2007). In such mental processes, external or internal input is transformed, reduced, elaborated, stored, recovered, and used (Brandimonte et al., 2006). The mental processes are split into several stages of perception, evaluation and retaining of information (Foscht and Swoboda, 2007). Although cognitive approaches are highly suitable for explaining single steps of psychological processes in decision-making, their applicability in the context of the quantitative research of this thesis was limited, since neither the single steps and their linkages nor learning processes were within the main scope in this thesis.

In contrast, S-I-R models derived from Neobehaviouristic Theory feature the major components of a buying situation: the environment of the buying decision, the attributes of the products available, as well as the attributes of the decision-maker including the socio-demographic and psychological aspects described by Kroeber-Riel and Weinberg (2003) (cf. Figure 1). Due to these strengths, the approach was considered to be suitable for capturing the attributes of the products investigated in the thesis, which are the production system (organic, conventional and conventional-plus) and the price level, and thus to meet objective 2 (cf. chapter 1.1). Besides this, the approach addresses various potentially relevant determinants of buying behaviour (cf. chapter 2.2.2) and is thus suitable for achieving objective 3 (cf. chapter 1.1). Against this background, the Neobehaviouristic Theory and corresponding S-I-R models were chosen as an additional framework to extend the RUT by including a set of potentially relevant determinants and aspects of buying behaviour.

2.2.2 Neobehaviouristic Theory and Stimuli-Intervention-Response models

In Neobehaviouristic theory and corresponding S-I-R models, it is assumed that a consumer in a buying situation is faced with external stimuli, such as product price, other product attributes, communication, service, and distinctiveness (cf. Figure 1; Kroeber-Riel and Weinberg, 2003). Furthermore, the social environment of a consumer, such as the peer group or social class as well as socio-demographic characteristics may serve as external and directly

measurable stimuli. In contrast, the psychological processes within the organism are only indirectly measurable by means of psychological constructs, such as attitudes, motivation and emotion towards a commodity (Kroeber-Riel and Weinberg, 2003). Depending on the attitudes, motivation and emotion towards the product, it is liked or disliked. Besides this, psychological processes include perception, learning and memorising processes (Kroeber-Riel and Weinberg, 2003) and are therefore linked with cognitive approaches (cf. chapter 2.2.1). Both stimuli (S) and psychological intervention processes (I) result in a consumer response (behaviour) (R), such as the purchase of a certain product (Nieschlag et al., 1997). A simplified S-I-R model is presented in Figure 1. In this model, intervention is split into activating and cognitive processes within the organism. Activating processes include attitudes, motivations and emotions (Kroeber-Riel and Weinberg, 2003). The cognitive component includes the perception and memorising of information as well as learning processes.

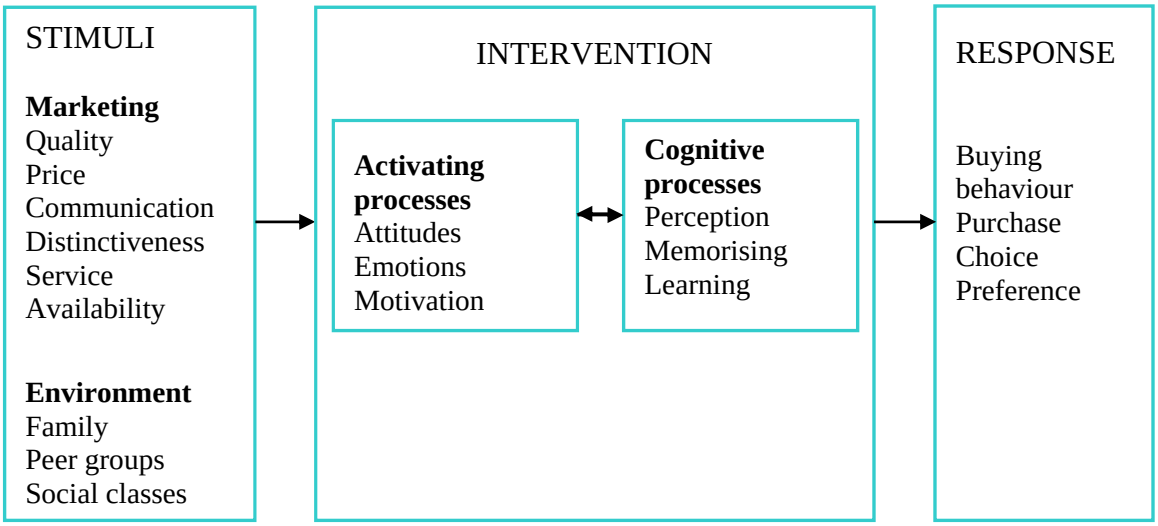

Figure 1: The Stimuli-Intervention-Response model

SOURCE: OWN ILLUSTRATION BASED ON KROEBER-RIEL AND WEINBERG (2003)

Of the intervention variables described in S-I-R models, consumer attitudes towards food are of particular interest in this study as determinants of the observed buying behaviour. This focus is in accordance with previous empirical research, which has revealed the relevance of consumer attitudes as determinants for organic food preferences (cf. Aertsens et al., 2009; Magistris and Gracia, 2008; Michaelidou and Hassan, 2008; Onyango et al., 2007; Krystallis and Chryssohoidis, 2005; Saba and Messina, 2003; Hill and Lynchehaun, 2002; Laroche et

al., 2001; Loureiro et al., 2001; Gil et al., 2000; Grunert and Juhl, 1995) and thus was relevant for the achievement of objective 3 (cf. chapter 1.1). Furthermore, since consumers with similar attitudes are assumed to show similar behaviour (Kroeber-Riel and Weinberg, 2003), a focus on attitudes allowed the characterisation of segments among occasional organic consumers (objective 4, cf. chapter 1.1).

Attitudes are defined as positive or negative dispositions of an individual towards an object (Solomon, 2007; Meffert, 1992). According to Solomon (2007), attitudes are a lasting, general evaluation of objects. It is assumed that attitudes are formed by learning processes (Solomon, 2007; Meffert, 1992). Kroeber-Riel and Weinberg (2003) describe an attitude as a positive or negative evaluation of an object that will result in a disposition to respond in a positive or negative way. A stronger positive attitude towards an object will correlate with a higher probability of buying the object (Kroeber-Riel and Weinberg, 2003; Meffert, 1992). However, an attitude does not necessarily lead to a specific response (Kroeber-Riel and Weinberg, 2003). Thus, there is a potential gap between predictions based on attitudes and a person's actual buying behaviour. Consumer attitudes are not directly observable as they are a latent construct (Kroeber-Riel and Weinberg, 2003). Instead, they are usually measured by means of rating scales of single indicators (items) that form the construct, which was the method selected in the quantitative research of this thesis (cf. chapter 5.5.3 and 6.5.2).

Previous research has shown that consumers' attitudes towards the healthiness of organic food are important in explaining organic preferences (Magistris and Gracia, 2008; Padel and Foster, 2005; Shepherd et al., 2005; Zanoli et al., 2004; Harper and Makatouni, 2002; Zanoli and Naspetti, 2002). Food naturalness (no artificial flavours, additives or colourings) and the domestic origin of food products are additionally relevant in determining organic food purchases (Stolz et al., 2009 cf. chapter 4; Onyango et al., 2007). Similarly, consumers use attributes such as 'no use of fertilizers', 'natural', 'healthy', 'no toxins' (Stolz et al., 2009 cf. chapter 4; Hill and Lynchehaun, 2002) and 'no use of genetically modified organisms' (Stolz et al., 2009 cf. chapter 4) to distinguish organic from conventional products. Accordingly, consumer attitudes in relation to these aspects were emphasised within the intervention portion of S-I-R models (cf. Figure 1).

Price and quality, which differed with respect to the production system (organic, conventional and conventional-plus) of the products available in the choice experiments were the marketing stimuli selected from among the stimuli (cf. Figure 1) for consideration in this thesis.

Furthermore, socio-demographic characteristics (social class) were selected for consideration from among the stimuli variables referring to the environment (cf. Figure 1) since previous research on the behaviour of consumers of organic products has shown that socio-demographic characteristics may be relevant; Gil et al. (2000) and Davies et al. (1995) showed that gender, income level and the presence of children may indicate higher likelihood of purchasing organic products. Similarly, Hill and Lynchehaun (2002) found that having children is a key factor in deciding whether to buy organic milk. Additionally Loureiro et al. (2001) found that the presence of children under 18 years in a household increased the probability of choosing organic products. Finally, according to Gil et al. (2000), family size and education level were significant predictors of whether an individual is an organic food consumer and was therefore considered in this thesis.

2.3 Classification of models

In the following, a classification of models is provided including the models applied in the thesis.

Two model types are distinguished in the classification of models: black-box and structural models (Nieschlag et al., 1997). According to Nieschlag et al. (1997), black-box models, such as S-R models, focus on input (stimuli) and output (response) variables, while internal processes of decision-making are not considered. In contrast, structural models, such as S-I-R models, focus on the structure of consumer consciousness to explain consumer decision-making (Nieschlag et al., 1997). They address the single components which form consumer consciousness, and investigate how they are related to each other, which was also an aim of this thesis (objective 3; cf. chapter 1.1)

Two types of structural models are distinguished, namely total models and partial models (Nieschlag et al., 1997). Total models consider all components and their interrelations in the decision-making process by using system models of consumer behaviour, such as the system model introduced by Howard and Sheth (1969). Such system models are built on a complex construct of input and output variables as well as on hypothetical constructs within the organism, and are information processing models of consumer behaviour (e.g. Bettman, 1979). In contrast to total models, partial models are focussed on particular components and inter-relationships, and typically on one major psychological construct, e.g. attitudes,

subjectively perceived utility derived from a product, perceived risk, or cognitive dissonance (Nieschlag et al., 1997). In this thesis, partial models were applied because it was impossible to identify and measure all of the determinants that are involved in the buying behaviour of occasional organic consumers with regard to different types of products. Furthermore, partial models are more readily operationalised in mathematical models. While non-mathematical models use literary logic, words, or sentences, mathematical models use mathematical symbols, numbers, and equations. The advantage of using mathematical models is that concrete 'if-then' assumptions are considered and tested (Chiang and Wainwright, 2005). They are more concise and precise than non-mathematical models. Against these advantages, mathematical models are sometimes criticised as being unrealistic (Chiang and Wainwright, 2005). Nevertheless, mathematical models were chosen in this thesis as they were suitable for quantifying the impact of determinants on the observed consumer behaviour (objective 2 and 3, cf. chapter 1.1). Furthermore, they were suitable for segmentation of occasional organic consumers according to their preferences (objective 4; cf. chapter 1.1)

Mathematical models can be separated into stochastic and regression models (Nieschlag et al., 1997). Stochastic models, such as the S-I-R model, consider buying behaviour (or choice) as a result of a stochastic process within the organism that can be quantified, resulting in probabilities. However, such models do not predict behaviour (Nieschlag et al., 1997). In contrast, regression models, such as the multinomial and latent class models applied in this thesis (cf. chapter 5.5.4 and chapter 6.5.4), which are based on RUT (cf. chapter 2.1.2), investigate the quantitative effect of an input variable on sale (Nieschlag et al., 1997). Such regression models were chosen for application in this thesis to meet objective 3 (cf. chapter 1.1), while the S-I-R model served as an extension of the theoretical framework (cf. chapter 2.2.2), although it was not operationalised.

3 METHODOLOGY

The following chapter 3.1 gives an overview of data collection methods applied in marketing research and the data collection methods used in this study. Besides this, an overview is given in chapter 3.2 of data analysis methods in general and of the analysis methods applied in this thesis in particular.

3.1 Data collection

Marketing research distinguishes between qualitative and quantitative data collection methods (Flick, 2009) and the choice of the appropriate research methods depends on the information needed (Aaker et al., 2006). Table 1 gives an overview of the main characteristics as well as on the strengths and limitations of qualitative and quantitative data collection methods as further emphasised in chapters 3.1.1 and 3.1.2.

Table 1: Overview of main characteristics of qualitative and quantitative data collection methods

Characteristics	Qualitative methods	Quantitative methods
Research objectives	In-depth understanding of complex phenomena Identify, describe and understand psychological and social connections	Quantify phenomena Identify shares and quantities Test hypotheses Estimate probabilities
Data collection methods	Qualitative interview/ in-depth interview Group Interview Focus group discussion	Quantitative interview/ standardised survey Observation Choice experiment (buying simulation)
Data collection instruments	Open questions Small case numbers Verbal descriptions	Closed questions Large case numbers Numerical data
Data analysis	Explicatory methods Content analysis	Mathematical methods Statistical analysis
Strengths	Identification of unnoticed connections and exploration of new themes In-depth analysis of perception, attitudes and other psychological constructs	Numerical data easier to process and thus much larger samples investigated Suitable to quantify findings and to test hypotheses and probabilities Make use of theory of probability, matrix algebra, functions and game theory
Limitations	Limited representativity, generalisability and quantifiability of results Potential risk of subjectivity in data interpretation Potential lack of traceability in data interpretation	Pre-structure of survey limits findings Limited in-depth information about respondents Potential danger of collecting irrelevant data or data not covering the relevant issues

SOURCE: OWN ILLUSTRATION BASED ON AAKER ET AL. (2006), RIESENHUBER (2007), HELFFERICH (2005), LAMNEK (2005), SHAO (2002), KAMENZ (2001), ATTESLANDER (2000), GREENBAUM (2000), KEPPER (2000), KEPPER (1999), MORGAN (1998) AND KEPPER (1994)

3.1.1 Qualitative data collection methods

Main characteristics of qualitative data collection methods

Qualitative methods are aimed at getting an in-depth understanding of complex phenomena as well as to identify, describe and understand psychological and social connections (cf. Table 1; Kepper, 1994). They are used to collect mostly complete information about what is in a consumers' mind and to know more about things that cannot be directly observed and measured (Aaker et al., 2006). Qualitative methods are interpretative, open and communicative approaches (Kepper, 1994), which are limited to small numbers of cases and to open questions (Kamenz, 2001). The data basis of qualitative approaches consists of verbatim transcripts, which are used for interpretative analysis methods (Kamenz, 2001).

The major strengths of qualitative approaches are their suitability to identify unnoticed connections and to explore new themes (cf. Table 1). Besides this, qualitative approaches provide an in-depth understanding of consumer perceptions, attitudes and other psychological dimensions.

Against these strengths, qualitative approaches have the disadvantages of limited representativeness, generalisability and quantifiability of the results (cf. Table 1; Helfferich, 2005; Lamnek, 2005). Furthermore, a significant limitation is the potential risk of subjectivity during data interpretation as well as the potential lack of traceability in data interpretation (Helfferich, 2005; Lamnek, 2005).

To achieve objective 1 (Exploration of occasional organic consumers' perceptions and attitudes towards various quality criteria for organic products; cf. chapter 1.1) and to answer the associated research questions, a qualitative data collection method was chosen. The justification for that choice was that objective 1 required a method that is suitable for identification, description and in-depth understanding of the underlying psychological connections, which is a major strength of qualitative data collection methods. The non-standardised research design of qualitative data collection approaches allowed the identification of unnoticed perceptions and attitudes towards product- and country-specific quality criteria as well as towards organic production. These were of interest in this thesis and were used in preparation for the subsequent, and more focussed, quantitative research.

Overview of qualitative data collection methods

Four main methods are distinguished from among qualitative data collection methods:

- Qualitative interview,
- Qualitative observation,
- Indirect questioning, and
- Focus group discussion (Kepper, 1994).

Qualitative interviews, which include the explorative interview, the in depth-interview and the focussed interview, are usually conducted as face-to-face interviews based on predefined interview guidelines (Kepper, 1994). The aim is to obtain mostly unbiased and complete information about the subject under investigation. Aaker et al. (2006) describes qualitative interviews as semi-structured interviews with varying levels of structuring of the interview and guidance provided by the interviewer. The open structure of qualitative interviews ensures that unexpected factors or attitudes are expressed by the respondent. Against this background, the method is particularly useful for interviews with experts (Aaker et al., 2006). Qualitative interviews are furthermore useful to gain (creative) key insights into product perceptions and expectations of consumers towards product or product attributes (Aaker et al., 2006). However, the potential risk of interviewer bias is relatively high in such face-to-face interview situations compared to other qualitative data collection methods (Kamenz, 2001). Therefore, the method was not chosen.

The method of qualitative observation investigates physical activities of the observed individuals and collects data on observed real behaviour instead of collecting statements made by the individuals (Kepper, 1994). A major disadvantage of the method in the context of this thesis is the low level of insights that can be obtained by qualitative observation of behaviour on how consumers perceive and evaluate organic products. Therefore, the method was not suitable to achieve objective 1 (cf. chapter 1).

Projective (indirect) questioning involves participants transferring particular characteristics with which they do not wish to be associated to other people or situations in order to increase the validity of the interviewees' responses (Buber and Holzmüller, 2007; Felser, 2007; Gröppel-Klein and Königstorfer, 2007; Kepper, 1994). Respondents are asked to express not their own attitudes but those of an imaginary other person or group. The aim of this technique is to encourage participants to reveal attitudes that they do not publicly ascribe to themselves

(Buber and Holzmüller, 2007; Felser, 2007). According to Kepper (1994), this procedure is particularly useful in cases of delicate subject under investigation, where direct questions produce a limited outcome.

Projective questioning was considered appropriate for use when asking about willingness to pay for particular criteria in study 2-DE and 2-CH (cf. chapter 4.3). In formulating this question projectively, the aim was to avoid participants from being influenced by a social desirability to indicate a greater willingness to pay than is the case in reality. In Study 1-DE a projective question was used to enable the participants to give less socially acceptable reasons for the greater relevance of individual criteria of organic farming as compared with organic farming as a whole (cf. chapter 4.3).

Focus group discussions, other than qualitative interviews, are not conducted individually, but in groups (Scholl, 2003) and are focussed on certain, previously defined topics (Lamnek, 1998). Focus group discussions, an extension of the focused interview (Scholl, 2003), are guided by a moderator and centre on opinions, attitudes and behaviour on an individual basis (Lamnek, 1998). An important attribute of focus group discussions is their communicative character, which is heightened by group interaction (Shao, 2002; Greenbaum, 2000; Morgan, 1998). Such interaction between participants in a group discussion leads to a larger number of individual topics being addressed than in a one-to-one interview. Consequently, a variety of levels, from different points of view of the subject under investigation are provided (Kamenz, 2001). Furthermore, spontaneous comments from group members more frequently occur than in one-to-one interviews (Lamnek, 1998). A further benefit of the method is the ordinary nature of the discussion situation, which reduces the inhibitions of interviewees (Lamnek, 1998). However, it is assumed that the total amount of information obtained from interviews would be larger than what is obtained when all interview respondents take part in a focus group discussion (Aaker et al., 2006). Nevertheless, due to the predominant strengths of the focus group discussion to meet objective 1 (cf. chapter 1.1), the method was chosen (cf. chapter 4.3 for the design of the focus group discussions and Annex I and II for focus group guidelines).

3.1.2 Quantitative data collection methods

Main characteristics of quantitative data collection methods

In contrast to qualitative data collection methods, quantitative data collection methods are aimed at measuring phenomena (Flick 2009). They are usually theory-based and aimed at testing hypotheses, causalities or estimating probabilities (cf. Table 1). Quantitative methods make use of large case numbers, closed questions, and numerical data. The data is collected in standardised approaches and analysed by means of mathematical methods and statistical analyses (Flick, 2009; Shao, 2002; Kamenz, 2001).

The strength of quantitative approaches is that numerical data allows the researcher to quantify and generalise phenomena and to make use of the theory of probability, matrix algebra, functions and game theory (cf. Table 1; Shao, 2002; Kamenz, 2001). Furthermore, in contrast to verbatim data, numerical data is easier to process and much larger case numbers can be included in quantitative research (Shao, 2002; Kamenz, 2001). In addition, quantitative approaches are suitable for describing phenomena or characteristics of a certain population or groups (Flick, 2009). In contrast to qualitative approaches, quantitative approaches are more generalizable and provide representative results (Flick, 2009). Against these strengths, the weakness of quantitative approaches is the potential danger of collecting irrelevant data, or data which does not sufficiently cover the context (cf. Table 1; Flick, 2009). However, this limitation was intended being reduced by firstly conducting the qualitative research before narrowing the focus in the quantitative research.

To achieve objectives 2, 3 and 4 of this PhD (cf. chapter 1.1), a quantitative approach was chosen since the numerical data on consumers' observed buying behaviour and determinants of behaviour could be collected. The numerical data allowed quantification and generalization of the observed behaviour by means of statistical analyses and could thus overcome the main limitation of the qualitative research applied in this thesis (cf. chapter 3.1.1).

Overview of quantitative data collection methods

In quantitative marketing research, two general approaches are distinguished: observation and the quantitative survey (interview). Observation is a method used to systematically record human behaviour (Hair et al., 2006). To achieve objective 2 (Analysis of occasional organic consumers' buying behaviour towards organic, conventional and conventional-plus products;

cf. chapter 1.1) and to answer the associated research questions, an observation method was chosen. The reason was that observation is the most suitable method to accurately investigate consumers' buying behaviour patterns without response bias, which is a potential hazard of survey methods (Hair et al., 2006).

Flick (2009) distinguishes between four observation methods:

- Standardised observation,
- Participative observation,
- Ethnography, and
- Experiment.

Standardised observation is aimed at investigating known incidents, which are segmented into single aspects or processes to be further analysed (Flick, 2009). The method is based on a strictly pre-defined standardised observation protocol, which outlines the activities to be observed, such as physical actions, verbal behaviour, and temporal behaviour patterns, as well as how they are to be observed (Flick, 2009; Hair et al., 2006). The strength of the method is that it allows the behaviour to be structured (Hair et al., 2006). The main weakness of standardised observation is that the method cannot be used to capture cognitive elements such as attitudes, preferences, beliefs, or emotions (Hair et al., 2006) and therefore was not chosen.

Participative observation is a research process in which the researcher's participation is part of the research (Flick, 2009). In contrast to standardised observations, participative observations are open, flexible and less structured: they recommend a constant re-definition of the research problems based on the behaviour observed during the research process (Flick, 2009). Although the open, flexible and less structured character of participative observation may be useful in certain situations, this procedure requires a large flexibility with respect to the time frame and funding, which was not given in the research project QLIF, in which this PhD thesis was developed.

In contrast, ethnography attempts to link the data collection with the research questions and the environment of the research (Flick, 2009). Ethnography is more focussed and restricted to the environment than the participative observation and therefore less vulnerable to situational, unplanned and coincidental data collection (Flick, 2009). However, the approach was not relevant for meeting the objectives of this thesis.

Choice experiments (in this case buying simulation) are commonly applied in cases of discrete choices and are an increasingly used marketing research method (Hair et al., 2006). According to Aaker et al. (2006), choice experiments are defined as

> '[…] studies, in which conditions are controlled so that one or more independent variable(s) can be manipulated to test a hypothesis about a dependent variable.'

Choice experiments belong to the causal research methods (Aaker et al., 2006; Hair et al., 2006), which are aimed at identifying causal relationships between several independent variables and their effects on a dependent variable (Aaker et al., 2006). The key principle of experimental research is the intervention by the researcher in terms of targeted manipulation of an independent variable, followed by an observation of the dependent variable (Flick, 2009; Aaker et al., 2006). The strength of the method over descriptive methods is its ability to investigate the causal link between variables and thus to measure the association between variables (Aaker et al., 2006). This is considered to provide valid predictions about the effects of marketing decisions and to develop basic theories (Aaker et al., 2006). In addition, the method is suitable to accurately observe consumers' buying behaviour patterns without a negative impact of response bias (Hair et al., 2006), which is potentially given in interview surveys. Against these strengths, however, the method is limited with regard to the external validity of the results of choice experiments obtained in laboratory settings as well as the relatively high costs of conducting them (Aaker et al., 2006; Hair et al., 2006).

To investigate the impact of varying price levels of organic, conventional and conventional-plus products on occasional organic consumers' buying behaviour, as required in research question 2.3 (cf. chapter 1.1), the choice experiment (buying situation) was selected from the quantitative observation methods available (cf. chapter 5.4.2, chapter 6.4 and Annex III for the experimental minutes). The method was considered to be suitable because the targeted manipulation of the independent variable 'price', which is a key principle of this method (Flick, 2009; cf. chapter 3.1.2), allowed the observation of the dependent variable 'choice' (of organic, conventional or conventional-plus products). Consequently, predictions about the effects of the product price on consumers' behaviour could be achieved (Flick, 2009). Given these strengths, the method was preferred over the standardised observation, the participative observation and the ethnography. Furthermore, the choice experiment was chosen due to the method's strength of identifying the causal link between product attributes and consumer

tastes and thus to measure the associations between the variables of interest (Aaker et al., 2006), which was necessary to achieve objective 3 of this thesis (cf. chapter 1.1).

Furthermore, to meet objectives 3 and 4 (cf. chapter 1.1), the experiment was linked with a quantitative survey in a single-source approach (cf. Appendix III for the questionnaire). This single-source approach, in which the same consumers first conducted a choice experiment and then completed a quantitative survey, was aimed to identify causal links between the observed buying behaviour and the determinants of the behaviour (cf. Figure 2).

The quantitative survey (quantitative interview) is a method, in which information reported by the respondents is collected (Aaker et al., 2006). Most quantitative surveys are based on a standardised questionnaire in which both the questions and the way in which respondents can respond to the questions are pre-defined (Flick, 2009). The standardisation of the data collection is aimed at achieving a high comparability of answers between all respondents (Flick, 2009). Consumer attitudes towards a product's attributes, such as pricing, as well as other factors that determine behaviour are often the subject of interviews (Aaker et al., 2006). The focus is on the process of decisions rather than on the decisions or behaviour itself. The aim is to provide information on why consumers performed certain behaviour (Aaker et al., 2006).

A large range of survey methods exists, which are distinguished according to the means of communication between interviewer and respondent. Aaker et al. (2006) distinguish between the four survey methods: personal interviews, telephone interviews, mail surveys, and fax surveys. Another classification is provided by Hair et al. (2006) who distinguish between four approaches: person-administered, telephone-administered, self-administered and computer-assisted (online) survey methods.

The strengths and limitations of the different survey methods are various and include expense, respondent control, danger and sources of disturbance, quality of responses, speed of data collection, flexibility and the amount as well as kind of information provided (Hair et al., 2006). However, a general advantage of surveys is that they can be used to collect a large variety of data on diverse topics and subjects (Aaker et al., 2006). A general weakness of quantitative surveys is the potential risk of interviewer error due to personal characteristics, experience, style of interviewing and motivation, which can lead to great variability in the way the interviews are conducted (Aaker et al., 2006). Besides this, there is a risk of response

bias due to respondents' unwillingness to respond accurately caused by the lengths of the interview or by getting bored with the topics addressed in the survey (Aaker et al., 2006).

Among the quantitative survey methods available, a personal face-to-face interview based on a standardised questionnaire (cf. Annex III for the questionnaire) was conducted in order to assure a high adequacy and completeness of answers (Aaker et al., 2006). The standardised questionnaire facilitated the comparability of answers between the consumers and thereby obtained information on why consumers performed certain behaviour, which contributed to achieving objective 3 (cf. chapter 3.1.2; Aaker et al., 2006). This information additionally enabled the segmentation required by objective 4 of this thesis (cf. chapter 1.1). Parts of the quantitative survey, particularly the indicators of consumer attitudes, were selected based on the findings of the qualitative research (cf. Figure 2 and chapter 2.2.2).

To summarise, in this thesis, a triangular methodological approach (Flick, 2009) was chosen that combined three data collection methods: one qualitative and two quantitative methods (cf. Figure 2).

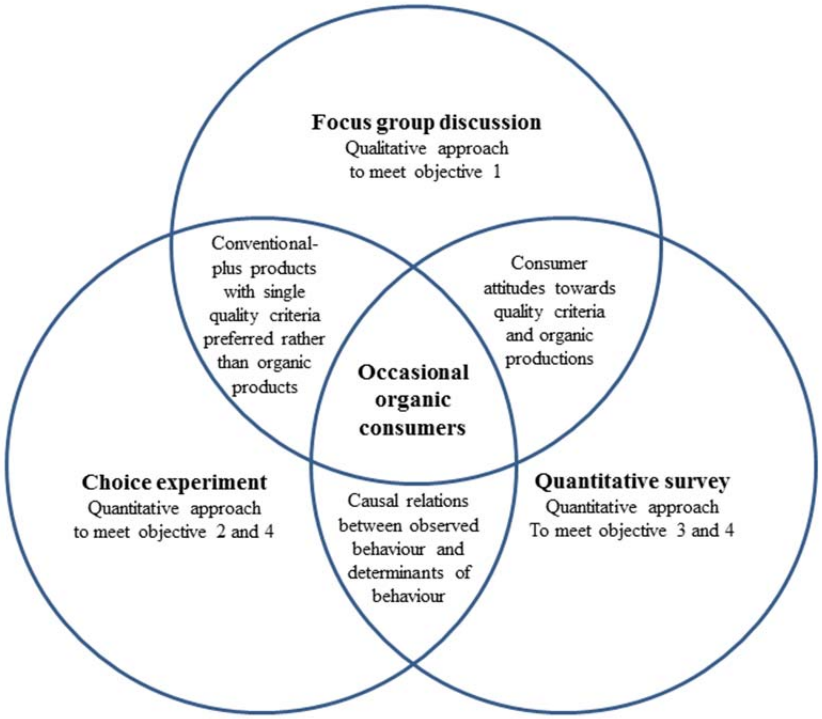

Figure 2: Triangular methodological approach

The intention behind combining three data collection methods was to gain different perspectives on occasional organic consumers from different data collection approaches (Flick 2009). Furthermore, triangulation was used to overcome the limits and weaknesses of the chosen methods (Flick 2009), as described in chapter 3.1.1 and 3.1.2. The data collection methods were selected according to their suitability to meet the objectives of this thesis. The methods chosen were:

1. Focus group discussion (including a projective technique),
2. Choice experiment (buying simulation), and
3. Quantitative survey (see Figure 2).

3.2 Data analysis

Qualitative data analysis methods were chosen to analyse the data from the focus group discussions: qualitative content analysis and cross-case comparison analysis. The data obtained from the choice experiments and quantitative survey was analysed with quantitative analysis methods: uni- and bivariate statistics, factor analysis and sum scales, multinomial logit models, and latent class models. A brief overview of the main qualitative and quantitative methods as well as their applicability in this thesis is provided in the following paragraphs.

3.2.1 Qualitative data analysis methods

From among the various qualitative data analysis methods, three main methods are distinguished (Mayring, 2003):

- Phenomenological analysis,
- Hermeneutic paraphrase, and
- Qualitative content analysis.

Phenomenological analysis is aimed at gaining insight into how respondents perceive a given phenomenon in a given situation. The method is a combined psychological, interpretative and idiographic data analysis approach. The phenomenological analysis is commonly used to critically reflect on predominant positions, to identify new or alternative positions, or to provide a broad understanding of the positions of subjects (Mayring, 2003). As the analysis

method involves a psychological interpretation of the data, the method is applicable in the field of psychology rather than in marketing research so was not selected for application in this study.

Hermeneutic paraphrase is used to modify (stepwise) the preliminary position of interpretations into a subjective perspective of the subjects (Mayring, 2003). According to Mayring (2003), this analysis method is commonly used for very detailed analyses of extensively structured text material or as starting point for further analyses (Mayring, 2003). However, in the context of objective 1 of this thesis, the hermeneutic paraphrase was considered to be less suitable, since the objective was to structure and summarise the various consumer perceptions and attitudes towards organic products.

Qualitative content analysis is a method which aims to objectively systematise the content of qualitative data (Kromrey, 2002) and is commonly used to analyse text material, such as data obtained from focus group discussions (Mayring, 2008; Hair et al., 2006; Kromrey, 2002). Qualitative content analysis allows structuring, analysing and reducing complex qualitative data (cf. Table 2; Mayring, 2008) so that the essential information is extracted (Mayring and Brunner, 2007). The method is furthermore aimed at drawing conclusions that go beyond the cases investigated (Kromrey, 2002). It was therefore suitable for structuring and systemising qualitative data material on consumer perception and attitudes of organic products, and thus to meet objective 1 of this thesis (cf. chapter 1.1).

Qualitative content analysis was selected as the method of analysis of the focus group discussions (chapter 4.4.1) and was particularly useful for structuring and summarising different types of perceptions and attitudes towards various food quality attributes, as well as towards organic farming. This task was achieved by elaborating a coding system, with the subsequent assignment of certain codes to each issue, and by the systematic coding of statements of individuals (cf. Table 2).

Within the qualitative content analysis method, different techniques are distinguished. An overview by Mayring (2008) of different qualitative content analysis techniques is provided in Table 3. The methods differ in their suitability for structuring phenomena described in text material. Some methods are solely aimed at either summarising text material (psychology of text processing), explaining text material (in-depth analysis of single cases, structural semantic), or structuring text material (e.g. classification analysis or qualitative content

analysis). Other methods are suitable for several processes, e.g. for summarising and structuring (frequency analysis) or for explication and structuring (hermeneutic).

Table 2: Qualitative content analysis

Type	Qualitative analysis method
Description	Evaluation method of hermeneutics; seeking to understand human behaviour Used to objectively structure complex qualitative data material
Application in this thesis	Analysis of focus group discussions; comparing material from different focus group discussions and different studies
Procedure	1. Transcription of focus group discussions using standard orthography 2. Elaboration of a coding system including a list of contents to be analysed 3. Assignment of certain code to each issue 4. Systematic coding of statements of individuals 5. Structuring statements according to code system 6. Conduction of content analysis, involving classifying, structuring and paraphrasing from the individual arguments to a general sense and relevance

SOURCE: OWN ILLUSTRATION BASED ON MAYRING AND BRUNNER (2007), LAMNEK (2005), MAYRING (2003) AND WILKINSON (2003)

A structuring and summarising technique was necessary to analyse the large amount of data on occasional organic consumers' perceptions and attitudes of various quality criteria for organic products that were obtained in the focus group discussions (objective 1, cf. chapter 1.1). In particular the structuring process was necessary to identify relevant product-specific and country-specific quality criteria and to analyse how consumers assess organic production compared to conventional production, which would not have been possible by simply summarising the text material. Thus, among the techniques described by Mayring (2008), the contingency analysis technique, which is suitable for summarising, structuring and explication, was chosen. The approach was suitable for identifying relevancies of single food criteria, which was achieved based on the frequency of statements referring to single food criteria.

Furthermore, an explicatory technique was considered to be suitable, since the context and background, in which occasional consumers' perceptions and attitudes were described, was relevant for the interpretation and valuation process. The contingency analysis involves the identification of text elements by a category system (code system), followed by an identification of a structure based on frequent contingency and finally an explication of single text elements by contingency.

Table 3: Overview of qualitative content analysis techniques

Analysis technique	Characteristics	Type
Frequency analysis	Extraction of text elements by category system (code system) Conclusions on relative weight of text elements by frequency	Structuring, summary
Valence and intensity analysis	Identification of text elements by category system (code system) Rating (scaling) based on elements Summary of rating	Structuring, summary
Contingency analysis	Identification of text elements by category system (code system) Identification of a structure based on frequent contingency Explication of single text elements by contingency	Structuring, summary, explication
In-depth analysis of single cases	Explication of single text elements by their context and further interpretations	Explication
Classification	Structuring of text material according to structure criteria	Structuring
Qualitative content analysis (Rust)	Analysis of structures by figures of semantic units	Structuring
Qualitative content analysis (Heinze)	Reconstruction and theory-based weighting of patterns	Structuring
Hermeneutic	Text-intrinsic and coordinated interpretation by analysis of single text elements, structuring and valuation	Explication, structuring
Objective hermeneutic	Explication of single interaction (context, intention, objective motives and consequences, tasks) Identification of universal communication types Generalisation	Explication, structuring
Qualitative content analysis of social science	Analysis of complex interpretation systems in social and activity context	Explication, structuring
Structural semantics	Explication of meaning of single text elements by deconstruction in smallest units of interest	Explication
Structural text analysis	Semantic analysis (explication of meaning of single text elements by deconstruction in smallest units of interest) Classification	Explication, structuring
Pragmatic analysis	Reconstruction of dialog structures Allocation towards taxonomy	Structuring
Psychology of text processing	Reductive process of summary	Summary

SOURCE: MAYRING (2008)

In addition to the qualitative content analysis, a cross-case comparison analysis of the different qualitative studies was conducted to synthesise the results and to identify and structure similarities and differences between the studies, which increased the generalizability of qualitative findings (cf. chapter 4.4.2; Weed, 2005; Miles and Hubermann, 1994). The cross-case comparison method is an analysis method that can be applied to both qualitative and quantitative data. The method involves a summary of aspects in matrix form, which is aimed at improving the structure of the findings (Weed, 2005; Miles and Hubermann, 1994).

It is possible to produce matrix forms on single aspects without necessarily counting these aspects in the data material. This can be achieved by coding and summarising issues in a matrix structure (cf. Table 4; Weed, 2005; Miles and Hubermann, 1994).

Table 4: Cross-case comparison analysis

Type	Qualitative or quantitative method
Description	Synthesising results to identify and structure similarities and differences between studies Method of analysis in large research projects in which particular issues are explored in a series of studies and the resulting material Ability to increase generalizability of qualitative findings Based on the analysis of primary data Two different ways of analysis, according to either individual cases or individual variables
Application in this thesis	Analysis according to individual variables, the variables being the quality criteria Summarisation of individual issues and aspects in matrix form for better structuring of the results in the synthesis Comparison of relevance of single quality criteria between studies and countries via matrix form
Procedure	1. Developing of coding structure 2. Coding individual issues 3. Summarising individual issues and aspects in matrix form

SOURCE: OWN ILLUSTRATION BASED ON WEED (2005) AND MILES AND HUBERMAN (1994)

3.2.2 Quantitative data analysis methods

Quantitative data analysis methods are commonly distinguished by the number of included variables and referred to as univariate, bivariate or multivariate analysis methods (Bortz, 2005).

Uni- and bivariate statistics

Uni- and bivariate statistics are commonly used to investigate quantities, distributions, similarities or differences of variables (Flick, 2009). In this thesis, univariate statistics were used to get an overview of the collected data (cf. chapter 5.5 and 6.5). In addition, univariate statistics were used to analyse which alternatives were preferred in a choice situation and to identify the shares of the conventional-plus products (research question 2.1, objective 2; cf. chapter 1.1; chapter 5.5). Additionally, bivariate statistics were used to analyse the association between consumer behaviour observed in the choice experiments and everyday-life preferences (research question 2.2; cf. chapter 1.1, chapter 5.5 and chapter 6.5). This was achieved with contingency tables which are commonly used to show frequency distributions of two variables in a matrix format (Bortz, 2005). In addition, the Pearson's chi-square test, which is used for the analysis of associations between two categorical variables (Bortz, 2005), was conducted to investigate whether the preferences observed in the choice experiments are significantly different in the two study countries (cf. chapter 5.5 and chapter 6.5).

Exploratory factor analysis and sum scales

Objective 3 of this thesis (Identification of determinants that explain occasional organic consumers' preferences for organic, conventional and conventional-plus products) and objective 4 (Investigation of preference heterogeneity among occasional organic consumers regarding organic, conventional-plus and conventional products) required multivariate analysis methods. Multivariate analysis methods were necessary since the analysis method had to capture consumers' behaviour (choice) as well as a set of independent variables.

In a first step, multivariate analysis was used to reduce the large set of variables that describe consumer attitudes towards food and thereby to facilitate the subsequent multivariate causal analysis between the observed consumer behaviour and consumer attitudes (determinants). In addition, for the subsequent causal analysis, it was important to avoid multicollinearity of the explanatory variables (Field, 2005). To solve these problems, an exploratory factor analysis

was conducted, as described in chapter 6.5.2 and Table 5. Exploratory factor analysis is a method of data reduction (cf. Table 5; Backhaus et al., 2006), which identifies underlying factors (latent variables) while retaining as much of the original information as possible (Field, 2005). These factors can be used for further analysis; in this thesis for the subsequent causal analysis. In addition, exploratory factor analysis was used to avoid multicollinearity, since variables (here consumer attitudes), which are correlated with each other are summarised by factors (Backhaus et al., 2006).

Table 5: Exploratory factor analysis

Type	Quantitative analysis method
Description	Data reduction method; reduction of large set of indicators to small number of underlying factors
Application in this thesis	To reduce the large set of attitude statements collected in the face-to-face interview To avoid multicollinearity Used as the number of single variables that can be considered in subsequent multinomial logit models and latent class models is limited
Procedure	1. Choice of variables 2. Correlation matrices between variables 3. Definition of communalities 4. Definition of number of factors 5. Factor interpretation 6. Test statistics (Eigenvalue showing the share of explained variance, MSA measure of sampling adequacy and Bartlett test of sphericity to test if the sample derived from a population is uncorrelated regarding the variables of interest)

SOURCE: OWN ILLUSTRATION BASED ON BACKHAUS ET AL. (2006), STATA PRESS (2005) AND SPEARMAN (1904)

Another approach to reducing the set of variables is the use of sum scales. Sum scales are like exploratory factor analyses in that they are suitable to summarise a set of variables that are assumed to belong to a common latent construct. The reliability of such scales can then be measured by the Cronbach's Alpha (α) (Cronbach, 1951). This approach is more theory driven than explorative; it was chosen to summarise the attitude variables in preparation for the subsequent causal analysis that is presented in chapter 5.5.3 (as suggested by one reviewer of paper 2).

Multinomial and latent class models

To achieve objectives 3 and 4 (cf. chapter 1.1), multivariate analysis methods were chosen. The reason was that the identification of determinants that explain consumer preferences, and of consumer segments, required the simultaneous consideration of more than two variables: the observed behaviour as a dependent variable and several potential determinants as independent variables. Furthermore, to meet objective 3, the methods had to be suitable for identifying causal relationships between the observed behaviour and determinants that explain the observed behaviour. In addition, the fact that the dependent variable (choice) in this research was categorical was an issue when choosing the appropriate analysis method.

The following approaches are available from among the existing multivariate causal analysis methods that fulfil the previously mentioned requirements: discriminant analysis, structural equation modelling and regression analysis. Discriminant analysis was not chosen in this thesis as it is only applicable for metric independent variables. In contrast, the analysis method was not applicable to test for non-metric determinants, such as gender or the educational level of consumers.

Structural equation modelling is an analysis method that is particularly focussed on hypothetical constructs or latent variables, such as attitudes, or motives, and is commonly used for complex causal analyses between variables (Backhaus et al., 2006). Such models consist of a measuring model based on factor analysis that provides the relationships between latent variables and their indicators, and a structural model based on a regression analysis (Backhaus et al., 2006). The latter measures the causal relationships between the latent variables. The model is suited to the analysis of the relationship between several independent and several dependent variables and can be used to study complex associations between variables and latent constructs (Backhaus et al., 2006).

Regression models are very flexible and are a commonly used analysis method (Backhaus et al., 2006). Regression models are aimed at identifying the relationship between one dependent and several independent variables and seek to predict an outcome using the set of independent variables (Field, 2005). The independent variables can be metric or categorical. For categorical outcome variables, such as the buying behaviour of consumers in the choice experiments in this thesis, logit models are used (Backhaus et al., 2006; Field, 2005). In these cases, the relationship between dependent and independent variables is non-linear and

therefore estimated with a log-likelihood function (Backhaus et al., 2006). Logit models estimate the probability of belonging to a category of the dependent variables depending on a set of independent variables (cf. Table 6).

Regression models were more suitable for analysing the causal relations between the observed consumer behaviour and determinants that explain the observed behaviour than structural equation modelling. One reason was that logit models are directly linked with the underlying Random Utility Theory (cf. chapter 2.1.2). In addition, logit models are more flexible in cases were both metric and nominal independent variables are included. In contrast, an important assumption of structural equation model approaches is that the independent variables are continuous and interval scaled (Satow, 2006), which is not mandatory for logit models. Finally, identifying complex associations and interrelationships between variables and constructs was not an issue in this thesis and therefore structural equation models were not necessary. A range of different logit models is included in Riesenhuber (2007) including the:

- Multinomial logit model,
- Nested logit model,
- Latent class model, and
- Mixed logit model.

The multinomial logit model is the basic econometric model for discrete choice analyses developed by McFadden in 1977 (McFadden, 2001). The model is designed for cases in which the dependent variable is a categorical variable with more than two levels (Backhaus et al., 2006; Long and Freese, 2006; Stata Press, 2005). The model involves the simultaneous estimation of binary logits for all comparisons among the choice alternatives, while one of the alternatives (or levels of the dependent variable) is the base category (herein the conventional alternative), which is referred to as the comparison group (Long and Freese, 2006). A restrictive assumption of multinomial logit models is the assumption of IIA (independence of irrelevant alternatives), postulating that

> ‘[…] the ratio of the choice probabilities is independent of the presence or absence of any other alternative in a choice set’ (Hensher et al., 2005).

Given that this is often not achieved, the nested logit model was developed for cases of hierarchical choices or choices within subsets of a group of alternatives (Hensher et al., 2005). Furthermore, the latent class model should be mentioned. The latent class model is designed

for studies of preference heterogeneity among decision makers and can be applied to identify latent consumer segments (Hensher et al., 2005). Another model in which the IIA assumption is relaxed, and which captures preference heterogeneity, is the mixed logit model (or random parameter logit model) (Albers et al., 2007), which was introduced by Revelt and Train (1998). In mixed logit models, the choice probability in a choice set is expressed over the vector (describing the parameter distribution) of taste parameters that can be random, and conditional on the individual-specific error components (Hensher et al., 2005).

In this thesis, two different logit models were used: multinomial logit models to achieve objective 3 and latent class models to achieve objective 4. Both models belong to the group of partial models (cf. chapter 2.3), which focus on relevant components and typically on one major psychological construct, e.g. attitudes (Nieschlag et al., 1997) as done within this thesis. Multinomial logit models were chosen from among the range of available logit models as described above as they are suitable for cases in which the dependent variable is categorical with more than two levels (in this thesis three levels: organic, conventional and conventional-plus) (cf. Table 6). Thus, given that the IIA assumption can be fulfilled (which was verified for all models except one as described in chapter 5.5.4) the multinomial logit model was deemed to be suitable for analysis of the data obtained from the choice experiments. A brief summary of the multinomial logit model is provided in Table 6:

Table 6: Multinomial logit model

Type	Quantitative analysis method
Description	Econometric model, designed for a nominal outcome variable with more than two levels (choice = organic, conventional-plus or conventional alternative) and case-specific independent variables (consumer characteristics) Simultaneous estimation of binary logits for all comparisons among the choice alternatives, while one of the alternatives (or levels of the dependent variable) is the base category, which is referred to as the comparison group
Application in this thesis	To identify determinants that explain consumers preferences for organic, conventional or conventional-plus products in the choice experiments
Procedure	1. Preparation of data file; uni- and bivariate statistics 2. Selection of variables/factors/scales included in the model 3. Definition of the base category (conventional alternative) 4. Estimation of product- and country-specific models 5. Optimisation of models based on measures of fit (McFadden R2, Log-Likelihood) 6. Test statistics (Hausman test for Independence of Irrelevant Alternatives, Wald test for significances of independent alternatives)

SOURCE: OWN ILLUSTRATION BASED ON BACKHAUS ET AL. (2006), LONG AND FREESE (2006) AND STATA PRESS (2005)

Two approaches are generally suitable for segmentation of occasional organic consumers according to their preferences and thus to achieve objective 4; cf. chapter 1.1): cluster analysis and latent class models. Other than cluster analysis, which is commonly used to cluster consumers according to different variables (Backhaus et al., 2006), latent class models allow segmentation of consumers according to their preferences and estimation of probabilities of explanatory variables on consumer preferences (cf. Table 7; Greene, 2007). In addition, the advantage of latent class models over cluster analysis is that only one model has to be estimated (Albers et al., 2007). Finally, the latent class model, like the multinomial logit model, is based on the Random Utility Theory. Thus the approach is suitable for operationalizing the theoretical consideration in an econometric model. Due to these strengths, latent class models were chosen to meet objective 4.

Table 7: Latent class model

Type	Quantitative analysis method
Description	Econometric model, designed to identify classes or segments among a group of individuals Assumption that the population consists of a number of unobserved (or latent) groups of individuals (segments), each characterised by relatively homogenous preferences Assumption that segments differ substantially in their preference structures Identification of existence and number of consumer segments, estimation of preference structure within each segment; identification of relation of membership in each segment to consumer characteristics
Application in this thesis	Applied in order to identify segments within the target group of occasional organic consumers that differ from each other with respect to attitude factors and behaviour towards higher prices
Procedure	1. Selection of variables included in the model 2. Definition of the base category (conventional alternative) 3. Estimation of product- and country-specific models 4. Optimisation of models based on measures of fit (Bayesian information criteria BIC, McFadden R2, Log-Likelihood)

SOURCE: OWN ILLUSTRATION BASED ON GREENE (2007) AND HENSHER AND GREENE (2003)

4 FOOD QUALITY FROM THE CONSUMER PERSPECTIVE – A SYNTHESIS OF QUALITATIVE STUDIES OF CONSUMER PERCEPTIONS AND EVALUATION OF VARIOUS QUALITY CRITERIA FOR ORGANIC PRODUCTS

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4.1 Abstract

Zusammenfassung

Obwohl Öko-Lebensmittel in den vergangenen Jahren an Bedeutung gewonnen haben, ist der Marktanteil für Öko-Lebensmittel immer noch vergleichsweise gering. Dies ist deshalb erstaunlich, weil Öko-Lebensmittel viele Erwartungen der Verbraucher hinsichtlich Qualität, Lebensmittelsicherheit und Gesundheit erfüllen. Doch anscheinend bevorzugen Verbraucher Einzelmerkmale des Gesamtsystems Öko-Landbau wie beispielsweise die artgerechte Tierhaltung oder den Verzicht auf chemisch-synthetische Pflanzenschutzmittel stärker als das Gesamtsystem Öko-Landbau. In der vorliegenden Arbeit wurden die Gründe für die Bevorzugung der Einzelmerkmale untersucht und der Frage nachgegangen, weshalb Öko-Lebensmittel immer noch ein Nischendasein führen. Dazu wurden drei explorative Studien durchgeführt. Diese wurden in einer Synthese zusammengefasst, um das umfangreiche Datenmaterial der Einzelstudien, bestehend aus insgesamt 10 Gruppendiskussionen, auf Gemeinsamkeiten und Unterschiede zu prüfen, um daraus Gesamtergebnisse für die Relevanz einzelner Qualitätskriterien von Lebensmitteln allgemein und von Öko-Lebensmitteln im Besonderen abzuleiten.

Die Bevorzugung von Qualitätsmerkmalen des Öko-Landbaus gegenüber dem Gesamtsystem ist vor allem auf die Verbraucherwahrnehmung zurückzuführen, welche ein selektives System der Informationsaufnahme und -verarbeitung darstellt. Dadurch sind der Kommunizierbarkeit komplexer Sachverhalte, wie Öko-Landbau oder Lebensmittelqualität, Grenzen gesetzt. Zudem hat die Studie gezeigt, dass sich die Auseinandersetzung der Verbraucher mit Lebensmitteln vornehmlich auf die jeweils letzte Stufe des Produktionsprozesses erstreckt, was bedeutende Konsequenzen für die Kommunikationspolitik bei Öko-Lebensmitteln auf Produktebene impliziert.

Abstract

Although the importance of organic food has increased steadily over the last years, the organic market share is still relatively low. This is remarkable, considering that organic food meets many consumer expectations regarding food quality and safety, and health. However, consumer preferences are guided more by individual attributes of the organic agricultural system, such as animal welfare or the non-use of chemical fertilisers and pesticides, than the organic production system as a whole. The paper presents a synthesis of three explorative studies of the reasons for preferences for individual attributes as well as for the still low market share of organic food. In this synthesis of the three studies, similarities and differences in 10 focus group discussions are identified in order to determine the relevance of specific food attributes and of organic food in general.

Consumer preferences for individual quality attributes of organic food rather than the organic agricultural system as a whole is mainly explained by the nature of consumer perception, which is a selective system of information collection and assimilation. This places narrow constraints on the communicability of complex issues such as organic farming or food quality. Furthermore, the synthesis shows that consumers' assessments of food are predominantly focussed on the last step of the food production process; this finding has major consequences for communication policies relating to organic food at product level.

Résumé

Même si l'importance des aliments biologiques est en constante augmentation, le part du marché biologique est encore insignifiant. Ceci est surprenant, puis que les aliments biologiques peuvent satisfaire plusieurs attentes de consommateurs telles que la santé, la

qualité et sécurité des aliments. Toutefois, les consommateurs sont plus sensibles à certaines caractéristiques particulières de l'agriculture biologique, comme la protection des animaux de rente, ou l'abandon des pesticides et engrais synthétiques, qu'au concept global de l'agriculture biologique. Cet article présente une synthèse de trois études analysant les raisons de la préférence pour ces caractéristiques particulières ainsi que l'insignifiance du marché des aliments biologiques. Lors de la synthèse des trois études avec 10 focus group discussions, les points communs et les divergences ont été identifiés pour en extraire des résultats compréhensifs sur l'importance des caractéristiques particulières de la qualité des aliments et de l'agriculture biologique.

Les préférences pour certaines caractéristiques particulières par rapport au concept global de l'agriculture biologique s'expliquent surtout par la perception des consommateurs, qui est un processus de sélection et assimilation des informations. Par conséquent, la communication de thèmes complexes comme l'agriculture biologique ou la qualité des aliments est limitée. La synthèse des recherches a également montré que la réflexion des consommateurs se limite à la dernière étape de la production alimentaire, ce qui a des conséquences pour la politique de communication des aliments biologiques au niveau des produits.

4.2 Introduction

Since the mid-1980s, Europe has been witnessing continuous growth in organic farming. This is attributable both to growing consumer demand for organic food and to governmental support (Zanoli et al. 2004). The support measures were originally launched as a means of using organic farming to reduce agricultural surplus production (EU Regulation 4115/1988). Since then the support of organic farming has been justified primarily on the grounds that organic farming utilises environmentally-friendly production methods and provides or preserves public goods (nature, clean drinking water) (Lampkin and Stolze, 2006) – and more recently, too, on the grounds of the sharply increasing consumer demand for organic food (BMVEL, 2008).

Despite the promotion measures and the continuous growth in the organic market, which amounted in 2006 and 2007 to between 18 % and 20 % (Padel et al, 2008; ZMP, 2008), the organic market share in individual countries remains relatively small. In Europe, Switzerland was the country in which the share of organic food in the total food market was largest in

2006, yet this share was only 4.5 %. In Germany in the same year the share was significantly lower, with organic food sales accounting for just 2.7 % of the food market (Padel et al., 2008; ZMP, 2008).

The low organic market share is surprising, since organic food go some way towards meeting the expectations that consumers have of quality, food safety and health. This is one of the findings of Ökobarometer 2007, a representative survey of organic food commissioned by the German Federal Ministry for Food, Agriculture and Consumer Protection (BMVEL, 2007). According to the study, consumers associate organic products in particular with higher standards of animal welfare, lower pollution levels and greater health benefits. An earlier survey, Ökobarometer 2004 (BMVEL, 2004), indicates that consumers rate individual attributes of organic farming as more important than the organic farming system as a whole. According to Ökobarometer 2004, 53 % of the respondents stated that the criterion 'from animal welfare husbandry' was 'very important' to them when buying food. In addition, 50 % of consumers declared that it was 'very important' for them that animals are not given prophylactically antibiotics, and 45 % of consumers said that the use of chemical-synthetic herbicides on crops should not be permitted. 'Exclusion of genetic engineering' was rated by 40 % of those surveyed as 'very important', while 39 % awarded this rating to 'minimal processing with few additives'. By contrast, only 15 % of consumers classified the criterion 'organically farmed' as 'very important', even though the individual criteria that had previously been referred to are standard components of organic farming. This raises the question of why the individual attributes are more highly rated and why organic food still represents a niche market.

To address these issues the authors have in recent years conducted three exploratory studies, involving 11 focus group discussions. The studies set out to investigate consumers' attitudes to and perceptions of components of food quality, and their relationship to organic food in general. The individual studies were then combined to form a synthesis. The aim of the synthesis was to examine the extensive data from the individual studies for commonalities and differences and from these to arrive at overall conclusions about the relevance of individual food quality criteria in relation to food in general and to organic food in particular. To this end the data in the synthesis was summarised by means of qualitative content analysis and cross-case comparison analysis. The present paper first describes the methods of data collection and evaluation used in the individual studies. The results of the synthesis are then

reported and this is followed by a discussion of the results. Finally, conclusions for suppliers of organic food and for agricultural policymakers are presented.

4.3 Data collection

Of the three exploratory studies conducted in the last three years, the first (referred to below as Study 1-DE) was carried out at the University of Kassel. Two further studies took place as part of the EU research project QualityLowInputFood (QLIF) under the supervision of Martine François, GRET (Groupe de Recherche et d'Échanges Technologiques, Paris). These two studies were identical in their approach. One of these two studies was also conducted within the greater Kassel area (Study 2-DE); the other took place in German-speaking Switzerland (Study 2-CH). This yielded interesting possibilities for comparing consumer attitudes in Germany with those in Switzerland, where the market for organic food is significantly more developed.

4.3.1 Focus group discussion

Focus group discussion is a qualitative research method. In contrast to quantitative research, which is based on large case numbers, numerical data and statistical analysis, qualitative research uses small case numbers and explicatory methods of data evaluation (Kamenz, 2001; Kepper, 2000; Kepper, 1999). Qualitative methods set out to identify, describe and understand psychological and social connections, but not to measure them (Kepper, 1994). The question at issue here – which has not previously been addressed – is why the overall system of organic farming is clearly not rated in the same way by consumers as its individual aspects; in this situation, qualitative studies are the method of choice, since to answer the question it is necessary to identify, describe and understand the underlying psychological connections.

A significant advantage of qualitative methods is the degree of openness that arises from the low level of standardisation of survey design (Lamnek, 2005; Kepper, 2000). This low level of standardisation makes it possible to gather information on previously unidentified aspects; on this account qualitative methods are particularly suitable for exploring new areas of interest (Kepper, 1994). An additional characteristic of qualitative methods is their communicative aspect, which arises from the interaction between interviewer and interviewees or between interviewees (Lamnek, 2005; Kepper, 2000). As a result, individual

opinions are reflected more strongly in qualitative surveys than they are in standardised procedures (Lamnek, 1998).

The ability of qualitative studies to identify previously unnoticed connections is one of their advantages; against this, though, must be set the disadvantages of limited representativity, generalisability and quantifiability of the results (Helfferich, 2005; Lamnek, 2005). However, the similarly (1-DE and 2-DE) or identically worded questions (2-DE and 2-CH) enable the information base to be expanded, yielding results that are more broadly based and more reliable.

The empirical method of data collection used in the individual studies was focus group disucssions; this represents an extension of the focused interview, conducted in a group rather than on an individual basis (Scholl, 2003). The method involves a group discussion of predefined topics, led by a moderator (Lamnek, 1998). The discussion centres on opinions, attitudes and behaviours (Lamnek, 1998).

The hallmark of the focus group is its communicative character, which is heightened by group interaction (Shao, 2002; Greenbaum, 2000; Morgan, 1998). As a result of such interaction between participants in a group discussion, a larger number of individual topics is addressed than in a one-to-one interview; in consequence, the subject under investigation is addressed at a variety of levels and from different points of view (Kamenz, 2001). In addition, the interaction produces spontaneous comments from group members; in one-to-one interviews these occur less frequently (Lamnek, 1998). A further strength of the focus group is the ordinary nature of the discussion situation, which reduces the inhibitions of interviewees (Lamnek, 1998). The method is particularly suitable for exploring new areas of investigation which at this stage lack a theoretical structure and in which hypotheses have yet to be developed (Lamnek, 1998).

4.3.2 Design of the individual studies

Since the individual studies were partly conducted independently of each other, there are differences in their design; these are described below. The participation criteria and the method of recruitment are first outlined. The content and sequence of the focus group discussion in each study is then presented.

Participation criteria and recruitment

Recruitment of discussion group members took account of the socio-demographic criteria of age and gender, purchasing intensity of organic food and involvement in food purchasing and organic food. People in farming-related occupations and employees of market research institutions were excluded on account of their specific knowledge of the subject and of the methods used. In all three studies, purchasing intensity of organic food, which was measured by means of buying indices, was the most important participation criterion. In the 2-DE and 2-CH studies, only occasional purchasers of organic products were recruited; Study 1-DE, by contrast, involved one focus group with intensive purchasers and two with occasional purchasers of organic products. From Study 1-DE only the focus group discussions with occasional purchasers were included in the analysis for synthesis purposes; the discussion with intensive purchasers was excluded in order to increase the degree of comparability between the studies.

In order to ensure that discussion group members were evenly distributed in terms of age, age quotas were set. These quotas were based on the distribution of age in the general population. In the two studies 2-CH and 2-DE the consumers were divided into two groups of equal size, one comprising participants aged 18–44 and the other those aged 45–65. In Study 1-DE consumers were divided into three age groups, comprising participants aged 18–34 years, 35–49 years and 50–65 years. Since it is known from previous studies that more women than men bear main responsibility for food purchasing (Spiller et al., 2004; Müller and Hamm, 2001), gender quotas were also defined in all three studies. Since no data on the distribution of responsibility for food purchasing according to gender is available for the general population in either Germany or Switzerland, the division on the basis of gender was carried out differently in each study. In Study 1-DE each age group was made up of 60 % women and 40 % men. In Study 2-DE the aim was to have 75 % women and 25 % men in each age group, and in Study 2-CH the ratio was 65 % women to 35 % men.

A high level of interest in the issue of food quality was an additional participation criterion for studies 2-DE and 2-CH; this was measured using attitude questions answered on a five-point scale. At the same time, however, participants were sought who had fairly low involvement (defined as the commitment with which consumers respond to an offer) with organic food; this, too, was assessed by means of relevant attitude questions. Members of the institutions

responsible for the research projects and people employed in market and opinion research or in farming were also excluded from the studies.

In order to select consumers who met the criteria, recruitment for the three individual studies was carried out by means of standardised screening questionnaires. In Study 1-DE each discussion group consisted of 10–12 invitees selected in accordance with the recruiting criteria; in studies 2-DE and 2-CH there were 10–14 invitees in each group. As Table 8 shows, varying numbers of people dropped out. The largest number of drop-outs was 3 (Study 1-DE, Group 3). In only one case did all the participants who had promised to attend actually turn up (Study 2-CH, Group 1). Those who failed to attend tended to be men rather than women and were more frequently from the older age groups; in consequence, the quotas varied somewhat from those originally planned. However, the drop-out rates and quota distortions are within the usual range for focus group discussions.

In Studies 1-DE and 2-DE the focus group discussions took place in a studio at the University of Kassel that was equipped with a video camera and audio recording equipment. The focus group discussions in Study 2-CH were held in a studio in Bern in which audio recording equipment was available (cf. Table 8).

The sequence of the focus group discussions was specified in advance in guidelines which laid down key questions on individual issues. Studies 2-DE and 2-CH used the same guidelines, while the focus group discussions in Study 1-DE were based on separate guidelines. The first two key questions were identical in all the studies (cf. Table 8). The guidelines for studies 2-DE and 2-CH included other discussion topics that do not form part of this synthesis.

Since it was assumed that consumers' perceptions and attitudes would vary according to the product under consideration, the key questions were discussed in relation to individual products. In studies 2-DE and 2-CH products from four different categories were therefore selected. The categories covered processed and unprocessed products and food of plant and of animal origin (cf. Table 8). The four products selected were eggs, yoghurt, tomatoes and bread, these being organic products that are very common and widely available in all countries. In Study 1-DE the key questions were discussed in relation to an unprocessed plant product and an unprocessed animal product. These products were eggs and apples.

Table 8: Design and content of the focus group discussions

Individual study	Study 1-DE	Study 2-DE	Study 2-CH
Objectives of the individual studies	Reasons for consumers preferring individual criteria of organic farming to the overall system of organic farming	Consumer attitudes to quality and safety of food in general and organic food	
Location of the discussions	Studio at the University of Kassel	Studio at the University of Kassel	Studio in Bern
Characteristics of the Focus Group Discussions	Group 1: 9 participants, of whom 6 female and 3 male 4 aged 18-34 4 aged 35-49 1 aged 50-65 Intensive purchasers of organic food	Group 1: 10 participants, of whom 8 female and 2 male 6 aged 25-44 4 aged 45-65 Occasional purchasers of organic food	Group 1: 14 participants, of whom 9 female and 5 male 7 aged 25-44 7 aged 45-65 Occasional purchasers of organic food
	Group 2: 9 participants, of whom 6 female and 3 male 3 aged 18-34 4 aged 35-49 2 aged 50-65 Occasional purchasers of organic food	Group 2: 10 participants, of whom 7 female and 3 male 6 aged 25-44 4 aged 45-65 Occasional purchasers of organic food	Group 2: 13 participants, of whom 7 female and 6 male 7 aged 25-44 6 aged 45-65 Occasional purchasers of organic food
	Group 3: 7 participants, of whom 4 female and 3 male 1 aged 18-34 4 aged 35-49 2 aged 50-65 Occasional purchasers of organic food	Group 3: 10 participants, of whom 7 female and 3 male 6 aged 25-44 4 aged 45-65 Occasional purchasers of organic food	Group 3: 12 participants, of whom 8 female and 4 male 7 aged 25-44 5 aged 45-65 Occasional purchasers of organic food
	-	Group 4: 10 participants, of whom 8 female and 2 male 5 aged 25-44 5 aged 45-65 Occasional purchasers of organic food	Group 4: 12 participants, of whom 7 female and 5 male 6 aged 25-44 6 aged 45-65 Occasional purchasers of organic food
Products	Eggs, apples	Eggs, yoghurt, bread and tomatoes	
Key issues	Relevance of individual purchasing and quality criteria Relative importance of the criterion ‘organically farmed’ in comparison to other purchasing criteria	Relevance of individual purchasing and quality criteria Relative importance of the criterion ‘organically farmed’ in comparison to other quality criteria Competition with organic food from products from other production systems Knowledge and attitudes of food production techniques Willingness to pay more for certain quality criteria	

Characteristics and sequence of focus group discussions

A survey technique used in all the studies was the projective question. Projective questions involve participants transferring particular characteristics with which they do not wish to be associated to other people or situations (Buber and Holzmüller, 2007; Felser, 2007; Gröppel-Klein and Königstorfer, 2007). Respondents are asked to express not their own attitudes but those of an imaginary other person or group. The aim of this technique is to encourage participants to reveal attitudes that they do not publicly ascribe to themselves (Buber and Holzmüller, 2007; Felser, 2007). In studies 2-DE and 2-CH it was considered appropriate to use a projective question when asking about willingness to pay for particular criteria. The question was: 'For which attributes do you think consumers would be prepared to pay higher prices?' In formulating this question projectively, the aim is to avoid participants being led for reasons or social desirability to indicate a greater willingness to pay than is in reality the case. In Study 1-DE a projective question was used to enable the participants to give less socially acceptable reasons for the greater relevance of individual criteria of organic farming as compared with organic farming as a whole. The question in this case was: 'In your opinion, why is it that individual criteria of organic farming are rated by the general population as very important purchasing criteria, while organic farming as an overall package is not rated as being so important?'

4.4 Data Analysis

Analysis and synthesis of the three individual studies was carried out by means of qualitative content analysis, which is described in the next chapter. In addition, the synthesis drew on methods of cross-case comparison analysis; this involved drawing up matrices to highlight the similarities and differences between the individual studies. Both methods and their application are described briefly below.

4.4.1 Qualitative content analysis

Qualitative content analysis is a method of analysing qualitative data. As an evaluation method it forms part of hermeneutics – the branch of knowledge which seeks to understand human behaviour (Lamnek, 2005). The method can be used to carry out systematic analysis of text, with the particular aim of analysing complex situations (i.e. situations that can be

identified and interpreted by multiple observers) (Mayring and Brunner, 2007; Mayring, 2003; Wilkinson, 2003).

The key strength of qualitative content analysis lies in the opportunity it provides for comparing material from different focus group discussions and even from different qualitative studies, provided that the material has been obtained in a similar way (Wilkinson, 2003). For this reason the method was used not only in the analysis of the individual studies but also in the synthesis. A weakness of this evaluation method is that group interactions are not analysed. This means that it fails to take account of any inconsistencies in the opinions voiced by a participant or of changes of opinion in the course of the discussion (Wilkinson, 2003). However, since evaluation did not take place on a case-by-case (participant) basis but focused instead on analysis of the spectrum of opinions and attitudes expressed, these methodological deficits are of no consequence for the synthesis.

As preparation for the qualitative content analysis of the individual studies and the synthesis, the focus group discussions were first transcribed from the recordings using standard orthography; these transcriptions formed the basis for the data analysis. A coding system was then drawn up. This contained a list of the issues to be analysed and all the individual aspects related to them. Each issue-related individual aspect was assigned a code. The individual statements in the transcriptions were then systematically coded. The next step involved summarising the statements relating to individual issues and the individual aspects of these issues, using the codes. An issue analysis was then carried out; this involved classifying, structuring and summarising the individual arguments according to their general sense and their relevance. The relevance of individual aspects was assessed on the basis of the assumption that important aspects are addressed more fully than less relevant aspects. Issues and individual aspects that were mentioned frequently and by several participants were therefore classified as very relevant; conversely, issues that were only raised by one person were rated as less relevant.

The issue analysis was first carried out for each separate discussion. The discussions in each study were then combined and the synthesis analysis, in the form of a cross-study issue analysis, was then performed. A key aspect of the synthesis was the identification of similarities and differences between the studies.

4.4.2 Cross-case comparison analysis

Cross-case comparison analysis was used as a method of synthesising the results in order to identify and structure similarities and differences between the individual studies and between the two survey countries. Cross-case comparison analysis is specifically designed for use in synthesising a number of surveys or studies. It is often used as a method of analysis in large research projects in which particular issues are explored in a series of studies and the resulting material – including country-specific features – needs to be combined and compared (Weed, 2005; Miles and Hubermann, 1994). The method is therefore particularly suitable for synthesising the individual studies. Cross-case comparison analysis is used to analyse both qualitative and quantitative data (Weed, 2005). Use of this method can increase the generalisability of qualitative findings (Miles and Huberman, 1994); this is a further important argument for its use.

As with content analysis, the method is based on the analysis of primary data. The already coded transcriptions therefore provided the starting material for the synthesis. Cross-case comparison analysis can be carried out in two different ways, according to either individual cases or individual variables. Combined analysis of cases and variables is also possible (Miles and Huberman, 1994). In this study the analysis was carried out according to variables, the variables being the quality criteria. This involved summarising individual issues and aspects in matrix form; the results of cross-case comparison analysis are typically presented in this way. Qualitative results are greatly reduced by the matrix format: while this involves a degree of information loss, it nevertheless contributes to significantly better structuring of the results in the synthesis (Miles and Huberman, 1994).

4.5 Results

Presentation of the results of the synthesis is divided into two chapters. In the first chapter the individual product-specific quality criteria are first described; these are subdivided into seven areas. A key aspect is the description of the relative importance of the individual quality criteria in relation to the different food. The second chapter contains the overall evaluation of the quality of organic food from the consumer perspective. The most important findings are accompanied by representative original quotations from the discussion group participants, which serve to illustrate and verify the results. The information in brackets after each

quotation shows the study from which the comment comes and the number of the discussion group and the participant.

4.5.1 Product-specific quality criteria

The following chapter describes the product-specific quality criteria that were addressed in the individual focus group discussions.

Ingredients

Overall only a few aspects relating to the issue area of ingredients were addressed by consumers. In the German focus group discussions the fat content of yoghurt was quoted as a criterion for assessing its quality (cf. Table 9). In this context some consumers mentioned the limited availability of fat-reduced organic yoghurt. In the focus group discussions in Switzerland, by contrast, this aspect was not raised. In assessing the quality of bread, the type of flour used – white or wholemeal – was regarded by consumers as the most relevant indicator (cf. Table 9).

Table 9: Relevance of ingredients summarised by country and product

Product	Criterion	Germany	Switzerland
Yoghurt	Fat content	✓✓	-
Bread	Type of flour and ingredients used	✓✓	✓✓

✓✓= VERY RELEVANT; - = NOT MENTIONED

A preference for wholemeal bread was expressed particularly frequently in this context, as for example in the following two statements:

> ‘At the moment I buy wholemeal bread because it tastes best to me.’ (Study 2-DE; FG4/6) ‘When buying bread I take care that it is wholemeal.’ (Study 2-CH; FG3/2)

In addition, the type of grain was mentioned by a number of consumers in both countries, as was the aspect of whether whole grains are used:

> ‘I buy dark bread, often with kernels or nuts. We used to buy white bread, but not anymore.’ (Study 2-CH; FG4/5)

Additives

The term ‘additives’ describes artificial and natural substances that are added to processed products in order to ensure that they have particular properties. In Studies 2-DE and 2-CH this issue area was discussed in all the focus group discussions in connection with the processed products yoghurt and bread. In this area there were only minor differences between the assessments of consumers in Switzerland and those in Germany.

It is very clear from the results of the synthesis that in assessing the quality of processed products the question of whether they contain additives, and if so which ones, is very relevant for some of the participants. In both countries the use of additives in general was discussed in relation to yoghurt; specific additives were also referred to (cf. Table 10) – namely flavourings, colourings and preservatives. Swiss consumers in particular were critical of these additives. In one of the German focus group discussions the use of fruit substitutes and gelatine also attracted unfavourable comment (cf. Table 10).

Table 10: Relevance of individual additives summarised by country and product

Product	Criterion	Germany	Switzerland
Yoghurt	Additives in general	✓✓	-
	Artificial flavourings	✓	✓✓
	Artificial colours	✓	✓✓
	Preservatives	✓	✓
	Fruit substitutes	✓	-
	Gelatine	✓	-
Bread	Additives in general	✓	✓✓
	Raising agents	✓	✓
	Preservatives	✓	-
	Protein	-	✓

✓✓= VERY RELEVANT; ✓ = PARTIALLY RELEVANT; - = NOT MENTIONED

The main reason for the critical comments about the additives listed in Table 10 is the fear of risks to health. This applies in particular to artificial flavourings and colours, which are generally rated as unhealthy and are also criticised on the grounds that they trigger allergies:

> ‘I actually only buy plain yoghurt because I know that the fruit is usually just an illusion and consists of flavourings or additives. And in my family there are quite a lot of allergy problems. I make sure that they don’t contain any flavourings, colours or preservatives.’ (Study 2-DE; FG1/5)

In addition, individual German consumers complained that some manufacturers use artificial additives instead of real fruit; this not only involves health risks but also impairs the taste:

> ‘If I have bought yoghurt it has been too sweet […] If it was fruit yoghurt, for example strawberry, it wasn’t proper strawberries, it didn’t taste like strawberries, it was additives of some sort. So now I don’t buy fruit yoghurt anymore.’ (Study 2-DE; FG 3/5)

Gelatine is another additive that is rejected by individual German consumers. However, these consumers did not give specific reasons for this rejection. Because of the perceived health risks some consumers avoid fruit yoghurt with artificial additives and instead buy organic yoghurt or plain yoghurt:

> ‘I mainly buy organic yoghurt. It tastes better than conventional yoghurt. Organic yoghurt has more fruit and no artificial flavourings.’ (Study 2-CH; FG2/1)

In the context of bread the issue of additives was raised less often than it was for yoghurt; it thus appears to be less relevant to consumers. In both countries raising agents were specifically mentioned. In the German discussion groups the consumers also mentioned preservatives, while in the Swiss discussions protein additives were referred to. Although the consumers tended to be critical of the use of additives in bread production, no specific reasons for this view were put forward. As with yoghurt, some consumers buy organic bread in order to avoid artificial additives:

> ‘You see I work in Göttingen and there are a lot of health food shops there … so that you take a bit of notice of what sort of additives or preservatives are in it or on it. Or rather aren’t in it, I hope, logically.’ (Study 2-DE; FG4/9)

Sensory properties

In overall terms sensory quality criteria are very relevant for consumers' perception and assessment of quality; this holds true for all products and in both countries. As Table 11 shows, no significant differences between the two countries were found. For all products except eggs, consumers regard taste as the most important sensory quality criterion. In the case of tomatoes consumers are of the view that taste depends on a number of factors. These include, firstly, the redness of the tomatoes, which the majority of consumers regard as an indicator of the degree of ripeness and hence of taste. However, the following comment from a Swiss participant reveals that this is not always the case:

> 'I have sometimes bought wonderful looking tomatoes. They didn't have any taste – so the lovely colour isn't the only thing that decides the taste.' (Study 2-CH; FG4/8)

The type of tomato was also mentioned as a criterion for the assessment of taste. Cherry and cluster-stem tomatoes were rated particularly positively for taste in both countries. In connection with the type of tomato, however, another important aspect was referred to. When purchasing tomatoes – unlike when buying apples – consumers do not have the option of choosing according to variety because the variety is not usually stated. The German consumers complained about this:

> 'Tomatoes aren't labelled with the variety like apples are.' (Study 2-DE; FG2/2)

In addition, consumers in both countries were of the opinion that geographical origin has a significant influence on the taste quality of tomatoes. In all the focus group discussions reference was made to perceived taste differences between tomatoes produced in different countries. The influence of the time of year on taste was also mentioned in all the focus group discussions. Overall, a large number of consumers in both countries found fault with the sensory quality of tomatoes, as for example in the following statement:

> 'I am amazed at what you sometimes find on the market. They aren't properly red and they don't taste of anything.' (Study 2-CH; FG4/8)

Other sensory properties mentioned in both countries in connection with the assessment of tomato quality were the nature of the skin, skin thickness and the consistency of the tomatoes. Consumers tend to prefer relatively thin skins and fairly firm tomatoes (cf. Table 11).

In the case of apples – as with tomatoes – sensory properties and taste in particular, are important quality criteria. In contrast to tomatoes, though, taste is seen as being linked primarily to the variety. Apart from taste, appearance was the only other important sensory property of apples mentioned (cf. Table 11).

In the focus group discussions about eggs, as with tomatoes, consumers mentioned a number of sensory properties: these included shell and yolk colour, shell thickness and egg size. Overall, though, sensory properties are less important in the assessment of egg quality than other criteria such as the husbandry system. With regard to the taste quality of eggs, some German participants were of the view that eggs from caged birds are inferior in this respect; in both countries, free-range and organically produced eggs are perceived positively in terms of taste. However, it seems that it is not just taste differences as such that are perceived; the association with the husbandry system appears to contribute to a positive taste experience.

Table 11: Relevance of sensory properties summarised by country and product

Product	Criterion	Germany	Switzerland
Tomatoes	Taste	✓✓	✓✓
	Redness	✓✓	✓
	Skin thickness	✓	✓
Apples			
	Taste	✓✓	n.a.
	Appearance	✓	n.a.
	Taste	✓	✓
Eggs			
	Shell colour	✓	✓
	Yolk colour	✓✓	✓
	Size	✓✓	✓
Yoghurt	Taste	✓✓	✓✓
	Consistency	✓	✓
	Taste	✓✓	✓✓
Bread	Consistency	✓	✓

✓✓= VERY RELEVANT; ✓ = PARTIALLY RELEVANT; N.A. = NOT ASSESSED

This phenomenon was formulated by a female Swiss participant as follows:

> ‘If I think that the eggs really are free-range ones, that affects the taste. I don’t quite know whether it really is the taste that does it, but just being able to imagine these hens being able to wander about freely outside makes the eggs taste wonderful to me.’(Study 2-CH; FG1/5)

Some consumers are also of the view that the hens’ feed affects the taste of the eggs, particularly if it contains fish meal:

> ‘I once had an egg, it was a battery egg […] and it tasted fishy. Then somebody told me that caged hens are fed on fish meal. I find that quite revolting.’ (Study 2-DE; FG1/2)

In both countries yolk colour also plays a part in the perception and assessment of egg quality:

> ‘For me it is important that the eggs are nice and big and that the yolk has a really yellow colour.’ (Study 2-CH; FG2/5)

Some consumers perceive yolk colour as being linked to the husbandry method. A few consumers rejected an over-intensive yolk colour, perceiving it as unnatural; a female consumer from Germany expressed this as follows:

> ‘I once bought some supermarket eggs whose yolks were very yellow. That wasn’t natural, it was artificial and it has made me more careful about buying eggs.’ (Study 2-DE; FG3/5)

A few consumers thought it possible that an intensive yolk colour was caused by additives such as carotene in the hens’ feed. When it came to shell colour opinions were divided: some consumers prefer brown shells and some white. Egg size is also important for some consumers; the majority prefer medium or large eggs. In the case of yoghurt, sensory properties were regarded as very relevant to the assessment of quality; taste was particularly crucial. While for eggs taste was seen as linked to the production system, in both German and Switzerland opinions were divided on the question of whether organic yoghurt tastes better than conventional yoghurt or vice versa, as the following statements show:

> ‘Sometimes organic yoghurts are a real disappointment. I don’t really notice any difference in taste between organic and non-organic. At the beginning I had great expectations that organic would taste better because it is more

> natural. But now it's not much of a consideration because I haven't noticed that organic is any different from conventional yoghurt. I've even had some bad experiences. Take the hazelnut yoghurt, for example, that doesn't taste good at all.' (Study 2-CH; FG4/6)

This contrasts with statements such as:

> 'I mainly buy plain organic yoghurt. It tastes better than conventional yoghurt.' (Study 2-CH; FG2/1)

In both countries the consistency of yoghurt was also addressed. There was a clear preference for a creamy and fairly solid consistency. Freshness was mentioned by only a few participants as an important criterion. The position with regard to bread was similar to that of yoghurt in that in both countries a number of different sensory properties were rated as most important in the perception and assessment of quality. In both countries the taste and consistency of bread were discussed in considerable detail. From the consumer perspective taste was seen as depending primarily on the ingredients used. Different preferences were expressed with regard to consistency. Overall, consumers were critical of bread that was too loose and crumbly.

Aspects of production and processing

For many products, it is individual aspects of production and processing or the type of processing that are the decisive factor in the perception and assessment of product quality. In addition it is evident from the studies that consumer awareness is more strongly influenced by certain individual aspects of agricultural production methods in the case of unprocessed products than it is in the case of processed products (cf. Table 12). In the case of tomatoes and apples consumers regard the avoidance of chemical-synthetic pesticides as particularly important (cf. Table 12):

> 'Tomatoes are often sold cheaply or at a special offer price. But these tomatoes are often treated with pesticides. If tomatoes are treated with pesticides they aren't healthy.' (Study 2-CH; FG 4/4) 'And if I buy normal tomatoes I wash them a bit more thoroughly because you think that they may have been sprayed or treated with poisons of some sort, which isn't a nice idea.' (Study 2-DE; FG 4/1)

Table 12: Relevance of individual aspects of production and processing summarised by country and product

Product	Aspects of production and processing	Germany	Switzerland
Tomatoes	No chemical-synthetic pesticides	✓✓	✓✓
	Organically produced	✓	✓✓
	Field-grown	✓✓	✓✓
	Grown on natural soil / no hydroculture	✓	-
	Exclusion of genetic engineering	✓	✓
	Time of harvesting	✓	✓
Apples	No chemical-synthetic pesticides	✓✓	n.a.
	Organically produced	✓✓	n.a.
Eggs	From animal welfare husbandry	✓✓	✓✓
	Organically produced	✓✓	✓✓
	Feed quality / exclusion of genetic engineering	✓✓	✓✓
	No or very limited use of antibiotics	✓✓	✓✓
Yoghurt	Organically produced	✓✓	✓✓
Bread	Organically produced	✓✓	✓✓
	Not pre-baked	✓	✓

✓✓= VERY RELEVANT; ✓ = PARTIALLY RELEVANT; - = NOT MENTIONED; N.A. = NOT ASSESSED

The use of chemical-synthetic pesticides in different production systems was discussed. It became clear that organic apples and tomatoes are mainly purchased because consumers in both countries want to avoid chemical-synthetic pesticides and pesticide residues.

From the point of view of consumers in both countries, another aspect that influences the quality of tomatoes is outdoor production. Consumers regard field-grown tomatoes as being of higher quality than greenhouse-grown ones:

> ‘When I buy tomatoes it stands to reason that I prefer field-grown and organically grown tomatoes that have not been sprayed.’ (Study 2-CH; FG 3/10)

In addition, individual participants in both countries mentioned the time of harvesting, since this affects the ripeness and hence the sensory quality of tomatoes. This is expressed, for example, in the following statement:

> ‘In buying organic tomatoes I have often noticed that they are bitter and have no taste. I think they come from Spain. Perhaps it's also because they are harvested early so that they withstand transport better.’ (Study 2-CH; FG 4/8)

Another issue that was discussed only in connection with tomatoes in both countries was the use of genetic engineering. It is an issue about which many consumers have fundamental reservations, since the effects of genetic modification cannot as yet be fully assessed. This viewpoint was expressed in one of the German focus group discussions as follows:

> ‘It’s extremely important to me that the tomato varieties aren’t ones that have been genetically modified because we don’t yet know what the long-term effects of genetic modification are. I find that very worrying.’ (Study 2-DE; FG 4/10)

In one of the German discussion groups the use of hydroculture was also criticised because the speaker feared that it is unhealthy:

> ‘So I can imagine that the Dutch tomatoes out of those little pots with a small sponge and liquid minerals in them, if I were to eat these tomatoes all the time – and we always eat a lot of tomatoes – that it wouldn’t be salubrious in the long term.’ (Study 2-DE; FG 4/7)

In the case of eggs the husbandry method was the most thoroughly discussed aspect in both countries, with almost all the participants in the focus group discussions regarding it as very relevant. Free-range and organic eggs are regarded as qualitatively better than deep-litter or battery eggs, particularly because the hens are kept in humane and natural conditions. One male German participant gave this reason for the relevance of this criterion:

> ‘Because people know that the birds are kept in cages because it’s been publicised in the media.’ (Study 2-DE; FG3/10)

In addition consumers are of the view that the composition of the hens’ feed impacts on egg quality. Both German and Swiss consumers perceive the use of genetically modified feed in egg production as a health risk. However, it was also thought likely that the use of genetic

modification in animal feed poses fewer risks than the direct consumption of genetically modified food:

> ‘If you don’t eat it [feed containing genetically modified organisms] directly, if it passes through the hen first, then I no longer give any thought to genetic engineering. Consumers are perhaps more worried about things that they eat directly – a cucumber or the like – than about an egg, where it passes through the hen first. Then it’s all at too much of a remove.’ (Study 2-DE; FG 1/2)

Some individual consumers clearly consider genetic engineering independently of the production system:

> ‘For me it is also very important – whether the farming methods are organic or conventional – that as far as possible no genetic engineering is used.’ (Study 1-DE; FG2/4)

Another issue that was mentioned in connection with egg quality is the use of antibiotics; anxieties about associated health risks were expressed. For some individual participants this point is very relevant.

> ‘For me all that stuff about antibiotics is terribly important, but nobody tells you about it.’ (Study 1-DE; FG2/8) ‘So I can’t say that I would like an egg that hasn’t been treated with antibiotics. To achieve that I have to buy an organic egg.’ (Study 1-DE; FG2/8)

Interestingly, in connection with yoghurt and bread no individual aspects of agricultural production were mentioned. While consumers rate animal welfare animal husbandry as very important in relation to egg production, this consideration does not feature in connection with the acquisition of the raw material of yoghurt, i.e. milk. The use of chemical-synthetic pesticides in the manufacture of the raw materials of bread production was likewise ignored. In the German focus group discussions this point was picked up in the context of the criterion of animal welfare animal husbandry and was justified in these words:

> ‘I think that for us consumers, yoghurt only starts to exist at the dairy. This means that the consumer no longer gives any thought to the cow.’ (Study 2-DE; FG1/5)

According to participants, a further reason for the differing weight attached to animal welfare husbandry is the relatively extensive attention given to battery egg farming in the media:

> ‘Of course the media focus more on hens and how they’re kept. We’re constantly being told about it. Less is reported about cows.’ (Study 2-DE; FG1/1)

In both countries, likewise, no association was made between the diet of milk cows and yoghurt quality.

In connection with both yoghurt and bread, processing methods were only touched on. For both products the focus tended to be on the issues already referred to in chapter 4.1.1. In this connection the organic production method was sometimes also referred to. The only aspect mentioned was the type of dough used in bread processing; this was raised by German participants. The consumers expressed varying preferences for sourdough or yeast dough, as the following quotation illustrates:

> ‘My favourite is dark sourdough bread.’ (Study 2-DE; FG4/8)

In Switzerland, by contrast, sourdough bread is less common and the type of dough is therefore less relevant.

Geographical origin

The relevance of geographical origin in the perception and assessment of quality varies for different products. The criterion of geographical origin is very relevant for tomatoes and apples (cf. Table 13) but less important for the other products. In the discussions of tomatoes in both Switzerland and in Germany the view was frequently expressed that tomatoes from southern countries such as Italy, France and Spain are significantly more flavoursome than tomatoes from the Benelux countries, which have a poor image as far as their taste is concerned.

The following statements illustrate this:

> ‘In my opinion the country of origin is crucial. There are imported tomatoes from southern countries that often taste very good and are of high quality.’ (Study 2-CH; FG3/4) ‘With tomatoes I make sure that they don’t come from Holland or Belgium. I prefer to buy Italian or Spanish tomatoes. But preferably

> Italian ones, in winter when none grow in Germany. Or simply the ones from the Canary Islands.' (Study 2-DE; FG4/7)

Moreover, sensory quality is not the only relevant aspect of geographical origin. In the case of tomatoes and even more so for apples, the majority of consumers in all the focus group discussions stated that the aspect of the low food miles travelled by these products was important to them.

Table 13: Relevance of geographical origin summarised by country and product

Product	Germany	Switzerland
Tomatoes	✓✓	✓✓
Apples	✓✓	n.a.
Eggs	✓	✓
Yoghurt	-	✓
Bread	✓	✓

✓✓= VERY RELEVANT; ✓ = PARTIALLY RELEVANT; - = NOT MENTIONED; N.A. = NOT ASSESSED

For eggs, bread and yoghurt there were differences between the survey countries with regard to geographical origin. Although the criterion is shown to be of relevance in both countries, the underlying reasons differ. In Switzerland, particularly for eggs but to some extent also for yoghurt and bread, the aspects of low food miles and support for local farming are important:

> 'I buy organic eggs and only ones from Switzerland. I do that on environmental grounds.' (Study 2-CH; FG2/9)

For some German participants and a few Swiss ones, the regional origin of eggs is relevant in connection with the traceability of the product. These consumers prefer eggs from the immediate locality because they are better able to monitor the production and husbandry conditions and have more confidence in them:

> 'Next door to our holiday house there lives a farmer. I have more confidence when I can buy eggs somewhere when I can see how the animals are kept. So I don't necessarily go to Migros [a Swiss supermarket chain] and buy eggs there. I have more confidence in the farmers.' (Study 2-CH; FG4/7)

For yoghurt, regional origin is another important criterion for the Swiss participants. Many of them, however, are of the view that insufficient locally produced yoghurt is available.

Product presentation and packing

Although product presentation and the type of packaging exert a significant influence on purchasing decisions in real-life situations, this aspect was mentioned only occasionally in the German focus group discussions and not at all in the Swiss ones. Among the German consumers the issue of packaging was raised only in connection with tomatoes and in single instances in connection with bread and yoghurt. Specifically participants commented that plastic packaging means that bruised or even rotten tomatoes are more easily overlooked:

> 'What sometimes annoys me with tomatoes is the way they are packed. Including organic tomatoes. And when they are wrapped in so much plastic […] particularly cluster-stem tomatoes. Some of them are often going mouldy. But you don't notice straight away […] perhaps because they are packed in such an airtight way.' (Study 2-DE, FG 4/1)

With reference to bread a few German consumers stated that they prefer fresh, unwrapped bread to packaged bread:

> 'I like to go to the baker's and buy fresh bread, not packaged bread.' (Study 2-DE; FG4/9)

For yoghurt various preferences were expressed with regard to pack size. Some consumers prefer large packs and others small ones. Opinions on packaging materials were also divided, with some participants preferring plastic pots and others glass ones.

Price and price-ratio-performance

Price and price-ratio-performance were discussed at greater length by German participants than by Swiss ones (cf. Table 14). Moreover, the issue was not of equal relevance to all products. It was raised more frequently in connection with eggs and sometimes also in connection with tomatoes and yoghurt. It was hardly ever mentioned in connection with bread and apples.

In connection with tomatoes seasonal price variations were mentioned; consumers stated that the high prices in winter led to a reduction in their consumption of tomatoes. The price difference between organic and conventionally grown tomatoes was also discussed, with some consumers perceiving the organic variety as being too expensive. In the case of eggs price and price-performance ratio are of key importance.

Table 14: Relevance of price and price-performance ratio summarised by country and product

Product	Germany	Switzerland
Tomatoes	✓✓	✓
Apples	✓	n.a.
Eggs	✓✓	✓✓
Yoghurt	✓✓	-
Bread	✓	-

✓✓= VERY RELEVANT; ✓ = PARTIALLY RELEVANT; - = NOT MENTIONED; N.A. = NOT ASSESSED

It is interesting that both in Germany and in Switzerland some consumers' readiness to pay depends on the use to which the eggs will be put. Many consumers adopt a strategy of buying organic or free-range eggs for direct consumption while buying cheaper eggs from deep-litter or even battery production for baking and other purposes. The following statement illustrates this:

> 'Well, I buy free-range eggs. And when I'm baking I sometimes buy the battery eggs, in other words the cheaper eggs. Sometimes I also buy organic eggs.' (Study 2-CH; GD1/9)

This behaviour seems paradoxical because it is not immediately apparent why consumers make a distinction on the basis of end usage. However, it is evident from the following dialogue that these consumers are concerned less with animal welfare than with the special enjoyment associated with the consumption of eggs from animal welfare husbandry:

> 'For baking I use the cheaper eggs and for eating as they are, I use free-range eggs or sometimes organic eggs.' (Study 2-DE; FG1/8) 'But why other eggs for baking? After all I eat them too via the cake.' (Study 2-DE; FG 1/5) Yes, but not directly.' (Study 2-DE; FG1/8) 'I do the same. When I eat them direct – boiled or as fried eggs – then I have the enjoyment directly.' (Study 2-DE; FG1/7)

The assessment of price-performance ratio depends to a significant extent on consumers' knowledge of qualitative differences. Some consumers, for example, are unable to comprehend why organically produced eggs are more expensive than free-range ones. They

perceive no added value in organic eggs as compared to free-range ones because free-range eggs already meet the criterion of animal welfare husbandry that consumers perceive as key.

In the case of yoghurt, price was discussed in the German discussion groups in yet another context, namely as an indicator of product quality. Consumers see a higher price as indicative of a high-quality product; cheaper yoghurt is assumed to be of lower quality. In connection with yoghurt, as with eggs and tomatoes, some German participants were critical of the higher prices charged for organic products in comparison to the corresponding conventional product.

4.5.2 Assessment of organic production

The synthesis of the individual studies in terms of product-specific quality criteria has shown that consumers associate both positive and negative aspects with the criterion 'Organically produced'. These aspects are listed in Table 15 and analysed below.

Table 15: Assessment of the organic products in terms of individual criteria

Positive assessments	Negative assessments
Better taste	Worse taste
Healthier	Worse consistency
No artificial additives	Shorter shelf-life
No chemical-synthetic pesticides	Limited availability of fat-reduced products (only mentioned in Germany)
Higher-quality feed in comparison to feed used in conventional production	Significantly higher prices
More limited use of drugs, especially antibiotics (only mentioned in Germany)	Limited credibility and traceability
Exclusion of genetic engineering (only mentioned in Germany)	Criterion 'organically produced' not linked to low food miles and seasonal availability
From animal welfare husbandry	Confusion with conventional products
No mass production	Lack of awareness of additional benefits
More environmental-friendly	Doubts about the inspection system (only in Switzerland)

With regard to taste, opinions were divided on whether organic products taste better or worse than conventional products. Eggs were particularly controversial: the taste of organic eggs was perceived positively by some consumers, while others detected no difference between the taste of organic and conventionally produced eggs. For some consumers the taste of organic yoghurt represents a reason for buying it, while for others it is a reason for not buying it. The

consistency of organic bread was criticised by some individuals; organic tomatoes and organic yoghurt likewise attracted some criticism on the grounds that they have a shorter shelf-life than the corresponding conventional products.

An important topic in all the focus group discussions in Germany was the limited availability of fat-reduced organic yoghurt:

> ‘I take account of the [pack] size and the fat content; in this connection it’s a drawback that unfortunately there are only organic products with quite a high fat content. There just aren’t any organic products with a low fat content. Because of that they are ruled out.’ (Study 2-DE; FG1/10)

In addition the studies showed that the majority of participants rate organic food as healthier than conventional products. Yet different reasons for this view are put forward for different products. In the case of tomatoes and apples the avoidance of chemical-synthetic pesticides is crucial:

> ‘Yes, but with the organic ones [tomatoes] the important thing is that they don’t contain so many pesticides. And when I eat them I have a product that’s healthier. But one can’t be sure exactly.’(Study 2-DE; FG4/7)

For organic yoghurt and organic bread, by contrast, the crucial factor was the absence of artificial additives:

> ‘Nevertheless I also think that organic yoghurt is healthier. All those artificial things in conventional yoghurt like assugrin and saccharin or whatever they’re called. These sort of things should be kept as natural as possible. That’s what’s best for one’s own health.’ (Study 2-CH; FG 2/5)

Organic eggs are regarded as healthier for two main reasons: because the hens’ feed is of higher quality and because fewer drugs are used in egg production.

The exclusion of genetic engineering in organic farming was quoted as a further reason why organic products are healthier than conventional products. Yet some consumers doubted whether organic products are actually healthier:

> ‘Whether they’re organic farmers or IP (integrated production) farmers, both have to keep fertiliser use to a minimum. Everything is exaggerated. I’ve been told all sorts of things. For example, that organic isn’t the same as organic.

> And I just don’t believe that organic products are healthier.’ (Study 2-CH; FG2/11)

The criterion ‘organically produced’ is perceived very positively in connection with animal welfare husbandry, particularly in the case of eggs. In addition some consumers assume that organic products are more likely to come from extensive production rather than intensive or mass production, and this too was perceived positively:

> ‘I think that the quality of organic products benefits greatly from the fact that organic farmers produce less and it’s not mass production. That means that the quality is bound to be better than for conventional products.’ (Study 2-CH; FG2/1)

The environmentally friendly nature of production was also rated positively but was only mentioned occasionally.

In the focus group discussions consumers repeatedly voiced criticism of organic production methods. A key aspect was their doubt about the genuineness of organic products. This doubt appears to be linked to the geographical origin of organic products, as was expressed particularly clearly in relation to tomatoes:

> ‘When tomatoes come from Spain, I have no means of checking [whether they were grown organically]. I don’t trust these tomatoes.’ (Study 2-DE; FG4/8)
> ‘Perhaps these two factors together, organically produced and low food miles, that would be traceable. But when they come from another part of Europe, it’s not traceable any more. And because of that I can’t check anything.’ (Study 2-DE; FG4/4)

In relation to organic eggs, too, doubts about genuineness also play a key part. It is clear that consumers would like to see better traceability:

> ‘I like the idea of organic farming. Nevertheless I trust eggs direct from the farmer more because I can see how the birds are kept. That's why I wouldn't buy organic eggs from Migros [the largest supermarket chain in Switzerland]. I definitely have more confidence in a farmer who I know.’ (Study 2-CH; FG2/7)

A further fundamental problem of organic products is that consumers are unaware of the additional benefits of organic methods in comparison with other production systems. In the case of eggs, in particular, it was evident that organic eggs are insufficiently distinguished from free-range ones:

> ‘They don’t necessarily have to be organic because I’m not quite sure whether the eggs are better than ordinary free-range eggs that aren’t organic.’ (Study 1-DE, FG3/7) ‘If I’m faced with free-range hens and organic hens, what’s the difference? That is very hard to understand. There certainly are differences, but they’re in the detail.’ (Study 1-DE; FG3/7)

In some cases it would seem that participants are unclear what constitutes organic production:

> ‘And I buy organic eggs too, if you want to call it that. There’s nothing on them to say that, but the farmhouse is a kilometre and a half from us and they are free-running hens; it doesn’t say organic on them but they’re certainly organic inside and the hens wander about there quite freely.’ (Study 2-DE; FG1/7)

In the case of organic yoghurt, too, some consumers fail to understand the reasons for the added value of organic yoghurt over conventional yoghurt:

> ‘The meaning of ‘organic’ in relation to yoghurt is too abstract. Yoghurt is a processed product. Because of that I don’t know what ‘organically farmed’ means in this connection. I assume that conventional yoghurt has no additives, what’s the difference between that and organically produced yoghurt?’ (Study 2-DE; FG 1/7)

The higher prices for organically produced products pose a problem, especially if there are doubts about genuineness or if the added value of the criterion ‘organically produced’ is not apparent. It would seem that organic labels alone put off some consumers:

> ‘The problem with organic farming is that is has the general reputation of being very, very expensive. People have gone away because the organic label implies to them: ‘Oh, that’s exorbitantly expensive’. (Study 1-DE; FG3/4)

The higher prices are particularly likely to deter consumers from buying organic products if there is no perceived added value by comparison with the corresponding conventional

products or if the sensory quality of organic products does not meet their expectations. Consumers also have negative perceptions of high food miles or the availability of organic products out of season, which is seen as contradicting the principles of organic farming:

> ‘If seasonality and low food miles go out of the window, the concept of organic farming falls apart. For example, [organic] greenhouse-grown tomatoes are imported from South Africa in winter. These products aren’t in keeping with any organic principles.’ (Study 2-CH; FG2/6)
>
> ‘I would select ‘local’ as the first criterion, even ahead of organic. If I had the choice between organic apples from New Zealand and conventional apples from the next village, I would definitely prefer the local ones with their good strong taste.’ (Study 1-DE; FG2/5)

In sum it was apparent from the focus group discussions that for occasional purchasers of organic food the relevance of the criterion ‘organically produced’ is closely linked to the specific product:

> ‘For eggs the husbandry method and the type of feed are important, and for dairy products I take it for granted that we have high standards and requirements in Germany, so that I think there’s a certain level of safety with regard to hygiene irrespective of whether things are ‘organic’ or not or of whether they’re cheaper or more expensive.’ (Study 2-DE; FG1/2)
>
> ‘With bread I don’t buy the organic sort, but I do buy organic meat and I do that for the sake of the animals’ welfare. I don’t necessarily need organic bread, not because I think that organic products aren’t healthier than conventional ones. We’re just not so keen on organic to such an extreme extent.’ (Study 2-CH; FG3/1)

4.6 Discussion of results

The synthesis of three research studies involving a total of 10 focus group discussions with occasional purchasers of organic food has generated a number of notable findings that are summarised below.

While individual attributes of food quality were discussed in depth and accorded a high level of relevance, the overall production systems of organic or conventional farming were

relatively rarely addressed. One possible explanation for consumers' focus on individual quality characteristics arises from the nature of consumer perception. Behavioural research has shown that perception is a subjective and selective system of information management; it involves extracting individual items of information from an overwhelming quantity of facts and sensory stimuli, in order to make sense of things and arrive at a basis for decision-making (Kroeber-Riel and Weinberg, 2003). There are therefore limits to the extent to which information about complex issues, such as organic farming or food quality, can be communicated. In this context it is important to ask where consumers obtain information about the quality of organic food. According to Ökobarometer 2007, radio programmes are an important source of information about organic food for 55 % of consumers, while television programmes are important for 56 % (BMVEL, 2007). Yet radio and TV coverage of individual aspects of production, processing and quality is often selective; it probably plays a significant part in focusing, as another qualitative consumer study in Germany (Baranek, 2007) has shown consumers' attention on individual criteria. For example, the animal welfare husbandry of laying hens has been a recurrent topic in the media in recent years. This raises consumer awareness of animal welfare husbandry practices but in a manner that extends only to eggs and not to other animal products.

When consumers consider food production, they focus primarily on the final stage of the particular production process. In connection with the vegetable products apples and tomatoes the question of whether chemical-synthetic pesticides are used in production is a key one; in connection with animal products, however, this aspect is not perceived, even though conventional and synthetic pesticides are used in conventional feed production. The situation with regard to products that undergo further processing is similar. In thinking about yoghurt consumers are significantly less aware of aspects of the agricultural production of milk – such as the use of genetic engineering and antibiotics – than they are when considering eggs, which are an unprocessed product. The role of the degree of processing in assessing the relevance of a criterion is particularly evident in connection with the criterion 'from animal welfare husbandry'. This criterion is highly relevant to the consideration of eggs. According to the findings of the focus group discussions, some consumers in both countries prefer the direct consumption of eggs from animal welfare production systems, such as those produced under free-range or organic conditions. Yet these same consumers use eggs from deep-litter or battery systems for cooking and further processing. At first glance this behaviour appears

paradoxical. For if consumers' sole concern in purchasing eggs from animal welfare husbandry were to contribute to the welfare of the birds involved, such a distinction on the basis of the use to which the eggs will be put makes no sense. However, closer inspection of the facts reveals that some consumers associate animal welfare husbandry with greater enjoyment. And since in processed products the taste of the egg can no longer be detected as such, the aspect of animal welfare husbandry then takes a back seat.

Consumers also associate the criterion of origin with a wide range of aspects, depending on the product involved. In the case of tomatoes origin is seen as an indicator of sensory quality. With eggs, on the other hand, origin is associated with confidence in different producers. Consumers often have more confidence in eggs from the local region or from neighbours or acquaintances than in anonymously produced eggs from the supermarket, even if they are organic. Origin is also associated with the food miles travelled from the place of production to the place of sale. This issue has moved further up the agenda in recent years – particularly in Great Britain, but also in Germany and in Switzerland (Zanoli et al., 2004). It is interesting to note that in this regard consumers' expectations of organic food are clearly different from their expectations of conventional products. In the focus group discussions in both Switzerland and Germany participants repeatedly commented that high food miles (in the extreme case apples from Chile or Argentina) are at odds with the principles of organic farming. In keeping with this, a number of consumers stated that they prefer conventional products from the local region to imported organic food. None of the groups drew a comparison between imported organic products and imported conventional ones.

A major problem from the consumer perspective is the very complex nature of the organic farming system; as other consumer studies have also shown, ordinary people have only a very hazy picture of what the system entails (Baranek, 2007; Oughton and Ritson, 2007). Participants in many of the focus group discussions raised the question of what organic farming actually involves. Many consumers are unfamiliar with the factors associated with organic production, especially at product level. In connection with bread, for example, 'health' does not appear to hit home as a selling point, since consumers ascribe a high level of quality and safety to bread in general. These consumers therefore fail to grasp why organic bread costs more. In addition, consumers frequently lack information about the production of conventional products; for example, they know little about the frequency and quantity of antibiotic use or about genetically modified products. From time to time in the discussion

groups highly exaggerated descriptions presented by individual participants remained uncontradicted in the discussions or baffled other group members.

At various points in the focus group discussions there were indications that organic food are frequently confused with conventionally produced ones. In the case of eggs, in particular, the individual statements of consumers provided examples of such instances of confusion. For example, eggs from neighbours or producers in the purchaser's own village, and eggs from the weekly market, are automatically regarded as organic, even if they are in fact merely free-range eggs. Further evidence that confusion between organically and non-organically produced products is still an extensive problem in Germany emerges from the analysis of panel data (Niessen, 2008). For example, in 39 % of all product purchases eggs and beef from special husbandry systems were confused with organically produced products. Such confusion is particularly common at weekly markets and when buying directly from farmers. It is also the case that older consumers are much more prone to confusing products in this way than are younger ones (Niessen, 2008).

In addition to the lack of transparency and risk of confusion, the higher prices for organic as compared with conventional products are a problem for many consumers. A number of studies of the organic food market have identified the higher prices as the main purchasing deterrent (Baranek, 2007; BMVEL, 2004; Spiller and Lüth, 2004; ZMP, 2004; Birner et al., 2002; Bruhn, 2002; Zanoli and Naspetti, 2002; Hamm, 1999). The synthesis of the focus group discussions reveals that conventional products are particularly likely to be preferred if they meet key quality criteria and are offered at a lower price; for example, free-range eggs fall into this category. It should also be noted that the issue of higher prices for organic food featured more prominently in the German discussions than in the Swiss ones. This can be attributed in part to the fact that the price difference between organic and conventional food is noticeably smaller in Switzerland than it is in Germany. In addition, competition among retailers in Germany in recent years has been waged mainly on the price front. Slogans such as 'Geiz ist geil' ('Stinginess is cool') have made German consumers noticeably more price conscious. By contrast, Swiss retailers have in the past focused more on quality and less on price.

4.7 Conclusions

Drawing on the findings from the 10 focus group discussions, conclusions for providers of organic food and for decision-makers in the field of agricultural policy are presented below.

4.7.1 For providers of organic food

Despite the sustained attempts of organic growers' associations and providers of organic food to inform consumers about the organic farming system and organic food, the focus group discussions have shown that occasional purchasers of organic food have little idea of what the complex organic farming system entails. At product level, in particular, many consumers lack information about the effective differences in quality between organic food and food produced conventionally or in alternative agricultural production systems. Because consumers' perceptions are selective and subjective, efforts to educate consumers about the overall system of organic farming have little prospect of success. A more promising approach would be to publicise specific additional benefits of organic farming in clear and catchy messages. The part of the production process on which the messages concentrate is a key aspect of such efforts. Since consumers' consideration of food quality focuses on the final stage of the production process of the food in question, the messages should relate to this stage of the process. For example, in connection with unprocessed organic food the message 'from animal welfare husbandry' could be used. When dealing with processed organic food, on the other hand, reference to the farming methods used in producing the individual ingredients is likely to be less successful. In this situation it is instead advisable to use messages that refer to special features of the processing process, such as the message 'no artificial additives'.

Greater efforts should be made to address the problem of confusion between organic food and food produced conventionally or by other production methods. Since confusion is particularly common when products are sold directly from the farm or at weekly markets, the identifiability of organic food in these situations needs to be significantly improved. The German organic label ('Bio-Siegel') that was introduced by the state in 2001 is widely recognised by German consumers. This label should be employed more extensively in direct marketing, especially as organic producers can use it free of charge upon making the necessary application.

Despite the higher prices of organic food – an issue that was repeatedly raised in the focus group discussions – and the generally greater price sensitivity of German consumers, a recently published study has shown that consumers are largely unaware of absolute prices (Hamm et al., 2007). They base their decisions instead on the relative prices of the alternative items available. The prices of organic food should therefore not be significantly higher than those of conventional premium products. However, by no means all German consumers are deterred by high prices. In recent years a consumer trend known as LOHAS (Lifestyle of Health and Sustainability) has spread to Germany. LOHAS is characterised by an emphasis on quality and a desire to combine consumption and enjoyment with healthy nutrition and sustainability. These last two criteria largely coincide with the aims of organic farming. Providers of organic food should therefore seek to woo this potential purchaser segment. Since this target group is mainly interested in healthy and sustainably produced food in general rather than in organic food per se, it is not enough to appeal to LOHAS with the 'organically produced' message alone. Efforts should focus instead on positioning organic food in the premium segment and communicating tangible additional benefits. In keeping with this, the image and packaging of organic food must be modern and designed to emphasise the enjoyment value of the lifestyle.

The lack of confidence that many occasional purchasers have in organic food should be reduced by increasing the transparency and traceability of agricultural production and processing. Some innovative concepts in this area have recently been developed; an example is the 'Bio-mit-gesicht' ('Organic Face-to-Face') initiative launched in Germany by a group of providers and producers of organic products and related associations. The aim of the initiative is 'to expand quality-driven organic farming and enable it to be experienced, particularly as it is represented by the organic farming associations'. At its heart are measures to improve the traceability of organic products: via the Internet consumers can obtain information about producers and about cultivation and processing conditions (FiBL, 2008; Bio-mit-gesicht, 2007). In view of the fact that consumers have higher expectations of organic food than they do of conventional ones in terms of origin and of the food miles travelled between the place of production and the place of sale, regional marketing strategies for organic food also go some way towards meeting consumer expectations.

4.7.2 For decision-makers in the field of agricultural policy

Future measures for promoting organic farming should focus primarily on communicating the benefits of organic farming and organic products. In particular, communication should aim to highlight the added value of organic farming, increase the transparency of organic production methods and reduce confusion between organic food and food from other agricultural production systems. Since the trust placed in organic food is closely linked to their origin, the linking of the organic symbol to a mark of origin could help to strengthen consumer confidence in organic food and to make such food more attractive. Hence German states such as Baden-Württemberg, Hesse and Mecklenburg-Western Pomerania in which the organic label is combined with a mark of origin are probably on the right track. Combining the organic label with a 'made in Germany' mark, along the same lines as the planned Swiss usage of the organic 'Bud' ('Knospe') symbol combined with a 'made in Switzerland' mark, represents a very promising method of increasing the credibility of organic products. The new EU seal, which is likely to be a compulsory mark on all organic food from the year 2010, has been designed to increase acceptance of organic food among consumers. In view of the fact that confidence in organic food produced outside the consumers' own country is declining, it is however questionable whether the EU organic seal will actually increase acceptance among consumers and be effective as a confidence-building measure. Here, too, it may be more appropriate to link the EU seal with regional labels rather than use the EU seal on its own. In addition to labelling, another desirable step is promotion of regional and innovative marketing strategies aimed at increasing transparency and traceability and hence also consumer confidence in and acceptance of organic production. In view of the major risk of confusing organic food with food from other agricultural production systems, communication measures should be targeted particularly at older consumers, as they more frequently confuse different products (Niessen, 2008). It is necessary to raise awareness of the inspection and quality assurance systems and of the associated labelling of organic products.

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5 PREFERENCES AND DETERMINANTS FOR ORGANIC, CONVENTIONAL AND CONVENTIONAL-PLUS PRODUCTS – THE CASE OF OCCASIONAL ORGANIC CONSUMERS

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5.1 Abstract

As a result of continuous growth in the organic market, organic food is increasingly available in conventional retail outlets, where organic products are placed alongside both conventional and so-called conventional-plus products. Conventional-plus products are food products with particular attributes which also apply to organic products, such as ‘no artificial additives or flavours’. This overlap provokes the question whether conventional-plus products might compete with organic products.

The aim of our study was to identify occasional organic consumers’ preferences and underlying determinants in relation to organic, conventional and conventional-plus milk, fruit yoghurt and apples in Germany and Switzerland. To achieve these objectives, we conducted purchase simulations combined with face-to-face interviews. The data was analysed using contingency tables and multinomial logit models.

In the purchase simulations, a large proportion of consumers who usually buy conventional products switched to conventional-plus products. This indicates that conventional-plus products compete with conventional rather than with organic products. Consumer attitudes towards the attributes ‘from pasture-raised cows’, ‘no preventive use of antibiotics’, ‘no use of genetically modified organisms’, ‘organic production’, ‘domestic production’ and ‘higher price for higher quality’ determined their preferences for organic, conventional and

conventional-plus products. Differences in attitudes between organic and conventional buyers were generally larger compared to those between conventional-plus and conventional buyers.

Key words: organic food, preferences, attitudes, buying behaviour, multinomial logit model

5.2 Introduction

Over the past few years, the European organic food market has experienced annual growth rates of more than 10 % (Willer, 2010; Padel et al., 2009; Padel et al., 2008). In 2008, Germany had the largest market turnover for organic food products at 5800 million EUR, followed by France at 3041 million EUR and the UK at 2065 million EUR (Schaack et al., 2011). The highest organic market shares of approximately five % were found in Denmark, Austria and Switzerland (Schaack et al., 2011).

Consumer demand for organic food has increased especially as a result of the food scandals at the beginning of the new millennium (Zanoli et al., 2004). The market growth has resulted into an increasing availability of organic food in conventional retail outlets (BÖLW, 2010), where occasional organic buyers constitute the majority of customers purchasing organic food. In our study, we defined occasional organic consumers as consumers who buy at least two organic products a month and not more than four organic products from different product groups more than twice a month.

In the conventional retail sector, however, organic products compete not only with conventional but also with so-called conventional-plus products. The latter are conventional food products that have specific additional attributes, such as ‘no use of genetically modified organisms’, or ‘no artificial additives’. These attributes refer to food production and processing and often apply to organic products. Occasional organic consumers in particular might prefer such cheaper conventional-plus alternatives ‘in-between’ organic and conventional products because this consumer group shows a potential interest in food production and processing while not being especially committed to either organic or to conventional food.

We investigated occasional organic consumers’ preferences and the determinants of these preferences in relation to organic, conventional and conventional-plus milk, fruit yoghurt and

apples. This was done by means of purchase simulations combined with face-to-face interviews. The interviews addressed consumers' attitudes towards food, their usual preferences with regard to milk, fruit yoghurt and apples, and their socio-demographic characteristics. The purchase simulations and interviews were conducted in Germany and Switzerland in the context of the European Commission funded research project 'Improving quality and reduction of costs in the European organic and low-input food supply chains (QLIF)'. The data was analysed using Multinomial Logit Models (MNLM).

Following this introduction, chapter 5.3 covers the theoretical framework of this research. Chapter 5.4 describes the empirical methods used as well as the design of the purchase simulation and analysis. In chapter 5.5, the results are presented, followed by a discussion of the results along with conclusions in chapter 5.6.

5.3 Theoretical framework

To explain consumer preferences observed in purchase simulations, we refer to Random Utility Theory (Lancaster, 1966). According to this theory, individuals are assumed to prefer the alternative with the highest perceived utility. Hence, a consumer n will choose alternative i from a set of J product alternatives only if this alternative has the highest perceived utility U_{ni}. The probability P_{ni} that a consumer will choose the product alternative i from a choice set J (in our research three alternatives: organic, conventional-plus and conventional) is:

$$P_{ni} = P\left(U_{ni}\right) > P\left(U_{nj}\right) \; for \;\; all \;\; j \neq i$$

Utility U_{ni} is furthermore split into two portions, a systematic portion V_{ni} and a stochastic portion ε_{ni}:

$$U_{ni} = V_{ni} + \varepsilon_{ni}.$$

While the latter portion summarises unobserved variation, V_{ni} represents the systematic and measurable portion of the utility function, which is generated by variables that can be observed by the researcher (Louviere et al., 2000).

To describe the variables that constitute the systematic portion V_{ni} of utility, we refer previous research on organic consumers, which has revealed that among the intervention variables,

consumer attitudes in particular determine preferences for organic food (e.g. Aertsens et al., 2009; Gracia and Magistris, 2008; Michaelidou and Hassan, 2008; Hughner et al., 2007; Onyango et al., 2007; Krystallis and Chryssohoidis, 2005; Padel and Foster, 2005; Shepherd et al., 2005; Zanoli et al., 2004; Saba and Messina, 2003; Harper and Makatouni, 2002; Hill and Lynchehaun, 2002; Zanoli and Naspetti, 2002; Loureiro et al., 2001; Gil et al., 2000). Of these, attitudes towards the healthiness of organic food are the most important attitudes in explaining organic preferences (Magistris and Gracia, 2008; Padel and Foster, 2005; Shepherd et al., 2005; Zanoli et al., 2004; Harper and Makatouni, 2002; Zanoli and Naspetti, 2002). Food naturalness (no artificial flavours, additives or colourings) and the domestic origin of food products are also relevant factors in determining organic food purchases (Stolz et al., 2009; Onyango et al., 2007). Similarly, 'no use of chemical fertilizers' and 'natural, healthy, no toxins' (Stolz et al., 2009; Hill and Lynchehaun, 2002) as well as 'no use of genetically modified organisms' (Stolz et al., 2009) are attributes used by consumers to distinguish organic from conventional products.

Additionally, previous research has shown that alongside attitudes, socio-demographic characteristics may also determine organic food choices. According to Michaelidou and Hassan (2008), higher income is significantly related to the intention to buy organic food. Furthermore, Gil et al. (2000) as well as Davies et al. (1995) have shown that gender, income level and presence of children may indicate a higher likelihood to purchase organic products. Similarly, Hill and Lynchehaun (2002) found that 'having children' is a key factor in deciding to buy organic milk, while Loureiro et al. (2001) showed that the presence of children under 18 years increased the probability of choosing organic products. According to Cicia et al. (2002), family size and level of education are significant factors among organic food consumers.

Finally, price is crucial in decision-making related to organic food. Many studies (Hughner et al., 2007; Oughton and Ritson, 2007; Padel and Foster, 2005; Zanoli et al., 2004; Zanoli and Naspetti, 2002; Hamm, 1999) have pointed out that the higher prices for organic products compared to conventional products are the most relevant factors for not buying organic food.

Against this background, we decided to focus on consumer attitudes towards pesticides, additives and aromas as well as genetically modified organisms. 'Domestic production', 'organic production' and 'higher prices for higher quality' were also considered. Additionally, we focussed on the attitudes towards 'from pasture-raised cows' due to its current relevance

for the food industry. Among socio-demographic variables, age, gender, educational level, household size, net household income and having children younger than 18 years of age were investigated.

5.4 Material and methods

5.4.1 Design of the purchase simulation

We conducted laboratory purchase simulations because there is less risk of interference compared to field studies (Aaker et al., 2006). This aspect was important for reasons of comparability because the simulations were conducted in different countries and locations. Furthermore, laboratory purchase simulations enabled us to test consumer preferences for different product alternatives without introducing any bias caused by organic or conventional brands. In the purchase simulations, consumers could choose between conventional, conventional-plus and organic milk, fruit yoghurt and apples. We chose these products to cover both animal and plant products as well as processed and unprocessed products in our research. In contrast to a large number of other studies, real physical product packages for milk and yoghurt and real apples were used, rather than product descriptions. The purpose of this was to simulate a realistic purchase situation.

The apples were offered in 1-kilogramme batches. We used the same apple variety ‘Gala’ for all three apple alternatives. The organic and conventional-plus apples were labelled as such on a card placed in front of the apples. In order to avoid any brand bias in the data, milk and yoghurt packages were created by a design company for the purpose of this study. The product dummies resembled existing products in terms of style and typical product information but did not contain food. The general packaging design of the three alternatives for milk and yoghurt was identical, except that the organic and the conventional-plus alternatives were labelled as such.

The organic alternatives displayed the ‘Knospe’ label of the Swiss organic farming association Bio Suisse in Switzerland and the official state organic logo ‘Bio-Siegel’ in Germany, which are the best-known organic labels in the respective countries. The conventional-plus alternatives carried labels with short messages: ‘from pasture-raised cows’ (milk), ‘free from artificial additives and flavours’ (yoghurt), and ‘reduced use of pesticides’

(apples). These quality attributes were chosen due to their current relevance in the food market.

The order in which the products were presented rotated randomly. A no-choice option was offered in addition to the three product alternatives. This option was offered because in a previous study by Dhar and Simonson (2003), evidence was found that under forced choice, participants tend to choose alternatives with average attribute levels. Moreover, to create a more realistic purchase situation, consumer choices were binding, i.e. the participants had to pay for the chosen products. In this regard, we followed the suggestion of Lusk and Schroeder (2004) who found that willingness to pay is often over-estimated in choice situations involving hypothetical payment.

The product alternatives were offered at different price levels, which were varied in four blocks. The organic and conventional prices were determined according to current prices in retail shops in the two study countries at the time of data collection. In each block, the conventional alternative was the cheapest of the three options. Its price was the same in all four blocks. The organic product was the most expensive alternative; its price varied across two different price levels, an average supermarket price (price A) and an average health food shop price (price B). In block 1 and 2, the organic alternative showed price level A and in block 3 and 4 price level B. The conventional-plus alternative was priced between the organic and conventional alternatives. Compared to the conventional price, the conventional-plus price premium accounted for either 50 % or 75 % of the price premium of the organic alternatives. In block 1 and 3, the prices for the conventional-plus alternatives were set at about 50 % of the price difference between the organic and the conventional alternative and in block 2 and 4 at about 75 %.

5.4.2 Data collection

The purchase simulations were conducted in October and November 2007. In Switzerland the consumers were recruited and surveyed in the German-speaking part of Switzerland. They were selected from population registers and approached by telephone. In Germany consumers were recruited and surveyed in central Germany and were approached in public places. Occasional organic consumers were identified using an organic food purchase index. The index measured the frequency with which respondents had purchased organic items in six

product groups during the past month. In addition, consumers were selected only if they normally purchased fresh milk, fruit yoghurt and apples (products tested in the simulation).

Furthermore, quota sampling was applied with regard to age and gender. The samples were divided into two age groups of 18-44 years and 45-75 years, each containing about 50 % of the participants; this corresponded with the age distribution of the total population in the respective countries. The proportion of women in the sample was higher; this conforms to the results of empirical studies in Germany, which indicate that women are predominantly responsible for food purchasing (Spiller et al., 2004; Müller and Hamm, 2001).

The consumers were surveyed individually. After arriving at the laboratory, they were briefed about the purpose and procedure of the purchase simulations. They were informed that they could choose one or none out of three product alternatives. They received an incentive of five EUR in Germany and ten Swiss francs in Switzerland. The incentive was sufficient to cover all three food choices even if the most expensive alternative was chosen in each case. The participants were informed that their product choices were binding, i.e. that they would have to pay for the chosen alternatives.

Having received this information, the consumers undertook the purchase simulation and a face-to-face interview. In the interview, the consumers' attitudes were elicited using statements measured on a 5-point scale. The interview also addressed questions regarding which kinds of products the consumers usually buy when it comes to milk, fruit yoghurt and apples.

5.4.3 Data analysis

In addition to a descriptive analysis, we created contingency tables of the preferences observed in the purchase simulation and 'stated normal preferences with respect to milk, yoghurt and apples' as well as 'prices levels'.

Furthermore, we constructed eight sum scales out of initially 43 items referring to consumer attitudes, which were measured on a five-point Likert scale attitude. We tested the reliability of each sum scale using Cronbach's Alpha (α) (Cronbach, 1951) and removed items to improve the reliability of the scales. The final solution consisted of 8 sum scales based on 31 items (cf. Table 19). Determinants of preferences for organic, conventional and conventional-plus milk, yoghurt and apples were identified by means of multinomial logit models (MNLM)

(Long and Freese, 2006). These econometric models are consistent with Random Utility Theory (cf. chapter 5.3). They are designed for a nominal outcome variable with more than two levels and independent variables that relate to consumer characteristics. MNLM simultaneously estimate binary logits (logarithm of odds that alternatives are chosen or not chosen) for all choice alternatives, while in each case, one of the alternatives (or levels of the dependent variable) is the base category (comparison group). In this research we defined the conventional alternative as the base category and estimated multinomial logit models for each product and country. Formally, the MNLM is written as:

$$P(y_n = i) = \frac{\exp(X_n \beta_i)}{1 + \sum_{j=1}^{J} \exp(X_n \beta_j)} ,$$

whereas X_n is a vector of all explanatory variables for consumer *n*. In addition, *i* and *j* represent choice alternatives from choice set *J* and β_j the parameters estimated by the MNLM.

5.5 Results

5.5.1 Composition of the sample

The total valid sample in this study was 293, consisting of 143 German and 150 Swiss consumers. As shown in Table 16, the average age of the participants was 45 in Switzerland (CH) and 43 years in Germany (DE).

The mean household size corresponded approximately to the mean household sizes in Switzerland (2.69 persons) (Bundesamt für Statistik, 2008) and Germany (1.43 persons) (Statistisches Bundesamt, 2008). In both countries the proportion of consumers with a college or university degree was above-average, as the present proportion of persons with a college or university degree is 21 % in Switzerland (Bundesamt für Statistik, 2008) and 13 % in Germany (Statistisches Bundesamt, 2008). However, this finding is in accordance with previous studies on organic food consumers (Michels et al., 2003; Hamm, 1999). In the Swiss sample, the majority of consumers had a net household income of more than 3000 EUR, which is similar to the income distribution in the Swiss population in 2007 (Bundesamt für Statistik, 2008). In the German sample, 75 % of the consumers had a net household income of

less than 1800 EUR. This is lower than the income distribution in the German population (Statistisches Bundesamt, 2003).

Table 16: Characteristics of the samples in Switzerland and Germany and other characteristics

Variable	Definition	Frequency in %		Mean	
		DE[1]	CH[2]	DE	CH
Age	in years	-	-	42.61	45.23
Gender	0= male	29	43	-	-
	1= female	71	57		
Household size	Persons per household	-	-	1.43	2.69
Children	0= no children	-	-	0.49	0.66
	1= children				
Children under 18 years	1= children under 18 years	25	37	0.48	0.37
	0= no children under 18 years	75	63		
Highest educational level attained	1 = no vocational education	2	8	-	-
	2 = vocational education	35	45		
	3 = college/university	60	45		
	4 = others	3	2		
Monthly net household income	1 = less than 600 €	19	5	-	-
	2 = 600-1199 €	33	3		
	3 = 1200-1799 €	23	11		
	4 = 1800-2399 €	9	10		
	5 = 2400-2999 €	7	14		
	6 = 3000-3599 €	7	15		
	7 = 3600-4199 €	1	18		
	8 = 4200 € and above	1	24		

[1]SIZE OF SAMPLE IN DE: N=143; [2]SIZE OF SAMPLE IN CH: N=150

5.5.2 Outcomes of the buying simulations

The organic alternatives were the most frequently chosen alternatives in both countries (cf. Table 17). Conventional-plus milk and yoghurts were ranked after the organic alternatives, while conventional apples were more frequently chosen than conventional-plus apples. Relatively few people chose the no-choice option.

Table 17: Shares of product alternatives chosen in the buying simulations in Switzerland and Germany

	Milk[1]		Fruit yoghurt[1]		Apples[1]	
Choice alternative	DE[2]	CH[3]	DE	CH	DE	CH
Conventional	16.8 %	17.3 %	12.6 %	12.0 %	20.3 %	22.0 %
Conventional-plus	23.8 %	26.7 %	30.8 %	26.7 %	15.4 %	20.7 %
Organic	59.4 %	56.0 %	56.6 %	61.3 %	64.3 %	57.3 %
Total	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %

[1]TWO NO CHOICES FOR MILK; FOUR NO CHOICES FOR YOGHURT: THREE NO CHOICES FOR APPLES. THESE CASES WERE DROPPED FROM THE ANALYSIS; [2]SIZE OF SAMPLE IN DE: N=143; [3]SIZE OF SAMPLE IN CH: N=150

Contingency tables of consumers' usual everyday preferences for milk, fruit yoghurt and apples and their observed preferences in the study showed that the share of conventional-plus milk and yoghurt choices in the purchase simulation can mainly be ascribed to consumers who usually buy the respective conventional product (cf. Table 18). Regarding milk, conventional buyers were distributed equally across the three choice alternatives. In relation to yoghurt and apples, conventional buyers preferred organic and conventional-plus products rather than conventional products. In contrast, consumers who usually buy organic milk, fruit yoghurt or apples, mainly chose the organic alternatives offered in the purchase simulations. About 16 % of the consumers switched from their usual preference for organic milk to conventional-plus milk. Obviously, the conventional-plus attribute 'from pasture-raised cows' meets the key expectations of those consumers.

The Pearson Chi^2 test was significant regarding all three products (Pearson Chi^2 milk = 82.80, P = 0.000; Pearson Chi^2 yoghurt =60.37, P = 0.000; Pearson Chi^2 apples = 96.22, P = 0.000). This result suggests that the choices observed in the buying simulation are not independent from the usual everyday preferences.

Table 18: Comparison of alternatives chosen and stated usual preferences

Choices observed in purchase simulations		Usual preferences: More conventional milk/fruit yoghurt/apples	More organic milk/fruit yoghurt/apples	Half organic, half conventional	Others	Total
Milk	Conv.	33.8 % (47)	1.5 % (2)	33.3 % (1)	0.0 % (0)	17.1 % (50)
	Conv.-plus	33.1 % (46)	16.4 % (22)	0.0 % (0)	31.3 % (5)	25.0 % (73)
	Organic	33.1 % (46)	82.1 % (110)	66.7 % (2)	68.7 % (11)	57.9 % (169)
Total		100.0 % (139)	100.0 % (134)	100.0 % (3)	100.0 % (16)	100.0 % (292)
Yoghurt	Conv.	18.5 % (33)	2.9 % (3)	0.0 % (0)	0.0 % (0)	12.3 % (36)
	Conv.-plus	37.7 % (67)	9.6 % (10)	50.0 % (1)	31.6 % (6)	28.7 % (84)
	Organic	43.8 % (68)	87.5 % (91)	50.0 % (1)	68.4 % (13)	59.0 % (173)
Total		100.0 % (168)	100.0 % (104)	100.0 % (2)	100.0 % (19)	100.0 % (293)
Apples	Conv.	40.3 % (52)	5.1 % (7)	0.0 % (0)	14.3 % (3)	21.2 % (62)
	Conv.-plus	29.5 % (38)	5.8 % (8)	20.0 % (1)	28.6 % (6)	18.1 % (53)
	Organic	30.2 % (39)	89.1 % (123)	80.0 % (4)	57.1 % (12)	60.7 % (178)
Total		100.0 % (129)	100.0 % (138)	100.0 % (5)	100.0 % (21)	100.0 % (293)

(…) = N; CONV= CONVENTIONAL; CONV-PLUS= CONVENTIONAL-PLUS

5.5.3 Attitude scales

The eight scales based on 31 attitude items are shown in Table 19. These are:

- Scale 1 ‘From pasture-raised cows’,
- Scale 2 ‘Free from artificial additives and flavours’,
- Scale 3 ‘Reduced use of pesticides’,
- Scale 4 ‘No use of genetically modified organisms’,
- Scale 5 ‘No preventive use of antibiotics’,
- Scale 6 ‘Organic production’,
- Scale 7 ‘Higher price for higher quality’ and
- Scale 8 ‘Domestic production’.

We tested the scales’ reliability using Cronbach’s alpha for each country separately. The Cronbach alpha values ranged between 0.698 for ‘no preventive use of antibiotics’ in Germany and 0.893 for ‘no use of genetically modified organisms’ in Switzerland.

Table 19: Attitude scales and corresponding items

Scale	Statement	Cronbach α
Scale 1: From pasture-raised cows	When buying milk, I care about how the cows are kept. When buying milk the criterion 'from pasture-raised cows' is very important to me. When buying yoghurt the criterion 'with milk from pasture-raised cows' is very important to me.	CH: 0.760 DE: 0.717
Scale 2: Free from artificial additives and flavours	When I try new products, I usually check the list of ingredients. I generally do not buy products containing preserving agents. I only buy yoghurt that I know has been produced without artificial additives. Artificial flavours and additives are harmful to human health. When buying yoghurt the criterion 'no use of artificial additives and flavours' is very important to me.	DE: 0.732 CH: 0.746
Scale 3: Reduced use of pesticides	Pesticide residues in fruit and vegetable are harmful to human health. When buying milk the criterion 'produced without chemical synthetical pesticides' is very important to me. When buying yoghurt the criterion 'produced without chemical synthetical pesticides' is very important to me. When buying apples the criterion 'produced without chemical synthetical pesticides' is very important to me.	DE: 0.816 CH: 0.805
Scale 4: No use of genetically modified organisms	Genetically modified food is a danger to human health. When buying milk the criterion 'no use of genetically modified organisms' is very important to me. When buying yoghurt the criterion 'no use of genetically modified organisms' is very important to me. When buying apples the criterion 'no use of genetically modified organisms' is very important to me.	DE: 0.854 CH: 0.893
Scale 5: No preventive use of antibiotics	When buying milk the criterion 'produced without the use of preventive antibiotics in the fodder' is very important to me. When buying yoghurt the criterion 'produced without the use of preventive antibiotics in the fodder' is very important to me.	DE: 0.698 CH:0.826
Scale 6: Organic production	I generally prefer buying organic food. When buying milk the criterion 'organically produced' is very important to me. When buying yoghurt the criterion 'organically produced' is very important to me. When buying apples the criterion 'organically produced' is very important to me.	DE: 0.810 CH: 0.838
Scale 7: Higher price for higher quality	I am willing to pay considerably higher prices for food which is of considerably higher quality. When buying milk, the criterion 'price' is very unimportant to me. When buying yoghurt, the criterion 'price' is very unimportant to me. When buying apples, the criterion 'price' is very unimportant to me.	DE: 0.788 CH: 0.806
Scale 8: Domestic production	I usually buy apples from my own country. I trust food more that has been produced my own country. When buying milk the criterion 'produced in my own country' is very important to me. When buying yoghurt the criterion 'produced in my own country' is very important to me. When buying apples the criterion 'produced in my own country' is very important to me.	DE: 0.842 CH: 0.814

5.5.4 Results of the multinomial logit models

The attitude scales, price blocks and socio-demographic variables (independent variables) and observed preferences (dependent variables) were analysed by means of multinomial logit models. Separate models were estimated for each product and country. In the models, the conventional alternative was defined as the base category. The estimated coefficients are presented in Table 20 (German models) and Table 21 (Swiss models).

Table 20: Multinomial logit models for milk, fruit yoghurt and apples in Germany with parameters of the explanatory variables (Base category: conventional alternative)

	Coefficients					
	Milk		Fruit yoghurt		Apples	
Scales	Conv.-plus	Org	Conv.-plus	Org	Conv.-plus	Org
From pasture-raised cows	1.94**	1.63**	0.55	0.48	0.11	-0.63
Free from artificial additives and flavours	0.69	0.80	-0.02	0.00	-0.24	0.25
Reduced use of pesticides	-0.56	-1.27	-0.05	-0.26	0.15	0.69
No use of genetically modified organisms	-1.56(*)	0.43	0.49	0.92	1.14(*)	1.08*
No preventive use of antibiotics	0.29	-1.07	-0.15	-0.21	-0.49	-0.59
Organic production	1.40	3.17***	0.06	2.13*	0.13	2.48***
Higher price for higher quality	1.01	0.94	0.78	1.10	1.40*	1.20*
Domestic production	-1.28(*)	-1.18(*)	-0.28	-0.28	-0.98*	-1.31*
High price blocks (2 and 4)	-1.11	-0.69	0.31	1.09	0.19	-0.23
Socio-demographic characteristics[1]						
Household size	-0.84(*)	-0.86*	-0.47	-0.21	-0.08	-0.23
Children younger than 18 years	-2.04	-0.14	1.03	0.71	-0.47	1.96*
Income class	0.78*	0.69(*)	0.77*	0.51	-0.07	-0.05
Constant	-1.71	-5.24	-5.35	-14.16***	-5.22(*)	-8.60**
N	141		139		142	
Pseudo R^2	0.44		0.28		0.35	
Final LL	-76.10		-95.48		-83.17	

[1]THE MODELS CONTAIN ONLY THOSE SOCIO-DEMOGRAPHIC VARIABLES WHICH WERE SIGNIFICANT IN RELATION TO ONE OR MORE PRODUCT ALTERNATIVES IN AT LEAST ONE COUNTRY; CONV.-PLUS = CONVENTIONAL-PLUS; ORG = ORGANIC; N=SAMPLE; $P \leq 0.001$ = ***; $P \leq 0.01$ = **; $P \leq 0.05$ = *; $P \leq 0.1$ = (*)

In the German purchase simulation, consumers who chose organic or conventional-plus or organic milk had significantly higher levels of agreement with the scale ‘from pasture-raised

cows' compared to those who chose conventional milk (cf. Table 20). Consumers who chose organic apples had significantly higher levels of agreement with 'no use of genetically modified organisms'. Furthermore, 'organic production' was significant or even highly significant regarding the choice of organic milk, yoghurt and apples.

Agreement with the scale 'higher price for higher quality' was significantly higher among consumers who chose conventional-plus or organic apples. In contrast, the level of agreement with 'domestic production' was significantly lower among conventional-plus and organic apples buyers.

Increasing household size reduced the probability of choosing conventional-plus milk by tendency and the choice of organic milk significantly. Having children aged less than 18 years increased the probability of choosing organic apples. Higher income classes increased the probability of choosing conventional-plus milk and yoghurt and by tendency organic milk.

In the Swiss purchase simulation, consumers who chose organic or conventional-plus milk had significantly higher levels of agreement with the scale 'from pasture-raised cows' compared to those who chose conventional milk (cf. Table 21).

Agreement with 'free from artificial additives and flavours' significantly increased the choice of organic yoghurt, while this attribute, surprisingly, was not significant in relation to conventional-plus yoghurt choices. Similarly attitudes towards 'reduced use of pesticides', were only significant in relation to organic apple choices and did not differ between conventional-plus and conventional choices regarding these two scales.

The sum scale 'no use of genetically modified organisms' was significantly higher among consumers who chose organic milk compared to those who chose conventional milk in the purchase simulations, while 'no preventive use of antibiotics' was – as expected due to its irrelevancy in relation to apples – of negative significance regarding organic apples.

The scale 'organic production' significantly determined Swiss consumers' preferences for organic fruit yoghurt and apples and to some extent, for organic milk. Similarly, 'higher prices for higher quality' was significantly higher among Swiss consumers who chose organic fruit yoghurt, conventional-plus apples or organic apples. Finally, in contrast to the German models, the scale 'domestic production' was not significant in the Swiss models. Similarly, the socio-demographic variables were not significant in the Swiss models. However, unlike in

the German models, higher price levels for conventional-plus and organic apples in the choice experiments significantly decreased the probability of choosing these alternatives.

Table 21: Multinomial logit models for milk, fruit yoghurt and apples in Switzerland with parameters of the explanatory variables (Base category: conventional alternative)

	Coefficients					
	Milk		Fruit yoghurt		Apples	
Scales	Conv.-plus	Org	Conv.-plus	Org	Conv.-plus	Org
From pasture-raised cows	1.86**	2.73***	0.62	0.29	0.38	-0.11
Free from artificial additives and flavours	0.24	-0.13	0.19	1.05*	0.41	0.03
Reduced use of pesticides	-0.17	-0.84	0.15	-1.00	0.46	1.61*
No use of genetically modified organisms	0.40	1.05*	-0.62	-0.31	0.21	0.48
No preventive use of antibiotics	0.22	-0.08	0.43	0.59	-1.13(*)	-1.78**
Organic production	-0.19	1.55(*)	-0.17	1.61*	0.21	2.51***
Higher price for higher quality	0.75	0.72	0.55	1.04*	1.46**	1.33*
Domestic production	0.47	0.43	0.32	0.30	-0.10	-0.45
High price blocks (2 and 4)	0.60	1.48(*)	0.00	-0.25	-1.50*	-1.69*
Socio-demographic characteristics[1]						
Household size	0.02	-0.20	-0.28	-0.36	0.24	0.00
Children younger than 18 years	0.07	0.14	-0.63	-0.70	-1.18	-1.01
Income class	0.28	0.37	0.23	0.15	0.13	0.09
Constant	-12.69**	17.96***	-4.15	-8.53*	-5.86(*)	-9.17**
N	143		143		142	
Pseudo R^2	0.40		0.27		0.34	
Final LL	-84.45		-94.75		-91.25	

[1]THE MODELS CONTAIN ONLY THOSE SOCIO-DEMOGRAPHIC VARIABLES WHICH WERE SIGNIFICANT IN RELATION TO ONE OR MORE PRODUCT ALTERNATIVES IN AT LEAST ONE COUNTRY; CONV.-PLUS = CONVENTIONAL-PLUS; ORG = ORGANIC; N=SAMPLE P ≤ 0.001 = ***; P ≤ 0.01 = **; P ≤ 0.05 = *; P ≤ 0.1 = (*)

All the models showed a McFadden's R^2 value of more than 0.2. In terms of goodness-of-fit the values obtained are satisfactory for multinomial logit models. The Hausman test of the IIA assumption (independence of irrelevant alternatives), which is mandatory when using multinomial logit models (Long and Freese, 2006) showed that the IIA assumption was met in all the models except for the case of apples in Germany. In this model, the organic alternative was not independent from the other alternatives, which was probably due to the low number of cases in the category 'conventional-plus', while the assumption was fulfilled when estimating a MNLM for apples across the two countries.

5.6 Discussion and conclusions

In both countries, consumers most frequently chose the organic milk, fruit yoghurt and apple alternatives. This result is not surprising given that the target group of the study were occasional organic consumers. These consumers were generally open to buying organic food and therefore tended to prefer the organic rather than the conventional-plus or conventional alternatives in the purchase simulations. In addition, organic milk, yoghurt and apples are commonly available in the conventional retail outlets and have above-average organic market shares compared to other products in both countries (Bio Suisse, 2008; Schaack et al., 2008).

The conventional-plus alternatives were mainly chosen by consumers who normally purchase the respective conventional product. Only few consumers who normally buy organic switched to the conventional-plus alternative in the purchase simulation. We conclude that as far as occasional organic consumers are concerned, the conventional-plus products are not likely to compete with organic products, but rather with conventional products.

The multinomial logit models showed that the consumers' attitudes influence their preference for conventional, conventional-plus and organic food. The importance of attitudes in determining preferences confirms the results from previous studies on organic food consumption (cf. chapter 5.3). In particular, the consumers' attitudes towards attributes 'from pasture-raised cows', 'no preventive use of antibiotics', organic production', 'domestic production' and 'higher price for higher quality' determined their preferences for organic or conventional-plus products.

Overall, it was found that the relevance of attitudes as determinants for preferences varied between the products. It is likely that the relevance of certain attitudes in determining preferences depends on the beliefs a consumer has in the respective product e.g. that organic yoghurt was chosen if a consumer believed that organic yoghurt was free from artificial additives and flavours and thus being healthier than yoghurt with artificial additives and flavours. This corresponds with findings from previous research on health claims on food products. Aschemann-Witzel (2009) showed that food products with health claims were more preferred by consumers and that consumers who assumed that products with claims were relatively healthier had a higher likelihood of choosing these products. In addition, consumers' beliefs in the claims significantly determined their choice.

Furthermore, there is indication that consumers are focussed selectively on individual criteria when choosing certain organic product. This finding corresponds with previous research on Swiss and German organic consumers' perceptions by Stolz et al. (2009) and on German consumer perceptions (Baranek, 2007), who found that organic consumer perception is selective and focussed on individual criteria of organic production. Often these individual criteria refer to the final stage of the production process (Stolz et al., 2009). Similarly, we conclude that consumer attitudes towards the criterion 'from pasture-raised cows' was significant in relation with organic milk choice, however, not in relation with organic yoghurt choice, given that yoghurt is more processed than milk.

By trend, attitudinal differences were stronger between organic versus conventional choices rather than between conventional-plus and conventional choices. The significance of attitudes towards 'higher price for higher quality' in the models estimated for yoghurt and apples indicate that organically-oriented consumers are less price-sensitive. This matches the findings of Mondelaers et al. (2008) and Enneking (2002) who showed that consumers with strong preferences for organic food are not affected by higher prices, while non-users of organic food display a very price-sensitive reaction. Consequently, the price levels for the product alternatives in the purchase simulations did not significantly influence consumers' preferences, except for choices of conventional-plus apples in Switzerland. This probably holds true as long as the price levels do not exceed acceptable and commonly market prices such as those used in the purchase simulations.

In the past, the organic sector has attempted to justify higher prices for organic compared to conventional food, resulting in organic food acquiring a negative price image among consumers. Since consumers often have only a vague idea about the differences between organic and conventional products (Hoogland et al., 2007; Stolz, 2005) marketing strategies should focus on communicating the specific benefits of organic products. However, simply reducing price levels for organic products is not a promising solution, because the production costs are higher for organic food. Low prices for organic food could even be seen as an indication of low quality (Cicia et al., 2002). Instead, increasing the perceived price-performance ratio of organic food by means of targeted communication is a more promising marketing strategy. In addition, even in blocks where the conventional-plus price was closer to the organic than to the conventional price, the conventional-plus alternatives managed to achieve considerable shares. The consumers who bought them were obviously attracted by the

specific quality criteria of the conventional-plus products. We therefore posit that communicating the specific attributes of organic products may be a promising marketing strategy for organic products. In this connection, the success of such communication depends on choice of claims to be communicated in relation with specific product (groups).

A high level of agreement with ‘domestic production’ reduced the probability of choosing organic milk and apples in Germany, while the scale was not significant in the Swiss models. As ‘domestic production’ is important to Swiss consumers in general (e.g. Casanova, 2007) the attribute probably did not determine organic preferences in this country.

The preferences observed in the German purchase simulation were determined by selected socio-demographic characteristics, such as household size, having children under 18 years old and income class. In contrast, no significance of socio-demographic variables was found in the Swiss models. Obviously the socio-demographic impacts on consumer preferences were smaller in Switzerland.

In this research, we focussed only on selected attitudes, socio-demographic characteristics and products. Nevertheless, this study can be distinguished from most other approaches in that it did not use written product descriptions. Instead, product dummies were created by a design company in order to test preferences for real physical products. Furthermore, real payment was included to reduce the ‘stated-to-revealed choice’ bias (Lusk and Schroeder, 2004) and thus to improve the external validity of the results. Furthermore, it is remarkable that only a small number of consumers chose the no-choice option offered.

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6 CONSUMER ATTITUDES TOWARDS ORGANIC VERSUS CONVENTIONAL FOOD WITH SPECIFIC QUALITY ATTRIBUTES

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6.1 Abstract

This paper describes the findings from a consumer survey conducted as part of the EU-funded research project QualityLowInputFood (QLIF). The objective was to segment occasional organic consumers with regard to their preferences for organic, conventional and conventional-plus products. Conventional-plus products are conventional products with a specific attribute that also applies to organic products. Thus, these conventional-plus products are placed between organic and conventional food products. In addition, we aimed at analysing differences between consumer segments regarding their price sensitivity and attitudes towards food. The survey used choice experiments to investigate occasional organic consumers' preferences towards the different types of products. In subsequent standardised face-to-face interviews, we collected data on consumers' attitudes towards food that might explain the observed preferences. The attitudes were summarised in attitude factors by means of factor analysis. The responses from the interviews and choice experiments were analysed by latent class models. These econometric models are used to identify segments within a group of individuals among their preference structure and to relate membership in each segment to consumer characteristics. Two segments of occasional organic consumers were identified. Consumers in segment 1 strongly preferred organic products and were less price sensitive. Furthermore, consumers in segment 1 showed a significantly higher level of agreement with most of the investigated attitude factors compared to segment 2. The latter

consisted of consumers who were significantly more price sensitive and preferred conventional-plus and conventional products rather than organic products.

Communicating quality attributes represents a promising marketing tool of product differentiation and information for both organic and conventional food marketers. The price sensitivity of parts of occasional organic consumer suggests that the perceived price-performance ratio of organic products needs to be increased by means of targeted pricing and communication strategies integrating product-relevant information. Otherwise, conventional-plus products, representing a cheaper alternative, might be preferred by parts of occasional organic consumers.

Key words: choice experiment, preference heterogeneity, latent class model, organic food

6.2 Introduction

Although the organic food market has grown continuously over the past decade, the total share of organic food[1] is still small compared to the total food markets. The highest market shares with about five percent are reached in Denmark, Austria and Switzerland (Willer, 2010). Previous research has identified several factors that prevent consumers from buying (more) organic food. Apart from a lack of availability of organic products, a lack of trust in and awareness of organic food, the price premiums of organic compared to conventional products are considered as a major barrier to the development of the organic food market (Outghton and Ritson, 2007; Padel and Foster, 2005; Hamm and Gronefeld, 2004; Zanoli et al., 2004). Furthermore, several studies (Magistris and Gracia, 2008; Michaelidou and Hassan, 2008; Botonaki et al., 2006; Krystallis and Chryssohoidis, 2005; Hamm and Gronefeld, 2004; Zanoli et al., 2004; Saba and Messina, 2003; Loureiro et al., 2001; Gil et al., 2000) revealed that consumer attitudes toward organic food significantly influence consumer choices. The most important attitudinal choice factors include health concerns, environmental concerns, taste preferences and preferred origin of food. Thus, purchasing organic food is assumed to depend on whether a consumer perceives utility related to organic products that might compensate the commonly existing price premiums.

[1] Organic food is food produced and certified according to organic principles, e.g. defined by EU Regulation 834/2007 [1].

However, recently, conventional-plus food products are increasingly available on the food market. These are conventional food[2] products which communicate a specific attribute that also applies for corresponding organic products. Examples of attributes communicated on conventional-plus products are 'free from artificial additives', or 'free-range'. Thus, conventional-plus products may be considered as products placed between organic and conventional products.

Given this overlap with respect to specific attributes, conventional-plus products might compete with organic products. Particularly consumers who occasionally buy organic food might be interested in conventional-plus products. In this paper, occasional organic consumers are defined as consumers who buy at least two organic products a month and not more than four organic products from different product groups more than twice a month[3]. This is expected because occasional organic consumers display a certain awareness of food quality while being less focussed on organic food compared to regular organic consumers.

Against this background, the objective of our survey was to identify segments among occasional organic consumers with respect to their preference for organic, conventional-plus and conventional products in Germany and Switzerland. Furthermore, we aimed at analysing the impact of different price levels and consumer attitudes on consumers' observed preferences. We focussed on three products: milk, yoghurt and apples. The empirical research consisted of choice experiments combined with standardised face-to-face interviews. The latter addressed consumer attitudes that might explain consumers' preferences. The responses from the interviews and choice experiments were analysed using latent class models (Wedel and Kamakura, 2000). These econometric models are used to identify segments within a group of individuals among their preference structure and to relate membership in each segment to consumer characteristics (Ben-Akiva and Lerman, 1985; McFadden, 1974).

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[2] In this paper, the term conventional food refers to food that is not certified organic food.

[3] We measured the intensity of organic food consumption by means of an index with a scale from 0 to 14 points. The participants were asked for their organic consumption intensity in seven different product groups with the standardised answer categories 'almost never' (0), 'sometimes' (1) and 'almost always' (2). The numbers in brackets show the points assigned to the categories. For each participant, the points reached in the seven product categories were added up. Consumers with an index of 2 to 9 points were classified as occasional organic consumers. Consumers with a higher index were classified as frequent buyers of organic food and therefore not included in this research.

The following chapters of this paper include a description of the theoretical framework for consumers' preferences, the material and methods used in this research, and present the results, discussion, and conclusions.

6.3 Theoretical framework

The choice experiment approach is consistent with Lancaster's theory of consumer choice (Lancaster, 1966). This theory postulates that consumption decisions are determined by the utility that is derived from the attributes of a good, rather than from the good per se. The econometric basis of the approach rests on the behavioural framework of Random Utility Theory, which describes discrete choices in a utility maximising framework (Ben-Akiva and Lerman, 1985; McFadden, 1974). Statistical analyses of the responses obtained from Choice Experiments can be used to estimate the marginal values for attributes of a good. In this study, the analysis employs the latent class model (Wedel and Kamakura, 2000) to estimate individual preferences for organic, conventional-plus and conventional food and also to investigate the presence of consumer segments with distinct preferences.

The premise of the latent class model (LCM) is that the population consists of a number of unobserved (or latent) groups of individuals (segments), each characterised by relatively homogenous preferences. However, these segments are assumed to differ substantially in their preference structures. The main objective in the estimation of the LCM model is to identify the existence and the number of segments, estimate the preference structure within each segment, and to relate membership in each segment to consumer characteristics. Latent class models have long been applied in market research (Gupta and Chintagunta, 1994; Swait, 1994; Kamakura and Russel, 1989).

We briefly outline the specification of the LCM as applied in this research. It is assumed that an individual n faces a choice of selecting a preferred alternative amongst a set of J=3 alternatives (plus no choice option). In this study the three alternatives were organic, conventional-plus and conventional alternatives of a specific product (milk, yoghurt or apples). The attributes of alternative i faced by respondent n are collectively labelled as vector x_{in} (in this research the alternatives were varied in terms of one attribute i.e. price).

Supposing that individual n belongs to segment s, then the individual's utility function associated with the preferred alternative i is:

$$U(in|s) = \beta'_s x_{in} + \varepsilon_{in|s} \quad (1)$$

where β_s represents segment specific preference parameters to be estimated and $\varepsilon_{in|s}$ is a random term that is assumed to be independent and identically distributed according to an extreme value distribution. The probability that individual *n* chooses alternative *i*, conditional on belonging to a given segment *s* is (Lancaster, 1966):

$$P(i_n|\beta_s) = \frac{\exp(\beta'_s X_{in})}{\sum_j^J \exp(\beta'_s X_{jn})}. \quad (2)$$

The log-likelihood for the LCM with S latent segments is given by:

$$LL = \sum_n^N \ln[\sum_{s=1}^S P(s)P(i_n \mid \beta_s)], \quad (3)$$

where *P(s)* is the probability that individual *n* belongs to segment *s* and β_s is a vector of segment-specific coefficients to be estimated. Following Hensher and Greene (2003), *P(s)* is specified to have the standard multinomial logit form:

$$P(s) = \frac{\exp(\lambda_s z_n)}{\sum_{s=1}^S \exp(\lambda_s z_n)}, \quad (4)$$

where z_n is a set of observed individual characteristics (in this research attitudinal factors), which are included in order to explain segment membership and λ_s is a vector of segment-specific parameters to be estimated, that denote the contribution of the various attitudinal factors to the probability of segment membership. In our empirical application, the aim was to identify segments within the target group of occasional organic consumers that differ from each other with respect to attitude factors (case-specific variables) and behaviour towards higher prices (alternative-specific variable).

6.4 Materials and methods

6.4.1 Design

The choice experiments were carried out in laboratories in order to ensure a lower risk of interference and a higher internal validity compared to field experiments which observe real-life situations, e.g. a food purchase in a shop (Aaker et al., 2006). Furthermore, we conducted

laboratory choice experiments because the conventional-plus products did not exist on the market at that time.

The products tested in the experiments were organic, conventional-plus and conventional milk, yoghurt and apples. Unlike a large number of studies on food choice, we used product dummies of real physical product packages for milk and yoghurt that were designed by a company, as well as real apples (variety Gala in 1 kg batches). The packages for milk and yoghurt resembled existing products but did not contain any food.

In order to avoid any bias, the product dummies did not carry a brand name. The general package design across all three product alternatives of milk and yoghurt was the same, except that the organic and the conventional-plus alternatives were each labelled: the Swiss organic alternatives were labelled with the 'Bud' ('Knospe') label of the Swiss organic farming association Bio Suisse and the German organic alternatives with the 'Bio-Siegel' (the governmental organic logo). The conventional-plus milk and yoghurt were labelled with quality attributes communicated on the packages. Regarding conventional-plus apples, the attribute was displayed on a card placed in front of apples. The conventional-plus attribute for milk was 'from pasture-raised cows' (cows that are kept on pastures during the whole year), for yoghurt 'free from artificial additives and flavours' and for apples 'reduced use of pesticides'.

To test the effects of different price levels on occasional consumers' preferences for the different types of products, the price levels were varied in four blocks. The organic and conventional prices levels were determined according to current market prices in the two study countries. We chose one price level for the conventional alternatives, which was invariant in all four blocks. We chose two price levels for the organic alternatives, one average supermarket price level (A) and one average health food shop price level (B). Both organic price levels were higher than the conventional price level. In block 1 and 2, the organic alternative showed price level A and in block 3 and 4 price level B. The conventional-plus alternatives were priced between the conventional and organic price levels. In block 1 and 3, the prices for the conventional-plus alternatives were set at about 50 % of the price difference between the organic and the conventional alternative and in block 2 and 4 at about 75 %.

Following the suggestions of Lusk and Schroeder (2004) who found that willingness to pay is frequently overestimated in choice experiments that involve hypothetical payment, product choice in this study involved real payment. The consumers received five EUR in Germany or ten Swiss Francs in Switzerland. This incentive was sufficient to cover all three food choices even if the most expensive alternatives were chosen. Besides this, the consumers were interviewed using a standardised questionnaire aimed at identifying potential determinants of the previously observed choice behaviour. Taking into account the relevance of consumer attitudes on food choice, the questionnaire contained 18 statements presented in Table 22. The statements were selected with respect to the products investigated. As both unprocessed and processed products were tested, we included statements, which are related to specific characteristics of production and processing that differ between organic and conventional farming systems. As animal products (milk and yoghurt) were subject of investigation, statements related to animal husbandry and feeding regimes were selected. Apart from that, statements referred to the most relevant buying motive (health aspect) and barrier (price premiums) for organic products. Additionally, we included statements referring to the geographical origin of the products and statements describing the level of involvement with regard to food quality and nutrition. Consumers' attitudes towards these statements were measured on a 5-point scale. Furthermore, we explored the consumers' real-life purchase preferences for milk, yoghurt and apples (organic, conventional or 'others').

6.4.2 Data collection

Occasional organic consumers – here defined as consumers who buy at least two organic products a month and not more than four organic products from different product groups more than twice a month – were identified using a screening questionnaire that measured the purchase frequency of organic products in six product groups. Furthermore, target quotas for a representative age and gender distribution within the sample were applied. As previous studies in Germany indicate that up to 70 % of the food purchases are done by women (Müller and Hamm, 2001), the target quota for women in this sample was 70 %. In Switzerland, the participants were selected from population registers and approached by telephone in the German-speaking part of Switzerland. In Germany, consumers were approached in public places in central Germany.

After having welcomed, informed and handed out the incentive, consumers were asked to purchase a conventional, a conventional-plus or an organic alternative for every product. Since Dhar and Simonson (2003) found evidence that, when forced to choose, participants tend to choose alternatives with average attribute levels, a no-choice option was also offered. Consumers' buying decisions were noted down. After the choice experiments, consumers completed the standardised questionnaire.

6.5 Results

6.5.1 Sample

The total valid number of cases in this study was 293, consisting of 150 Swiss and 143 German consumers. The average age of the consumers was 45 years in Switzerland and 43 years in Germany which corresponded to the respective national averages. With an average of 2.69 persons per household, the Swiss sample approximately corresponded to the mean household size in Switzerland (2.24 persons) (Bundesamt für Statistik, 2008). In the German sample, the average household size of 1.43 persons was lower than the average German household size of 2.08 persons (Statistisches Bundesamt, 2008). The proportion of participants with a college or university degree in the sample was above average. This corresponds with previous studies showing above-average education of organic consumers (Michels et al., 2003).

6.5.2 Consumer attitudes relating to food quality

In all, 18 statements related to consumer attitudes with regard to food quality and production were assessed in the face-to-face interviews. To reduce the number of variables, we conducted a factor analysis (Field, 2005).

The factor analysis involved principle component analysis and VARIMAX rotation. Only factors with an Eigenvalue greater than one were extracted. The Kaiser-Meyer-Olkin criterion value was 0.703, indicating a medium sampling adequacy. For interpreting the factors, only statements with factor loadings greater than 0.5 (absolute value) were used. We identified five factors: 'concerns about food ingredient', 'willingness to pay higher prices for higher food quality and organic food', 'health concerns in relation to food production', 'low involvement

with food quality and nutrition', and 'preference for domestic food'. These factors were calculated from 14 out of the 18 statements (cf. Table 22). One statement was not considered in the factor analysis due to difficulties in understanding across the sample. Three statements with factor loadings lower than 0.5 were furthermore excluded for the final solution.

Table 22: Attitudinal factors related to food production and quality

Factor	Statement	Factor loading	Eigen-value	Total variance explained (%)
FA 1: Concerns about food ingredients	I only buy yoghurt produced without artificial additives.	0.744	3.054	19.1
	I generally do not buy products that include preservatives.	0.738		
	When I try new products, I do not usually check the list of ingredients.	-0.551		
FA 2: Willingness to pay higher prices for food quality and organic food	I think that organic products are too expensive.	-0.751	1.628	10.2
	I am willing to pay considerably higher prices for food which has considerably higher quality standards.	0.720		
	I prefer to buy organic food.	0.706		
FA 3: Health concerns in relation to food production	Pesticide residues in fruit and vegetables are harmful to human health.	0.735	1.471	9.2
	Genetically modified food is a danger to human health.	0.614		
	Artificial flavours and additives in food are harmful to human health.	0.594		
	Milk from cows kept at pasture in the summer is as healthy as milk from cows kept indoors throughout the year.	-0.565		
FA 4: Low involvement with food quality and nutrition	The taste of meals is more important than the ingredients.	0.793	1.289	8.1
	I am bored by discussions about nutrition and health.	0.704		
FA 5: Preference for food from Switzerland/Germany[1]	I usually buy apples from Switzerland/Germany.	0.769	1.091	6.8
	I trust food more if it was produced in Switzerland/Germany.	0.746		

[1] IN THE QUESTIONNAIRE, ONLY THE RELEVANT COUNTRY WAS MENTIONED

6.5.3 Observed buying behaviour

Comparing consumers' preferences for organic, conventional-plus and conventional products in both countries, we found slight but not significant differences between the countries (Pearson's chi-square tests for milk: Chi^2=0.590, p=0.459; yoghurt: Chi^2=4.746, p=0.191;

apples: Chi^2=2.434, p=0.487). By contrast, the shares of the alternatives chosen by the participants varied significantly between the products (for milk versus yoghurt: Chi^2=72.905, p=0.000; for milk versus apples: Chi^2=26.915, p=0.001; for yoghurt versus apples: Chi^2=19.655, p=0.020). In both countries, more than 50 % of the participants chose the organic alternatives. It is noteworthy that in both countries the shares of consumers who chose the conventional-plus milk and yoghurt alternatives were higher than of those who chose the conventional alternatives.

A comparison of the observed buying behaviour and the consumers' usual preferences in everyday life showed that the relatively high shares of choices of the conventional-plus milk and yoghurt alternatives in the choice experiment can mainly be ascribed to consumers who usually buy conventional milk or yoghurt.

6.5.4 Preference heterogeneity and prices effects

Table 23 shows the results of the latent class models (LCM) estimated separately for milk, yoghurt and apples of the pooled sample across the two countries. In this research, preference for conventional products was defined as the base category and normalisation during estimation was done with respect to the parameters of the second segment (fixed parameters).

Table 23: Results of latent class models of milk, yoghurt and apples with parameters of explanatory variables and constants

	Milk n=293		Yoghurt n=293		Apples n=293	
	Segment 1	Segment 2	Segment 1	Segment 2	Segment 1	Segment 2
PRICE[1]	-2.007	4.880***	1.354	6.429***	-1.419	1.796***
CONP[2]	-48.910	-0.349	0.247	0.094	7.378	-1.760***
ORG[3]	6.461**	-30.149	4.461**	-2.611***	10.065*	-30.280
FA1	0.232	f.p.[4]	0.737***	f.p.	0.347*	f.p.
FA2	0.990***	f.p.	1.185***	f.p.	1.408***	f.p.
FA3	0.469***	f.p.	0.302*	f.p.	0.759***	f.p.
FA4[5]	-0.137	f.p.	-0.574***	f.p.	-0.254	f.p.
McFadden's R^2	0.344		0.388		0.418	

[1]PRICE = PARAMETER ESTIMATED FOR PRICE LEVEL; [2]CONP= CONSTANT OF CONVENTIONAL-PLUS ALTERNATIVE; [3]ORG = CONSTANT OF ORGANIC ALTERNATIVE; [4] F.P. = FIXED PARAMETER; [5]FA5 WAS NOT SIGNIFICANT IN ALL THREE MODELS AND SEGMENTS AND IS THEREFORE NOT INCLUDED IN THIS TABLE; * = P< 0.05, ** = P < 0.01, *** = P< 0.001

An important issue in the empirical application of these models is the number of segments to be used in the analysis. Using the Bayesian information criterion (BIC), we found that the LCM with two classes (consumer segments) was the optimal specification.

In all three models, the values of the McFadden's R^2 were above 0.3 and even above 0.4 in the case of apples. These values indicate a good model fit. In general, we found that in each of the three product models, consumers in segment 1 significantly preferred the organic alternative (ORG). Unsurprisingly, these consumers of segment 1 were likely to be more concerned about the ingredients in food (FA1) compared to segment 2. In addition, they were more willing to pay for quality food (FA2) and more motivated by health concerns (FA3) in their food choices. These factors were significant or even highly significant in segment 1 in the three models.

The most relevant factor to characterise segment 1 was FA2 (Willingness to pay higher prices for higher food quality) as this factor was highly significant across all three products. When comparing the significance levels of FA1 (Concerns about food ingredients) in segment 1 between the products, we found substantial differences between the products. Regarding the processed product yoghurt, FA1 was highly significant in segment 1, while this factor was significant regarding apples and even not significant regarding milk. In contrast, FA3 (Health concerns in relation to food production) was highly significant with regard to milk and apples, and significant with regard to the processed product yoghurt. In addition, the latent class models showed that the price levels of the alternatives (PRICE) did not significantly influence consumer preferences in segment 1. In other words, the price level was not a significant predictor for preference in segment 1 (preferences for organic products).

Consumers in segment 2, in contrast, were highly price sensitive as indicated by the significance of PRICE. These consumers were not likely to choose organic yoghurt as ORG was negatively significant in this model. Compared to segment 1, segment 2 was more heterogeneous and consisted of consumers who either preferred conventional-plus or conventional products. However, regarding apples, consumers in segment 2 predominantly preferred conventional products as ORG was not significant and CONP even highly significant and negative. Although occasionally buying organic products in real-life, consumers in segment 2 were not likely to choose organic yoghurt and apples in the choice experiment.

6.6 Discussion

Occasional organic consumers' preferences for the conventional-plus alternatives were relatively high in the Choice Experiments and even above the shares of the conventional alternatives for milk and yoghurt. It is striking that the conventional-plus products were mainly chosen by consumers who usually prefer the respective products in conventional quality. Two conclusions may be drawn from this: first, communicating specific food quality attributes attracts occasional organic consumers; and second, conventional-plus milk, yoghurt and apples compete with conventional rather than with organic products.

The latent class models showed that occasional organic consumers are heterogeneous in their preferences: some are less price sensitive and prefer organic products. Others are more price sensitive and rather prefer conventional-plus or conventional products. This result agrees with the findings of Mondelaers et al. (2008) and Enneking (2002) who found that organic consumers are much less price sensitive compared to non-buyers.

For parts of occasional organic consumers, the perceived price-performance ratio of conventional-plus products was obviously better than of organic products. Nevertheless, if products other than milk, yoghurt and apples were investigated, consumers of segment 1 might belong to segment 2 and vice versa, as occasional organic consumers are flexible and diverse regarding their preferences. Organic marketing should take into account the price sensitivity of parts of occasional organic consumers and increase the perceived price-performance ratio of organic products by means of suitable communication and pricing strategies.

Communicating quality attributes represents a promising marketing strategy for both organic and conventional food marketers. For conventional marketers, conventional-plus attributes may serve as a tool for conventional product differentiation. For organic marketers, highlighting single attributes in product-specific communication strategies may serve as information tool. Product-specific information about organic food is necessary because attributes that distinguish organic from conventional products mainly refer to food production or processing. These so-called credence attributes are not directly visible to consumers, resulting into an only vague idea of what is meant with 'organic' on the product-level (Stolz, 2005).

The strong relevance of consumers' attitudes in explaining preferences confirms the results of previous studies (Magistris and Gracia, 2008; Michaelidou and Hassan, 2008; Botonaki et al., 2006; Krystallis and Chryssohoidis, 2005; Hamm and Gronefeld, 2004; Zanoli et al., 2004; Saba and Messina, 2003; Loureiro et al., 2001; Gil et al., 2000). As consumers form their attitudes towards objects over long-term periods (Solomon, 2007), short-term advertisements might not be sufficient to increase demand for organic food. Instead, more extensive and constant education and information based programmes and communication strategies might be successful in building up positive attitudes among consumers towards organic food. Given that the relevance of consumer attitudes varies between products, communication strategies should integrate product relevant information to improve the perceived utility of organic products.

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7 SYNTHESIS

The following chapter includes a synthesis of the results of the thesis (chapter 7.1), as well as a reflection on the theoretical framework (chapter 7.2), of the data collection, and of the data analysis methods (chapter 7.3).

7.1 Synthesis of the results

The synthesis of results is structured according to the four objectives along with their associated research questions.

7.1.1 Results related to objective 1 and associated research questions

Objective 1 of this thesis was to explore occasional organic consumers' perceptions and attitudes of various quality criteria for organic products by means of qualitative data collection. Research question 1.1 asked 'which product- and country-specific quality criteria are important when evaluating food?' The qualitative research showed that product-specific quality criteria mentioned by consumers referred to:

- Ingredients,
- Additives,
- Sensory properties,
- Aspects of production and processing,
- Geographical origin,
- Product presentation and packing, and
- Price and price-performance ratio.

These product-specific quality criteria were mentioned by consumers in both study countries: Germany and Switzerland. However, the relevance of single aspects in relation to most of these quality criteria and the range of single aspects mentioned in relation to specific quality criteria varied between the countries. For example, the relevance of ingredients summarised by country and product showed that consumers in Germany referred to a larger range of food ingredients than did consumers in Switzerland (cf. chapter 4). In addition, some of the food

ingredients, such as artificial colours or flavourings, were more relevant in Switzerland than in Germany, while the overall relevance of the criterion ‘additives’ was larger in Germany.

Research question 1.2 addressed the question of ‘how consumers assess organic production?’ The data showed that, depending on single criteria, organic production was both positively as well as negatively assessed by consumers. Positive assessments of organic production referred to:

- Better taste,
- Healthier,
- No artificial additives,
- No chemical-synthetic pesticides,
- Higher-quality feed in comparison to feed used in conventional production,
- More limited use of drugs, especially antibiotics (only mentioned in Germany),
- Exclusion of genetic engineering (only mentioned in Germany),
- From animal welfare husbandry,
- No mass production, and
- More environmental-friendly.

In contrast, negative assessments of organic production referred to:

- Worse taste,
- Worse consistency,
- Shorter shelf-life,
- Limited availability of fat-reduced products (only mentioned in Germany),
- Significantly higher prices,
- Limited credibility and traceability,
- The criterion ‘organically produced’ not linked to low food miles and seasonal availability,
- Confusion with conventional products,
- Lack of awareness of additional benefits, and
- Doubts about the inspection system (only in Switzerland).

In relation to assessments of organic production, only few differences were found between the study countries: the aspects ‘more limited use of drugs, especially antibiotics’, ‘exclusion of

genetic engineering' and 'limited availability of fat-reduced products' were only mentioned by consumers in Germany, while only consumers in Switzerland referred to 'doubts about the inspection system'.

7.1.2 Results related to objective 2 and associated research questions

Objective 2 of this thesis was 'to analyse occasional organic consumers' preferences for organic, conventional and conventional-plus products'. This objective was achieved by means of quantitative data collection. Research questions 2.1 asked 'which alternatives are preferred in a choice situation?' and 'what is the share of the 'in-between' conventional-plus products?' It was found that the organic alternatives were the most frequently chosen options in both countries. Conventional-plus milk, with a share of 23.8 % in Germany and 26.7 % and Switzerland, as well as fruit yoghurt, with a share of 30.8 % in Germany and 26.7 % in Switzerland, were ranked below the organic alternatives. In contrast, conventional apples with a share of 20.3 % in Germany and 22.0 % in Switzerland were slightly more frequently chosen than conventional-plus apples (15.4 % in Germany and 20.7 % in Switzerland) (cf. chapter 5).

The data collected to address research questions 2.2, which asked whether 'conventional-plus products are preferred by consumers who choose organic quality products in everyday-life more than by consumers who choose conventional products in everyday-life' showed that the shares of conventional-plus milk and yoghurt choices can mainly be ascribed to consumers who usually buy the respective products in conventional quality: of the consumers who usually buy conventional milk, yoghurt or apples, 33.1 % switched to conventional-plus milk, 37.7 % to conventional-plus yoghurt and 29.5 % to conventional-plus apples. In contrast, of the consumers who usually buy organic milk, yoghurt or apples, only 16.4 % switched to conventional-plus milk, 9.6 % to conventional-plus yoghurt and 5.8 % to conventional-plus apples (cf. chapter 5).

Research question 2.3 asked whether 'consumer preferences for conventional-plus products decrease when the price level of conventional-plus products is close to the organic price-levels.' It was found that the observed preferences were not correlated with the price levels except in the case of apples in Switzerland. In this case, high price levels for conventional-plus and organic apples significantly decreased consumer choices of these alternatives.

7.1.3 Results related to objective 3 and associated research question

Quantitative data was collected to meet objective 3 of the thesis, which was 'Identification of determinants that might explain consumer preferences' and to answer research question 3, 'Which consumer characteristics determine their preferences for organic, conventional or conventional-plus products?' The results showed that attitudes strongly determine consumers' preferences for organic, conventional and conventional-plus products (cf. chapter 5). Consumer attitudes tended to differ more between organic and conventional choices than between conventional-plus and conventional choices. In Germany, consumer attitudes towards the following criteria significantly determined organic product choices:

- From pasture-raised cows (milk),
- No use of GMOs (apples),
- Organic production (all products),
- Higher prices for higher quality (apples), and
- Domestic production (milk and apples).

In Switzerland, the following attitudes determined the choice of organic products:

- From pasture-raised cows (milk),
- Free from artificial additives and flavours (yoghurt),
- Reduced use of pesticides (apples),
- No use of GMOs (milk),
- Organic production (yoghurt and apples), and
- Higher prices for higher quality (yoghurt, apples).

The following attitudes determined consumer choices of conventional-plus products:

- From pasture raised cows (milk), and
- Higher prices for higher quality (yoghurt, apples).

The model furthermore showed that, apart from consumer attitudes, higher price levels for conventional-plus and organic apples significantly decreased the probability of them being chosen in Switzerland. In addition, selected socio-demographic characteristics significantly determined consumers' preferences in Germany: increasing household sizes reduced the

probability of choosing organic milk significantly. Households with children younger than 18 were significantly more likely to choose organic apples. In contrast to the findings in Germany, socio-demographic characteristics were not significant predictors of consumer preferences in Switzerland.

7.1.4 Results related to objective 4 and associated research questions

Quantitative research was conducted to achieve objective 4 and to answer research question 4.1 'Are there different segments within the group of occasional organic consumers?' Evidence for preference heterogeneity among occasional organic consumers was found. The quantitative research showed that occasional organic consumers can be grouped into two segments: consumers in segment 1, which consisted of about 60 % of the participants, were less price-sensitive and preferred organic products. Consumers in segment 2 (about 40% of the participants) were more price sensitive and rather preferred conventional-plus or conventional products.

Research question 4.2, 'Which characteristics distinguish consumers in different segments?' was also answered in this thesis. The most relevant attitude factor to characterise segment 1 was 'Willingness to pay higher prices for higher food quality'. The factor 'Concerns about food ingredients' was also a highly significant predictor of membership of segment 1 for yoghurt, while this factor was significant for apples and not significant for milk. In contrast, the factor 'Health concerns in relation to food production' was highly significant with regard to milk and apples and significant with regard to the processed product fruit yoghurt. The price level was not a significant predictor of preference in segment 1 (preferences for organic products).

Consumers in segment 2, in contrast, were highly price sensitive. These consumers, furthermore, were not likely to choose organic fruit yoghurt. Compared to segment 1, segment 2 was more heterogeneous and consisted of consumers who either preferred conventional-plus or conventional products in the choice experiments. However, regarding apples, consumers in segment 2 predominantly preferred conventional products. Although occasionally buying organic products in real-life, consumers in segment 2 were not likely to choose organic fruit yoghurt and apples.

7.2 Reflection on the theoretical framework

The theoretical framework chosen in this thesis was aimed at providing the basis for the quantitative research on occasional organic consumers' buying behaviour to meet objectives 2, 3 and 4. The Random Utility Theory, which is an econometric theory, was chosen as the theoretical framework. The framework was extended by elements of the S-I-R model derived from Neobehaviouristic Theory, a psychological behavioural theory.

The theoretical framework was suitable because the Neobehaviouristic Theory is a behavioural theory and thus appropriate for behavioural research. Furthermore, the Random Utility Theory, being an economic theory, provided the theoretical basis for the econometric analysis on consumer behaviour. Utility, being the underlying decision rule of the Random Utility Theory, could be transferred into the context of this thesis. It was assumed that occasional organic consumers would choose the product with the highest perceived utility from a set of organic, conventional and conventional-plus products. Furthermore, the Random Utility Theory was suitable for capturing both observed utility derived from the measurable determinants as well as unobserved utility or randomness of behaviour in the choice experiments.

The S-I-R model of Neobehaviouristic Theory, which was chosen as an extending theory, was capable of shedding light on potentially relevant determinants of consumer behaviour, which are usually not referred to in econometric theory despite their relevance (cf. chapter 2.2). However, only some of the intervention components of the S-I-R model could be included. Under the activating process, the emphasis was placed on consumer attitudes, which were expected to be the most relevant determinant of consumer preferences (cf. chapter 2.2.2). Since motivation forms part of attitudes (Solomon, 2007), motivation was indirectly covered by the single attitudes investigated in both the qualitative and quantitative research. Among the cognitive processes, consumer perceptions of food quality and of organic food were intensively explored within the qualitative study. In contrast, the other components of cognitive processes, namely memorising and learning, were not included in this thesis.

Similarly, emotions were not investigated in this thesis. Emotions, although having a strong impact on consumer preferences and buying behaviour (Solomon, 2007), are generally difficult to measure adequately due to their affective nature (Coan and Allen, 2007). While methods have been developed to elicit and assess emotion by using images and sounds

(Bradley and Lang, 2007), expressive behaviour (Ekman, 2009; Laird and Öhmann, 2007) as well as scripted and unscripted social interactions (Harmon-Jones et al., 2007; Roberts et al., 2007), no adequate method was found to assess consumers' emotions towards organic, conventional and conventional-plus food. The reason is that emotions are highly situational and subjective and thus do not allow drawing of general and objective conclusions.

7.3 Reflection on the methodological approach

The triangular methodological approach to this thesis was aimed at investigating occasional organic consumers from different perspectives, which was achieved given that this study has provided:

1. An in-depth understanding perspective of how occasional organic consumers perceive and evaluate quality criteria of organic products and organic production by means of focus group discussions,
2. An observational perspective of consumers' buying behaviour by means of consumer choice experiments, and
3. A causal perspective on background characteristics that determine consumer behaviour by means of linking the data obtained from the consumer choice experiments with the data from the quantitative survey.

The triangular methodological approach was aimed at maximising the information that can be obtained from empirical research in that the strengths of the single methods are set to counteract their mutual weaknesses (Flick, 2009). To achieve objective 1 of this thesis, 'to explore occasional organic consumers' perceptions and attitudes of various quality criteria for organic products' the method of focus group discussions was suitable and efficient. The qualitative exploration delivered in-depth information about occasional organic consumers' diverse perceptions of, and attitudes towards, organic food. The openness of the method due to the low level of standardisation (Lamnek, 2005; Kepper, 2000) made it possible to gather information on previously unidentified various product-specific perceptions and attitudes in relation to food quality as well as in relation to organic production. In addition, the communicative aspect of qualitative methods, which arises from the interaction between interviewer and interviewees or between interviewees (Lamnek, 2005; Kepper, 2000), was useful in this thesis: individual opinions and sometimes controversial perceptions and

attitudes toward organic production were stated by consumers (Lamnek, 1998). The group interaction, which is an important hallmark of focus group discussions (Shao, 2002; Greenbaum, 2000; Morgan, 1998), was useful since quality attributes of organic food as well as the assessment of organic production was discussed at a variety of levels and from different points of view. It is finally assumed that the ordinary nature of the discussion situation, which was intended to reduce the inhibitions of interviewees (Lamnek, 1998), achieved this goal and encouraged the consumers to communicate freely on both the positive and negative perceptions and attitudes towards organic production. However, the method was not suitable for measuring and determining behaviour or for segmenting consumers according to their behaviour. Thus, the focus group discussion was not appropriate for meeting objectives 2, 3 and 4.

To achieve these objectives, a combined approach of choice experiments (purchase simulations) and quantitative surveys was chosen. The choice experiments, which are part of an observation method, provided a higher level of realism than self-reported behaviour in a survey (Flick, 2009). The choice experiments were designed to be a near-buying situation, including real product (packages) and purchases as well a no-choice option, which additionally increased the realism of the buying situation and thus the validity of the results. However, the choice experiments were faced with several limitations:

- The experiments were simulations rather than ‘real’ purchase situations so behaviour in a real buying situation cannot be directly inferred (Völckner, 2006),
- The potential risk of social desirability could have biased the results (Felser, 2007) and led to an over-estimation of consumer preferences, and
- Conclusions drawn on consumers’ willingness to pay for single product alternatives were limited because the ranges of the price levels of the single product alternatives (organic, conventional and conventional-plus products) were rather small because the price levels were chosen to correspond to current market prices.

Nevertheless, it was decided not to vary the prices of the single alternatives across the other alternatives, but only within the conventional-plus and organic alternative respectively. The reason was that a variation across all product alternatives would have led to an unreal buying situation in which, against consumers’ expectations and real market prices, the organic alternatives would have been offered at lower price levels than the average conventional

alternatives and vice versa. This might have led to the danger that consumers do not take the experiment seriously.

Furthermore, the choice experiments were not designed as repeated choice experiments. Showing just one choice set to each respondent did not allow variation of the price levels that were presented to an individual. This resulted in a loss of information about the price as a choice determinant and consequently did not allow calculation of the marginal willingness to pay for conventional-plus versus organic products. Against this disadvantage, however, the selected procedure probably required a lower cognitive burden of decision-making than in repeated choice experiments. Therefore, the risk of attribute-non-attendance and thus the risk of bias in the parameter estimation was likely to be lower than that expected in repeated choice experiments, since the potential danger of attribute non-attendance increases with the complexity of the choice tasks involved (Scarpa et al., 2009).

By using a single-source approach, the preferences observed in choice experiments could be linked with the data collected in the subsequent quantitative survey. This direct linkage between the two data collection methods allowed the identification of potentially relevant choice determinants. To collect information on potential determinants, the quantitative survey was highly suitable as it allowed comparison of consumers according to these determinants. The quantitative survey was not only linked with the choice experiments, but also with the qualitative research: a choice of relevant criteria identified in the qualitative research, such as ‘domestic origin’, ‘no use of fertilisers’ or ‘no use of GMO’ were included in the survey (cf. chapter 5.3 and 6.5.2).

However, since only few food products were investigated in both the qualitative and quantitative approaches, the results of this thesis are limited to the studied products. With respect to food products other than the ones investigated within this thesis, it is likely that other criteria might be relevant.

8 CONCLUSIONS AND RECOMMENDATIONS

In the following, the conclusions drawn from results of this thesis are provided. Based on these conclusions, a set of recommendations for different target groups were developed. Recommendations for providers of organic food are included in chapter 8.2. The subsequent

chapter 8.3 provides recommendations for decision-makers in the field of agricultural policy. Finally, recommendations for further research are included in chapter 8.4.

8.1 Conclusions

1. Consumers' perception of organic food is primarily focussed on the final stage of the particular production process. The selective nature of consumers' perception limits the extent to which information about complex issues, such as organic farming or food quality, can be communicated (Chapter 4).
2. The very complex nature of the organic farming system means that consumers have only a vague picture of what the organic system entails. This particularly applies at product level. In addition, consumers lack information about the production of conventional products (Chapter 4).
3. Organic food is frequently confused with conventional food (Chapter 4).
4. Consumers doubt the genuineness of organic products. This doubt appeared to be stronger for organic imports than for domestic or regional products (Chapter 4).
5. Consumers have higher expectations of organic than they do of conventional food in terms of origin and of the food miles travelled between the place of production and the point of sale (Chapter 4).
6. Consumers' attitudes strongly influence their preferences for organic, conventional-plus and conventional products (Chapter 5 and 6).
7. Selected socio-demographic characteristics significantly determine consumer preferences for organic, conventional-plus and conventional products. Increasing household sizes significantly reduces the probability of choosing organic milk. Having children younger than 18 years old in the household significantly increased the probability of choosing organic apples. The same applies to higher prices for conventional-plus and organic products in some cases (Chapter 5).
8. Whether conventional-plus products serve as substitutes strongly depends on the product and product attributes that are communicated to consumers (Chapter 5).
9. Occasional organic consumers are less committed to organic products and thus more easily switch between product alternatives (Chapter 6).
10. Conventional-plus products are particularly preferred by consumers who are price sensitive. This segment is more unlikely to increase their future organic food demand than the less price sensitive segment of occasional organic consumers (Chapter 6).
11. Occasional organic consumers are heterogeneous in their preferences: some are less price sensitive and prefer organic products. Others are more price sensitive and rather prefer conventional-plus or conventional products. For some occasional organic consumers, the perceived price-performance ratio of conventional-plus products is clearly better than that of organic products (Chapter 6).

8.2 Recommendations for providers of organic food

Based on these conclusions, a set of communication and product mix strategies were developed, which are targeted to providers of organic food. These policies are described in the following chapters.

8.2.1 Communication strategy

Communication of the added value of organic products

The focus group discussions showed that occasional organic consumers assess a range of criteria of organic products positively (cf. chapter 4.5.2), such as ‘taste’, ‘healthiness’ ‘no additives’, ‘no chemical-synthetic pesticides’, ‘higher-quality feed’, ‘more limited use of drugs in animal husbandry’, ‘exclusion of genetic engineering’, ‘animal welfare husbandry’, ‘no mass production’ and ‘eco-friendly’. These criteria could be used in communication strategies as a unique selling proposition (USP) of organic products. Herein, providers of organic food should select an appropriate mix of messages targeted to their customers. It is crucial to communicate the added value as short and catchy messages rather than providing a broad portfolio of information on organic production and organic products since consumer perception is limited (Kroeber-Riel and Weinberg, 2003). The fact that consumer perception is primarily focussed on the final stage of the particular production process should be particularly considered when selecting appropriate communication criteria: these should predominantly focus on the final stage of the production process.

Communication strategies of organic products should furthermore take up current and future hot spots, such as the safety of animal feed or climate protection. The organic farming sector should proactively promote the added value of organic products with regard to such topics. Particularly against the background of the current public debate and rising awareness of climate protection, the organic sector is requested to deliver significant arguments and facts about how organic farming may contribute to climate protection.

Strengthening affirmative consumer attitudes towards organic production

The choice experiments showed that affirmative consumer attitudes towards characteristics of organic food and farming significantly determine their preferences for organic products. Since consumer attitudes are formed over long periods (Solomon, 2007), continuous information

programmes are crucial for attaining any impact. Since consumers seek consensus with peer groups or idols by

> '[…] taking into account what they will buy before they decide what to buy' (Solomon, 2007),

such peer-groups and idols play a key role in strengthening affirmative attitudes towards organic food.

Assuring that consumers are able to identify organic products at the point of sale

Since consumers, especially in Germany, often confuse organic products with non-organic products at the point of sale (POS), as shown by the focus group discussion as well as in previous research (Niessen, 2008), providers of organic food should inform consumers about how they can identify organic products at the POS. It is particularly necessary to increase their awareness of organic labels and brands. Information should be particularly targeted to older consumers, among whom confusion is most commonly observed (Niessen, 2008).

Reducing the lack of confidence in organic products

To reduce the lack of consumer confidence in organic products, the transparency and traceability of agricultural production and processing should be increased. This could be achieved by means of innovative marketing strategies, such as 'bio-mit-gesicht' ('Organic Face-to-Face') (FiBL, 2008; bio-mit-besicht, 2007), which aim to increase consumer confidence in organic products by providing transparency and traceability of organic food through the internet. Furthermore, as the focus group discussions showed that domestic (or regional) organic products are more trustworthy in the eyes of consumers than imported organic products, providers of organic products can furthermore increase trust in their organic products in local markets by combining the organic labels or brands with 'made in Switzerland'- or 'made in Germany'-labels as well as with regional marketing concepts. Finally, consumer confidence with organic products could be increased by providing more information about the control systems.

Highlighting and increasing of the attractiveness of organic products

Given that consumers face a huge amount of information and advertisement in everyday-life and particularly at the point of sale, it is difficult to attract consumers' attention. Innovative

marketing concepts using experimental marketing methods are a promising strategy to attract consumer awareness. Such methods should be employed to create an emotional and rational response from consumers towards organic products. This can be achieved, for example, by using interactive media, such as showcases or short videos, sounds as well as catchy, joyful and smart messages or pictures that refer to organic products and farming.

8.2.2 Product mix strategy

Quality strategy

Since consumers have higher expectations of organic than of conventional food, a high quality of organic products is crucial for the long-term success of organic products in the market. This particularly applies against the background that occasional organic consumers easily switch to non-organic products if organic products do not meet their quality expectations.

The focus group discussions showed that there is a range of criteria which are negatively assessed by occasional organic consumers. There were some cases where consumers experienced worse taste and consistency and a shorter shelf-life of organic than non-organic products. Professional product testing and product improvement is crucial for meeting the high expectations of organic consumers. As organic consumers are heterogeneous in their preferences, needs, tastes and expectations, it is important to identify and define target groups. This allows adaptation of the product development, communication, and positioning of organic products to the target groups.

Suggestions of exclusivity of goods increases consumers' perceived value of products and evokes demand (Solomon, 2007). Against this background, a promising product positioning strategy is to point to the exclusivity of organic products and to posit organic food in the premium segment, suggesting an enjoyment value of a healthy lifestyle. Finally, to meet the expectations of organic consumers who expect that organic products are of regional or domestic origin, providers of organic products should offer domestic and regional organic products at the point of sale whenever possible rather than imported organic products.

8.3 Recommendations for decision-makers in the field of agricultural policy

Increasing consumer awareness and knowledge of organic farming

Due to the complexity of the organic farming system and the particularities of the production and processing steps involved, large communication campaigns and education programmes should be launched to increase consumer knowledge of organic food and farming. For example, against the background of the relevance of climate protection, decision-makers in the field of agricultural policy should support research on measuring environmental and climatic impacts of agricultural farming systems and on developing and implementing adequate standards aimed at environmental and climate protection.

Against the background that consumers prefer regional and domestic organic products, there is a need for policy support for domestic producers to increase the availability of domestic and local organic products. Both in Germany and Switzerland, organic farming is supported by several policy instruments. A legal framework was introduced in both countries (Bundesministerium für Justiz, 2008; Schweizer Bundesrat, 1997) as well as direct payments (Schweizer Bundesrat, 2010; BMVEL, 2006). Furthermore, numerous other activities, as defined in the 'Bundesprogramm für Ökolandbau' (BMVEL, 2008) in Germany or in the 'Verordnung für die Unterstützung der Absatzförderung für Landwirtschaftsprodukte LAfV' (Schweizer Bundesrat, 2006) in Switzerland, are financed by national bodies. However, despite these attempts to improve the framework for organic farming, organic food demand is increasing while the domestic supply drops behind. Thus, policy-makers should put more effort into supporting organic farming conversion and thus contribute to a better domestic organic food supply and higher credibility of organic food.

8.4 Recommendations for further research

Since only few food products could be included in this thesis, further research should investigate the relevance of attributes of product-specific quality with regard to a broader range of products. This would contribute to gaining more insights on an adequate choice of values for communication strategies. In addition, further research on the psychological

aspects of trust building among organic consumers and on how to improve occasional organic consumers' loyalty towards organic products is relevant.

Further research that provides detailed information on organic consumer typologies and target groups, with a focus on eating habits and lifestyles, might be useful for supporting organic food providers in developing targeted marketing strategies that are tailored to different consumer typologies. Detailed information on organic consumer typologies will contribute to the differentiation of the organic market and an increase of the organic food demand.

Future research should investigate innovative and experimental communication strategies of organic products and communication strategies that address current and future hot spots, such as the safety of animal feed or climate protection. Particularly against the background of the current public debate and rising awareness of climate protection, research should investigate the value of communication arguments on how organic farming may contribute to climate protection and sustainable production.

Finally, it is known from consumer behaviour research that affective and emotional processes strongly determine decision-making processes in buying situations (Solomon, 2007; Kroeber-Riel and Weinberg, 2003). Future research should focus on the affective and emotional intervention in relation to organic products. It is particularly relevant to develop reliable, applicable, cost efficient and informative survey instruments to measure affections or emotions towards organic products or to objects of interest in general.

SUMMARY

The overall objective of this PhD thesis was to provide information about the segment of occasional organic consumers. In particular, the thesis focussed on consumer perceptions and attitudes towards the quality of, and preferences for, organic, conventional and conventional-plus products in two countries: Germany and Switzerland. The results contribute to increase the competitiveness and the demand of organic products.

To achieve the objectives, qualitative and quantitative research was combined in order to explore occasional organic consumers' perceptions and attitudes as well as to observe their preferences for different types of food products: organic, conventional and conventional-plus products. Apart from one study (study 1-DE, cf. chapter 4), the research in this PhD thesis was part of the European Commission funded research project 'Improving quality and reduction of costs in the European organic and low-input food supply chains (QLIF)'.

The qualitative research showed that, depending on single criteria, organic production was both positively as well as negatively assessed by consumers. Positive assessments of organic production referred to 'better taste', 'healthier', 'no artificial additives', and 'no chemical-synthetic pesticides', 'limited use of antibiotics', and 'no GMOs', etc. Negative assessments of organic production referred to 'worse taste or consistency', 'higher prices', 'the criterion organically produced not linked to low food miles and seasonal availability', 'doubts in the inspection system', etc. Consumer perception of organic food was found to be highly selective and primarily focussed on the final stage of the particular production process. A major problem is that consumers are still mostly unfamiliar with factors associated with organic production, have a lack of confidence, and often confuse organic with conventional products. Besides this, consumer expectations of organic products are different from the expectations of conventional products.

The quantitative research revealed that attitudes strongly determine consumers' preferences for organic, conventional and conventional-plus products. Consumer attitudes tended to differ more between organic and conventional choices rather than conventional-plus and conventional choices. The quantitative research also showed that occasional organic consumers were heterogeneous in their preferences. They can be grouped into two segments: consumers in one segment were less price sensitive and preferred organic products. The price level of the products in the choice experiment was not a significant predictor for preference in

this segment (preferences for organic products). Consumers in the other segment were more price sensitive and rather preferred conventional-plus or conventional products. These consumers, furthermore, were not likely to choose organic fruit yoghurt. Compared to the first segment, this segment was more heterogeneous and consisted of consumers who either preferred conventional-plus or conventional products in the choice experiments. However, regarding apples, consumers in the second segment predominantly preferred the conventional alternative.

To conclude, specific additional benefits of organic farming should be communicated in clear and catchy messages. Besides this, it is important to strengthen affirmative consumer attitudes towards organic production and more effort should be put into highlighting and increasing the attractiveness of organic products. Policy support should focus on increasing the domestic and regional supply of organic products. This could be achieved by means of strengthening networks, minimising economic risk and creating incentives for conversion to organic farming. Furthermore, it is important to provide know-how and to improve organic farmers' entrepreneurial skills in order to increase organic farm incomes.

ZUSAMMENFASSUNG

Im Zuge des kontinuierlichen Wachstums des Bio-Marktes werden mehr und mehr Bio-Produkte im konventionellen Lebensmitteleinzelhandel angeboten (BÖLW, 2010). Dort konkurrieren Bio-Produkte insbesondere mit konventionellen Produkten und sogenannten Konventionell-Plus-Produkten. Dabei handelt es sich um konventionelle Produkte, bei denen ein spezifisches Qualitätskriterium explizit auf der Verpackung kommuniziert wird, wie beispielsweise 'keine künstlichen Zusatzstoffe' oder 'aus Freilandhaltung'. Häufig treffen solche Qualitätskriterien auch auf Bio-Produkte zu. Besonders Gelegenheitskäufer von Bio-Produkten könnten Konventionell-Plus-Produkte, die eine 'Zwischenvariante' von Bio- und konventionellen Produkten darstellen, bevorzugen. Dies ist zu vermuten, da Gelegenheitskäufer ein potenzielles Bewusstsein für Aspekte der Produktion und Verarbeitung aufweisen, gleichzeitig jedoch weniger auf Bio- oder konventionelle Produkte festgelegt sind. Darüber hinaus werden Konventionell-Plus-Produkte im Vergleich zu Bio-Produkten meist zu einem niedrigeren Preis angeboten und könnten daher eine attraktive Alternative für diese Konsumentengruppe darstellen.

Noch bewirken diejenigen Konsumenten, welche regelmäßig Bio-Produkte kaufen (in Deutschland 39 % der Bevölkerung) (Buder et al., 2009), einen größeren Anteil am Umsatz von Bio-Produkten als Gelegenheitskäufer. Dennoch gelten Gelegenheitskäufer als wichtige Zielgruppe des Bio-Sektors, denn der Anteil der Gelegenheitskäufer wächst stetig und birgt ein enormes Wachstumspotenzial für den Bio-Markt.

Vor diesem Hintergrund ist es für den Bio-Sektor wichtig, über mehr Informationen zum Kaufverhalten dieser Zielgruppe zu verfügen. Besonders aufgrund der starken Konkurrenz zwischen Bio-Produkten und anderen Produkten im konventionellen Lebensmitteleinzelhandel ist es notwendig, die Wahrnehmungen, Einstellungen und das Kaufverhalten in Bezug auf Bio-Produkte sowie konventionelle und Konventionell-Plus-Produkte zu untersuchen. Dabei ist es relevant zu analysieren, ob Konventionell-Plus-Produkte gegenüber Bio-Produkten bevorzugt werden und welchen Einfluss der Preis der Produkte auf das Kaufverhalten ausübt, da Konventionell-Plus-Produkte meist günstiger sind als Bio-Produkte und daher bevorzugt werden könnten.

Das Ziel dieser Doktorarbeit war es, Informationen über Gelegenheitskäufer bereit zu stellen. Die Doktorarbeit fokussierte dabei insbesondere auf die Wahrnehmungen und Einstellungen

der Konsumenten zur Qualität von sowie deren Kaufverhalten gegenüber Bio-, konventionellen und Konventionell-Plus-Produkten in zwei Ländern: in Deutschland und in der Schweiz. Die Ergebnisse der Doktorarbeit sollen dazu beitragen, die Wettbewerbsfähigkeit von und die Nachfrage nach Bio-Produkten zu erhöhen.

Um diese Ziele zu erreichen wurden qualitative und quantitative Studien durchgeführt. Die Untersuchung der Wahrnehmungen und Einstellungen der Gelegenheitskäufer von Bio-Lebensmitteln erfolgte anhand qualitativer Explorationen. Das Kaufverhalten dieser Käufergruppe und Determinanten des Kaufverhaltens sowie die Rolle des Produktpreises wurden im Rahmen eines Choice Experiments (Kaufsimulation) mit Milch, Fruchtjoghurt und Äpfeln sowie einer quantitativen Befragung untersucht. Der quantitative Ansatz diente darüber hinaus zur Segmentierung der Gelegenheitskäufer. Bis auf eine Studie (Studie 1-DE, Kapitel 4) waren die Studien dieser Doktorarbeit Teil des von der Europäischen Kommission finanzierten Forschungsprojektes ‘Improving quality and reduction of costs in the European organic and low-input food supply chains (QLIF)’.

Die Auswertung und Synthese der qualitativen Studien erfolgte anhand einer Qualitativen Inhaltsanalyse und einer Cross-Case Comparison Analyse. Die Kaufexperimente und die quantitative Befragung wurden zunächst mit deskriptiver Statistik ausgewertet. Im Anschluss daran erfolgte eine Explorative Faktorenanalyse bzw. das Erstellen von Summenskalen, um die Anzahl der in der quantitativen Befragung erhobenen Variablen zu reduzieren und zusammenzufassen. Schließlich erfolgten in einer Kausalanalyse unter Verwendung von Logit-Modellen die Untersuchung von Determinanten des Kaufverhaltens sowie die Segmentierung von Gelegenheitskäufern.

Die Ergebnisse der qualitativen Studien ergaben, dass – in Abhängigkeit eines jeweiligen Qualitätsaspekts – Bio-Produkte im Vergleich zu konventionellen Produkten positiv und/oder negativ von den Konsumenten bewertet werden. Positive Bewertungen bezogen sich besonders auf die Aspekte ‘besserer Geschmack’, ‘gesünder’, ‘keine künstlichen Zusatzstoffe’, ‘keine chemisch-synthetischen Pflanzenschutzmittel’, ‘reduzierter Einsatz von Antibiotika’ und ‘keine Verwendung von Gentechnik’ etc. Negative Bewertungen bezogen sich auf die Aspekte ‘mangelhafter Geschmack bzw. mangelhafte Konsistenz’, ‘höhere Preise’, ‘fehlender Link zwischen biologischer Produktion und kurzen Transportwegen’ sowie ‘Zweifel am Kontrollsystem’ etc.

Darüber hinaus wurde in den qualitativen Studien deutlich, dass die Konsumentenwahrnehmung von Bio-Produkten selektiv ist und sich hauptsächlich auf die letzte Stufe des Produktionsprozesses konzentriert. Die mangelnde Verbraucherkenntnis von Einzelfaktoren des komplexen Systems Bio-Landbau stellt ein weiteres Problem dar ebenso wie das mangelnde Vertrauen in Bio-Produkte und die Tatsache, dass Bio-Produkte oft mit konventionellen Produkten verwechselt werden.

Im Kaufexperiment entschied sich die Mehrheit der Bio-Gelegenheitskäufer bei Milch, Fruchtjoghurt und Äpfeln für die Bio-Variante, gefolgt von der Konventionell-Plus-Variante im Fall von Milch und Fruchtjoghurt. Im Gegensatz dazu wurde bei Äpfeln die konventionelle Variante gegenüber der Konventionell-Plus-Variante bevorzugt. Die quantitative Forschung zeigte außerdem, dass die Konsumenteneinstellungen einen signifikanten Einfluss auf die Präferenzen für Bio-, konventionelle oder Konventionell-Plus-Produkte hatten. Die Einstellungen unterschieden sich dabei deutlicher zwischen Konsumenten mit Präferenzen für Bio- versus konventionelle Produkte als zwischen Präferenzen für konventionelle versus Konventionell-Plus-Produkte. Zudem zeigte die quantitative Forschung, dass Gelegenheitskäufer von Bio-Produkten heterogene Präferenzen aufweisen und sich in zwei Segmente einteilen lassen. Die Konsumenten des einen Segments waren weniger preissensibel und bevorzugten Bio-Produkte. Der Produktpreis limitierte hierbei nicht die Präferenzen für Bio- oder Konventionell-Plus-Produkte. Konsumenten des anderen Segments waren hingegen preissensibler und bevorzugten eher Konventionell-Plus- oder konventionelle Produkte. Im Vergleich zum ersten Segment waren die Präferenzen im zweiten Segment jedoch deutlich heterogener.

Aus den Ergebnissen der Studien wurden die folgenden Schlussfolgerungen abgeleitet. Die Fokussierung der Konsumenten auf Einzelaspekte der Produktion von Lebensmitteln sowie die Selektivität ihrer Wahrnehmung haben wesentliche Auswirkungen auf die Kommunizierbarkeit des komplexen Systems Bio-Landbau. Kurze und einprägsame Botschaften sind bei der Kommunikation erfolgsversprechend. Ohne solche konkreten Anhaltspunkte bieten günstigere Konventionell-Plus-Produkte gerade für preissensible Gelegenheitskäufer eine attraktive Alternative zu Bio-Produkten.

Die Verwechslungsgefahr von Bio-Produkten mit konventionellen Produkten und das mangelnde Vertrauen in Bio-Produkte zeigen, dass hier gezielte Informationen für Gelegenheitskäufer notwendig sind. Die Erfüllung der hohen Erwartungen der Konsumenten

an Bio-Lebensmittel, besonders in Hinblick auf ihre Herkunft, ist außerdem ausschlaggebend für den Erfolg am Markt. Aufgrund der hohen Relevanz von Verbrauchereinstellungen zu Bio-Produkten für deren Nachfrage ist die Persistenz von Kommunikationsmaßnahmen ausschlaggebend; nur langfristig können positive Einstellungen vom Konsumenten zu Bio-Lebensmitteln entstehen.

Politische Entscheidungsträger im Bereich der Agrarpolitik sollten mit der Lancierung bzw. Weiterführung von Förderungsmaßnahmen darauf abzielen, den Kenntnisstand der Konsumenten zu Bio-Produkten und Bio-Landbau zu erhöhen. Um den hohen Anforderungen der Konsumenten an biologische Erzeugnisse gerecht zu werden, sollten sich Politikmaßnahmen außerdem darauf konzentrieren, die inländische und insbesondere regionale Produktion von Bio-Produkten zu fördern.

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REFERENCES

Aaker, D. A., Kumar, V. and Day, G. S. (2006) Marketing research. Wiley and Sons Publishers, New York.

Aertsens, J., Verbeke, W., Mondelaers, K. and Van Huylenbroeck, G. (2008) Personal determinants of organic food consumption: a review. British Food Journal 111 (10), 1140-1167.

Albers, S., Klapper, D., Konradt, U., Walter, A. and Wolf, J. (Eds.) (2007) Methodik der empirischen Forschung. Second edition, Betriebswirtschaftlicher Gabler Verlag, Wiesbaden.

Aschemann-Witzel, J. (2009) Claims auf Lebensmitteln und Involvement. Eine Untersuchung mit Hilfe realitätsnah gestalteter Choice Experiments. Dissertation an der Universität Kassel, Peter Lang Verlag, Frankfurt am Main.

Atteslander, P. (2000) Methoden der empirischen Sozialforschung. De Gruyte Studienbuch, Berlin, New York.

Backhaus, K., Erichson, B., Plinke, W. and Weiber, R. (2006) Multivariate Analysemethoden. Eine anwendungsorientierte Einführung. Eleventh edition, Springer Verlag, Berlin, Heidelberg, New York.

Baranek, E. (2007) Wer kauft Bio? Zielgruppenspezifische Motive für den Kauf von Bio-Lebensmitteln. Köster Verlag, Berlin.

Ben-Akiva, M. and Lerman, S. R. (1985) Discrete choice analysis: theory and application to travel demand. MIT Press, London.

Bettman, J. R. (1979) An information processing theory of consumer choice. Addison-Wesley Publishing, London.

Bio Suisse (2008) Marktanteile ausgesuchter Bio-Produkte. Facts and Trends 2008. Available from: http://www.bio-suisse.ch/media/de/pdf2006/d_def_grafiken_bio_suisse_08_neu.pdf (verified June 23, 2008).

Bio-mit-gesicht (2007) Über das Projekt bio-mit-gesicht.de. Available from: http://www.bio-mit-gesicht.com/bmg/index.html (verified January 8, 2008).

Birner, R., Bräuer, I., Grethe, H., Hirschfeld, J., Lüth, M., Meyer, J., Wälzholz, A., Wenk, R. and Wittmer, H. (2002) Ich kaufe, also will ich? Eine interdisziplinäre Analyse der

Entscheidung für oder gegen den Kauf besonders tier- und umweltfreundlich erzeugter Lebensmittel. Berichte über Landwirtschaft 80 (4), 590-613.

BMVEL (2004) Kriterien beim Kauf von Öko-Lebensmitteln. Ökobarometer 2004. Bundesministerium für Verbraucherschutz, Ernährung und Landwirtschaft. Available from: http://www.oekolandbau.de/data/000A3A6519001063BCBE6521C0A8D816.0.pdf (verified March 26, 2004).

BMVEL (2006) Direktzahlungen. Available from: http://www.bmelv.de/SharedDocs/Standardartikel/Landwirtschaft/Foerderung/Direktzahlungen/Direktzahlungen.html (verified November 10, 2010).

BMVEL (2007) Aus Gelegenheitskäufern werden regelmäßige Bio-Kunden. Ökobarometer 2007. Available from: http://www.oekolandbau.de (verified December 3, 2007).

BMVEL (2008) Bundesprogramm Ökologischer Landbau. Bundesministerium für Verbraucherschutz, Ernährung und Landwirtschaft. Available from: http://www.bundesprogramm-oekolandbau.de (verified April 27, 2008).

BÖLW (2010) Zahlen, Daten, Fakten: die Bio-Branche 2010. Available from: http://www.boelw.de/uploads/media/pdf/Dokumentation/Zahlen__Daten__Fakten/ZDF2010gesamt.pdf (verified November 10, 2010).

Bortz, J. (2005) Statistik für Human- und Sozialwissenschaftler. Springer Verlag, Heidelberg.

Bradley, M. M. and Lang, P. J. (2007) The international affective picture system (IAPS) in the Study of Emotion and Attention. In Coan, A. and Allen, J. J. B. (Eds.) Handbook of Emotion Elicitation and Assessment. Oxford University Press, Oxford, New York.

Brandimonte, M. A., Bruno, N. and Collina, S. (2006) Cognition. In Pawlik, K. and d'Ydewalle, G. (Eds.) Psychological Concepts. An International Historical Perspective. Psychology Press, New York.

Botonaki, A., Polymeros, K., Tsakiridou, E. and Mattas, K. (2006) The role of food quality certification on consumers' food choices. British Food Journal 108 (2), 77-90.

Bruhn, M. (2002) Die Nachfrage nach Bio-Produkten: eine Langzeitstudie unter besonderer Berücksichtigung von Verbrauchereinstellungen. Europäische Hochschulschriften, Reihe V: Volks- und Betriebswirtschaft 2916. Peter Lang, Frankfurt/Main.

Buber, R. and Holzmüller, H. (2007) Qualitative Marktforschung. Konzepte – Methoden – Analysen. Gabler Verlag, Wiesbaden.

Buder, F., Hamm, U., Bickel, M., Bien, B. and Michels, P. (2009) Dynamik des Kaufverhaltens im Bio-Sortiment. Kundensegmente des Öko-Markts 2008.

Abschlussbericht. Bundesprogramm Ökologischer Landbau, Bundesanstalt für Landwirtschaft und Ernährung (BLE), Bonn. Available from: http://orgprints.org/16983/1/16983-09OE014-uni_kassel-hamm-2010-kaufverhalten.pdf (verified February 4, 2008).

Bundesamt für Statistik (2008) Statistisches Lexikon der Schweiz. Available from: http://www.bfs.admin.ch/bfs/portal/de/index/infothek/lexikon/bienvenue___login/blank/zugang_lexikon.Document.21677.xls (verified June 23, 2008).

Bundesministerium für Justiz (2008) Gesetz zur Durchführung der Rechtsakte der Europäischen Gemeinschaft auf dem Gebiet des ökologischen Landbaus. Available from: http://bundesrecht.juris.de/_lg_2009/BJNR235810008.html (verified November, 10. 2010).

Casanova, M. (2007) Die Marke Schweiz – Gefangen in der Mythosfalle zwischen Heidi und Wilhelm Tell: aktuelle Herausforderungen im Zusammenhang mit der Verwendung der Marke Schweiz als Co-Branding-Partner. In Florack A., Scarabis, M. and Primosch, E. (Eds.) Psychologie der Markenführung. Vahlen Verlag, München.

Cicia, G., Del Giudice, T. and Scarpa, R. (2002) Consumers' perception of quality in organic food. A random utility model under preference heterogeneity and choice correlation from rank-ordering. British Food Journal 104 (3, 4, 5), 200-213.

Chiang, A. C. and Wainwright, K. (2005) Fundamental methods of mathematical economics. Fourth edition, McCraw Hill, New York.

Coan, J. A. and Allen, J. J. B. (2007) Handbook of emotion eliciting and assessment. Oxford University Press, Oxford, New York.

Cronbach, L. J. (1951) Coefficient alpha and the internal structure of tests. Psychometrika 16, 297-334.

Davies, A., Titterington, A. J. and Cochrane, C. (1995) Who buys organic food? A profile of the purchasers of organic food in Northern Ireland. British Food Journal 97 (10), 17-23.

Decker, R. and Wagner, R. (2002) Marketingforschung. Methoden und Modelle zur Bestimmung des Käuferverhaltens. Redline Wirtschaft, Moderne Industrie Verlag, München.

Dhar, R. and Simonson, I. (2003) The effect of forced choice on choice. Journal of Marketing Research 40 (2), 146-160.

Ekman, P. (2009) The direct facial action task: emotional responses without appraisal. In Coan, A. and Allen, J. J. B. (Eds.) Handbook of emotion elicitation and assessment. Oxford University Press, Oxford, New York.

Enneking, U. (2002) Analysis of food preferences using discrete choice modelling – The case of organic sausages. Agrarwirtschaft 52 (5), 254-267.

EU Regulation (1988) Commission Regulation (EEC) No 4115/88 laying down the rules for applying the aid scheme to promote the extensification of production. Available from: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:1988:361:0013:0018:EN:PDF (verified November 24, 2010).

EU Regulation (2007) Council Regulation (EC) No 834/07 on organic production and labelling of organic products and repealing Regulation (EEC) No 2092/91. Available from: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:189:0001:0023:EN:PDF (verified November 24, 2010).

Felser, G. (2007) Werbe- und Konsumentenpsychologie. Third edition, Springer Verlag, Berlin, Heidelberg.

Ferjani, A., Reissig, L. and Mann, S. (2010) Bio-Landbau Schweiz: Wer sind die Aussteiger, wer die Einsteiger? Umstellungshemmnisse und Umstellungsgründe. Analyse einer schriftlichen Befragung. Available from: http://www.agroscope.admin.ch/data/publikationen/1289814265_Ferjani_A_ART_SR_13_D_i.pdf (verfied December 6, 2010)

FiBL (2008) Bio-mit-gesicht. Available from: http://www.fibl.org/de/deutschland/bio-mit-gesicht.html (verified April 27, 2008).

Field, A. (2005) Discovering statistics using SPSS. Sage Publications, London, Thousand Oaks, New Delhi.

Flick, U. (2009) Sozialforschung. Methoden und Anwendungen. Ein Überblick für BA-Studiengänge. Rowohlt Verlag, Hamburg.

Foscht, T. and Swoboda, B. (2007) Käuferverhalten: Grundlagen, Perspektiven und Anwendungen. Third edition, Gabler Verlag, Wiesbaden.

Gil, J. M., Gracia, A. and Sanchez, M. (2000) Market segmentation and willingness to pay for organic food products. International Food and Agribusiness Management Review 3, 207-226.

Gracia, A., and Magistris, T. (2008) The demand of organic foods in the South of Italy: a discrete choice model. Food Policy 33 (5), 386-396.

Greenbaum, T. L. (2000) Moderating Focus groups. A practical guide for group facilitation. Sage Publications, Thousand Oaks, London, New Delhi.

Greene, W. (2007) The latent class model. Reference Guide, NLogit 4.0. Econometric software, Plainview, New York.

Gröppel-Klein, A. and Königstorfer, J. (2007) Projektive Verfahren im Überblick. Qualitative Marktforschung – Konzepte, Methoden, Analysen. Gabler Verlag, Wiesbaden.

Grunert, S. C. and Juhl, H. J. (1995) Values, environmental attitudes, and buying of organic foods. Journal of Economic Psychology 16 (1), 39-62.

Gupta, S. and Chintagunta, P. K. (1994) On using demographic variables to determine segment membership in logit mixture models. Journal of Marketing Research 31 (1), 128-136.

Hair, J., Bush, R. and Ortinau, D. (2006) Marketing research within a changing environment. Third Edition, McCraw-Hill Irwin, New York.

Hamm, U. (1999) Verbraucher – Bestimmungsgründe der Nachfrage nach Lebensmitteln aus ökologischem Landbau. In Eschricht, M., Leitzmann, C. (Eds.) Handbuch Bio-Lebensmittel. V-2, Behr's Verlag, Hamburg.

Hamm, U. and Gronefeld, F. (2004) The European market for organic food: revised and updated analysis. Organic marketing initiatives and rural development 5, School of Management and Business, Aberystwyth.

Hamm, U., Aschemann, J. and Riefer, A. (2007) Sind die hohen Preise für Öko-Lebensmittel wirklich das zentrale Problem für den Absatz? Berichte über die Landwirtschaft 85 (2), 252-271.

Harper, G. C. and Makatouni, A. (2002) Consumer perceptions of organic food production and farm animal welfare. British Food Journal 104 (3, 4, 5), 287-299.

Harmon-Jones, E., Amodio, D. M. and Zinner, L. R. (2007) Social psychological methods of emotion elicitation. In Coan, A. and Allen, J. J. B. (Eds.) Handbook of emotion elicitation and assessment. Oxford University Press, Oxford, New York.

Helfferich, C. (2005) Die Qualität qualitativer Daten. Manual für die Durchführung qualitativer Interviews. VS Verlag für Sozialwissenschaften, Wiesbaden.

Hensher, D. A. and Greene, W. H. (2003) The mixed logit model: the state of practice. Transportation 30 (2), 133-176.

Hensher, D.A., Rose, J. M. and Greene, W. H. (2005) Applied choice analysis: a primer. Cambridge University Press, Cambridge.

Hill, H. and Lynchehaun, F. (2002) Organic milk: attitudes and consumption patterns. British Food Journal 104 (7), 526-542.

Hoogland, C. T., De Boer, J., and Boersema, J. J. (2007) Food and sustainability: Do consumers recognize, understand and value on-package information on production standards? Appetite 49 (1), 47-57.

Howard, J. A. and Sheth, J. N. (1969) The theory of buying behaviour. Wiley marketing series, New York.

Hughner, R. S., McDonagh, P., Prothero, A., Chiffero, J, Shulz, L.L. and Stanton, J. (2007) Who are organic food consumers? A compilation and review of why people purchase organic food. Journal of Consumer Behaviour 6 (2, 3), 94-110.

Kamakura, W. and Russel, G. J. (1989) A probabilistic choice model for market segmentation and elasticity structure. Journal of Marketing Research 26 (4), 379-390.

Kamenz, U. (2001) Marktforschung: Einführung mit Fallbeispielen, Aufgaben und Lösungen. Second edition, Schäfer-Poeschel Verlag, Stuttgart.

Kepper, G. (1994) Qualitative Marktforschungsmethoden, Einsatzmöglichkeiten und Beurteilungskriterien. Deutscher Universitätsverlag, Wiesbaden.

Kepper, G. (1999) Methoden der Qualitativen Marktforschung. In Herrmann A. and Homburg, C. (Eds.) Marktforschung. Gabler Verlag, Wiesbaden

Kepper, G. (2000) Methoden der Qualitativen Marktforschung – Methoden, Anwendung und Praxisbeispiele. In Herrmann, A. and Homberg, C. (Eds.) Marktforschung. Second edition, Gabler Verlag, Wiesbaden.

Koutsoyiannis A. (1979) Modern Microeconomics. Second edition. Macmillan Press, London.

Kroeber-Riel, W. and Weinberg, P. (2003) Konsumentenverhalten. Eigth edition, Vahlen Verlag, München.

Kromrey, H. (2002) Empirische Sozialforschung. Tenth edition. UTB Leske and Budrich Verlag, Stuttgart.

Krystallis, A. and Chryssohoidis, G. (2005) Consumers' willingness to pay for organic food. British Food Journal 107 (5), 320-343.

Lamnek, S. (1998) Gruppendiskussionen – Theorie und Praxis. Psychologie Verlagsunion, Weinheim.

Lamnek, S. (2005) Qualitative Sozialforschung. Beltz Verlag, Wiesbaden, Basel.

Lampkin, N. and Stolze, M. (2006) European action plan for organic food and farming. Law, Science and Policy 3, 59-73.

Lancaster, K. J. (1966) A new approach to consumer theory. Journal of Political Economy 74 (2), 132-157.

Laroche, M., Bergeron, J. and Barbaro-Forleo, G. (2001) Targeting consumers who are willing to pay more for environmentally friendly products. Journal of Consumer Marketing 18 (6), 503-520.

Laird, J. D. and Öhmann, A. (2007) Emotional behaviour as emotional stimuli. In Coan, A. and Allen, J. J. B. (Eds.) Handbook of emotion elicitation and assessment. Oxford University Press, Oxford, New York.

Long, J. S. and Freese, F. (2006) Regression models for categorical dependent variables using Stata. Second edition, Stata Press, College Station, Texas.

Loureiro, M. L., McCluskey, J. J. and Mittelhammer, R. C. (2001) Assessing consumer preferences for organic, eco-labelled, and regular apples, Journal of Agricultural and Resource Economics 26 (2), 404-416.

Louviere, J. J., Hensher, D. A. and Swait, J. D. (2000) Stated choice methods, analysis and applications. Cambridge University Press, Cambridge.

Lusk, J. L. and Schroeder, T. C. (2004) Are Choice Experiments incentive compatible? A test with quality differentiated beef steaks. American Journal of Agricultural Economics 86 (2), 467-482.

Magistris De, T. and Gracia, A. (2008) The decision to buy organic food products in Southern Italy. British Food Journal 110 (9), 929-947.

Mankiw, N. G. (2007) Principles of Economics. Fourth edition, Thomson South-Western, Haryana.

Mayring, P. (2003) Qualitative Inhaltsanalyse. Eighth edition, Beltz Verlag, Weinheim und Basel.

Mayring, P. (2008) Qualitative Inhaltsanalyse. Grundlagen und Techniken. Tenth edition, Beltz Verlag, Weinheim, Basel.

Mayring, P. and Brunner, E. (2007) Grundgedanken der Qualitativen Inhaltsanalyse. In: qualitative Marktforschung. Konzepte – Methoden – Analysen. Gabler Verlag, Wiesbaden.

McFadden, D. (2001) Economic choices. The American Economic Review 91 (3), 351-378.

McFadden, D. (1974) Conditional logit analysis of qualitative choice behaviour. In Zarembka, P. E. (Ed.) Frontiers in econometrics. Academic Press, New York.

Meffert, H. (1992) Marketingforschung und Käuferverhalten. Gabler Verlag, Wiesbaden.

Michaelidou, N. and Hassan, L. M. (2008) The role of health consciousness, food safety concern and ethical identity on attitudes and intentions towards organic food. International Journal of Consumer Studies 32 (2), 163-170.

Michels, P., Schmanke, A. and Linnert, E. (2003) Bio-Frische im LEH: Fakten zum Verbraucherverhalten. Materialien zur Marktberichterstattung, Band 45, ZMP, Bonn.

Miles, M. B. and Huberman, A. M. (1994) Qualitative data analysis. Sage Publications, Thousand Oaks.

Mondelaers, K., Verbeke, W. and Van Huylenbroeck, G. (2008) Importance of health and environment as quality traits in the buying decision of organic products. Proceedings of the first workshop on valuation methods in agro-food and environmental economics, 3rd and 4th July, Barcelona.

Morgan, D. L. (1998) Focus groups as qualitative research. Qualitative research methods series, Sage Publication, Thousand Oaks.

Müller, M. and Hamm, U. (2001) Verbrauchereinstellungen beim Einkauf von Lebensmitteln in Mecklenburg-Vorpommern. Schriftenreihe der Fachhochschule Neubrandenburg A, 14, Fachbereich Agrarwirtschaft und Landespflege, Neubrandenburg.

Nieschlag, R., Dichtl, E. and Hörschgen H. (1997) Marketing. Eighteenth edition, Duncker and Humboldt Verlag, Berlin.

Niessen, J. (2008) Öko-Lebensmittel in Deutschland. Möglichkeiten und Grenzen der Tracking-Forschung auf dem Markt für Öko-Lebensmittel. Dissertation an der Universität Kassel, Dr. Kovač Verlag, Hamburg.

Novy, A. (2005) Internationale Politische Ökonomie. Available from http://www.lateinamerika-studien.at/content/wirtschaft/ipo/ipo-753.html (verified February 5, 2007).

Onyango, B. M., Hallman, W. K. and Bellows, A. C. (2007) Purchasing organic food in US food systems. A study of attitudes and practice. British Food Journal 109 (5), 399-411.

Oughton, E. and Ritson, C. (2007) Food consumers and organic agriculture. In Cooper, J., Niggli, U. and Leifert, C. (Eds.) Handbook of organic food safety and quality. CRC Press, Boca Raton.

Padel, S., Schaack, D. and Willer, H. (2009) Development of the organic market in Europe. In Willer, H. and Kilcher, L. (Eds.) The world of organic agriculture. FiBL, Frick and IFOAM, Bonn.

Padel, S., Jasinska, A., Rippin, M., Schaack, D. and Willer, H. (2008) The European market of organic food in 2006. In Willer, H., Yussefi-Menzler M. and Sorensen N. (Eds.) The world of organic agriculture. FiBL, Frick and IFOAM, Bonn.

Padel, S. and Foster, C. (2005) Exploring the gap between attitudes and behaviour. British Food Journal 107 (8), 606-625.

Revelt, D. and Train, K. (1998) Mixed logit with repeated choices. Review of economics and statistics 80 (4), 647-657.

Riesenhuber, F. (2007) Grosszahlige empirische Forschung. In Albers, S., Klapper, D., Konradt, U., Walter, A. and Wolf, J. (Eds.) Methodik der empirischen Forschung. Second edition, Gabler Verlag, Wiesbaden.

Roberts, N. A., Tsai, J, L. and Coan, J. A. (2007) Emotion elicitation using dynamic interaction tasks. In Coan, A. and Allen, J. J. B. (Eds.) Handbook of emotion elicitation and assessment. Oxford University Press, Oxford, New York.

Saba, A. and Messina, F. (2003) Attitudes towards organic food and risk/benefit perception associated with pesticides. Food Quality and Preference 14 (8), 637-645.

Satow, L. (2006) LISREL-Einführung. Skript zur Lehrveranstaltung. FU Berlin. Available from: http://www.userpage.fu-berlin.de/~satow (verified February 5, 2007).

Scarpa, R., Gilbride, T. J., Campbell, D. and Hensher, D. A. (2009) Modelling attribute non-attendance in choice experiments for rural landscape valuation. European Review of Agricultural Economics 36 (2), 151-174.

Schaack, D., Willer, H. and Padel, S. (2011) The organic market in Europe. In Willer, H. and Kilcher, L. (Eds.) The world of organic agriculture. FiBL, Frick and IFOAM, Bonn.

Schaack, D., Engelhardt, H., Kasbohm, A., Bien, B. and Schoch, R. (Ed.) (2008) Verkaufspreise im Ökologischen Landbau. Ökomarkt Jahrbuch 2008. Materialien zur Marktberichterstattung 77, ZMP, Bonn.

Scholl, A. (2003) Die Befragung: Sozialwissenschaftliche Methode und kommunikationswissenschaftliche Anwendung. UVK Verlagsgesellschaft, Konstanz.

Schumann, J., Meyer, U. and Ströbele, W. (1999) Grundzüge der mikroökonomischen Theorie. Seventh edition, Springer Verlag, Berlin, Heidelberg, New York.

Schweizer Bundesrat (1997) Verordnung über die biologische Landwirtschaft und die Kennzeichnung biologisch produzierter Erzeugnisse und Lebensmittel (Bio-Verordnung). Available from: http://www.blw.admin.ch/themen/00006/index.html (verified November 10, 2010).

Schweizer Bundesrat (2006) Verordnung über die Unterstützung der Absatzförderung für Landwirtschaftsprodukte (Landwirtschaftliche Absatzförderungsverordnung, LAfV). Available from: http://www.blw.admin.ch/themen/00006/index.html (verified November 10, 2010).

Schweizer Bundesrat (2010) Weisungen und Erläuterungen 2010 vom 12. Mai 2010 zur Verordnung über die Direktzahlungen an die Landwirtschaft (Direktzahlungsverordnung, DZV, SR 910.13) vom 7. December 1998. Available from: http://www.blw.admin.ch/themen/00006/index.html (verified November 10, 2010).

Shao, A. T. (2002) Marketing Research. An aid in decision making. South Western Publishing, Cincinnati.

Shepherd, R., Magnusson, M. and Sjödén, P. O. (2005) Determinants of consumer behaviour related to organic foods. Ambio 34 (4), 352-359.

Solomon, M. R. (2007) Consumer behaviour. Buying, having, and being. Seventh edition, Pearson Education Publishing, New Jersey.

Spearman, C. (1904) ‘General Intelligence’ Objectively determined and measured. American Journal of Psychology 15, 201-239.

Spiller, A. and Lüth, M. (2004) Kaufverhalten bei Bio-Lebensmitteln. In Praxishandbuch Bio-Lebensmittel. V.2.2.1, Behr’s Verlag, Stuttgart.

Spiller, A., Lüth, M. and Enneking, U. (2004) Analyse des Kaufverhaltens von Selten- und Gelegenheitskäufern und ihrer Bestimmungsgründe für/gegen den Kauf von Öko-Produkten. Abschlussbericht, Bundesprogramm Ökologischer Landbau, Bundesanstalt für Landwirtschaft und Ernährung (BLE), Bonn. Available from: http://orgprints.org/4201/ (verified January 4, 2008).

Stata Press (2005) Factor analysis. Stata Multivariate Statistics. Reference Manual, STata Press, College Station, Texas.

Statistisches Bundesamt (2008) Statistisches Jahrbuch 2008. Für die Bundesrepublik Deutschland. Statistisches Bundesamt, Wiesbaden.

Statistisches Bundesamt (2003) Wirtschaftsrechnungen – Monatliches Haushaltseinkommen nach ausgewählten soziodemographischen Merkmalen. Fachserie 15 (6), Statistisches Bundesamt, Wiesbaden.

Stolz, H. (2005) Analysis of consumer attitudes towards single components of organic agriculture compared to the system of organic agriculture – an explorative study. In Hess, J. and Rahmann, G. (Eds.) Ende der Nische. Beiträge zur 8. Wissenschaftstagung Ökologischer Landbau, Kassel. Available from: http://orgprints.org/3381/01/3381.pdf (verified June 23, 2008).

Stolz, H., Bodini, A., Stolze, M., Hamm, U. and Richter, T. (2009) Lebensmittelqualität aus der Verbraucherperspektive – eine Synthese qualitativer Studien zur Wahrnehmung und Beurteilung verschiedener Qualitätskriterien bei Öko-Produkten. Berichte über Landwirtschaft 87 (1), 153-182.

Swait, J. (1994) A structural equation model of latent segmentation and product choice for cross-sectional, revealed preference choice data, Journal of Retailing and Consumer Services 1 (82), 77-89.

Treibel, A. (2006) Einführung in soziologische Theorien der Gegenwart. Seventh edition, VS Verlag für Sozialwissenschaften, Wiesbaden.

Völckner, F. (2006) Methoden zur Messung individueller Zahlungsbereitschaften: ein Überblick zum State of the Art. Journal für Betriebswirtschaft 56 (1), 33-60.

Wedel, M. and Kamakura, W. (2000) Market segmentation: conceptual and methodological foundations. Kluwer Academic Publishers, Boston.

Weed, M. (2005) ‘Meta interpretation’ a method for the interpretative synthesis of qualitative research. Forum qualitative social research, 6, 1, 4-10. Available from: http: www.qualitative-research.net/fqs-texte/1-05/05-1-37-e.htm (verified January 11, 2008).

Wilkinson, S. (2003) Focus groups. In Smith, J. A. (Eds.) Qualitative psychology. A practical guide to research methods. Sage Publications, London, Thousand Oaks, New Delhi.

Willer, H. (2010) Development of the organic market in Europe. In Willer H. and Kilcher L. (Eds.) The world of organic agriculture. FiBL, Frick and IFOAM, Bonn.

Willer H. and Yussefi, M. (2007) Organic farming worldwide 2007: overview and main statistics. The world of organic agriculture. FiBL, Frick and IFOAM, Bonn.

Wozniak, R. H. and College, B. M (1997) Commentary on ‘Psychology as the behaviorist view it’ Behaviorism. In Bringmann, W. G., Luck, H. E., Miller, R. and Early, C. E. (Eds.) A pictorial history of psychology. Quintessence Publishing, Chicago.

Zanoli, R., Bähr, M., Botschen, M., Laberenz, H., Naspetti, S. and Thelen, E. (2004) The European consumer and organic food. Organic marketing initiatives and rural development 4, School of Management and Business, Aberystwyth.

Zanoli, R. and Naspetti, S. (2002) Consumer motivations in the purchase of organic food. British Food Journal 104 (8), 643-653.

ZMP (2004) Strukturen der Nachfrage nach ökologischen Nahrungsmitteln in Deutschland. Materialien zur Marktberichterstattung 53, ZMP in Zusammenarbeit mit der CMA, Medienhaus Plump, Rheinbreitbach.

ZMP (2008) Ökomarkt 2008. Verkaufspreise im ökologischen Landbau 2006/2007. Materialien zur Marktberichterstattung 77, ZMP in Zusammenarbeit mit der CMA, Medienhaus Plump, Rheinbreitbach.

APPENDIX

Appendix I: Focus group discussion guidelines of Study 1-DE presented in chapter 4

Abschnitt	Thema/Fragen	Dauer
Beginn mit kurzer Vorstellung der Moderatorin	Bitte nehmen Sie Platz. Herzlich Willkommen und vielen Dank, dass Sie sich bereit erklärt haben, an der Gruppendiskussion teilzunehmen. Ich will mich kurz vorstellen: (Vorstellung) Kurz zu dem Begriff Gruppendiskussion: Bei einer Gruppendiskussion äußern die Teilnehmer ihre Meinung zu bestimmten Themen. Die Gruppendiskussion hat für mich gegenüber einem Einzelinterview einen wesentlichen Vorteil: Durch das Gespräch in der Gruppe entstehen neue Ideen und Impulse. Als Moderatorin ist meine Einstellung und Meinung hier nicht gefragt, sondern Ihre und freue mich deshalb über jeden Diskussionsbeitrag. Die Diskussionsrunde wird folgendermaßen ablaufen: Zuerst gebe ich eine kurze Einführung in das Thema, dann kommen wir zur Gruppendiskussion. Am Ende der Diskussion will ich dann die wesentlichen Punkte noch mal mit Ihrer Hilfe zusammenfassen.	(10 min)
Vorstellen der Räumlichkeiten und der Technik	Die Diskussion wird auf Video und auf Tonband aufgezeichnet, damit ich die hinterher ausgewertet werden kann. Nach der Auswertung werden die Aufzeichnungen wieder gelöscht. Ich möchte noch mal darauf hinweisen, dass ich nach der Auswertung der Gruppendiskussion die Aufzeichnungen lösche und die hier gewonnenen Daten ausschließlich für meine Studie verwende und nicht an dritte weitergebe. Bevor wir beginnen, würde ich Sie gerne mit den Räumlichkeiten und der Technik vertraut machen.	

	Nehmen Sie bitte Platz (und wählen Sie Ihnen unbekannte Sitznachbarn). Jede Teilnehmerin und jeder Teilnehmer bekommt jetzt einen Buchstaben statt eines Namens. Bitte gewöhnen Sie sich daran, dass Sie im folgenden Frau A bzw. Herr B heißen. Dies dient dazu, die Diskussion anonym auszuwerten.	
Einführung in die Thematik, Erläuterung ‘extensive Landwirtschaft’	In dieser Gruppendiskussion geht es um Lebensmittel aus Ökologischem Landbau im Vergleich zu Lebensmitteln aus Extensiver Landwirtschaft. Dazu möchte ich zunächst erklären, was man unter Lebensmitteln aus Extensiver Landwirtschaft versteht.’ Die Form der extensiven Landwirtschaft ist als Begriff in Deutschland meist nicht bekannt, deshalb will ich ihn kurz erläutern. Ein Beispiel für den Extensiven Anbau von Pflanzen wäre ein Anbau ohne Einsatz von Dünger, während der intensive Anbau von Pflanzen mit hohem Düngereinsatz verbunden ist. Ein weiteres Beispiel ist die Produktion von Fleisch: bei extensiver Fleischproduktion werden Rinder auf der Weide gehalten, während bei der intensiven Fleischproduktion die Tiere im Stall gehalten werden und Kraftfutter bekommen, damit sie schneller wachsen.	
Vorstellung des Diskussions-themas	Im Ökologischen Landbau müssen die Landwirte bestimmte Vorschriften einhalten, beispielsweise dürfen die Felder nicht mit den gängigen Pflanzenschutzmitteln gespritzt werden. Bei der extensiven Landwirtschaft handelt es sich im Gegensatz zur Ökologischen Landwirtschaft um eine Form der Bewirtschaftung, bei der Teillösungen angestrebt werden, also bei der nicht ein ganzes Paket an Vorschriften einzuhalten ist, sondern bestimmte Punkte beachtet werden, beispielsweise, dass Pflanzen zwar gespritzt, aber nicht gedüngt werden.	(10 min)
Fragestellung	Warum wir jetzt über Lebensmittel aus Ökologischer Landwirtschaft im Vergleich zu Lebensmitteln aus Extensiver Landwirtschaft sprechen wollen, hat folgenden Grund: Das Bundesverbraucherministerium hat eine Verbraucherbefragung zum Thema ‘Kriterien beim Einkauf von Lebensmitteln’ in Auftrag gegeben. Die Ergebnisse dieser Befragung wurden im März 2004 veröffentlicht. In der folgenden Tabelle ist die Rangliste von Kriterien beim Einkauf von Lebensmitteln dargestellt.	

Kriterien beim Einkauf von Lebensmitteln

Artgerechte Tierhaltung	53 % [1)]
Der Gesundheitsaspekt	53 %
Ein gutes Preis-Leistungs-Verhältnis	51 %
Frische und Reife	50 %
Guter Geschmack	50 %
Dass Tiere nicht vorbeugend mit Antibiotika behandelt werden dürfen	50 %
Dass Pflanzen nicht mit chemisch-synthetischen Unkrautbekämpfungsmitteln behandelt werden dürfen	45 %
Ausschluss von Gentechnik	40 %
Schonende Verarbeitung mit wenig Zusatzstoffen	39 %
Naturbelassenheit	35 %
Niedriger Preis	23 %
Regionale Herkunft	23 %
Beratung	19 %
Herkunft aus ökologischem Landbau	15 %
Einkaufserlebnis/Atmosphäre beim Einkaufen	12 %

1) Prozentualer Anteil der Befragten, die das jeweilige Einkaufskriterium mit 'sehr wichtig' bewerteten.

Quelle: eigene Darstellung nach dem BMVEL 2004

Kernfrage	Für uns stellt sich nun die Frage, warum einzelne Aspekte des Ökolandbaus als ‘sehr wichtiges’ Einkaufskriterium eingestuft werden. Beispielsweise bewerteten 53 % der Befragten das Kriterium ‘dass Tiere nicht vorbeugend mit Antibiotika behandelt werden dürfen’ mit ‘sehr wichtig’. Dagegen wurde der ‘Herkunft aus Ökolandbau’ als Kriterium vergleichsweise wenig Bedeutung beigemessen. Nur 15 % der Verbraucher beurteilten dieses Kriterium als ‘sehr wichtig’(vgl. Tabelle 1). Warum setzen Verbraucher ‘Öko’ und beispielsweise ‘dass Tiere nicht vorbeugend mit Antibiotika behandelt werden dürfen’ nicht gleich? Über diese Frage soll hier in dieser Gruppendiskussion am Beispiel von zwei verschiedenen Lebensmitteln gesprochen werden. Ich habe ein pflanzliches und ein tierisches Lebensmittel ausgewählt, um in der anschließenden Diskussion ein möglichst breites Bild zu bekommen. Bei dem pflanzlichen Lebensmittel handelt es sich um Äpfel, bei dem tierischen Lebensmittel um Eier.	
Einstiegsfrage	Dann beginne ich mit der ersten Frage zu dem pflanzlichen Lebensmittel, dem Apfel: 1. Auf welche Kriterien legen Sie wert, wenn Sie Äpfel kaufen 2. Was stellen Sie sich unter dem extensiven Anbau von Äpfeln vor? 3. Was stellen Sie sich unter dem ökologischen Anbau von Äpfeln vor? 4. Worin liegen Ihrer Meinung nach die Unterschiede zwischen extensiv erzeugten und ökologisch erzeugten Äpfeln?	(50 min)

Weiterführende Fragen	Vorhin haben wir über Äpfel als Vertreter der Gruppe der pflanzlichen Lebensmittel gesprochen. Als nächstes wollen wir über Eier als Vertreter die tierischen Lebensmittel sprechen: Dazu stelle ich Ihnen wieder dieselben Fragen wie eben schon bei den Äpfeln: 5. Auf welche Kriterien legen Sie wert, wenn Sie Eier kaufen 6. Was stellen Sie sich unter extensiver Erzeugung von Eiern vor? 7. Was stellen Sie sich unter ökologischer Erzeugung von Eiern vor? 8. Worin liegen Ihrer Meinung nach die Unterschiede zwischen extensiv erzeugten und ökologisch erzeugten Äpfeln? 9. Würden Sie Äpfel aus Ökologischem Landbau oder aus extensiver Landwirtschaft beim Einkauf bevorzugen und aus welchen Gründen? Würden Sie Eier aus Ökologischem Landbau oder aus extensiver Landwirtschaft bevorzugen und aus welchen Gründen? (Soll die Eierfrage noch in Anschluss an Frage 4 gestellt werden?)	
Kernfrage	Woran liegt es Ihrer Meinung nach, dass einzelnen Kriterien des Ökologischen Landbaus als sehr wichtiges Einkaufskriterium beurteilt werden (beispielsweise aus artgerechter Tierhaltung), der Ökologische Landbau als Gesamtpaket jedoch als weniger wichtig beurteilt wird.	(20 min)
Résumé	Wichtigsten Punkte nochmal zusammenfassen	(5 min)
Bedanken und Verabschieden	Herzlichen Dank für Ihre interessante Wortbeiträge und Denkanstöße und für vielen Dank für Ihre Teilnahme an der Diskussion.	

Appendix II: Focus group discussion guidelines of Study 2-DE and 2-CH presented in chapter 4

Duration	Question to raise	Directions	Questions for further investigation	Objective
10 min	Introduce yourself as facilitator / reporter of the FG, the research, tape recorder and video if any, time table (finishing time and incentives at the end) Explain the rules of the FG: the objective is the richness of insights, no bad idea, participants should feel free to express any idea.	The research should be presented as a European research on food habits focused on tomatoes, bread, yoghurt and eggs. The aim of the research is to help farmers and processors to improve production techniques according to consumers' expectations. You, as a consumer, are considered as experts to shed light on consumer's expectations.		- Explain the rules of the FG
	Round table with names and where do you come from or children or any appropriate question (according to the country)	Facilitator speaks		- Get to know each other - The reporter and facilitator write (and/or papers with names in front of each one)

1 20 min	**1. Which criteria do you take into consideration when you buy yoghurts and eggs (2 rounds)**	Round table without interaction Note if quality (organic or LI) appears but do not mention it yourself Split the time for the two products	1.1 What sort of tomato (wheat bread) ? 1.2 Where ?	- To understand quality criteria for the consumers and the place of organic in relation to these criteria: first insight. - What is the perceived quality? - To 'feel' each participant (who speaks easily, who will have to be questioned, …)
2 20 min	**2.a: Have you ever been disappointed when buying tomatoes / Wheat bread and Why?**	Orientation towards **very concrete** description of unsatisfying quality, problem / deficiency / trouble	2.a.1 What was the reason for disappointment? 2.a.2 Where did you buy? 2.a.3 Is the disappointment linked to the product itself? 2.a.4 What did you do then ? (cease to buy the product, change retailer, change product, change brand,	- To precise (concrete examples) question 1 and 2.

	2.b: Do you consider Organic is an important characteristic and Why ? **2.c: If you do not buy organic tomatoes / wheat bread, what do you choose instead of organic ? and why ?**		change shop, look for information, …) 2.b.1 What are the differences / similarities between these products and organic ?	- The aim of the questions is to understand the meaning of 'organic' for the consumer through an investigation on alternative to organic, reasons of disappointment (what was expected and was not there, …).

3 30 min	**3. How do you think that production or processing process influences the quality and safety of tomatoes and wheat bread?**	We have spoken about the characteristics, quality and safety of the tomatoes and wheat bread you are buying, and the disappointments you may have about these products. Now, let us talk about the production and processing process of those products. **Do not mention the attributes** / production and processing processes. Raise questions to make them emerge through reformulation. For example if a consumer mentions 'tasty' tomatoes, ask him for the reason why tomatoes are 'tasty' or not (season, green house, …) **The facilitator notes the attributes** / quality criteria / production and processing processes / retailing chain raised by the consumers on small pieces of paper (during the discussion).	3.1 What about organic tomatoes / wheat bread? less pesticides, …. 3.2 Do you have suggestions for farmers / processors to improve the match with your expectations?	- How do the consumers construct the meanings around quality concepts?

		If the consumers do not know production or processing process, or at the end of the period (if some techniques have appeared) the facilitator raises the question with Otto's list of critical techniques.	3.3 Do you know that these techniques / ingredients are used for production and processing yoghurt / eggs? (Otto's list of critical techniques) 3.4 Are you worried by the use of such techniques? / What are the techniques which worries you most?	
4 45 min	**4. What characteristics do you think people would pay higher prices for?**	Now we have seen a lot of characteristics, production and processing methods. Most of them are connected with higher costs for production and/or processing. That means that the use of some techniques is costly, or some characteristics are costly. The question is then what are the consumers ready to pay?	- To make a hierarchy between attributes / processing and production methods through the question of price. Additional questions (optional) if the consumers	- How do the consumers choose between incompatible expectations? How do they construct meanings of the choices to be made? - The **aim of the discussion** is to make contradictions

		The **facilitator notes on the paper board the attributes** / criteria / production and processing processes which are mentioned by the consumers in the previous discussion. It is the basis of the mapping exercises for the consumers. **Part 1: Individual mapping (5 minutes)** Can you draw these attributes into the boxes on a line like this. On the right, the characteristics you think **people would pay high prices for**. On the left the characteristics you think people would have difficulties to pay for. These characteristics may be very important, but people would not pay for them. In the middle the characteristics you think people would pay for, but not high prices.	have no idea of the price 4.1 : Are you aware of different levels of price at the same time for tomatoes / wheat bread ? vary so much ?	emerge from the discussion. The consumers' reaction can be : - Rationalisation. Finding reasons and arguments to justify - Being troubled. 'I did not think of this' . The first phase of a learning process (according to Giordan) - Choosing between options (hierarchy) and developing arguments The **output of the discussion** is the arguments they use in the discussion.

		Part 2 : Collective mapping (the rest of the time) The facilitator draws the same line on the paper board. Now, let us have a discussion about this together. He raises the discussion by placing the attributes / characteristics / production or processing methods and raising a discussion among consumers. He chooses ‘consensus’ characteristics (nobody would pay / or everybody finds it essential) or ‘conflict’ characteristics (some consumers value, some other not). The facilitator **raises incompatible combinations**. For example ‘no use of thickeners’ and ‘low-fat yoghurts’. Or ‘no use of greenhouses’ but without price premium.		

Appendix III: Experimental minutes and questionnaire of quantitative research presented in chapter 5 and 6

QualityLowInputFood

QLIF SP 1.2.1 Choice Experiment minutes and questionnaire

Date……..

Name of the interviewer.……..…….....

Participant number [1.] ...……..……..……

Product order [2.] ……...……..……..……

Price level [3.] ……..…….....

Block:…..……..…….....

Choice Experiment: Choice and ranking

Now you can start with the food purchase.

Please buy one milk now.

(Interviewer: Two options exist: option 1 = participant buys the product; option 2 = participant does not buy the product; please go directly to the respective option in the questionnaire)

4. M	**Option 1: One milk alternative was chosen**	☐ **[Option 1 = 1; Option 2 = 0]**

(Interviewer: Please mark the product alternative chosen)

5. M	milk	conv.	conv. +	organic
	choice	1	2	3

If that product was not available which milk alternative would you choose instead?

(Interviewer: Please mark the alternative chosen)

6. M	milk	conv.	conv. +	organic	no choice
	choice	1	2	3	4

4. M	**Option 2: No milk alternative was chosen**	☐	**[Option 1 = 1; Option 2 = 0]**

Out of the three milk alternatives, which is your <u>most</u> favoured one?

(Interviewer: Please mark the product alternative chosen)

5. M	Milk	conv.	conv. +	organic	no choice
	Choice	1	2	3	4

If that product was not available which alternative would you buy instead?

(Interviewer: Please mark the product alternative chosen)

6. M	Milk	conv.	conv. +	organic	no choice
	Choice	1	2	3	4

Please buy one yoghurt now.

4. Y	**Option 1: A yoghurt was chosen**	☐	**[Option 1 = 1; Option 2 = 0]**

(Interviewer: Please mark the product alternative chosen)

5. Y	Yoghurt	conv.	conv. +	organic
	Choice	1	2	3

If that product was not available which alternative would you choose instead?

(Interviewer: Please mark the product alternative chosen)

6. Y	Yoghurt	conv.	conv. +	organic	no choice
	Choice	1	2	3	4

4. Y	**Option 2: No yoghurt was chosen**	☐	**[Option 1 = 1; Option 2 = 0]**

Out of the three yoghurt alternatives, which is your <u>most</u> favoured one?

(Interviewer: Please mark the product alternative chosen)

5. Y	Yoghurt	conv.	conv. +	organic	no choice
	Choice	1	2	3	4

If that product was not available which alternative would you choose instead?

(Interviewer: Please mark the product alternative chosen)

6. Y	Yoghurt	conv.	conv. +	organic	no choice
	Choice	1	2	3	4

Please buy apples now.

4. A	**Option 1: One apple alternative was chosen**	☐	**[Option 1 = 1; Option 2 = 0]**

(Interviewer: Please mark the product alternative chosen)

5. A	Äpfel	conv.	conv. +	organic
	Choice	1	2	3

If that product was not available which alternative would you choose instead?

(Interviewer: Please mark the product alternative chosen)

6. A	Äpfel	conv.	conv. +	organic	no choice
	Choice	1	2	3	4

4. A	**Option 2: No apple alternative was chosen**	☐ **[Option 1 = 1; Option 2 = 0]**

Out of the three apple alternatives, which is your most favoured one?

(Interviewer: Please mark the product alternative chosen)

5. A	Äpfel	conv.	conv. +	organic	no choice
	Choice	1	2	3	4

If that product was not available which alternative would you choose instead?

(Interviewer: Please mark the product alternative chosen)

6. A	Äpfel	conv.	conv. +	organic	no choice
	Choice	1	2	3	4

Interview

Now let's start with the second part of the study, which is the interview. Please take a seat. The interview deals with your food purchase and especially with your buying habits and preferences. Please remark that there are no right or wrong answers. We are simply interested in your opinions and habits.

Section 1: Reasons for 'no choice' in the previous buying situation

(Only if the 'no choice' buying decision occurred at least once in the previous buying situation)

(Interviewer: If no milk was chosen)

7. M	**You did not choose any of the three milk alternatives offered. What was the reason for that?**

……

……

……

(Interviewer: If no yoghurt was chosen)

7. Y	**You did not choose any of the three yoghurt alternatives offered. What was the reason for that?**

……

……

……

(Interviewer: If no apples were chosen)

7. A	**You did not choose any of the three apple alternatives offered. What was the reason for that?**

……

……

……

Section 2: Attitudes towards food safety and quality

I am now going to read out several statements to you. Please tell me whether you strongly agree, slightly agree, neither agree/nor disagree, slightly disagree or strongly disagree with the following statements:

(Interviewer: Please give interviewees a sheet of paper with the five possible answer categories)

		Strongly agree	Slightly agree	Neither agree/nor disagree	Slightly disagree	Strongly disagree
8.	I usually buy apples from *the respective case study country*.	1	2	3	4	5
9.	I am willing to pay considerably higher prices for food which has considerable higher quality standards.	1	2	3	4	5
10.	When buying milk, I do not think about how the cows were kept.	1	2	3	4	5
11.	Usually I only buy fruits of the season.	1	2	3	4	5
12.	I believe that cows in the respective case study country are usually kept on pastures during summer.	1	2	3	4	5
13.	I often prepare ready to eat meals instead of cooking myself.	1	2	3	4	5
14.	I prefer buying organic food.	1	2	3	4	5
15.	Milk from cows kept on pastures during summer is as healthy as milk from cows kept stables the whole year.	1	2	3	4	5

		Strongly agree	Slightly agree	Neither agree/nor disagree	Slightly disagree	Strongly disagree
16.	When I try new products, I do not usually check the list of ingredients.	1	2	3	4	5
17.	I generally do not buy products including preserving agents.	1	2	3	4	5
18.	I think that organic products are too expensive.	1	2	3	4	5
19.	I am bored of discussions about nutrition and health.	1	2	3	4	5
20.	The taste of meals is more important that the ingredients.	1	2	3	4	5
21.	Genetically modified food is a danger to human health.	1	2	3	4	5
22.	Pesticides residues in fruit and vegetable are harmful for the health.	1	2	3	4	5
23.	I trust food more which was produced in my home country.	1	2	3	4	5
24.	I only buy yoghurt of which I know that it was produced without artificial additives.	1	2	3	4	5
25.	Artificial aromas and additives in food are harmful for the health.	1	2	3	4	5

Section 3: Buying criteria for food

3.1 The next part deals with buying criteria for food. I am going to read out a number of criteria to you. Please tell me how important the following factors are when you buy <u>milk</u>: very important, slightly important, neither important nor unimportant, slightly unimportant, or very unimportant?

(Interviewer: Please give interviewees a sheet of paper with the possible answer categories)

order		Milk	very important	slightly important	neither important nor unimportant	slightly unimportant	very unimportant
	26. M	Appearance of the package	1	2	3	4	5
	27. M	Produced organically	1	2	3	4	5
	28. M	Brand	1	2	3	4	5
	29. M	Produced in the respective case study country	1	2	3	4	5
	30. M	Free from GM technologies	1	2	3	4	5
	31. M	Price	1	2	3	4	5
	32. M	Produced without pesticides	1	2	3	4	5
	33. M	Taste	1	2	3	4	5
	34. M	From pasture-raised cows s	1	2	3	4	5
	35. M	Produced without preventive antibiotics in the fodder	1	2	3	4	5

38. M	**Are there other criteria that are <u>very</u> important when you buy milk?**

……..

39. M	**You have pointed out the criteria …… as 'very important. Which is your <u>most important</u> buying criterion regarding milk?**

……

[enter respective variable: 26. M – 35. M]

3.2 Now let's go on with the yoghurt. How important are the following factors when you buy yoghurt: very important, slightly important, neither important nor unimportant, slightly unimportant, or very unimportant?

order		Yoghurt	very important	slightly important	neither important nor unimportant	slightly unimportant	very unimportant
	26. Y	Appearance of the package	1	2	3	4	5
	27. Y	Produced organically	1	2	3	4	5
	28. Y	Brand	1	2	3	4	5
	29. Y	Produced in the respective case study country	1	2	3	4	5
	30. Y	Free from GM technologies	1	2	3	4	5
	31. Y	Price	1	2	3	4	5
	32. Y	Produced without pesticides	1	2	3	4	5
	33. Y	Taste	1	2	3	4	5
	34. Y	With milk from cows of pasture-raised cows	1	2	3	4	5
	35. Y	Produced without preventive antibiotics in the fodder	1	2	3	4	5
	36. Y	Produced without artificial additives and aromas	1	2	3	4	5

38. Y **Are there other criteria that are very important when you buy yoghurt?**

……..

39. Y **You have pointed out the criteria …… as 'very important. Which is your most important buying criterion regarding yoghurt?**

……

[enter respective variable: 26. Y – 36. Y]

3.3 Now let's go on with the apples. How important are the following factors when you buy apples: very important, slightly important, neither important nor unimportant, slightly unimportant, or very unimportant?

order		Apples	very important	slightly important	neither important nor unimportant	slightly unimportant	very unimportant
	26. A	Appearance of the apples	1	2	3	4	5
	27. A	Produced organically	1	2	3	4	5
	29. A	Produced in the respective case study country	1	2	3	4	5
	30. A	Free from GM technologies	1	2	3	4	5
	31. A	Price	1	2	3	4	5
	32. A	Produced without pesticides	1	2	3	4	5
	33. A	Taste	1	2	3	4	5
	37. A	Variety	1	2	3	4	5

38. A **Are there other criteria that are very important when you buy apples?**

……..

39. A **You have pointed out the criteria …… as 'very important. Which is your most important buying criterion regarding apples?**

……

[enter respective variable: 26. A – 37. A]

Section 4: Usually preferred trademarks and/or production system regarding milk, yoghurt and apples

Now I would like to know which products you usually buy.

4.1 What kind of milk do you usually buy?

(Interviewer: Ask for brand and production system)

40. M	**Brand……**	**After the interview**: coding of production system
41. M	**Production system……...**	**Coding:**
Code:	**……**	**conv. = 1;** **organic = 2;** **others = 3**
42. M	**text from 41. M, if 'others (3)'**	

4.2 What kind of yoghurt do you usually buy?

(Interviewer: Ask for brand and production system)

40.Y	**Brand……**	**After the interview**: coding of production system
41. Y	**Production system……...**	**Coding:**

Code:	**……**	**conv. = 1;** **organic = 2;** **others = 3**
42. Y	**text from 41. Y, if 'others (3)'**	

4.3 What kind of apples do you usually buy?

(Interviewer: Ask for brand and production system)

		After the interview: coding of production system
41. A	**Production system……...**	**Coding:**
Code:	**……**	**conv. = 1;** **organic = 2;** **others = 3**
42. A	**text from 41. A, if 'others (3)'**	

Section 5: Socio-demographic characteristics

43.	**5.1 How many people live in your household?**

…….

(Interviewer: a person living in shared accommodation (students etc.) counts as a one-person household, unless they purchase their food together)

44.	**5.2 Do you have children?**

☐ Yes [1]

☐ No [0]

(Interviewer: If answer 'no', go to question 5.5)

45.	**5.3 How many children do you have?**

……

5.4 How old are your children?

……

(Interviewer: please note age of all children)

After the interview: Note down number of children in each age class.

Variable	age class	number
46.	**< 1**	
47.	**1 – 3**	
48.	**4 – 6**	
49.	**7 – 12**	
50.	**12 – 18**	
51.	**> 18**	

Please fill in the following questions by yourself.

52. **5.5 What is your monthly gross household income?**

- ☐ up to **600 €** [1]
- ☐ from **600 €** up to **1.199 €** [2]
- ☐ from **1200 €** up to **1799 €** [3]
- ☐ from **1800 €** up to **2399 €** [4]
- ☐ from **2400 €** up to **2999 €** [5]
- ☐ from **3000 €** up to **3599 €** [6]
- ☐ from **3600 €** up to **4199 €** [7]
- ☐ **4200 € and more** [8]

53. **5.6 What is the highest level of education you have achieved?**

- ☐ Graduation without professional education [1]
- ☐ Graduation with professional education [2]
- ☐ College/University graduation or higher (BSC, MSC, PhD) [3]
- ☐ Others: …… [4]

54. **5.7 How old are you?**

…….

Thank you for your help in this research!

<u>After the interview: Enter data from recruitment questionnaire:</u>

55. Sum from question 6 (organic index): ……

<u>Enter observation data:</u>

Duration of food purchase in seconds for each product group:

56. M **…..…..** (sec) **56. Y** **……** (sec) **56. A** **……..** (sec)

Total duration of food purchase (all three products) in seconds:

57. **……** (sec)

Details on information search (0 = person did not touch product; 1 = touched)					
Milk		**Yoghurt**		**Apples**	
58. M	conv. ☐ 0 ☐ 1	**58.Y**	conv. ☐ 0 ☐ 1	**58. A**	conv. ☐ 0 ☐ 1
59. M	conv.+ ☐ 0 ☐ 1	**59. Y**	conv.+ ☐ 0 ☐ 1	**59. A**	conv.+ ☐ 0 ☐ 1
60. M	organic ☐ 0 ☐ 1	**60. Y**	organic ☐ 0 ☐ 1	**60. A**	organic ☐ 0 ☐ 1