

CHAPTER 2

METHODOLOGY

This chapter is representing the methodological procedure of the work. First of all, the own research process is described followed by the interviews which have been prepared, conducted and analyzed. In the last part of the methodology chapter the structure and the own approach of the strategic market analysis is presented.

2.1 Own research process

At first, via literature review and practical experience in the plant breeding company NPZ (Norddeutsche Pflanzenzucht Hans-Georg Lembke KG) important theoretical principals were established in order to determine the relevant research objectives. The company NPZ is an international operating plant breeder and distributes varieties in over 30 countries. Their main business is the breeding and sales mainly of winter rapeseed and legumes like field bean and field pea seeds. In the last four years NPZ is also active in the commercialization of soybean seed.

To provide specialized knowledge in this subject, the own observation process also includes field visits, field days and the attendance at expert conferences at which important personal contacts with specialists could be established. This served for setting a frame around the soybean branches along the agricultural value chain which are to be analyzed.

Figure 1 shows a scheme of the value chain according to Strecker et al. (2010). The areas shown in light blue will not be investigated in detail because the focus was laid on adjacent sectors of the seed industries from the first and second stages of processing. The first stage includes manufacturing of oils and meals; the second includes the manufacturing of compound feed or tofu for human consumption. As there is the requirement of non-GMO seeds adapted to European regions the plant breeding and seed producing industry will be included as well.

For the areas shown in dark blue, at least one representative expert of that sector has been interviewed.

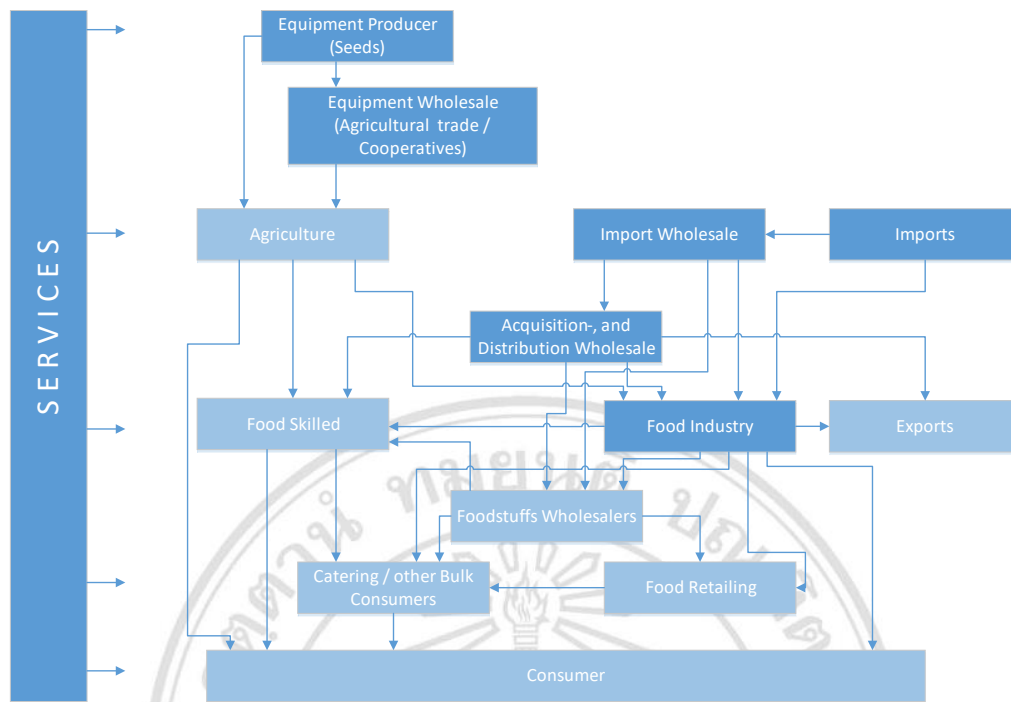


Figure 1 Agriculture and food value chain

Source: Adapted from Strecker et al. 2010, p. 28

A market development is dependent on much more aspects and market interdependencies particularly on its actors and consumers. There are for example lobbyists of various interest groups. Political interventions often serve to force markets in certain directions. Therefore, views from different market segments can be very revealing in terms of intentions and assessments on market chances and limitations (Strecker et al. 2010).

Since the market for soybean seeds is not yet fully established as a common crop in several countries within the EU, the first investigated segment was research and development. Research and development is a substantial upstream sector of the agricultural- and food value chain structure depicted above. For the part Equipment Producer, experts of the plant breeding industry had been interviewed. For the part Equipment Wholesale, a large feedstuff producer as well as an oil mill were chosen in order to cover the main transformation processes. Moreover, the oil mill business involves also the sections Import Wholesale and Acquisition- and Distribution Wholesale. Regarding the Food Industry a large European tofu producer, who is delivering food to wholesale and retails, was chosen to give information on that part.

Afterwards, the interviews form the data base on expert opinions, which are then discussed in a market analytical context. This includes the independent soybean market observation before and during the period of analyzing the interviews.

2.2 Analysis of Europeans soybean growing potential

In order to investigate the soybean growing potential in Europe and therewith, answering the research question 4 about acreages, which could be replaced by soybeans, the expiration is as it follows. In a first step the growing conditions of the largest soybean growing countries, the US and Brazil, will be compared to Europe to capture its growing conditions in general. Within a second step a possible crop substitution by soybean will be examined on the basis of revenue situations and further crop cultivating influencing factors.

2.3 Systemized expert interviews

The epistemic goal of systematizing expert interviews is an extensive and comprehensive collection of expert knowledge regarding the research topic. This form of interviews has been chosen because it can systematically provide information where the interviewed expert functions as advisor. This regards technical knowledge as well as knowledge on processes. In both cases it shall be acknowledged which is reflexively available to the interviewees. Thus, the knowledge can be more or less directly requested without requiring specific hermeneutic techniques. Hence, the interviews are conducted with a very differentiated guideline. In that way, all information gaps shall be closed.

Each expert has been chosen as representative for a certain branch and the interview refers to a clearly defined section. This means that the expert knowledge shall help to inductively conclude generalizable information (cf. Mayring, 1999 in Mayer, 2013). For the evaluation of the expert interviews the qualitative content analysis is suitable (Bogner et al., 2014) which will be discussed in chapter 2.3.4.

2.3.1 Preparation of the interviews

As expert interviews require careful planning, initially a comprehensible selection of experts was done – the so called sampling. Criterion for the selection of interview partners was, first that soybeans play a role within their product range and, secondly that

the companies have notable market shares. When selecting the interview partners, their individual relevant position, within the company and the relation to the soybean market have been identified. Additionally, the interview partners have been chosen with respect to their international network to clients and suppliers. Also knowledge on the organizational structures and the distribution of developmental competences in the respective developmental field are required. Thus, for example the plant breeding company Saatzucht Probstdorf is active in Romania, Slovakia, Czech Republic, Hungary and the Ukraine. RKW and Josera already made partial use of soybean commodities from the EU and Danube Soya has a great network within the EU via own on site workers and numerous projects. This information was gathered via theoretical preparations and considerations (Mayer, 2013) which forms the basis for a flexible concept. This shall fully give account to the chosen reality section and shall function as the basis of the guideline.

Eventually, two experts from different branches, connected to the seed industry were selected as an GMO-free production can only start with GMO free seed and is therefore crucial for the value chain. This means the interviewees are from the segments of plant breeding, research and development (R&D) and feed and food industry. Regarding the policy relevant activities, also chairmen of non-governmental organizations, associations and the processing industry should be part of the survey. These sectors form the close environment to the plant breeding industry and are therefore more relevant than downstream sectors. Covering all sectors would go beyond the scope of this master thesis. Table 1 shows the companies or organizations with the corresponding experts.

After selection of expert interviewees contact was immediately established. This took place via telephone or e-mail.

Table 1 Overview of interviewed partners and sectors (sample structure)

Sector in the agricultural value chain	Company / Organization	Interview Partner
Research and development	University of Hohenheim - Regional office for plant breeding Taifun Tofu- Life Food	Mr. Miersch , head of the agricultural centre for soybean cultivation and development
Plant breeding industry	NPZ- Norddeutsche Pflanzenzucht	Ms. Beyermann , International sales manager
	Saatzucht Donau Probstdorfer Saatzucht	Mr. Birschitzky , general manager Mr. Mayr , soybean breeder
Acquisition and processing - Feedstuff industry - Food industry	RKW – Raiffeisen Kraftfutterwerke Kehl Josera – Quality fodder supplements	Mr. Stoll , general manager Mr. Marquart , head of purchasing
	Taifun Tofu – Life Food	Mr. Miersch , head of the agricultural center for soybean cultivation and development
Oil mill	ADM – Archer Daniels Midland Company	Mr. Van der Poel , general manager
Non-Governmental Organization	Bioland- Action Group Genetic Engineering-Free Agriculture	Dr. Eichert , head of the Bioland state association
	Danube Soya	Mr. Krön , general manager

Source: Own table 2016.

2.3.2 Development of the interview-guidelines

When carrying out interviews with experts in the context of qualitative research, these are usually semi-structured interviews. For the preparation and implementation of these interviews guidelines are developed, which fulfill a dual function: they serve the structuring of the investigated topic as well as function as specific aid and orientation guide in the interview situation. Hence, prior to the survey as well as during the survey guidelines are an important tool within the interviews (Bogner et al., 2014).

Questions are formulated in an open manner during the interview which gives the interviewee the possibility to reply freely. With the consistent usage of the guideline the comparability of gained data shall be increased. The guideline shall ensure that all important aspects of the research question will be included during the interview. Nevertheless, this method is characterized by openness of the qualitative research. This means that the guideline does not have to be strictly followed in any situation. The interviewer has to decide if and when additional inquiries towards statements of the expert are suitable (Mayer, 2013).

First of all, central topic clusters were set based on systematic preliminary considerations. For this matter prior intensive branch and topic research was done. This resulted in groups of the guideline interviews into the following categories: regionality, pricing, agricultural policies, countries, markets, feed and GMOs. All questionnaires can be found in the annex III-IX.

2.3.3 Interview process

To ensure a relaxed interview atmosphere, the interviewee was confirmed confidential treatment of all information. This is guaranteed by personal verifying and agreement of the final interview excerpts which are part of the thesis. After approval of the interviewee, the conversations were recorded as memo. This created the possibility for the interrogator to handle the guideline with flexibility, because it was possible to fully concentrate on the interview. The aim is to give the interviewees space for possible additional relevant topics from their point of view (Kaiser, 2014; Bogner et al. 2014).

Monitoring and comprehension questions during the interview served the completeness and accuracy of data collection. At the end of each interview, the interview itself was made subject in order to gain the view of the expert towards the choice and completeness of the questionnaire. This procedure is recommended by Mayer (2013) to verify the quality of the questionnaire for the specific research area.

2.3.4 Qualitative content analysis

In the previous chapters it was shown how the theoretical frame as well as the collection of data were carried out. In this chapter, the methodological procedure regarding the empiric data analysis will be introduced. The following steps, which are based on Mayring's structuring content analysis, were carried out in order to examine and evaluate the gathered data. Mayring suggests an open procedure in which possible categories shall evolve from the existing material. For the specific practical approach Mayring designs a *general content analysis flow model* (Mayring, 2003), which structures all activities of the qualitative content analysis in the following eight steps:

1. Determination of the material

This step serves the primary reduction of the data material which is to be investigated. Only those parts of the interviews, which aim at answering the research questions, are selected. In the case of this study all interviews, which had been carried out, were also relevant.

2. Analysis of the formation situation

In this step the context, in which the interviews were carried out, is of interest. This includes who gathered the material, who took part in the interview and what position the interviewees have in the company. Information regarding these questions were already given in the previous part of the methodology (chapter 2.3.1).

3. Formal characterization of the material

This step is about accurately determining and documenting the material. Transcribed interviews are often the basis of the content analysis, which also applies for this study. It is of importance to designate the type of transcription and their conventions. In this study, no pauses, tones of voice or para linguistic elements have been included into the evaluation, as in this case the data analysis is about the commonly shared knowledge. The transcription of the interviews included the entire interview contents (questions and answers) (Mayring 1999) in (Mayer, 2013)

4. Determination of the course of analysis

It must be determined, on which aspects of the existing material statements shall be made. Hence, it will be possible to align the analysis to the thematic contents of the gained material.

5. Theoretical differentiation of the research question

In order to act according to all scientific requirements, it is important to meet precise rules and systematization. The result must be intersubjective verifiable. The information arising from the content analysis shall be presented within a frame of existing scientific results and discussions on the topic. In order to guarantee this requirement, current market reports about the soybean market situation, projects and other studies were constantly followed (Mayring, 2003).

6. Determination of the analytical technique

It has to be decided which type of content analysis procedure is most suitable to be applied. In this study the qualitative content analysis according to Mayring is used, because the questionnaire was already structured with the respective background knowledge. The aim is to filter out certain aspects of the material and to estimate the entire material based on certain criteria (Mayring, 2003). Therefore, categories were defined, which are adapted and modified to the own data set in order to answer the objectives of this work. In the chapter 4.1 Analysis of the expert interviews examples will be presented for illustration.

7. Definition of units for the analysis + 8. Conduct of material analysis

The Expert Interviews were implemented by means of a content analysis, particularly by applying a coding scheme. Qualitative research is defined by Patton (2002) as follows:

More generally, however, content analysis is used to refer to any qualitative data reduction and sense-making effort that takes a volume of qualitative material and attempts to identify core consistencies and meanings (Patton, 2002, p. 453).

The collected primary data for this case study was transcribed into rich text format and then evaluated in terms of a content analysis with the computer-assisted qualitative data analysis software (CAQDAS) Atlas.ti. The data is coded first and then structured and retrievable (Bryman, 2004). The researcher is assisted with the handling of lots of information. Coding data with Atlas.ti was the focus of this qualitative data analysis. Thus, data chunks and text passages from one or different documents as well as emerging topics are connected (Gibbs, 2004).

First and second cycle coding is differentiated by Saldaña (2009). In the first cycle coding, pieces of data are assigned to codes, as for instance paragraphs or sentences. Second cycle coding categorizes the first cycle codes according to themes or constructs which results in pattern codes (Miles et. al., 2014).

The coding followed the methods described by Saldaña (2009). Descriptive coding was one of the different coding methods that were chosen for the first coding cycle. ‘Descriptive Coding assigns basic labels to data to provide an inventory of their topics. Many qualitative studies employ descriptive codes as a first step in data analysis’ (Saldaña, 2009). Furthermore, sub codes can be used when they are applicable (e.g. chance/ policy/ greening or limitation/ policy/ threshold values). The method provides a base for further content analysis in qualitative studies. It supports the user with an organizational structure for the study and categorizes the data at an easy level. Thus, the method is especially suitable for first-time users of CAQDAS (Saldaña, 2009).

The pattern codes in the second cycle coding were composed closely along the study’s aims and the interview guideline. This helped to put the recorded data into a few analytical units, so that information could be processed easier and to refocus the analysis on the research question.

2.4 Strategic market analysis

In doing a market analysis one is analyzing the standing of a business on the market. A methodical investigation assists the observation of the market and should create a market transparency. In order to have strategic proceedings, the market analysis bases itself on Wübbenhorst's model (2016) (figure 2). Because a market analysis is a very extensive undertaking, chosen sections were worked on, since a complete scheme would

be beyond the scope of a master thesis. The areas that are covered in this work are: World Market Price, Usage & Attitude including the sections of Customer Survey and Market Segmentation as well as a Market Forecast with the sections Market Observation and Forecast.

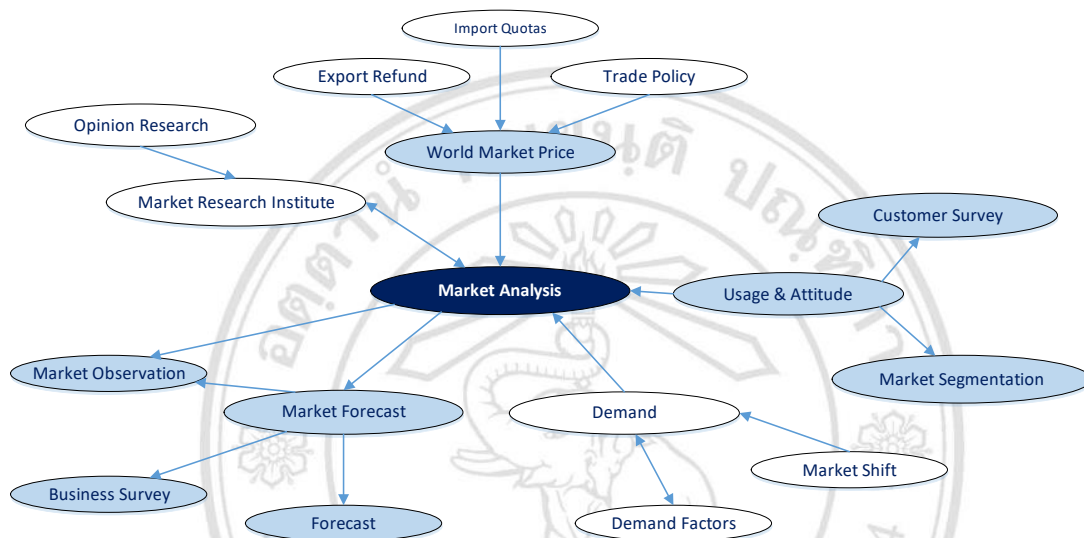


Figure 2 Mind map of a market analysis
Source: Adapted from Wübbenhorst 2016.

In doing a market analysis there is always a specific market that is of interest. In this case the product is the non-GMO soybean commodity market in Europe. In looking into individual sectors of the soybean agricultural and food value chain also the business politics are of interest. This assists in understanding the attraction and influence on the commodity market as well as recognizing the driving and impeding forces of today and in the nearest future.

Methodically, market analyses are based on statistics and opinion polls (Wübbenhorts, 2016), which are presented in chapter 4 as the second part of the market analysis. Therefore, experts, that showed interest in the intended market, were intentionally chosen from different branches and they were interviewed based on the in 2.3 described method. Identical questions to the macro environment, political, economic, socio-cultural and technological factors, allow a statistical evaluation, which is part of

chapter 5. On this occasion, major contributing findings with regard to chances and limitations of a European soybean market are listed and discussed. To gain a different understanding of the macro environment, the first step includes the segmentation of the market (Hungenberg, 2014). This was already considered as much as possible in the selection of the interviewee (see chapter 2.3.1). Therefore, the given interviews of the experts represent the field Usage & Attitude.

The field Market Forecast is made up of the expert's prognosis statements and the continued independent Market Observation. The online and literature inquiries in chapter 3 The European soybean market analysis includes current basic market information as well as outlooks that will assist the market observation. Thus, chapter 3 and 4 are the evaluation of the expert's opinions and the following discussion about the current state of the market is the basis for a possible forecast.



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