Analysis of a Business Field Extension and Implementation of a Business Plan along Agricultural Services

Master Thesis
of
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Abstract

This master thesis presents a detailed analysis of a business field extension along three agricultural services: crop spraying, slug pellets spreading and lime sand spreading. Insights from the fields of market analysis, competition strategy, marketing, cost accounting calculation, pricing and financial planning are provided in a way that enables a practical implementation by the Ackerl Co. Since the Ackerl Co. is a trading company in the field of agriculture, theoretical methods and strategies are always supported by recommendations for practical applications for the company.

Major findings during the introduction section were the inducement factors which influenced Johann Ackerl, the founder of the Ackerl Co., and planted the idea of setting up the providing of agricultural services. The inducement factors are used to identify attitudes and mindset of Johann Ackerl on which the vision and mission statement are based on.

During the market analysis insights and knowledge about the customer target group, asking 108 customers of the Ackerl Co. about their preferences and opinions about the different planned agricultural services (quantitative research with surveys). Outcomes were: There is an existing market for the different services and all markets will grow in the future, due to the fact that more and more farmers are considering to outsource farming operations. Another important result is, that the major part of the asked farmers want to outsource the whole process chain from procurement of the products (plant protection products or lime sand products), over guidance, independent application from the contractor to the documentation of the operation and application.

The competition analysis and strategy is giving the knowledge, that there is a low number of commercial competitors in the region around Sattledt which provide ident services. For the plant protection services as major competitor the Maschinenring is considerable. For spreading dry lime sand products there are no direct competitors. The SWOT analysis reveals among several strengths of the Ackerl Co. like a good product knowledge as well as good connections to the farmers and suppliers.

The marketing process displays the most important aspects for: Product, Place, Promotion, Physical facilities, People, Price and Process. The finding of the appropriate machines to provide the services is done by a scoring method.

The financial sections of this thesis deals with the different pricing methods and present one possible financial plan for the first five fiscal years. For each agricultural service a cost accounting calculation is done and the pricing of the different services is based on costs as well as on existing prices from competitors.

Kurzfassung

Diese Masterarbeit befasst sich mit der Entwicklung eines Businessplans zur Geschäftsfelderweiterung hinsichtlich den landwirtschaftlichen Dienstleistungen: Pflanzenschutz, Schneckenkorn-Streuen und Kalk-Streuen. Die bearbeiteten Themen Marktanalyse, Wettbewerbsstrategie, Marketing, Kostenrechnung, Preisfindung und Finanzplan werden bearbeitet, sodass eine praktische Umsetzung durch das Unternehmen Ackerl einfach durchführbar ist. Da das Unternehmen Ackerl als Handelsbetrieb im Bereich Agrarprodukte tätig ist, wird in dieser Arbeit die fachliche Theorie zu Methoden und Strategien stets durch Empfehlungen für die praktische Anwendung und Umsetzung untermauert.

In der Einleitung werden die wichtigsten Kriterien und Anreize, die Johann Ackerl, der Eigentümer des Unternehmens ist, dazu bewegten, landwirtschaftliche Dienstleistungen als Serviceportfolio in Erwägung zu ziehen, präsentiert. Diese Faktoren werden genutzt um ein Bewusstsein für die Hintergründe und Beweggründe von Johann Ackerl zu schaffen, aus denen in weiterer Folge die Vision und Mission des Unternehmens entwickelt werden.

Durch die Marktanalyse werden Einblicke in die landwirtschaftliche Dienstleistungsbranche gewährt und Informationen über die Kundenzielgruppe können gewonnen werden. Die Hauptinformationen stammen aus einer Umfrage an 108 Kunden der Firma Ackerl (quantitative Untersuchung). Wichtige Erkenntnisse aus der Befragung sind:

1. Es existiert bereits ein Markt für die geplanten Dienstleistungen, welcher in Zukunft wachsen wird.
2. Der Großteil der befragten Landwirte bevorzugt bei der Auslagerung der Maßnahmen die Auslagerung der ganzen Prozesskette von der Beschaffung (Pflanzenschutzmittelprodukte, Kalkprodukte), über die Beratung, eigenständige Anwendung bis hin zur Dokumentation der Maßnahme und Anwendung.

Die Wettbewerbsanalyse und -strategie zeigt, dass eine geringe Anzahl an gewerbliche Mitbewerber rund um Sattledt, welche vergleichbare Dienstleistungen anbieten, existiert. Nennenswert als Mitbewerber im Pflanzenschutzbereich ist der Maschinenring. Für die Kalkstreuungsdienstleistung für Trockenkalke gibt es derzeit noch keinen Mitbewerber. Die durchgeführte SWOT-Analyse zeigt unter anderem die Stärken des Unternehmens Ackerl auf, wie zum Beispiel die gute Produktfachkenntnis der Mitarbeiter sowie die guten Verbindungen zu den Landwirten beziehungsweise zu den Lieferanten.

Der Marketing-Prozess gibt die wichtigsten Aspekte für Produkt-, Vertriebs-, Preis-, Kommunikationspolitik sowie zu Ausstattung, Personal und Prozesse, wieder. Um die richtigen Maschinen für die Anwendung der Maßnahmen zu finden, wird eine Nutzwertanalyse erstellt.

Der Finanzteil dieser Arbeit zeigt die Preisfindung sowie einen möglichen Finanzplan für die ersten fünf Geschäftsjahre. Für jede landwirtschaftliche Dienstleistung werden eine Maschinenkostenrechnung sowie eine Gewinnschwellenberechnung erstellt.

Table of Contents

1 Introduction

In the first chapter, the current situation, targets, task and the study area of this thesis for Ackerl Co. are discussed. The current situation of the Ackerl Co. is setting up the argument or the consideration for the planned company extension. The targets are developed from the current situation and then turned into tasks. In the final part of this chapter the study area is given.

1.1 Current situation

The Johann Ackerl Co. is a trading business which is active in the area of agricultural products, building materials and beverages. In addition to the three trading branches of the company, the beverage branch has a business offspring, which provides a beverage and event equipment service for sale and return to event organizers. The family owned business is in Sattledt, located in the central area of Upper Austria. At the moment, Johann Ackerl employs eight part- and full-time workers for the administration, logistics and sales.

With a wide structure based on the three different business branches, the Ackerl Co. has traditionally grown sustainably. More recently, the Ackerl Co. has had to deal with increasing competition in the agricultural trading segment, which has resulted in a stagnated turnover over the past few years for this branch. Furthermore, the market forecast shows a stagnant trend in the agricultural branch of the company, which can be explained by several reasons. One is the high number of active providers in this business field, which all offer equal or comparable products and will continue their business practices. To create separation between the agricultural trading competitors, the company would require a unique selling proposition. But since there are no significant differences in the products themselves, there is not much room for potential in offering better services and/or offering the products at another price level. [1]

A further reason is the structural change in agriculture. Figure 1 shows, that there has been a decreasing trend in the number of farms. In 1990 more than 45,000 farms were operating their properties in Upper Austria, while there are only 30,000 farmers left operating their farming business in 2010.[2]

The logical reversing of the issue above is, that the average farm size has increased, which means that a given farmer is cropping on average more land than before. As a result, those bigger farmers (major customers) become more important to the company, due of their high turnover potential.
The average farm size in the manner of land (including forests, madows and fields) increased by about 50% in the last 20 years. In 1990 an average Upper Austrian farmer cropped 21.4ha. 20 years later in 2010, farmers had 31.8ha in average.[3]

[1] Interview/Conversation with: Ackerl, Johann (06.11.2016)
[2] Cf. Land OÖ. 2010, (online); accessed 08.11.2016
[3] Cf. Ibid.

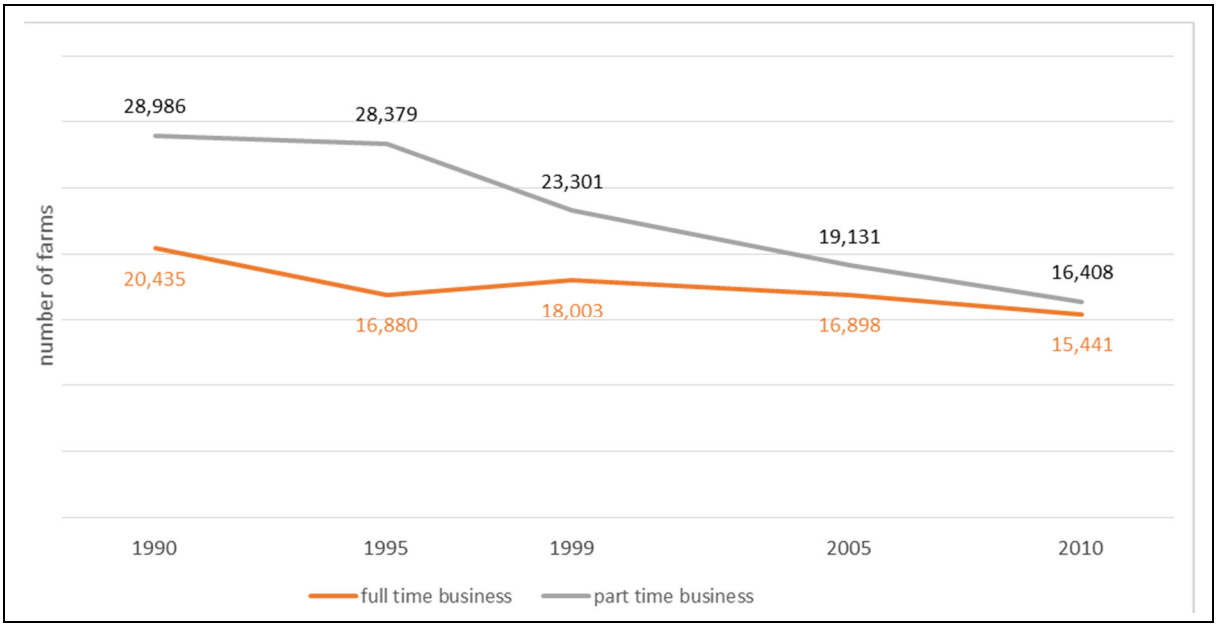

Figure 1: Number of farms in Upper Austria[4]

An entrepreneur cannot run his business without major customers, as they ensure the company's market share and have a multiplier effect on middle and small customers. Major customers usually demand a higher care expense and push prices, however, and are therefore not always the most profitable.[5]

In order to differentiate itself from competitors, the company is considering establishing an additional agricultural supporting leg. By providing agricultural services in addition to trading products, the company will develop a unique selling proposition and gain additional income for its agricultural branch.[6]

Therefore an analysis of the business field extension and implementation of a business plan regard to agricultural services should be investigated.

1.2 Targets

Upon completion of this master thesis, the paper offers a decision and procedure draft for the planned business extension to the Ackerl Co. The following agricultural services will be covered by the research of this thesis, which include crop protection and lime spreading services (dry sand). The former encompasses a crop spraying service and the spreading of slug pellets.

[4] Cf. Ibid.
[5] Cf. Biesel (2004) p. 151
[6] Interview/Conversation with: Ackerl, Johann (06.11.2016)

The following targets are related to the three aforementioned services: crop spraying, slug pellets spreading and lime sand spreading. All listed targets below have to be fulfilled for each of the three defined services.

1. Specified customer needs and requirements for the different agricultural services in terms of customer demand and customer expectations, represented in a table. The results of the analysis determine the choice of a suitable application and process possibility.
2. Specified selection of one application equipment out of possible machine types for each agricultural service. The selection has to be based on the results of the analysis of the needs and requirements of customers.
3. Demonstration of the future position of the company compared to competitors in the agricultural service.
4. Demonstration of the company's future situation in the industry field which covers possible followers in this business field and to make other environmental interest groups visible.
5. Results of the economics of each agricultural service.
6. Demonstration of the financial impact on the company.
7. Creation of a future business strategy for the company extension.

As sum of all listed targets above, the main target is to answer the question if there is a possible overall economic effect on the business.

1.3 Task

The following tasks are necessary to fulfill the defined targets in the previous chapter:

ad 1. The analysis of the customer needs and requirements will be investigated through a customer survey. For this, the questioning will be in qualitative manner to customers of the Ackerl Co. To reach a high return rate of the survey and get qualitative and relevant information from the customers, employees of the Ackerl Co. will conduct them personally with the help of a questionnaire during their customer Christmas visits.

ad 2. Based on the results of the customer demand and expectations through the analysis, one possible application equipment and process has to be chosen. To fulfill the expectations of the customers as much as possible and offer a reasonable business opportunity for the Ackerl Co., a value analysis is performed.

ad 3. The competition analysis has to cover all potential and perceived companies, which already offer comparable agricultural services for farmers. To get a view of the company position in this service market, a SWOT analysis depicts the business's situation going forward.

ad 4. Based on Porter's five forces analysis the industry analysis is investigated. Market entry barriers are discussed in regard to comparable industry participants (market followers).

ad 5. For each agricultural service, an investment or machine calculation has to be made for the chosen application equipment. A scenario-analysis (worst-, trend-, and best-case-scenario) and a break-even-point calculation must be performed for every agricultural

service type. To get different customer demand values for the calculation of the different scenario analysis, reasonable assumptions need to be discussed.

ad 6. The financial plan has to include all three agricultural services and should show the financial impact on the company for the future. Most importantly, the financial planning must detail the financing requirements for the company.

ad 7. A business plan is the basic manner to picture a future business strategy. By including a mission and vision statement, determination and development of a possible unique selling proposition, and a marketing strategy, the company can start planning its possible business extension.

1.4 Study area

The customer survey will only be given to customers of the Ackerl Co. in the closer area of 50km. To get a viable statement of the questioning, an accurate number of the customer demand for the different services, and an idea about the expectations of the customers, at least 100 customers of the Ackerl Co. have to be interviewed.

The value analysis for the respective service should cover a maximum of three possible application machines or rather processes. The one with the best results to fulfill expectations and cover the customer demand is considered for the further business extension planning.

Because of the regional accessibility of the agricultural services, the competition and industry analyses must cover the market participants which are in the radius of 10km of the company's location. Best practice examples of competitors from further distances can be overtaken for the possible business extension.

The finance plan for the company should depict the next five financial years for the agricultural business service branch.

1.5 Procedure

The procedure for this thesis and therefore, the time plan is pictured in the table on the next page.

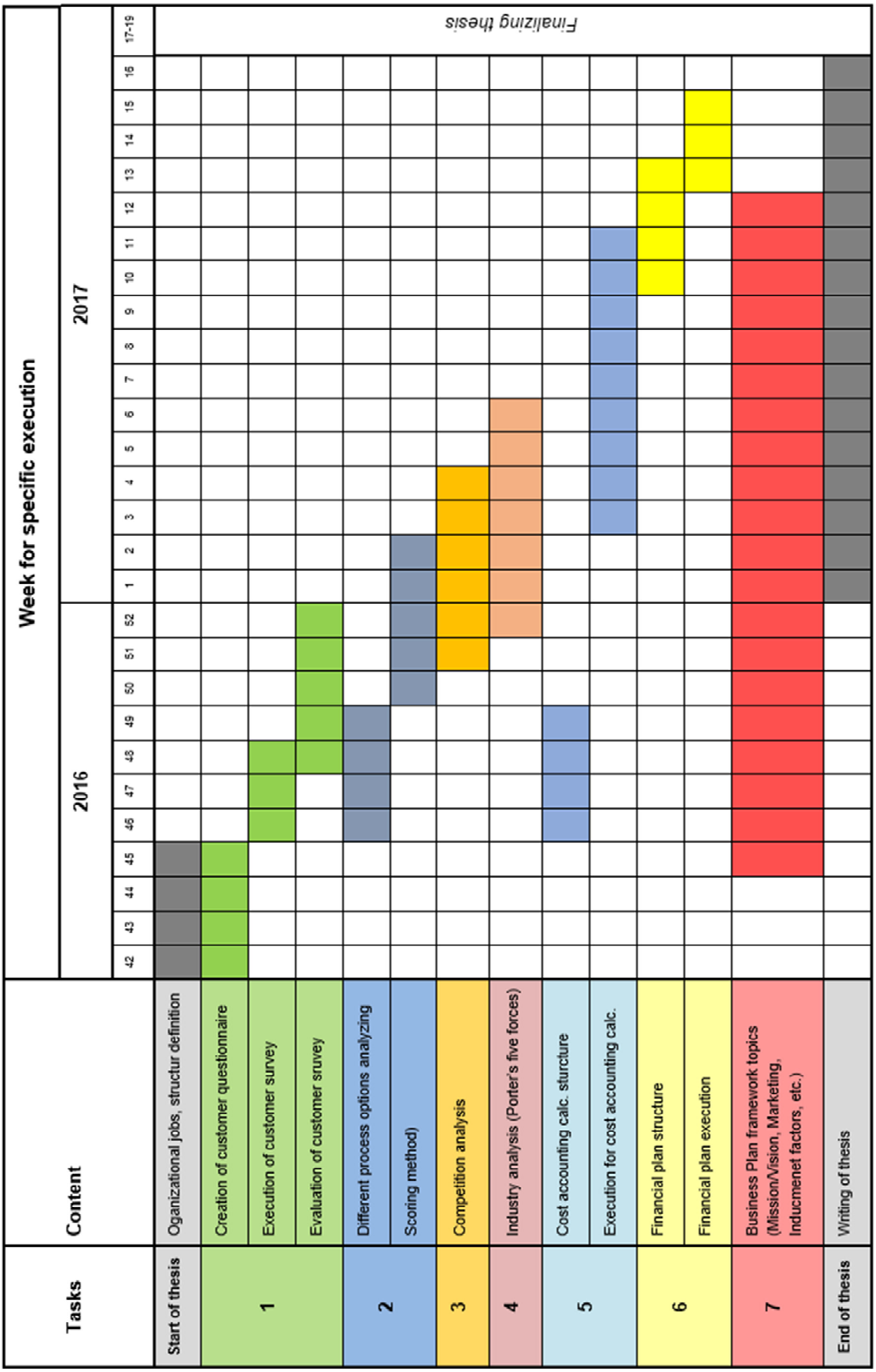

Table 1: Procedure

2 Inducements for the business idea

This chapter will explain the motivation and reasoning behind the business extension for the Ackerl Co. To explain the motivation based on the business idea factors, the history of the business is given. The history will show the long-standing company activity in the agricultural industry segment which represents the business roots of the firm.
In the last chapter 2.3, the term agricultural service contractor is defined. Furthermore, a short introduction of the planned services for the Ackerl Co. is given.

2.1 History of Ackerl Co.

Johann Ackerl started as commercial agent for animal feed in 1979. In addition to this venture, he ran his arable farm in Sattledt as a part time business. Through the agricultural background and the knowledge of trading, Johann Ackerl decided in February 1989 to found the Johann Ackerl Co. as a single enterprise in Sattledt, Upper Austria. The field of the enterprise at this point of time was trading animal feed, especially soy grits and animal feed concentrate.[7]

After the first bigger investment in 1990, which was dedicated to building the first warehouse beside the farmhouse for storing soy grits, Johann Ackerl decided to extend the product segment with seeds and crop protection products. Johann Ackerl hired his first employee, Gertraud Ackerl, his wife, for the administration part in the business. From there on, the company grew as family-owned business.[8]

In 1999 the Lagerhaus Genossenschaft closed its branch office in Sattledt. This was the opportunity to extend the product range of the company again. Johann Ackerl extended the business, trading building materials and providing a beverage pick up store. In the following year, he also started to sell and rent beverages and party equipment to event organizers.[9]

Continuously increasing the storage of products and also the turnover, Johann decided to invest again in a warehouse and in a storage area in 2006. Having two full-time employees and two part-time employees at this time, the company could grow safely and steadily. By only investing little money into marketing, it relied mainly on word of mouth to attract new customers.[10]

In mid 2016, there were two full time workers and 6 part time workers employed. The high number of part time workers is due to the need of additional workforce in the peak season of the event service business in spring and summer. As previously stated, the company could grow healthily and so the total turnover grew continuously over time as you can see in Figure

[7] Ibid.
[8] Ibid.
[9] Ibid.
[10] Ibid.

3. In particular, the beverage and the event service branch established itself in the market very well through 24/7 emergency service.[11]

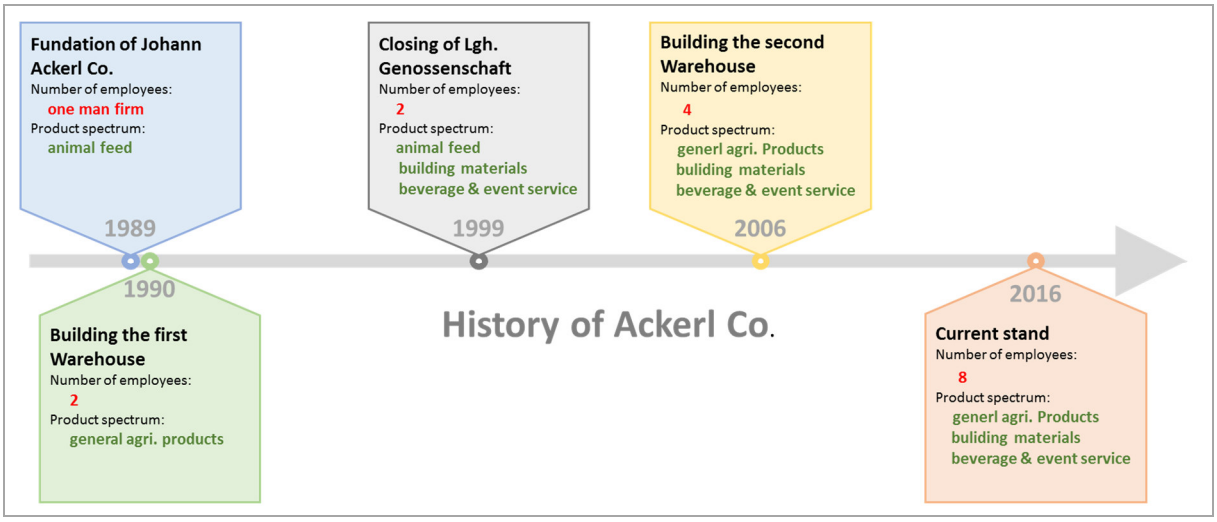

Figure 2: History of Ackerl Co.[12]

Currently, Johann Ackerl is still operating his arable farm in addition to the trading business, due to personal interest and his desire to keep the cornerstone of the business. Another reason to allot time for farming is to be in touch with current agricultural problems and have a thorough understanding and guidance level from farmer to farmer. As part of the farming business, Johann Ackerl provides a plant protection service in the framework of an agricultural neighborhood assistance. But as an offspring of the agricultural business, it is limited in turnover due to the Austrian regulation.[13]

[11] Ibid.
[12] Ibid.
[13] Ibid.

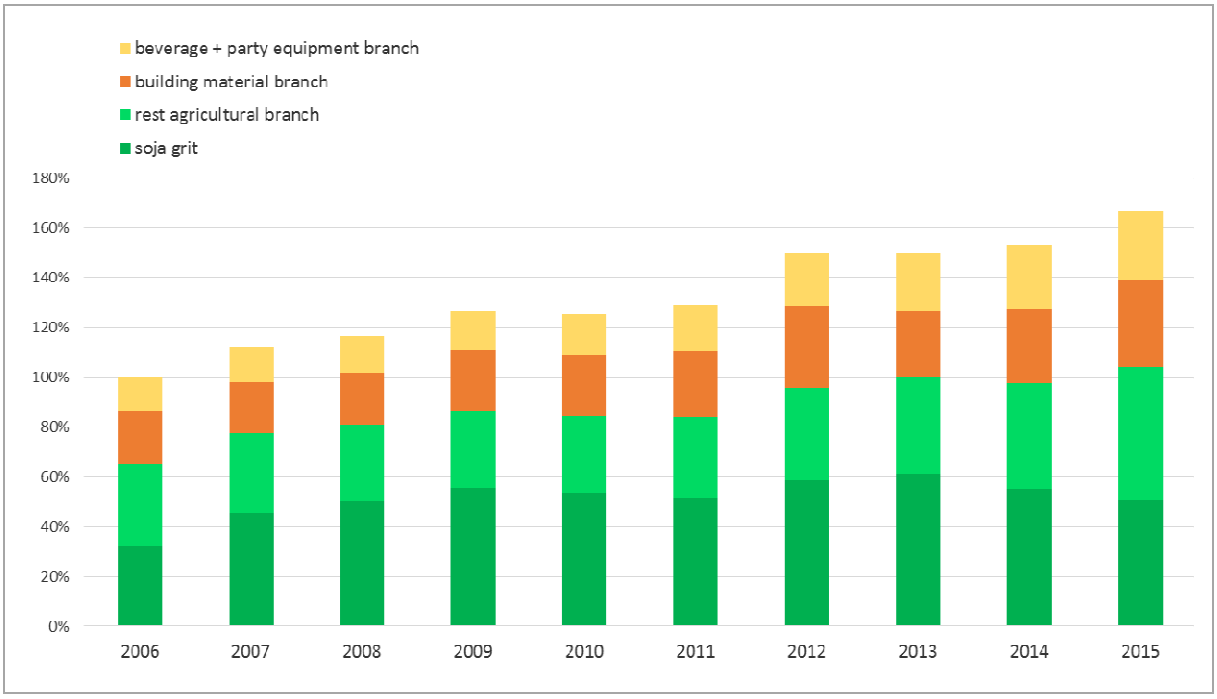

Figure 3: Relative turnover of Ackerl Co. (2006-2016)[14]

As shown in the diagram above, the company's overall business turnover increased steadily from 2006 to 2015.

2.2 Business idea factors

For a successful venture, a business idea must consist of the three following factors: an entrepreneur's ability, his connections and the market opportunities.[15] Before a launch of a whole business or a business extension should happen, entrepreneurs have to be completely convinced, that the business idea is a winner and there will be a market for.[16]
To summarize thoughts of the business idea for agricultural services and to be sure that a business extension along agricultural services may would be an option, there was a brainstorming session with Johann and Martin Ackerl. The goal of the session was to understand the current position of the business extension, which was explored in a mind map. The investigated results are mentioned point by point for every factor in the next sections.

[14] Interview/Conversation with: Ackerl, Johann (05.11.2016)
[15] Cf. Faktor. 2013, (online); accessed 08.11.2016
[16] Cf. MacKinnon Hansell. 2016, (online); accessed 22.11.2016

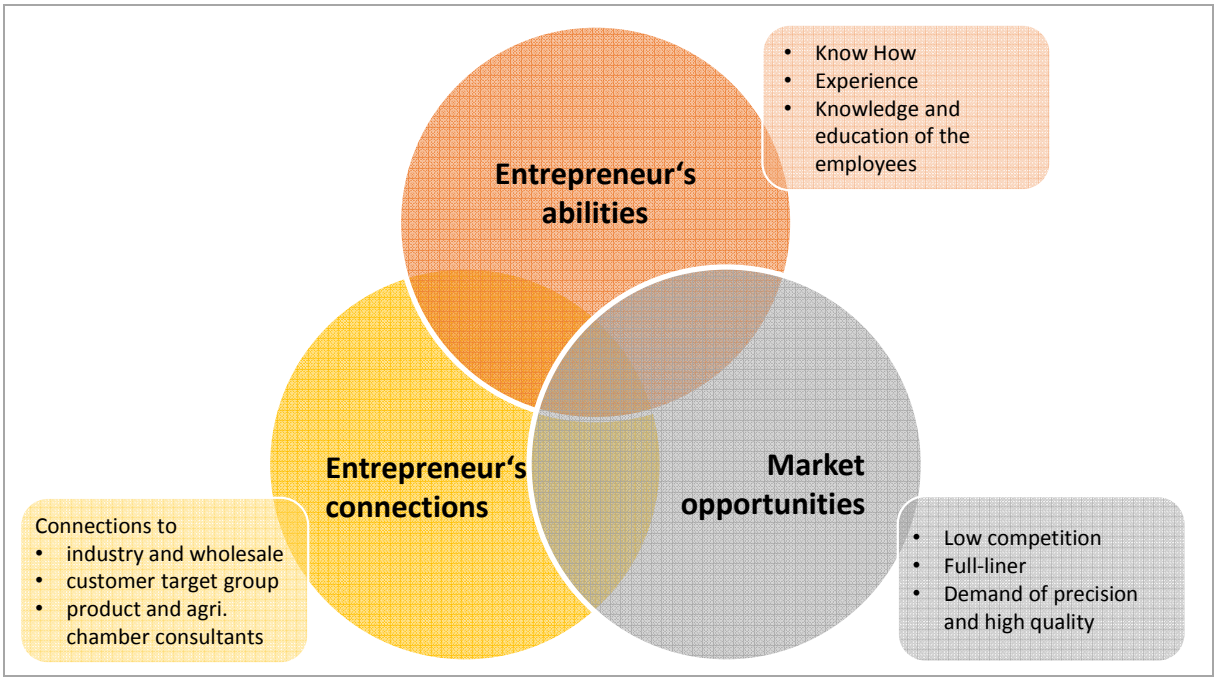

Figure 4: Business idea factors[17]

2.2.1 Entrepreneur's abilities

The ability of an entrepreneur is mostly determined by his skills. Everything from his personal strengths and weaknesses to his ability to bring a high passion for an idea will impact his venture.[18]

Know How

Due to the long activity in the field of agriculture, a farmer must know how the service has to be done on the crop. In addition, he must gain knowledge of the products (crop protection products and lime) through the trading activity and the farmer guidance farmer in the Ackerl Co.

Experience

Through the long activity in the business of crop protection products as previously stated, the Ackerl Co. provides individual crop solutions for farmers to have the sufficient effectiveness to a reasonable cost level.

Knowledge and education of the employees

The employees in the agricultural branch of the company all have an agricultural background, in that they grew up on a farm and are part time farmers or/and have an agricultural education. Regarding their job and their field of activity in the company they have adequate knowledge. Martin Ackerl, the agricultural branch manager, has a certification for professional crop protection services.

[17] Based on Faktor. 2013, (online); accessed 08.11.2016
[18] Cf. Ibid.

2.2.2 Entrepreneur's connections

The ventures can succeed if the entrepreneur has good relationships and a well-developed network. For every business idea, there is a need to access people, communities and channels, which bring a business idea to life.[19]

Connections to industry and wholesale

Through the company history of almost 30 years, there is a good knowledge about the industry and the wholesale strategy in the agricultural branch. There is a good connection to the wholesale managers and a perfect knowledge about seasonal varying demand.

Connections to customer target group

The customer target group are farmers for agricultural services. As previously stated, through the long activity in the field of trading agricultural products as well as the farming business of the Ackerl Co., there is a strong connection to this target group which demand those services.

Connections to product and agricultural chamber consultants

The relationship to the product consultants of the agricultural industries is perfect and communication is on eye level, due to the long alliance in partnership to the industries and wholesalers. In addition, the industry relies on the perfect guidance of the Ackerl Co. for the farmers. The connection to the agricultural chamber consultants is possible through the farming business.

2.2.3 Market opportunities

There are great ideas to meet the market demands, but not all of them are successful business ideas, because not every market opportunity needs to be that unique to base a business idea on.[20]

Low competition

Currently, there is low competition in providing the crop protection service as a full-liner, which means providing the products and the application service together. The acquisition of the knowledge and the right to trade crop protection products require a lot of effort and are quite difficult. For dry lime spreading as a whole package, there is no competition at all in the closer vicinity to Sattledt.

Full-liner

One half of being a full-liner for agricultural services (crop protection and lime spreading) is already covered through the agricultural trading part of the business. After the acquisition of the application machines for the service, a full service is possible.

[19] Cf. Ibid.
[20] Cf. Ibid.

Demand of precision and high quality

The requirements on the targeted services demand a high precision and quality level, especially for crop protection products the time of the application and the precise measure in the right time window is substantial. The understanding to apply the right products at the right time and conditions is achieved through the long guidance activities.

2.3 Definition of agricultural service contractor

Agricultural service contractors are entrepreneurs who provide a service (e.g. crop services, landscape and horticultural services) for other businesses. An agricultural service provider carries out the service for a charge. Those jobs or services (e.g. harvest, fertilization, crop protection or tillage) are sold to different types of customers, from farm-oriented enterprises to non-farm final customers.[21]

Agricultural contractors become a part of a value chain. They do not become the owner of the goods to which they carry out the service. Based on the customer, the activity to be done opens the question of making or buying.[22]

The planned agricultural services (crop spraying, spreading slug pellets, lime sand spreading) of the Ackerl Co. will be exclusively complete services, which means that the product is packaged with the service. The further cost and financial research on the possible business extension will focus only on the service itself. The experience to sell those products and the knowledge of the possible trading margins is not an issue due to the trading business of the Ackerl Co.

Further details of the planned service portfolio will be described in chapter 6.1.

[21] Cf. BLU - Bundesverband Lohnunternehmen e. V. 2016, (online); accessed 10.11.2016
[22] Cf. Ibid.

3 Mission and Vision Statement

In this chapter, the mission and vision statement of the company are given. This is necessary to give shape, identity and direction to the agricultural service organization. These statements only apply to the agricultural business branch of the company, in addition to the other business segments.

The normative level of a company is the definition of the company identity. It secures the ongoing ability for the preservation and the further development of the company. Company management subjects are, for example, the general company philosophy, the vision statement, the mission-statement and the company values. Decisions at this level have long-term effects and an indirect impact on the company.[23]
There are no exact and hard rules to develop a mission or a mission statement, but there are some general principles which should be followed.[24] Those principles and further details about the vision and mission statement are listed in the following chapters.

3.1 Vision statement

The vision statement is the concentrated expression of the striving future of the company. The vision answers the question, where the company will be in long-term view and what it is going to accomplish. A good vision statement should have the following principles:[25]

- Directional (future-oriented)
- Inspiring (a challenge which should wake enthusiasm)
- Plausible (achievable and realizable content)
- Concise (clear and understandable for each stakeholder of the company)

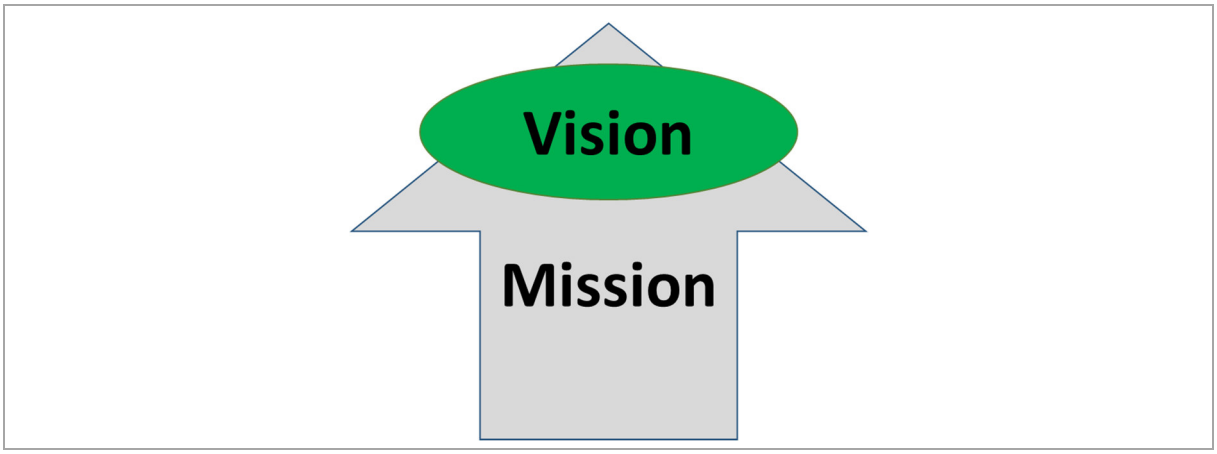

Figure 5: Vision statement[26]

[23] Cf. Bach, et al. (2012) pp. 9–10
[24] Cf. Millard. 2010, (online); accessed 02.12.2016
[25] Cf. Bach, et al. (2012) p. 11
[26] Based on Ibid. p. 11

To be successful in the long run of the future business, a company needs to have a vision which points the way. It defines the company goal in a long-term perspective. The vision serves the identity and the positioning of the company in the public as well as for identification and motivation for the company's employees.[27]

3.1.1 Examples of vision statements

In the following table, examples of famous and widely known vision statements of worldwide acting companies are given.

Short vision statements	
Disney	To make people happy.
Ikea	To create a better every day life for the many people.
Quantitative statements - based on numbers, quantities.	
Microsoft	A computer on every desk and in every home; all running Microsoft software.
Nike	Current: To be the number one athletic company in the world.
Qualitative statements – based on qualities that you want to have	
Ford	To become the world's leading Consumer Company for automotive products and services.
Avon	To be the company that best understands and satisfies the product, service and self-fulfillment needs of women – globally.
Competitor based statements	
Honda	In 1970: We will destroy Yamaha.
Philip Morris	In 1950s: Knock off RJR as the number one tobacco company in the world.
Role model vision statements	
Giro Sport Design	To become the Nile of the cycling industry.
Stanford University	To become the Harvard of the west.
Internal transformation vision statements	
Sony	Become the company most known for changing the worldwide poor-quality image of Japanese products.
US Armies Vision	To transform ourselves into a newer, leaner Army positioned for the 21st century.

Table 2: Examples of vision statements[28]

[27] Cf. Nagl (2015) p. 10
[28] Cf. O'Donovan. 2016, (online); accessed 20.11.2016

3.1.2 Vision statement for Ackerl Co.

To define a vision statement for the Ackerl Co., a brainstorm session with Martin and Johann Ackerl was set. The main question of the session to answer was: “Why is the Ackerl Co. still dealing in the agricultural market, despite small trading margins and high competition in the market field?”[29]

The outcome of the session, from which the vision statement for the Ackerl Co. can be easily derived are:[30]

- Keep the business roots of the firm.
- Look always for new and alternative business options to gain economic benefit.
- Do what you have passion for.

To summarize the mentioned points above in a short and easy to remember statement, the Ackerl Co.’s vision statement for the agricultural business branch is:

“From passion to agriculture”[31]

3.2 Mission statement

The mission statement is the description of the stable and valid task of a company. The mission statement answers the question of the company’s purpose and aim. It is independent of time and should be lasting valid. Often, customer requirements, markets and business activities are in the focus.[32]

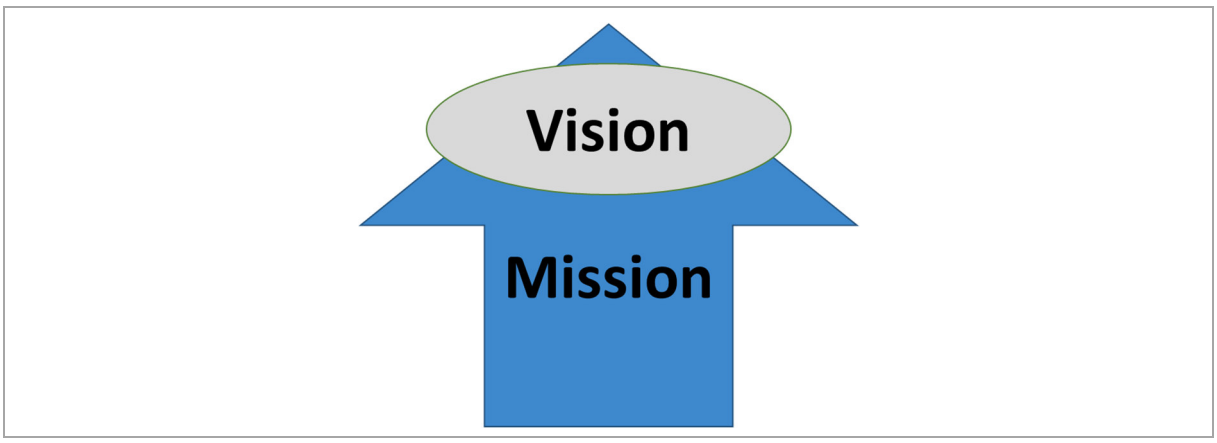

Figure 6: Mission statement[33]

[29] Interview/Conversation with: Ackerl, Johann; Ackerl, Martin (27.12.2016)
[30] Ibid.
[31] Ibid.
[32] Cf. Bach, et al. (2012) p. 12
[33] Based on: Ibid. p. 11

The implementation or the compliance of the mission sets the frame for the achievement of the overall company vision.[34]

3.2.1 Examples of mission statements

In the following table, mission statements of well-known companies are given.

Company	Mission statement
Disney	"The mission of The Walt Disney Company is to be one of the world's leading producers and providers of entertainment and information. Using our portfolio of brands to differentiate our content, services and consumer products, we seek to develop the most creative, innovative and profitable entertainment experiences and related products in the world."[35]
Microsoft	“At Microsoft, our mission is to enable people and businesses throughout the world to realize their full potential. We consider our mission statement a commitment to our customers. We deliver on that commitment by striving to create technology that is accessible to everyone—of all ages and abilities. Microsoft is one of the industry leaders in accessibility innovation and in building products that are safer and easier to use.”[36]
Sony	“At Sony, our mission is to be a company that inspires and fulfills your curiosity. Our unlimited passion for technology, content and services, and relentless pursuit of innovation, drives us to deliver ground-breaking new excitement and entertainment in ways that only Sony can. Creating unique new cultures and experiences. Everything we do, is to move you emotionally.”[37]
US Army	“The U.S. Army’s mission is to fight and win our Nation’s wars by providing prompt, sustained land dominance across the full range of military operations and spectrum of conflict in support of combatant commanders. We do this by: • Executing Title 10 and Title 32 United States Code directives, to include organizing, equipping, and training forces for the conduct of prompt and sustained combat operations on land. • Accomplishing missions assigned by the President, Secretary of Defense and combatant commanders, and transforming for the future.”[38]

Table 3: Examples of mission statements

3.2.2 Mission statement for Ackerl Co.

Similar to the procedure as in the chapter 3.1.2, the brainstorm session with Johann and Martin Ackerl was set to define a mission statement for the Ackerl Co.

[34] Cf. Ibid. p. 12
[35] Cf. Walt Disney Company. 2017, (online); accessed 10.01.2017
[36] Cf. Microsoft. 2017, (online); accessed 10.01.2017
[37] Cf. Sony. 2017, (online); accessed 10.01.2017
[38] Cf. U.S. Arny. 2017, (online); accessed

As result of the session and in inclusion of the basic focus points of a mission statement as mentioned above (customer requirements, markets and business activities), the mission statement for the Ackerl Co. is:

"The Ackerl Co.'s mission is to provide effective, latest and problem-solving products and services for agriculture and downstream areas. Especially providing complete agricultural services and the maintenance of a good relationship to customers and suppliers are the aspects to ensure maximum customer satisfaction in the future."[39]

[39] Interview/Conversation with: Ackerl, Johann; Ackerl, Martin (27.12.2016)

4 Market analysis

A business plan requires a detailed analysis of the target market. The main task of a successful market analysis is the investigation of the attractiveness and the dynamic of a market. In particular, the relationship of the company to potential and current customers is the main part of the market analysis. Therefore, a restriction of the total market into the relevant market in which a company is acting, is necessary.[40] First, the entirety of the market (e.g. total car market in Germany) as well as market segments (e.g. market segment for SUVs in Germany) need to be researched.[41]

The market analysis is a fundamental part of marketing. It is inseparable from other areas of marketing, because sufficient knowledge about the target market group and the market is essential in order to adapt offers to customer needs as well as influence them.[42]

In the following parts of this chapter, market research is introduced, which then is used for the customer analysis, analysis of customer needs and requirements, market size analysis and further also in the competitor analysis.

4.1 Market research process

In this chapter, a typical process for market research is presented which is used during the research for the following chapters to analyze the market and to identify the following: market potential, customer, customer needs and competitors.

There are often process models with five phases: definition, design, data collection, data analysis and documentation. But in practice those five phases model can vary.[43] As you can see in figure 7, a schema with the typical phases of a market research process with seven phases according to Kuß is the template for the market investigation. The process implies that there is a strong dependency between the phases. Weaknesses or failures in early phases cannot be fixed by special care or great effort in later phases. For example, if there are deficiencies in the collection of the data, a sophisticated data analysis cannot compensate those deficiencies. In this sense, the result of a market research is just as good as its weakest component in the process.[44]

[40] Cf. Dillerup, et al. (2011) 193 ff
[41] Cf. Nagl (2015) p. 13
[42] Cf. Kuß, et al. (2014) p. 1
[43] Cf. Magerhans (2016) p. 47
[44] Cf. Kuß, et al. (2014) pp. 10–11

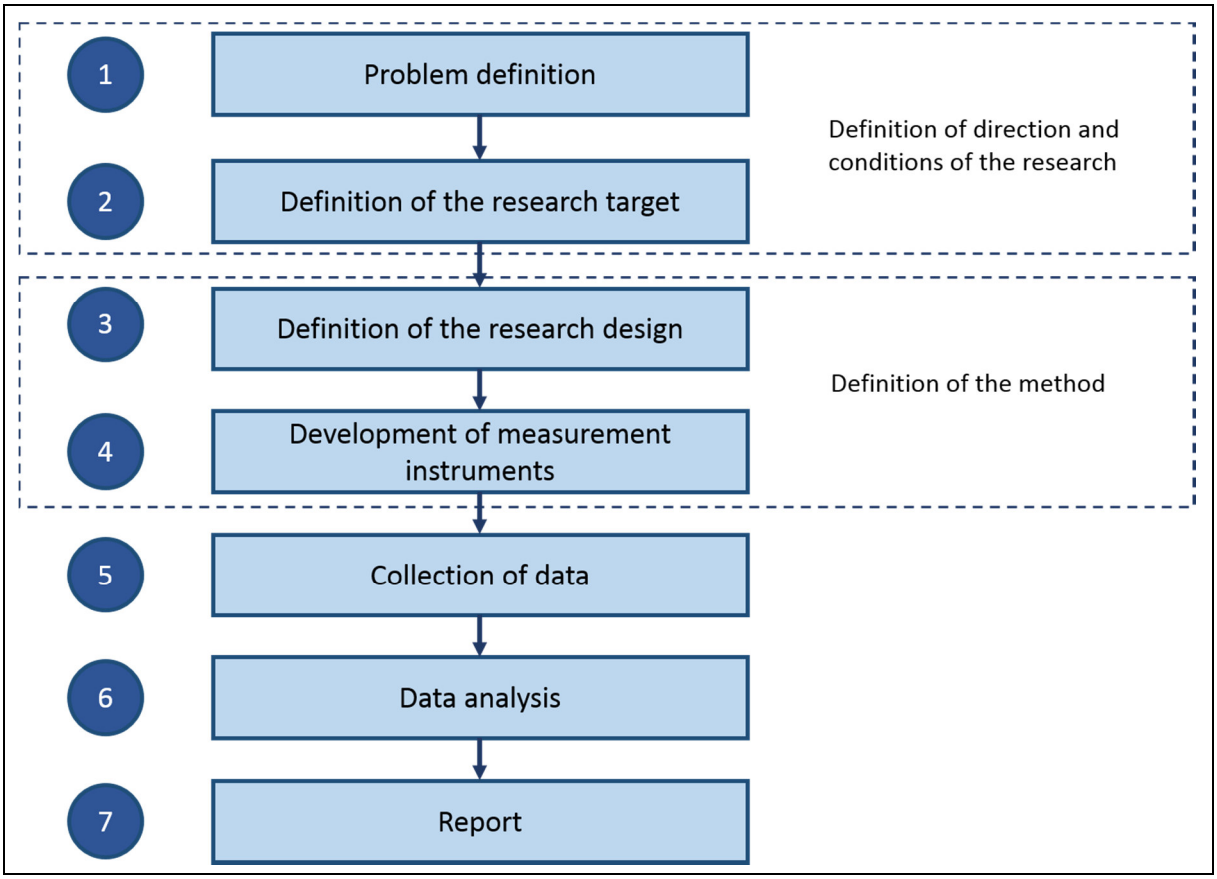

Figure 7: Typical phases of a market research process[45]

Problem definition

In the first phase of the market research process, a precise description of the problem is necessary to set the right direction for the further research process steps. If there is no precise defined description and formulation of the problem, it can lead to high research efforts for a wrong or unimportant problem instead of pointing out the root problem.[46]

Definition of the research target

After the initial problem situation is well known and described, second phase begins with the definition of the research targets. With the definition of the research targets, the determination of the problem will be further concretized and specified. The targets have to be formulated in a way such that the fulfillment of the targets is also the solution of the problem. Out of the definition of the targets, the type of research is concluded. There are the following different types of target research:[47]

[45] Based on: Ibid. p. 11
[46] Cf. Ibid. p. 11
[47] Cf. Ibid. p. 13

- Explorative research:
  Finding the root causes of a problem or the interdependencies between variables is the aim of the explorative research type.
- Descriptive research:
  The description or the identification of an interesting entirety (e.g. households, persons) according to the characteristics (e.g. label preferences, consumption) of the research problem.
- Causal research:
  The aim of the causal research is to determine causes and effects for observed phenomena.

Definition of the research design

The definition of the research design is a complex task, in which the basic decision about the use of the research methods are made. Therefore, it needs to be investigated if the research target can be solved with reasonable preparation and analysis (secondary analysis) of already existing data (e.g. existing data from research institutions) or the acquisition of new data (primary analysis) to answer the research question. Beside traditional sources for the secondary analysis, especially online sources are nowadays important.[48] For the primary analysis, the following 4 research types can be distinguished:[49]

- Qualitative research:
  The aim of this type is not to make representative statements, but more to learn about connections, relations and impacts of problem relevant variables (explorative).
- Cross-section research:
  The cross-section research is time point related to make relevant statements for specific entireties (e.g. income ration of a specific population group). Basically it is a description of characteristics for special entireties (descriptive)
- Longitudinal-section research:
  To describe dynamic phenomena over a time course (e.g. change of market shares over time) is the aim of the longitudinal-section research type (descriptive).
- Experiment:
  In the experiment research type basically the cause-effect relation is investigated (causal).

Empiric research can be separated into quantitative and qualitative methods. For the quantitative research models it is interesting to make relevant statements about connections and to predict manifestations in exact numbers. For the quantitative method there is the possibility to get proper result through surveys and observations. The qualitative method is characterized through the approach of more flexibility and openness, compared to the quantitative method. The qualitative method is to describe, interpret and understand structures

[48] Cf. Magerhans (2016) 63, 67
[49] Cf. Kuß, et al. (2014) pp. 13–14

of classifications or typologies and the generation of hypothesis. The approach of a qualitative research method are qualitative interviews or group discussions.[50]

Development of measurement instruments

After the conception of the research design, the measurement instruments have to be developed. The measurement instruments determine and measure the diverse characteristics of different research objects (e.g. budget for holidays per household). Typical examples for measurement instruments are single or so called multi-item-scales in questionnaires. The development of exact and reliable measurement devices for market research reasons is often a difficult task.[51]

Collection of data

The process of collecting data is often the most resource-consuming phase (time, personal, finance). This phase consists of theoretical approaches, especially through experience and precise care of the responsible person embossed.[52]

Data analysis

The data analysis phase is mainly characterized through statistical methods to summarize, compact and structure the large amount of collected data. The following three different types are described:[53]

- Simple descriptive method (statistical measurement numbers, graphical figures, frequency tables)
- Estimations and statistical tests (results out of samples for entireties)
- Multivariate methods (simultaneous and coherent analysis of multiple variables)

Report

As the last step of the market research process, the creation of the report has to be presented. The report includes the main results, conclusions and recommendations. By that last point, the problem definition and the questions in the definition of the research target phase should be answered. Usually a research reports includes the following four report parts.[54]

1. Short summarization of the problem definition and the research targets
2. Description of the research method
3. Representation of the research results
4. Conclusion and recommendation

[50] Cf. Winter. 2000, (online); accessed 10.05.2017
[51] Cf. Kuß, et al. (2014) p. 14
[52] Cf. Ibid. p. 14
[53] Cf. Ibid. pp. 14–15
[54] Cf. Ibid.

4.2 Customer analysis

Customers are an important strategic factor for a company. A long-term customer relationship is the prerequisite for a successful strategy. The goal of customer analysis is to find out about customer needs and requirements and particularities of purchasing behaviors. In addition, it should separate the customer into customer groups or segments and then link those groups to special behaviors is another aim of the analysis.[55]

The analysis for the next two chapters are done by the instructions of the market research process, which is described under 4.1.

4.2.1 Customer segments

Before starting with the customer segmentation, a company has to define its market delineation. The customer segmentation depends on the market a company wants to stay in.[56]

For the three agricultural services for which the market research is done, the market focus is solely on agriculture farmers. To provide the services also for communes or municipalities is not planned for the first business moves in this new company service segment. In further customer segment analysis, only the customer group of farmers will be further separated.

The research method to get knowledge about the customer segments is a quantitative research method, due to the high number of 108 surveys.

Problem definition

To know special preferences of different market segments and to be able to link farm characteristics to different trends, a customer segmentation is necessary to make proper statements.

Definition of the research target

The customer segmentation should link the different characteristics (farm branches, farm size and type of farm operation) with the relative preferences of the outsourcing of the different agricultural services.

Definition of the research design

A primary research method is applied (Cross-section method). The survey is accomplished with 108 customers of the Ackerl Co. (quantitative research)

[55] Cf. Vorbach (2015) p. 160
[56] Cf. business-wissen.de, (online); accessed 17.01.2017

Development of measurement instruments

For the survey, a questionnaire for each participating customer is set. The relevant questions to answer or fulfill the research target are listed below.

1) Which ones of the agricultural branches meet for your farm? (multiple answers possible)
    a. Arable farming
    b. Pig breeding
    c. Pig fattening
    d. Chicken keeping
    e. Cattle keeping

2) How large is the cultivable land of your farm?
    a. Up to 15 ha
    b. 15 to 30 ha
    c. 30 to 45 ha
    d. Over 45 ha

3) How is the business operation planned for the next five years?
    a. Operation as full-time business
    b. Operation as part-time business
    c. The operation of the farm is uncertain at the moment

4) Do you consider to outsource the crop spraying in the future?
    a. No
    b. Yes, I have already outsourced the crop spraying
    c. Yes, I consider to outsource the crop spraying in the future

5) Do you have crops in your crop rotation, for which a slug control is ordinarily necessary (e.g. canola)?
    a. No
    b. Yes, up to 3 ha
    c. Yes, 3 to 5 ha
    d. Yes, 5 to 10 ha
    e. Yes, more than 10 ha

6) If you have crops, for which a slug control is ordinarily necessary, do you consider to outsource the slug pellets spreading in the future?
    f. No
    g. Yes, I have already outsourced the spreading of slug pellets
    h. Yes, I consider to outsource the spreading of slug pellets

7) Do you consider to outsource the spreading of lime sand in the future?

a. No
b. Yes, I have already outsourced the spreading of lime sand
c. Yes, I consider to outsource the spreading of lime sand in the future

Collection of data

The surveys are conducted personally from employees of the Ackerl Co.

Data analysis

The outcome is summarized with Microsoft Excel. The results are the sum of 108 single survey results. The data analysis is time point related, which means the results can vary from this time of research to the time of future research.

All participating farmers are at least arable farmers. 22 of the asked farmers are pure arable farmers, which means it is their only agricultural mainstay. In the region around the Ackerl Co., pig breeding and/or fattening is another important business segment for farmers. The following Figure 8 gives an overview of the farm branch results.

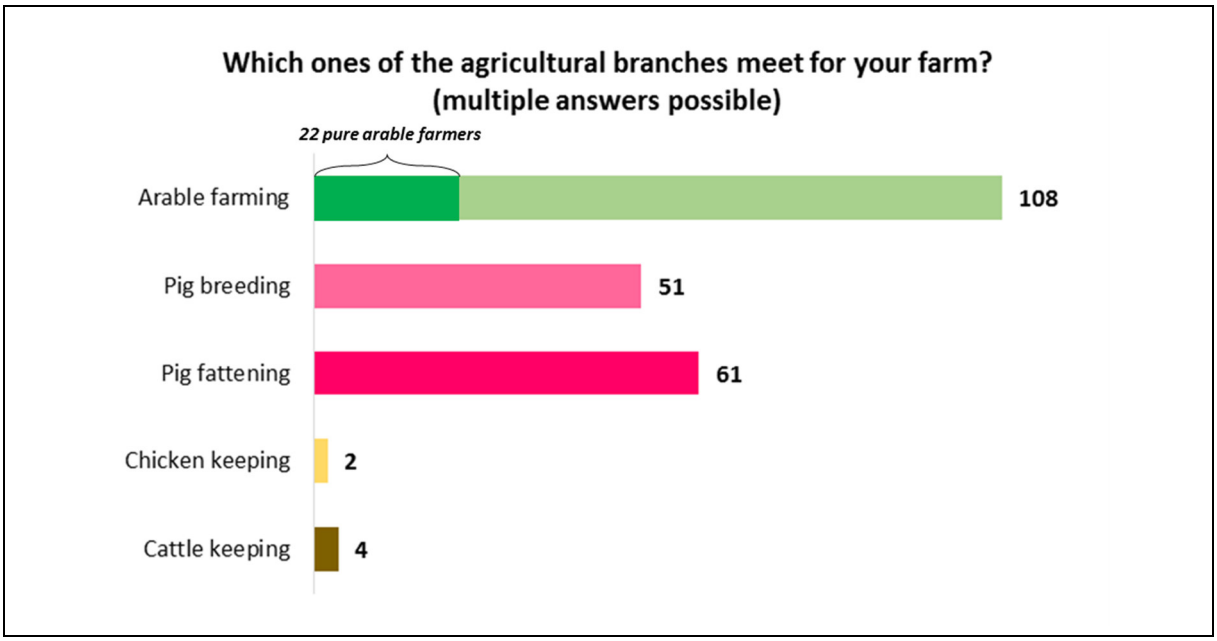

Figure 8: Agricultural farm branches (n=108)

To know about the farm size in terms of cultivable land, Figure 9 shows us that almost 2/3 of the farms which are involved in the survey are smaller than 30ha.

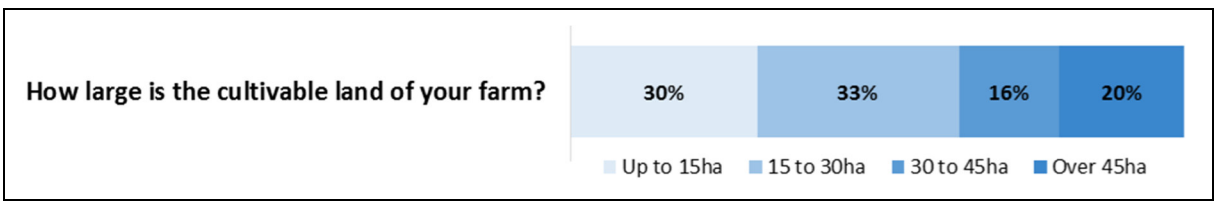

Figure 9: Cultivable land size of farms (n=108)

According to Figure 10, 2/3 of the involved farms are full-time operated. The rest of the farms are operated as a part-time activity and a small part is not sure about the continuation of their farming business for the future. Especially, as already mentioned in Figure 1.1, the structural changes lead farmers to lease their land.

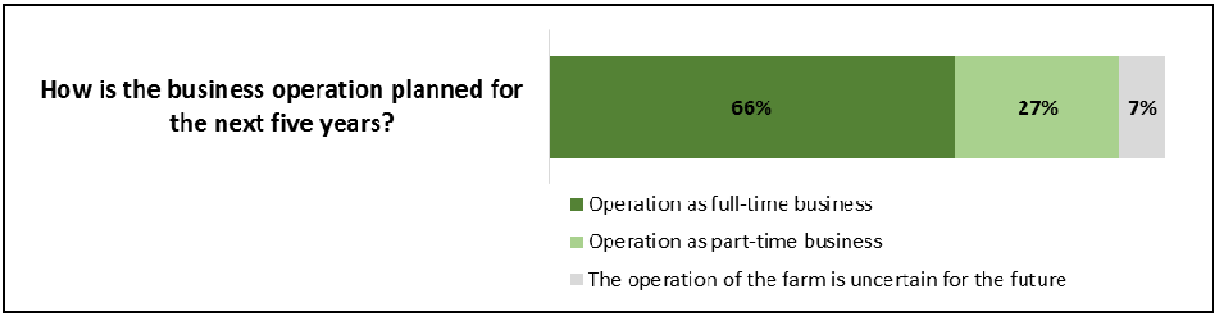

Figure 10: Farm business operation in the future (n=108)

Regarding the question whether farmers will consider outsourcing the plant protection in the future, Figure 11 gives us the results. For 63% of the participating farmers, outsourcing the plant protection is currently and in the future not an issue. 17% already outsource the plant protection for their crops and another 20% consider to outsource the plant protection in the future.

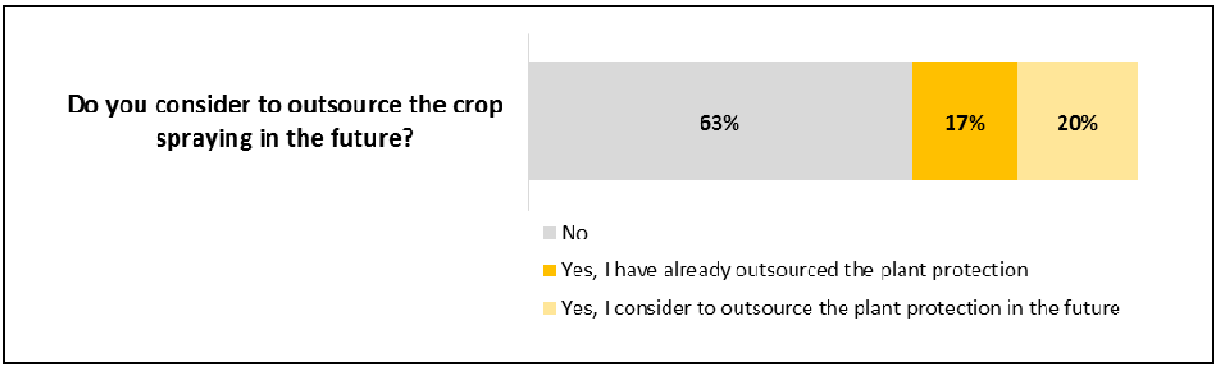

Figure 11: Consideration of outsourcing plant protection (n=108)

Slug control is not necessary for all crops. There are only a few, for which a slug control is usually necessary. In the region of the Ackerl Co., canola is a widely spread crop culture that is checked for slugs once a year right after seeding. As seen in Figure 12, 82% of the participating farmers do not have canola in their crop rotation. 18% have canola in various extents in their crop rotation.

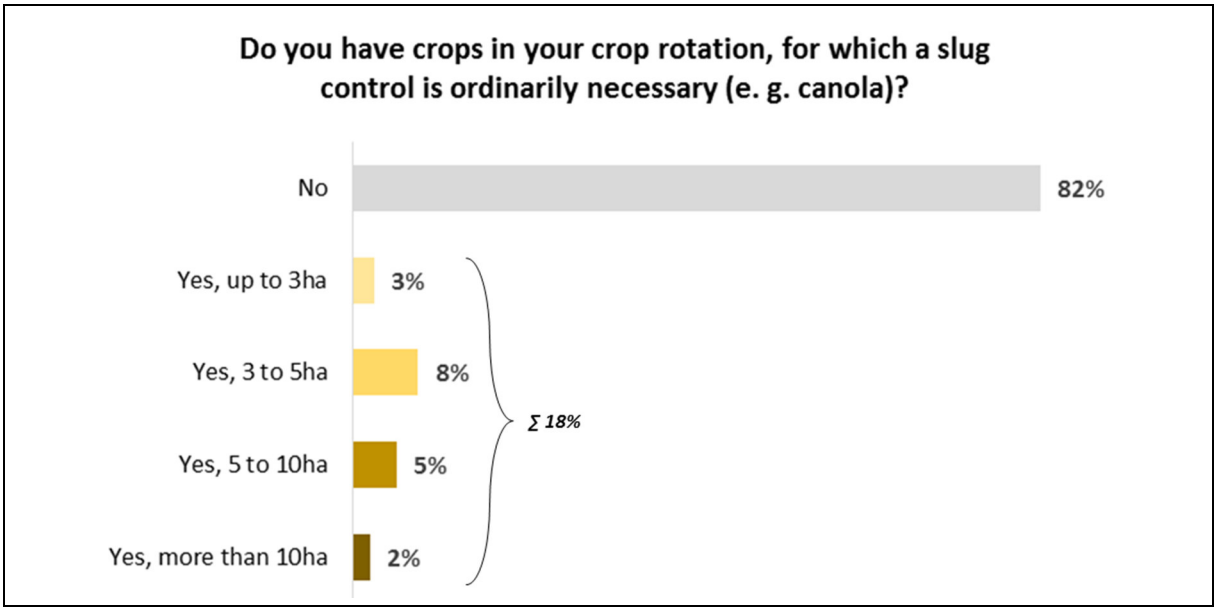

Figure 12: Crops, for which a slug control is ordinarily necessary (n=108)

39% of farmers who have to control for slugs in their canola do not consider the outsourcing of the spreading of the slug pellets to be an issue. Almost 1/3 of the participating farmers have already outsourced the slug pellets spreading and another 1/3 of the participating farmers consider to outsource this application in future. Figure 13 shows the results.

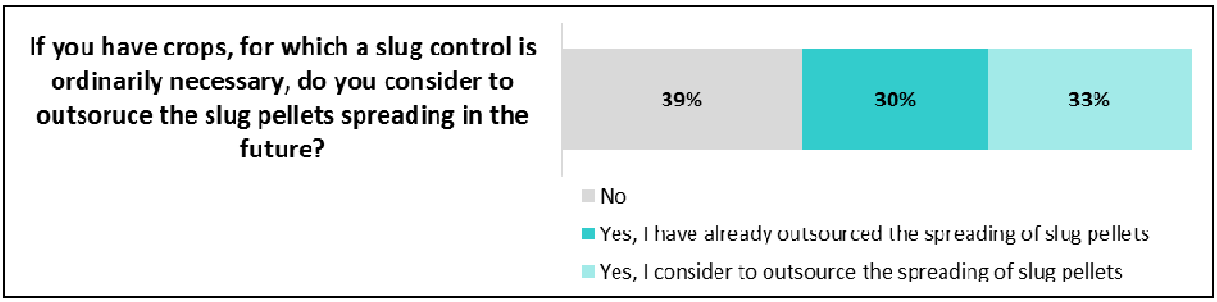

Figure 13: Consideration of outsourcing slug pellets spreading (n=108)

Regarding the question how many farmers are considering outsourcing spreading lime sand, 67% of the participating farmers said it is not an issue. Only 5% of the participating farmers have already outsourced this agricultural service, but for 28% of the asked farmers, taking advantage of the service would be an option. Figure 14 below gives us the overview of the result.

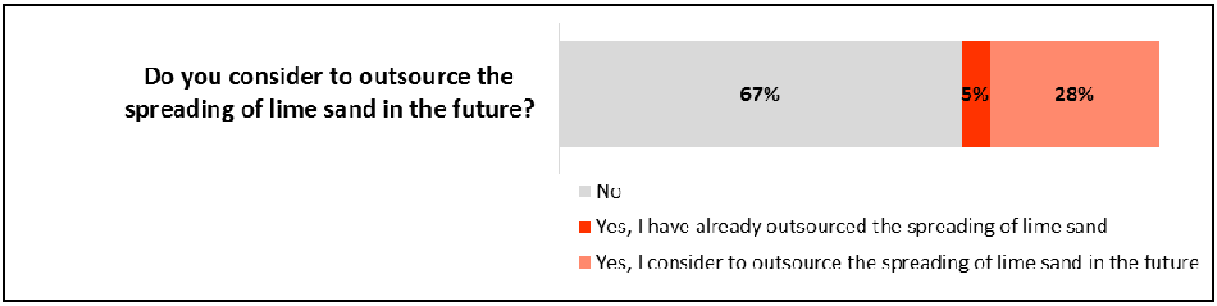

Figure 14: Consideration of outsourcing lime sand spreading (n=108)

Report

After the data analysis, which shows the results of the survey, the report of the research targets is the linkage between farm characteristics and the respective customer segments groups.

For all figures below, the part which describes those farmers who take the advantage of the different services includes both the farmers who currently demand the service and the farmers, who are considering the service for the future.

Figure 15 shows the different separations of the farmers. On the one hand there is the difference between pure arable farms and mixed farms and on the other hand there is the difference between full-time businesses and part-time businesses. The figure shows for each separation the percentage of the part that takes the advantage of the crop spraying service and the percentage of the part that does not take the advantage of the service.
There is a big difference in the percentage of pure arable farms and mixed farms. Often part-time farmers only run their farming business as an arable farm, and as the figure shows, part-time farmers demand the service more than full-time farmers. Part-time farmers have jobs not related to their farm business and so they often do not find the time to apply the plant protection.

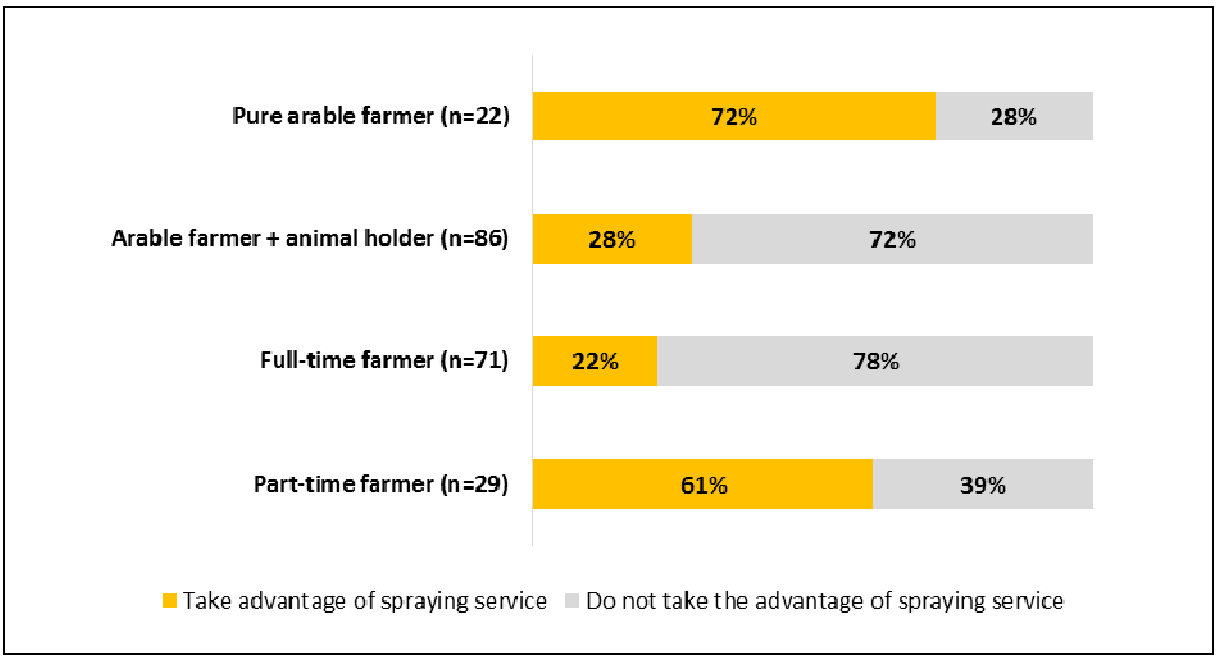

Figure 15: Relation of different customer segments for crop spraying service

As shown in Figure 16, smaller farmers demand the service more than bigger farmers. More than half are farms smaller than 15 ha cultivable land. To serve this half with the provided service results in a high number of customers and thereby a higher effort of preparation and documentation.

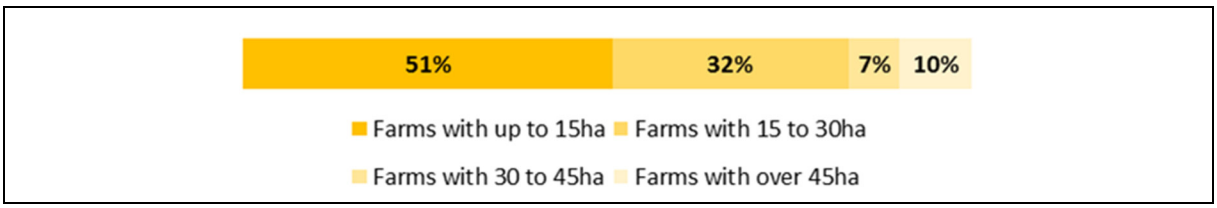

Figure 16: Cultivable land size distribution of demanding farms in crop spraying service (n=40)

Another interesting point is whether farmers who outsourced the crop spraying application will also outsource the spreading of slug pellets in case they have crops for which a slug control is necessary. Figure 17 shows, that almost 90% demand both services. Only about 10% do the spreading of the slug pellets on their own, although they outsource the crop spraying.

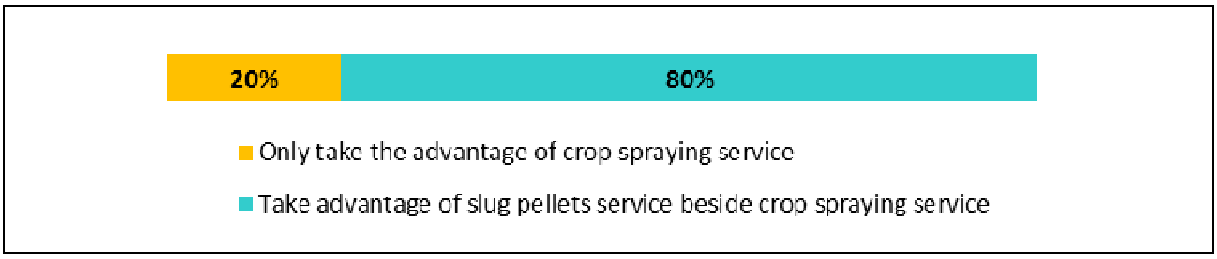

Figure 17: Relation of farmers, who take the advantage of both plant protection services to farmers, who only take the crop spraying service (n=5)

A similar picture for the lime sand spreading service as shown in Figure 18 is compared to the crop spraying service. Full-time farmers demand the service less than part-time farmers.

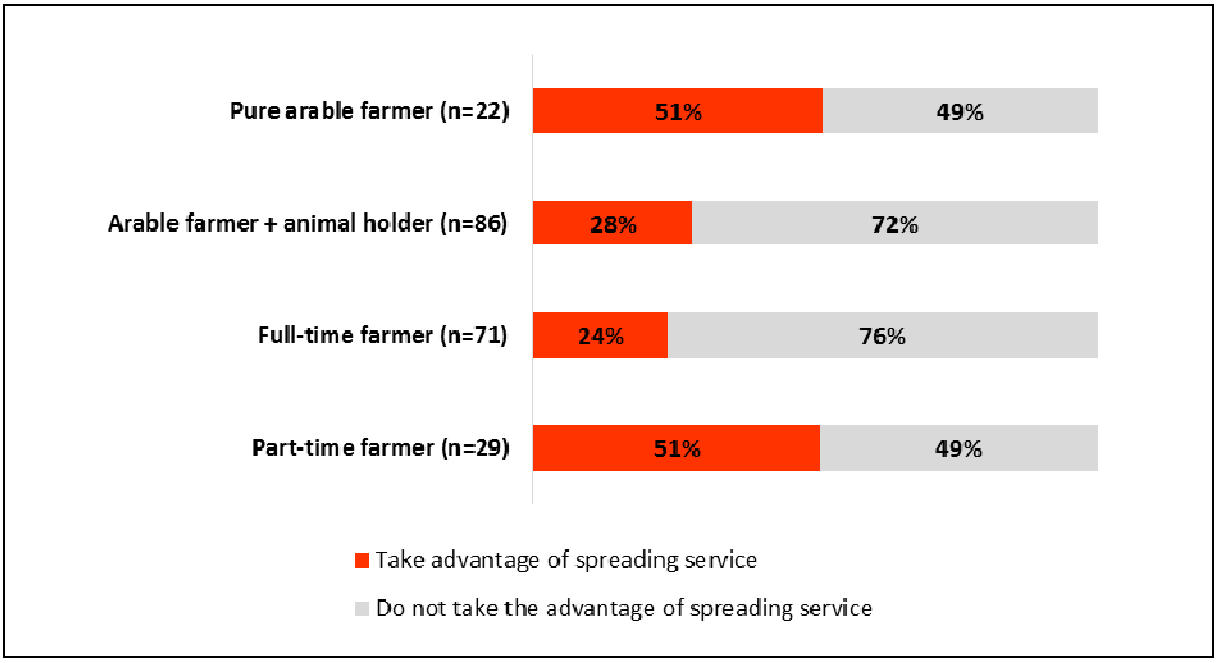

Figure 18: Relation of different customer segments for lime sand spreading service (n=108)

Figure 19 below shows that, compared to the land size distribution of the crop spraying service the larger farmers demand the service of spreading lime sand in relation to smaller farms a bit more.

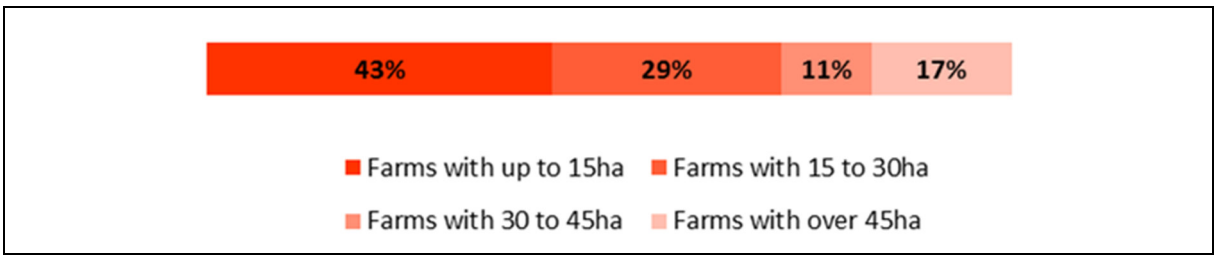

Figure 19: Cultivable land size distribution of demanding farms of lime sand spreading service (n=36)

4.2.2 Customer needs and requirements

Professional farmers want to be served by professionals. Farmers don't have interest in experiments and uncertainties when outsourcing agricultural operations. Reliability on appointed dates, motivated operators and well maintained equipment are defined as standard.[57]

The paragraph above shows the need of providing high quality service in regard to agricultural services. Farmers outsource parts of their farm operations to get working tops flattened, to execute the appropriate operation if there is no company-owned equipment available and to obtain a result of the operation at least on the same level as they can do it on their own. The

[57] Cf. Scherzer, (online); accessed 01.03.2017

important factors, customer needs and requirements for the different services, are examined and rated during this chapter.

Customer satisfaction is developed by the experience in dealing with the product or service or rather with the company or brand. It is the result of a comparing process between the obtained performance and the expectations. It is a matter of an individual should/is adjustment, in which the “should” are the expectations of the customers and the “is” are the experiences of the received performance for the customers. The results of this comparison can be displayed in three different forms:[58]

1. The Is-performance exceeds the Should-performance: The customer obtains more, than he is expecting.
2. The Is-performance is about the Should-performance: The expectations of the customer are fulfilled.
3. The Is-performance is below the Should-performance: The expectations of the customers are not fulfilled.

In practice, customer satisfaction is extremely important in the role of the success of the business. The more satisfied a customer is, the more faithful and loyal towards the company and product or service he is.[59]

In order to fulfill the expectations of farmers and to run the agricultural service business on a high level of customer satisfaction, customer needs and requirements need to be researched and defined. Factors like the timely execution of the operation or the requirements on modern agricultural service equipment are just two of many essential factors.

Problem definition

To be able to provide customer oriented services, it is necessary to know the exact customer needs and requirements. The best fulfillment of those needs and requirements leads to the maximum customer satisfaction.

Definition of the research target

The different requirements on the different agricultural services needs to be researched. If there are connections or trends between customer segment groups and special preferences according to requirements of the services, those trends need to be worked out and displayed. Also the question if only the service for the application is necessary, or the full chain from procurement of the products over the application and the documentation, needs to be answered.

[58] Cf. 4managers, (online); accessed 01.03.2017
[59] Cf. Ibid.

Definition of the research design

A primary research method is carried out (Cross-section method). The survey is accomplished with 108 customers of the Ackerl Co. (quantitative research)

Development of measurement instruments

For the survey, a questionnaire for each asked customer is set. The relevant questions to answer or fulfill the research target are listed below.

1) If you consider to outsource the crop spraying, how would you outsource the operation?
    a. Partially outsourcing
    b. Outsourcing of the entire crop spraying operation (procurement, storage, application, documentation)

2) If you consider to outsource the plant protection (crop spraying and/or slug pellets spreading), how important are the following characteristics?

	Crucial	Very important	Somewhat important	Not very important	Unimportant
Independent and timely execution of the plant protection action	○	○	○	○	○
Field piece related documentation according to legal requirement	○	○	○	○	○
Plant protection equipment on most modern stand of technique	○	○	○	○	○
Expert advice in choice of plant protection products	○	○	○	○	○
Favorable price (service + plant protection products)	○	○	○	○	○

3) If you consider to outsource the lime sand spreading, how would you outsource the operation?
    a. Partially outsourcing
    b. Outsourcing of the entire crop spraying operation (procurement, storage, application, documentation)

4) If you consider to outsource the spreading of lime sand, how important are the following characteristics?

	Crucial	Very important	Somewhat important	Not very important	Unimportant
Independent and timely execution of spreading lime sand	○	○	○	○	○

Field piece related documentation according to legal requirement	○	○	○	○	○
Spreading equipment on most modern stand of technique	○	○	○	○	○
Expert advice in choice of lime sand products	○	○	○	○	○
Favorable price (service + lime sand products)	○	○	○	○	○

Collection of data

The surveys are conducted personally from employees of the Ackerl Co.

Data analysis

The outcome of the survey is summarized with Microsoft Excel. The displayed results below are out of 108 single survey results. The answering of the expected service quality characteristics are only accomplished by the farmers who have already outsourced or considered outsourcing the respective agricultural service in the future (plant protection service gathers crop spraying and spreading of slug pellets).

Figure 20 shows the demand relation between the different outsourcing types for crop spraying. More than 80% demand, once they outsource the crop spraying, an entire service from procurement of the plant protection products over storage, application until documentation of the operation. The results from the different outsourcing types for crop spraying let us assume a similar result for the service of spreading slug pellets.

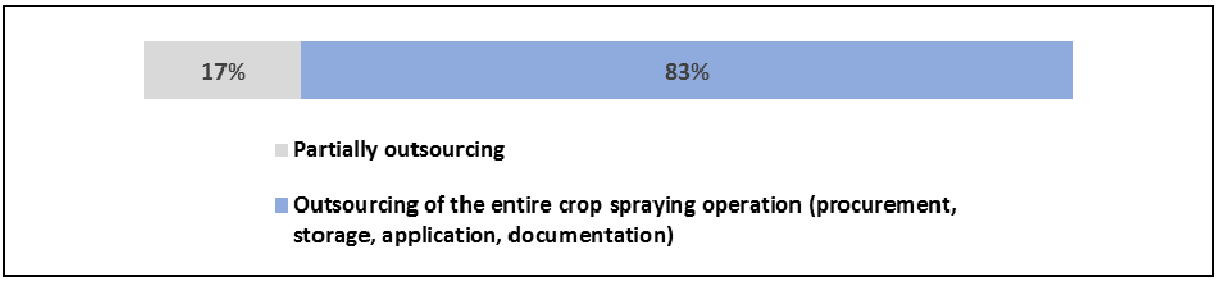

Figure 20: Demand relation between different outsourcing types for crop spraying (n=40)

In total, 48 of the participating farmers, or 44% of the respondents, have already outsourced or considered outsourcing the crop spraying and/or spreading of slug pellets in the future. A favorable price, expert advice in choice of plant protection products, plant protection equipment and machines on most stand of technique and independent and timely execution of the plant protection action are crucial or very important for the predominantly half of the interviewed.

Only the field piece related documentation according to legal requirements are for less than the half of the interviewed farmers crucial or very important.

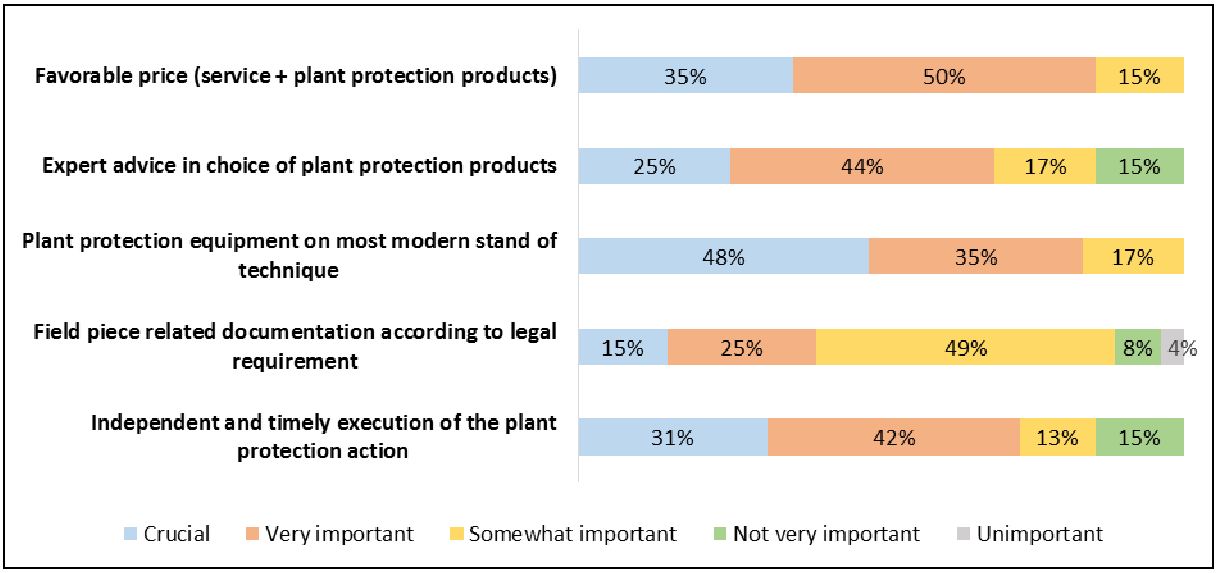

Figure 21: Importance of plant protection service characteristics (n=48)

The diagram below displays analogical results of the outsourcing type for lime sand spreading compared to the crop spraying service. The conclusion is that once farmers have outsourced the operation, they want to outsource the whole process chain to have the possibility to focus on different farming jobs and activities.

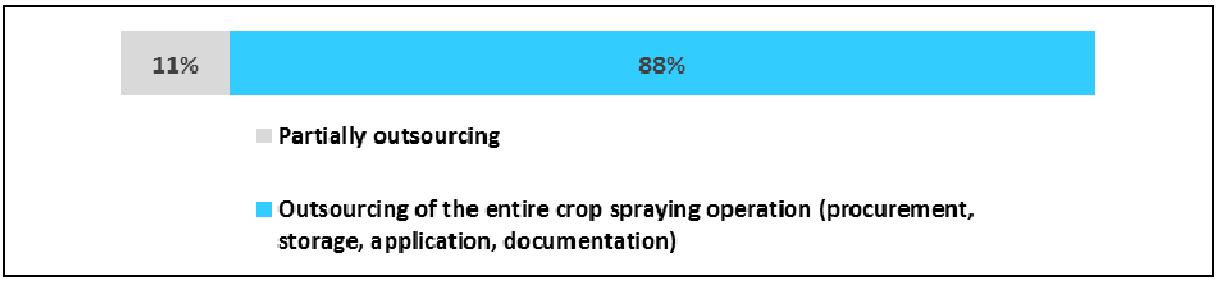

Figure 22: Demand relation between different outsourcing types for lime sand spreading (n=36)

Figure 23 below shows the results of the expected service quality characteristics of spreading lime sand. 36 of the 108 participating farmers (33%), have already outsourced or considered outsourcing the spreading of lime sand in the future. The results of those 36 farmers are summed and listed below.

Similar to the results of the plant protection service characteristics, also a favorable price, expert advice in choice of lime sand products and independent and timely execution of spreading lime sand are for more than half of the interviewed crucial or very important. The field piece related documentation according to legal requirement are not crucial or very important for more than the half of the interviewed. Compared to the plant protection results,

the spreading equipment on most modern stand of technique is not as important as plant protection equipment.

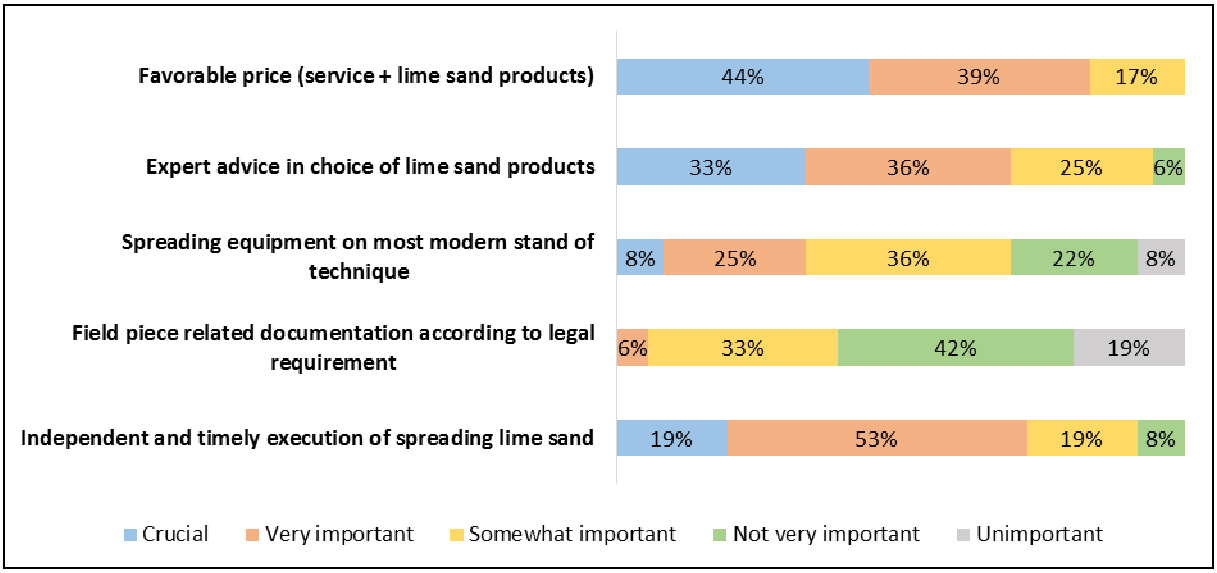

Figure 23: Importance of lime sand spreading service characteristics (n=36)

The requirements on agricultural service contractors are clear; the services have to be faster, better and cheaper.[60] Farmers don't outsource operations to contractors if those services are not fulfilled on a certain quality and price level. The services have to be economical and on a high quality level in order for a farmer to hire the Ackerl Co. as an agricultural contractor. Therefore to meet these goals and expectations, the asked requirements which are approved with the survey results above need to be fulfilled.

The overall result of the customer analysis is, that there is a customer group, which is interested in the benefit of the defined services. Especially for farmers which run their farming business beside a job and for smaller farmers there is a general trend for outsourcing arable operations.

4.3 Market size

In the following chapter, the market potentials and market volumes for the plant protection services and the lime spreading service is introduced.

4.3.1 Market potential

The market potential defines the possible sales in a market. It is the sum of the possible sales in a market for a specific product or specific service. The market potential is the upper limit of the total demand and takes all potential clients into consideration.[61]

[60] Cf. Scherzer, (online); accessed 01.03.2017
[61] Cf. Wübbenhorst, (online); accessed 11.01.2017

Problem definition

To know the potential market for the plant protection service and lime spreading service is a basic requirement to get a business running. Plant protection applications are essential production steps for arable farmers to fruitfully grow crops every year. The lime sand spreading service is an application with sustainable impact on soil structure and is applied once in a while but usually not yearly. But how big is the market potential for those services?

Definition of the research target

The definition of the research targets can be structured into the following parts: [62]

1. Average number of applications of the services in a year and the “overrun-factors” in hectare per year.
2. Market potential for each agricultural service in hectares per year for the following municipalitites: Sattledt, Ried im Traunkreis, Eberstalzell, Steinerkirchen, Steinhaus, Sipbachzell, Kremsmünster, Thalheim, Schleißheim, Weißkirchen, Eggendorf, and Fischlham.

Definition of the research design

A secondary research method is applied.

Development of measurement instruments

There are no direct measurement instruments scheduled for this process step.

Collection of data

An online research with the support of search engines and statistical publications for those topics are used to find all actual numbers to answer the questions above.

Data analysis

The data analysis is done and displayed with the help of Microsoft Excel.

In Figure 24 there is the arable land in hectare pictured for the relevant municipalities as defined in the research target. There are in total 16,897 ha of arable land in those municipalities.

[62] Interview/Conversation with: Ackerl, Johann (02.01.2017)

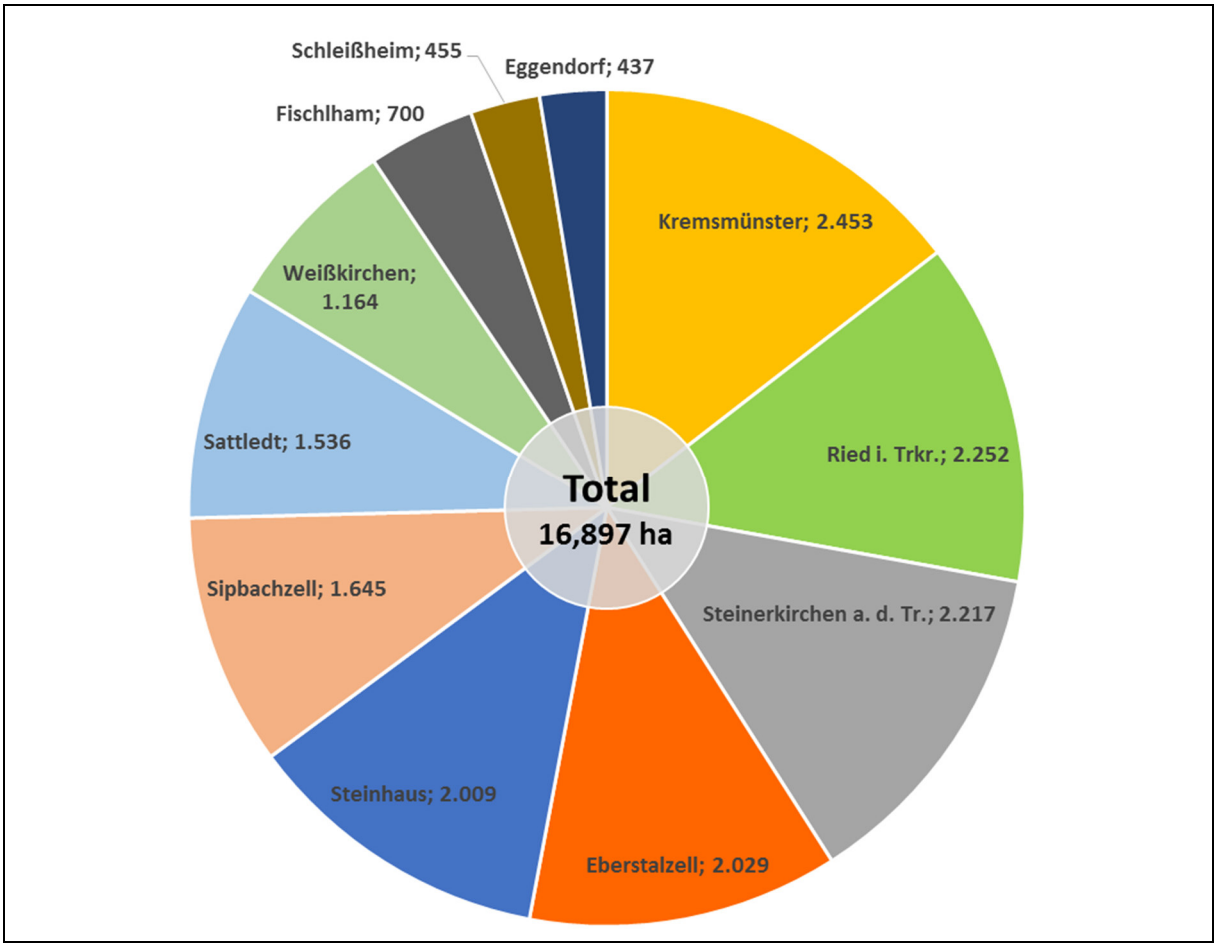

Figure 24: Arable land in hectare for selected municipalities[63]

Report

The relevant market potential, the number of arable hectares for the defined municipalities and the average number of overruns of the services in hectare per year are the main tasks for determining the market potential. To get appropriate numbers for each municipality, online research was conducted. For the different "overrun-factors," different approaches were made.

For the calculation of the market potential for each agricultural service, the different "overrun-factors" were determined:

- The factor for the crop spraying service is 2.[64] Thereby 33,794 ha are the market potential for this agricultural service.
- To get a plausible factor for the slug pellets spreading service, the cultivable land for canola was taken into consideration, which is 5,85% of the total arable land in Austria (averaged value from 2013 until 2015). Canola is the main crop where a slug pellets application usually is applied.[65] The market potential for spreading slug pellets is 1,436 ha/year. The application of slug pellets is usually necessary once a year.

[63] Cf. Land OÖ. 2010, (online); accessed 11.01.2017
[64] Interview/Conversation with: Ackerl, Johann (02.01.2017)
[65] Cf. AgrarMarkt Austria. 2016, (online); accessed 11.01.2017

- The recommended rule of thumb for lime sand spreading is doing the application once every three years. Thereby there is a market potential for spreading lime sand of 5,632 ha/year.[66]

To get a detailed knowledge of the different potentials of every municipality, Table 4 gives a good overview.

Municipalities	Arable land [ha]	Market potential for crop spraying service [ha/year]	Market potential for slug pellets spreading [ha/year]	Market potential for lime sand spreading [ha/year]
Kremsmünster	2,453	4,906	209	818
Ried i. Trkr.	2,252	4,504	191	751
Steinerkirchen a. d. Tr.	2,217	4,434	188	739
Eberstalzell	2,029	4,058	172	676
Steinhaus	2,009	4,018	171	670
Sipbachzell	1,645	3,290	140	548
Sattledt	1,536	3,072	131	512
Weißkirchen	1,164	2,328	99	388
Fischlham	700	1,400	60	233
Schleißheim	455	910	39	152
Eggendorf	437	874	37	146
Total	**16,897**	**33,794**	**1,436**	**5,632**

Table 4: Market potential for different agricultural services for selected municipalities

The “overrun-factors” for the different agricultural services are considered in the columns of Table 4.

4.3.2 Market volume and market forecast

The market volume displays the sum of all realized sales volume of a special market or for a specific product or service. The market volume is a part of the market potential and is necessary to determine the market shares for a specific product or service of a company.[67]

Market forecasts are parts of the descriptive researches. In terms of market research, forecasts are predictions how certain markets will be in future. For example, a question can be: What’s the size of a certain market in 5 years?[68]

[66] Cf. Bodenkalke Gen. 2017, (online); accessed 08.01.2017
[67] Cf. Wübbenhorst, et al., (online); accessed 11.01.2017
[68] Cf. Kuß, et al. (2014) p. 34

For the market volume, the percentages are hectare related as opposed to the customer analysis, where percentage numbers were customer related.

Problem definition

To make an economic consideration of the agricultural services, it is necessary to know or to calculate with realistic order numbers with respect to market demand. Therefore, the knowledge of the market volume is necessary to make proper assumptions. Also in further contemplation, realistic order numbers and forecasts are necessary to invest into appropriate service equipment to get the jobs done.

Definition of the research target

The research target can be structured as followed:

- Market volume and forecast for the crop spraying service
- Market volume and forecast for the slug pellets spreading service
- Market volume and forecast for the lime sand spreading service

Definition of the research design

To do research on the market volume and on market forecast, a primary research method is applied (Cross-section method). The survey is accomplished with 108 customers of the Ackerl Co. The result of this sample, which should represent an average value, leads through the market potential to the market volume.

Development of measurement instruments

For the survey, a questionnaire for each asked customer is set. The relevant questions to answer or fulfill the research target are listed in Chapter 4.2.1.

Collection of data

The surveys are conducted personally from employees of the Ackerl Co.

Data analysis

The outcome is summarized with Microsoft Excel. The relative results of 108 surveys are transferred to the market potential, which then results into the market volume for the respective agricultural service. The data analysis is time point related, meaning that the results can vary from this time of research to another future research.

Report

In order to invest in appropriate service equipment and complete in a timely and effective manner, the market volume is necessary to know. Moreover, knowing how the market will grow is necessary to plan for the future market size.

The results which are given in the following paragraphs are market numbers for the defined potential market under 4.3.1 and are in the dimension of hectare. The “overrun-factors” for the different services are considered. The market volume for the slug pellets service only focus on the arable land, for which a slug pellets application is typical (e.g. canola).

As shown in Table 5, the actual market volume of crop spraying service is 13% (4,463 ha). The crop spraying service at this stage can be executed in different ways. One option is to do the service under the frame of the neighborhood assistance or “Maschinenring”. The other option is for an agricultural contractor to provide the service.
The market forecast for the crop spraying service is plus 14% (4,676 ha), which means that an additional 14% of the arable land of farmers is predicted to be outsourced in the future (without time-relation). Reasons for farmers to outsource the crop protection include strict regulations with the handling of plant protection products expensive new machinery equipment. In addition, farmers have their focus on other business parts, like animal breeding, or the farm might just be a part-time business, and people do not have time to apply the plant protection products at the right time under the right conditions.
73% (24,655 ha) of the arable land of farmers is not predicted to be outsourced in the future for crop spraying.

The relative market volume of slug pellets spreading of 23% is bigger than the volume for crop spraying. But in absolute numbers of 229 ha, the market for slug pellets spreading is quite small due to the fact that the slug pellets application is only necessary for special crops like canola, which is a niche in the region of central Upper Austria. In rare, special circumstances, a slug pellets application in between-crops is done, which is not included in the accomplished survey.
Nevertheless, the market forecast shows that this market will also grow in the future with plus 32% (without time-relation). The reasons to outsource the spreading of slug pellets are pretty much the same as for crop spraying.
For 45% of the arable land, for which a slug pellets application is typical, a service will not be demanded.

The current market volume for the service of lime sand spreading is very small. Only 5% of the lime sand application is outsourced. The reason for this is that farmers do not own machines for spreading lime sand, since they can rent the machinery at the dealer’s place, where they buy the lime.
Nevertheless, the market for spreading lime sand under contract is a growing market with a plus of 23%, due to several reasons. One reason for the growing trend is that farmers have to clean their tractors intensively after lime sand spreading due to the lime sand dust. Another reason is that the provided machinery for rent is usually state-of-the-art and the operators are not trained due to the infrequent use every three years.
For 72% of the market, there is no need for the lime sand spreading service in the future.

	No service need		Market volume		Market forecast	
	Relative [%]	**Absolute [ha]**	**Relative [%]**	**Absolute [ha]**	**Relative [%]**	**Absolute [ha]**
Crop spraying service	73	24,655	13	4,463	14	4,676
Slug pellets spreading	45	442	23	229	32	317
Lime sand spreading	72	4,021	5	301	23	1,311

Table 5: Market volume and forecast for the agricultural services

The determined “overrun-factors” from chapter 4.3.1 are already considered in the table above.

Concerning that for the market potential and market volume only the adjacent municipalities of Sattledt and some small municipalities in between are considered, there is a high market potential in general. If the potential market boarders are enlarged the potential market is increasing. Especially for the crop spraying service and the lime sand spreading service there are market potentials, which can be interesting for an economic positive business extension.

Further expectations of the expected market volume for the Ackerl Co. for further cost accounting calculations is in the appendix given, and necessary for the cost accounting calculations.

5 Competition analysis and strategy

In the following chapter, the competition market for the defined agricultural services is analyzed before the SWOT analysis, Porter's five forces analysis and the USP analysis for the Ackerl Co. is given.

5.1 Competitor analysis

The competition analysis is an essential practice that demands ongoing attention. Observing the strengths and weaknesses of each competitor in addition to the trend prognosis of research institutes within the business branch are parts which need to be captured before entering a new market segment. Adapting and observing the competitor's position needs to be done continuously. [69]

Data about location, product portfolio and service portfolio, business strategy, as well as strengths and weaknesses will be gathered and analyzed in this chapter. The analysis will be carried out with the market research process, which is introduced in chapter 4.1. Competitors within a vicinity of 10km as already defined in chapter 1.4 will be considered. One competitor for lime sand spreading will be analyzed from a further distance due to the reason that spreading lime sand is not time-sensitive and lime sand can be direct transported to the field border with trucks. This competitor also carried out a lime sand spreading service in 2016 for a farmer next to Sattledt.

5.1.1 Competitor research process

In addition to the knowledge of the expectations and requirements of the customers in the provided services, which are already analyzed in Chapter 4.2.2, the knowledge of the competitor positions is essential to have a successful market start.

Problem definition

In order to position the new business branch, the company has to know detailed information about the surrounding competitors.

Definition of the research target

The target for the competitor analysis is to answer the following questions:[70]

- Who are the competitors?
- What is their product and service portfolio?
- What are the competitor's strengths and weaknesses?

An additional goal is to know the market situation at the moment, in particular the market shares of different services offered by competitors.

[69] Cf. Hermanni (2016) pp. 292–293
[70] Cf. Hellerforth (2006) p. 547

Definition of the research design

The research design will be secondary research via online research and conversation information and notes. The online research will be done by using the company websites. Information from conversations, especially with Johann Ackerl, the boss of the Ackerl Co. will lead to further information regarding the competitors' strengths, weaknesses and business strategies (qualitative research).

Besides the secondary research, there is also a primary research implemented through a customer survey, which is conducted by the employees of the Ackerl Co. (quantitative research)

Development of measurement instruments

For the survey, a questionnaire for each asked customer is set. The asked questions are listed below:

1) Do you consider to outsource the plant protection in the future?
    a. No
    b. Yes, I have already outsourced the plant protection
        If yes, to whom did you outsource the service?
            I. Neighborhood assistance
            II. Maschinenring
            III. Contractor
    c. Yes, I consider to outsource the plant protection in the future

2) Do you consider to outsource the spreading of lime sand in the future?
    a. No
    b. Yes, I have already outsourced the spreading of lime sand
        If yes, to whom did you outsource the service?
            I. Neighborhood assistance
            II. Maschinenring
            III. Contractor
    c. Yes, I consider to outsource the spreading of lime sand in the future

Collection of data

For the collecting of the data, the most threatening or most important competitors in the circle of 10km need to be defined. The gathering of those competitors should cover all direct competitors which offer more or less the same products and services.[71]

In addition, the indirect competitors for the three defined services should be covered. Indirect competitors provide products or services (substitution), but serve the same needs or expectations for the customers.[72]

[71] Cf. Nagl (2015) p. 17
[72] Cf. Ibid. p. 17

The surveys for the secondary research are conducted personally by employees of the Ackerl Co.

Data analysis

The competitors within a circle of 10km are listed below:

- Kirchmayr Kompost und Energie GmbH, Sattledt
- Maschinenring Region Wels / Neighborhood assistance
- RWA Raiffeisen Ware Austria Aktiengesellschaft (Lagerhaus)
- Schaumberger Andreas, Schenkenfelden
- Seierl GmbH, Ried im Traunkreis
- Steinwendner Agrar Service GmbH, Thalheim bei Wels

The competitors around the Ackerl Co. are pictured below in Figure 25. The Schaumberger Andreas Co. is located further away. The Maschinenring and the neighborhood assistance is covering the whole area through the service from farmer to farmer.

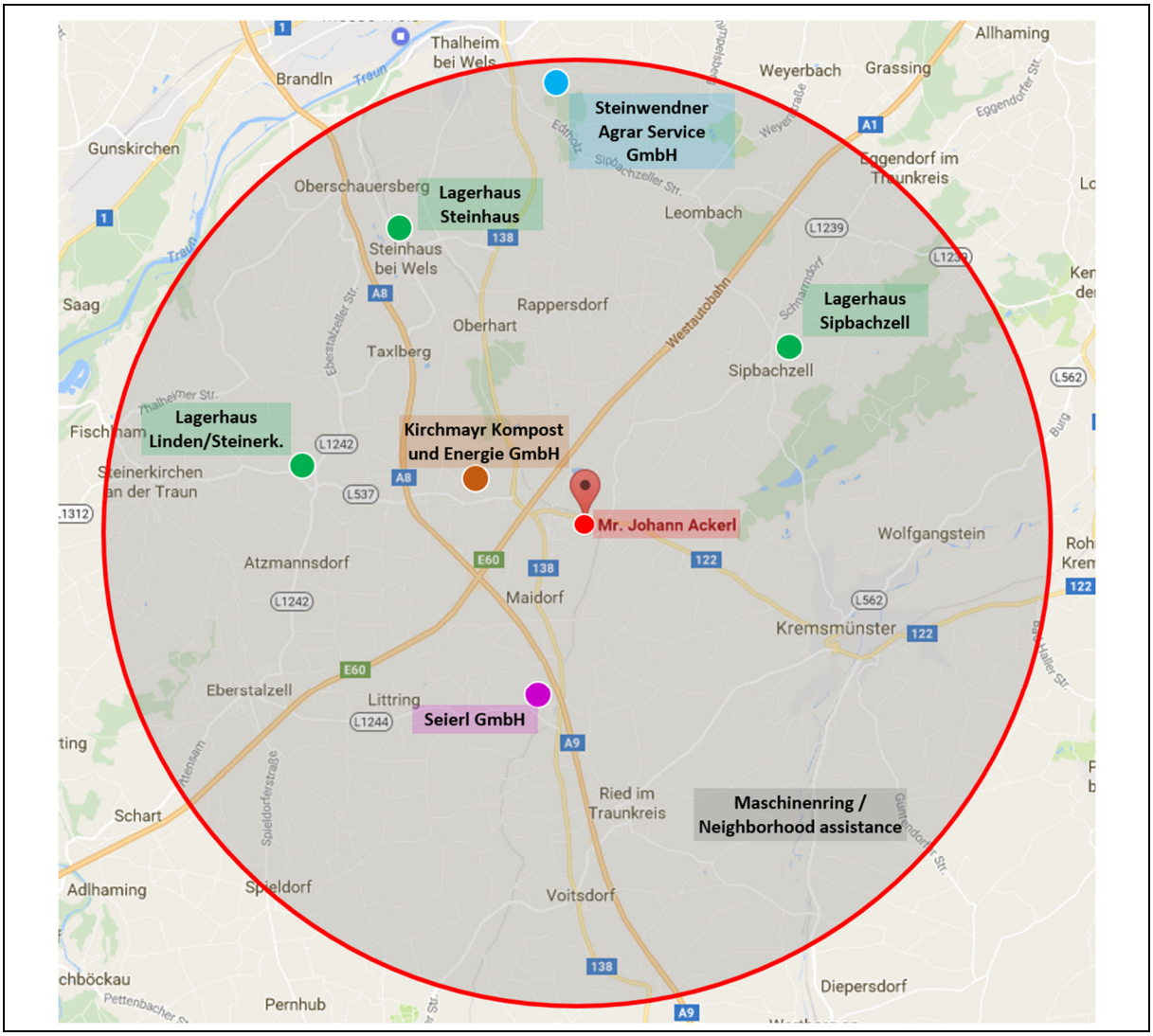

Figure 25: Surrounding competitors for agricultural services for the Ackerl Co.

In Figure 26 below, the market shares between the different competitors on the market are displayed. For the crops spraying service, the neighborhood assistance is most common with a share of almost 60%. The neighborhood assistance for crop spraying is mostly only the application without procurement of products and documentation. The Maschinenring serves 36% of the market. The Maschinenring offers the service as full-service or if desired only the application. Only a small market share of 6% covered by agricultural contractors like the Steinwendner Co.

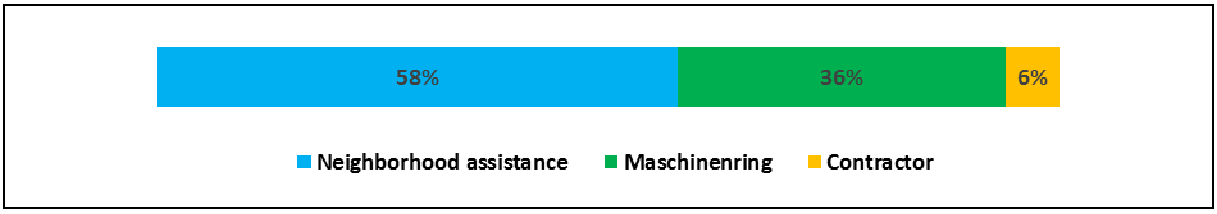

Figure 26: Market shares of crop spraying service of competitors (n=19)

Compared to the crop spraying service, the spreading of lime sand is separated in different market shares between the competitors. Contractors serve half of the market, while neighborhood assistance covers 40% and the Maschinenring only serves a small part (10%) of the market.

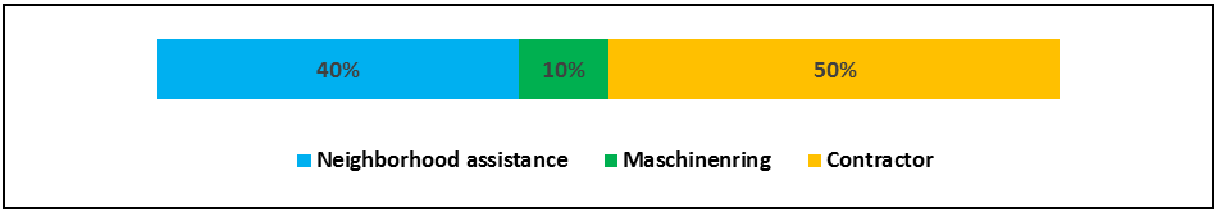

Figure 27: Market shares of lime sand spreading service of competitors (n=6)

It's also important to note that Figure 27 delivers only a middle significant statement of the market shares, because only 6 farmers out of 108 asked in total take the advantage of the lime sand spreading service.

Report

First, it's important to mention that for the plant protection services, the Maschinenring, the neighborhood assistance and the Steinwendner Co. are the direct competitors. All other competitors listed above don't offer any similar or substitute service for plant protection.
For the lime sand spreading service, only the Schaumberger Co. is a direct competitor, which offers a similar service as the planned service offer of the Ackerl Co. The different Lagerhaus branch offices of the RWA AG, the Steinwendner Co., the Kirchmayr Co. and the Seierl Co. are indirect competitors for lime sand spreading, due to the reason that they offer substitute services or lime sand products.

The report of the competitor analysis is structured separately for every single competitor. Therefore, the next chapters will give the results of the competitor analysis for each discovered competitor.

5.1.2 Kirchmayr Kompost und Energie GmbH

The Kirchmayr Kompost und Energie GmbH was founded in 1984 by Mr. Johann Kirchmayr. The idea and the first steps towards compost production were made. In addition to the core competence of producing compost, providing different agricultural and communal services are other business branches of the Kirchmayr Co. In 2010, Paul Kirchmayr took the company over. Their business goal and strategy is to produce high quality compost and a wide range of agricultural and communal service portfolio. The agricultural and communal services are spreading lime sand, spreading compost, wood chopping and other special services for producing compost.[73]

The spreading of lime sand, which is the competing part for the Ackerl Co., is only an indirect competition, because the present spreading equipment which is in use of the Kirchmayr Co. is likely for spreading moist lime products, manure and compost. There is of course the technical possibility to spread dry lime sand with the spreaders of the Kirchmayr Co., but due to the reason of high dust emissions, the spreading equipment with spreading plates are generally used for moist lime products. The calcification effect of moist lime compared to dry lime products are partly the same, but for further calcification effects, only possibilities through different dry lime products can be made.

Strengths of the Kirchmayr Co. include its long history in the field of spreading moist lime and having a high number of personal contact to lime suppliers and a stable customer stock. Moreover, the company is mainly operated as a family business, which are more stable in times of crisis compared to other companies.[74]

The biggest weakness of the Kirchmayr Co is that the moist lime, which primarily is in use in our region, is only available in a certain amount per year. The distribution of this moist lime type is not in care of the Kirchmayr Co, since it's only one part of the business and the company does not depend on this income source. In this respect, the weakness has a relatively small impact.

5.1.3 Maschinenring Region Wels / Neighborhood assistance

The Maschinenring Wels is a part of the Maschinenring Österreich, a community founded in 1960 for peasant self-help. The original idea 50 years ago was to support fellow farmers by using cropping and farming equipment together. This vision is still valid today. There are 86 Maschinenring regions in Austria, the Maschinenring Wels is one out of those 86. In addition

[73] Cf. Kirchmayr Kompost und Energie GmbH, (online); accessed 04.03.2017
[74] Cf. Rheinische Post Mediengruppe. 2004, (online); accessed 02.03.2017

to the agricultural business segment, the Maschinenring also provides labor leasing services for communes and for other companies today. The target group for their services are farmers as well as communes, small and middle size companies in the rural region.[75]

The Maschinenring Wels provides plant protection services (crop spraying and spreading of slug pellets) as a complete service, which means it organizes the application from the procurement of the plant protection products until it's on the field. The operators are farmers who use their own equipment for other farmers. Operating the service within the frame of the Maschinenring is advantageous for the operating farmer, since settlements of the service itself and the plant protection products are done by the Maschinenring.[76] Moreover, the liability for the farmer in case of an application mistake is covered by the liability insurance of the Maschinenring. In the field of spreading lime sand, the Maschinenring don't offer a service, due to the reason that most farmers don't own an own lime sand spreader. Therefore, the Maschinenring cannot convey this service from one farmer to another.[77]

The major strength of the Maschinenring as a direct competitor is that the community members are also the customers. The Maschinenring is a wide structured network between farmers and the Maschinenring offices. They can provide plant protection products at a reasonable price level due to the joint purchase of these products. In addition, the farmers can fully occupy their own equipment by providing the service to neighboring farmers while having a good liability insurance in the background, which makes it very attractive for a farmer to provide this service.[78]

Managing the jobs, however, means high organizational effort and thereby costs. In addition, the entry barrier for farmers to provide the plant protection service to other farmers is low. Only having the legal rights for applying plant protection products on crops and the own equipment is necessary to offer the service to other farmers via the Maschinenring. This low entry barrier can lead to low professional knowledge about the usage of the different plant protection products. The trust in the fulfillment of the Maschinenring to obtain the plant protection service at the expected quality level is often not met and depends more on the performing farmer.[79]

5.1.4 RWA Raiffeisen Ware Austria AG (Lagerhaus)

The first cornerstone for the Lagerhaus was made by Friedrich Wilhelm Raiffeisen in 1862. He founded the first cooperative for the peasant population. Today there are more than 900,000 cooperatives for over 400 million cooperative members in over 100 different countries. In Austria there are 90 Lagerhaus-cooperatives with a total annual turnover of 5 billion euro.[80]

[75] Cf. Maschinenring, (online); accessed 02.03.2017
[76] Cf. Maschinenring, (online); accessed 03.03.2017
[77] Ackerl, et al. (14.02.2017)
[78] Ibid.
[79] Ibid.
[80] Cf. Lagerhaus, (online); accessed 03.03.2017

The Lagerhaus-cooperative OÖ-Mitte, which has 16 branch offices in total, has 3 branch offices in the closer region of Ackerl Co. Both the Lagerhaus Sipbachzell and Linden/Steinerkichen provide plant protection products and lime sand products with a spreader rental service for farmers. Therefore these two branch offices are indirect competitors. The Lagerhaus Sipbachzell have one spreader which was bought in the later years, while the Lagerhaus Linden/Steinerkirchen have two spreaders for rental service. Plant protection products are also offered by the Lagerhaus Steinhaus. Since all of the surrounding branch offices are trading plant protection products for farmers, which then are applied on their own on the crops, these branch offices aren't competitors for the plant protection service, yet still competitors for the trading business. The two Lagerhaus office branches which offer a spreader rental service are indirect competitors, because farmers can easily lend the spreaders to spread the lime sand by their own. The only resources which a farmer needs to have are a tractor to tow the spreader, and time to do the operation.[81]

The most important strengths of the Lagerhaus cooperatives are the distribution network that covers all of Austria and the fact that many farmers are customers and members of the cooperative at the same time.[82] The big business network has a high potency in purchase, which results through the economy of scale effect.

Through the wide structured distribution network, the Lagerhaus cooperative must devote a lot of resources for administration and organization within the cooperative and between all branch offices. The high number of branch offices is a cost-intensive system.[83]

5.1.5 Schaumberger Andreas

The Schaumberger Co. is active in the field of trading lime sand products and offering a lime sand spreading service for farmers. The company has the authorization for the trading and service business since 2016. Before trading and offering the service as an authorized company, it offered the lime sand spreading service for farmers as a neighborhood assistance service since 2006. The company is situated roughly 50 km away from Sattledt in Schenkenfelden, which is in the eastern region of Upper Austria (Mühlviertel). In addition to the lime sand trading and service business, Andreas Schaumberger operates a biological farm, where he grows potatoes and produces apple juice.[84]

Being the first on the market worked out for the Schaumberger Co. The company grew sustainablly from 2006 until now. In 2016 the company invested in new, bigger spreading equipment. The focus on this single business branch as an agricultural service is an advantage, because they don't fritter away the business competences. Another strength is also their experience of more than 10 years in this business field.[85]

[81] Ackerl, et al. (14.02.2017)
[82] Cf. Lagerhaus, (online); accessed 03.03.2017
[83] Ackerl, et al. (14.02.2017)
[84] Cf. Schaumi's Hof, (online); accessed 03.03.2017
[85] Ackerl, et al. (14.02.2017)

The Schaumberger Co. is the only direct competitor in the field of lime sand spreading trading and service offering. The disadvantage of the company compared to the Ackerl Co. is the location, which is decentral and further away from Sattledt.[86]

5.1.6 Seierl GmbH

The Seierl Co. is the closest regional competitor to the Ackerl Co. Franz Seierl founded the company in 1938 and the business today is in its third generation. The company's branches are trading agricultural products, heating material and hardware building material. In addition to the family members, the company has 13 employees at the location in Ried im Traunkreis. The company's slogan is: "Free agricultural trade – without, no competition".[87]

Seierl Co. trades agricultural products and therefore also plant protection products as well as lime sand products. Besides trading of lime sand, they also offer a spreader rental service equivalent to the Lagerhaus cooperative. Having two spreaders for rental, which were bought two years ago, they have a high capacity in the busy season of lime sand spreading. The Seierl Co. is an indirect competitor for the lime sand part, a direct competitor for trading plant protection products and not a competitor at all for the plant protection service.[88]

Through the long presence in the field of trading agricultural products, the Seierl Co. is well established in the branch and well known in the region. That the company is family owned and the family members are managing the company, are still strengths, even considering the relatively large size of the business. Through the fact that the Seierl Co. is a big player in this market field, the advantage in purchase through the economy of scale effect should not be underestimated. Farmers say that the Seierl Co. is the discounter of the agricultural trading companies, which signals a cost-advantage leading position in the agricultural market branch.[89]

But customers also recognized, that cheap offers often suffers under no consultation and no guidance of products. The fact that the Seierl Co. is not operating active a farm compared to the Ackerl Co. is a disadvantage and can be a weakness in regard tosome products, like special plant protection products.

5.1.7 Steinwendner Agrar Service GmbH

Steinwendner Co. is located in Thalheim bei Wels. The company is a strong partner for services in the field of agricultural, communal and forestry services. The foundation of the company was the chopping of tree sticks. Baling straw and producing basic feed are also important business branches at the moment. Those three main parts of the company are

[86] Ibid.
[87] Cf. Seierl GmbH, (online); accessed 03.03.2017
[88] Ackerl, et al. (14.02.2017)
[89] Ibid.

rounded off by additional services as well as upstream and downstream services for the three main business activities, baling, chopping and feed producing.

The company has a spreader equipment which is in use for manure, lime sand and compost. But similar to the Kirchmayr Co., the spreading equipment in use is ideally for spreading moist lime products, manure and compost. Steinwendner Co. also offers a plant protection service as a full service from procurement of the plant protection products until the application. For this market field, the company is a direct competitor, though this branch is not the core competence of the company and not the business focus.[90]

Offering agricultural services for more than 10 years, which is the core competence of the company, is the most important strength of the Steinwendner Co. Moreover, the company has their own workshop for maintaining and repairing machines and other equipment, which is an advantage for quick repairs, for example.[91]

But beside the strengths of the Steinwendner Co., a weakness is of course the low knowledge in guidance and application of plant protection products. The business branch, which includes all the plant protection part, is managed by one external employee. The dependence on this employee is also a weakness.[92]

Market volume numbers of the different competitors could not be obtained in the frame size of this thesis.

5.2 SWOT-Analysis

The comparison of strengths and weaknesses with chances and risks is carried out with the SWOT-Analysis which is displayed in Figure 28. The letters “SWOT” stands for strength, weakness, opportunities and threats. [93]

Strength and Weaknesses are inbound the company and are influenced by internal factors. A clear inside view is necessary to meet optimal business decisions and to compare positively to the competition. Chances and risks are hardly influenced by the company itself because they rely on external factors.[94]

Through the comparison of the business internal factors with the business external view, strategic opportunities can be derived and in the following summarized in the overall business strategy.[95]

[90] Ibid.
[91] Ibid.
[92] Ibid.
[93] Cf. Vorbach (2015) p. 175
[94] Cf.Grimm, et al. (2014) p. 81
[95] Cf. Vorbach (2015) p. 175

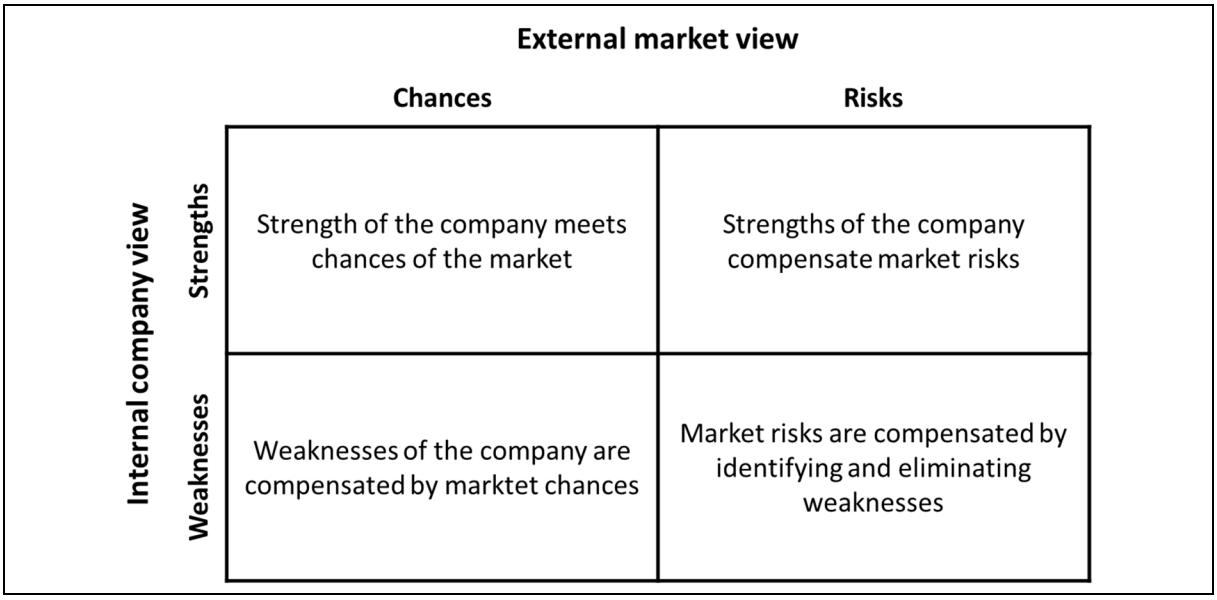

Figure 28: Structure of a SWOT-Analysis[96]

The following paragraphs list different questions for strengths, weaknesses, chances and risks, which need to be answered for the Ackerl Co.

5.2.1 Strengths (internal factors)

What are the causes for the previous successes of Ackerl Co.?[97]

The success of the Ackerl Co. is based on different factors. The company's status as a family business brings advantages like quick customer response as well as a general high customer satisfaction. The high customer satisfaction for example can be explained through the availability for customers also on the weekend, if they ran out of any important products (e.g. plant protection products or beverages for events). As family business it is easier to manage such quick demands. Also placing products and services on appropriate market prices leads to a good word of mouth advertisement.

Another positive effect on the success is of course a long business history, especially for the agricultural trading part. Gained experiences of products, on the one hand through customer feedback and on the other hand through the own farming experience, can be passed on to solve customer problems.

The fact that administration is kept on a small level to save costs is another strength factor compared to competition. Short communication paths as well as the already mentioned factor, that the business is mainly managed by family-members leads to this manageable administration work.

Through the long history in the agricultural industry field, connections to suppliers and to a wide basis of customers is present.

[96] Based on: Grimm, et al. (2014) p. 81
[97] Cf. Nagl (2015) p. 19

What are the potential chances and strengths of Ackerl Co.?[98]

The existing storage area for dangerous products (plant protection products) can be used immediately with no additional investment costs in the first step. Another potential strength is that necessary equipment can be better utilized, when using this equipment also for the farming business of Johann Ackerl.
The good knowledge of skills for plant protection products and lime sand products of the team, especially of Martin Ackerl and Johann Ackerl are strengths to be at least currently in the state of things with plant protection and lime sand.

Which synergy effects can be used to benefit more from new strategies?[99]

Providing the agricultural services (plant protection and spreading lime sand) to farmers opens another market entry to sell agricultural products. Existing connections to the customer target group can be used to advertise the new business branch to the future customers.
In addition, being directly on farmers' fields when performing the service leads to the possibility that employees of the Ackerl Co. can recommend agricultural actions in case of visibly improvable conditions.

5.2.2 Weaknesses (internal factors)

Which weak spots need to be removed and avoided in the future?[100]

While the family-owned aspect of the business is a strength, it's also a weakness in that different tasks don't belong specific employees. Separate task areas belonging to specific employees need to be set up.
When plant protection services and lime sand spreading services are required from the customers, additional part-time employees with flexible working hours are necessary. There is almost no additional working time of the existing employees available. To compensate this weak spot, finding employees with tractor and equipment operating skills as well as skills in correct handling plant protection products is absolutely necessary.

Which processes can be optimized to reduce costs?[101]

To optimize the already small administration in a way that the information flows quickly to the responsive employees will save time and further costs. Also the rearrangement of a new enterprise resource planning software, which is currently in progress will optimize the general processes of the company.

[98] Cf. Ibid. p. 19
[99] Cf. Ibid. p. 19
[100] Cf. Ibid. p. 20
[101] Cf. Ibid. p. 20

5.2.3 Opportunities (external factors)

Which opportunities are available to the Ackerl Co.?[102]

The knowledge through the farming background and the expertise in plant protection and lime sand products of Johann Ackerl and Martin Ackerl can be turned into high quality agricultural services. Also the analysis results, provided by the previous chapters about customer needs and requirements, can be used to set up the right service process with appropriate machinery. The low competition in the region around Ackerl Co. for the dry lime sand spreading service can be used as an opportunity to be the first on the market in the region.

Which trends should be followed?[103]

The need of the predominantly part of the customers which requires a full service, starting with the procurement of the products, storage and handling over the service itself until the documentation of the application. This result should be recognized as future ongoing demand and should therefore be followed.

5.2.4 Threats (external factors)

Which difficulties concerning the economic situation of the agricultural market segment can be seen?[104]

The general structural change in agriculture as already discussed in chapter 1.1 leads to the increase in farm sizes. Thereby the bigger farms, which are major customers, can put suppliers under price pressure.

The current low prices for agricultural products lead to farmers controlling their costs better and thereby looking for cheap product prices. This creates a general price pressure for the whole agricultural supplier market.

What do competitors do?[105]

The biggest threat for the Ackerl Co. as competitor for the planned agricultural service branch is the Maschinenring and/or neighborhood assistance service due to the tax benefit for tax flat rate operated farms. Tax flat-rate operated farms have to charge 13%[106] value added tax, while commercial contractors have to charge 20%[107] value added tax. 90%[108] of all farms in Austria are flat-rate operated, which leads to price advantage of 5.8%.

The Steinwendner Co., a direct competitor for the crop spraying service, focuses on other agricultural services, as they are their core competences. All other competitors are currently indirect competitors for the agricultural service field the Ackerl Co. wants to take enter.

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[102] Cf. Cf. Ibid. p. 20
[103] Cf. Cf. Ibid. p. 20
[104] Cf. Ibid. p. 20
[105] Cf. Ibid. p. 20
[106] Cf. Landwirtschaftskammer Österreich, (online); accessed 08.03.2017
[107] Cf. Wirtschaftskammer Österreich, (online); accessed 08.03.2017
[108] Cf. Lehner. 2015, (online); accessed 08.03.2017

Will statutory provisions be changed in the future?[109]

It does not seem that laws for providing agricultural services inside Austria will be changed in the near future.

If we look at the structure of the SWOT-Analysis in Figure 28, combining the strength of the Ackerl Co. with the chances of the market leads to an encouraging future for the business.

5.3 Porter's five forces analysis

Porter describes five basic competition forces in his well-known business sector structure model. The competition forces are also called driving forces of competition. The figure below shows us the business sector structure model.[110]

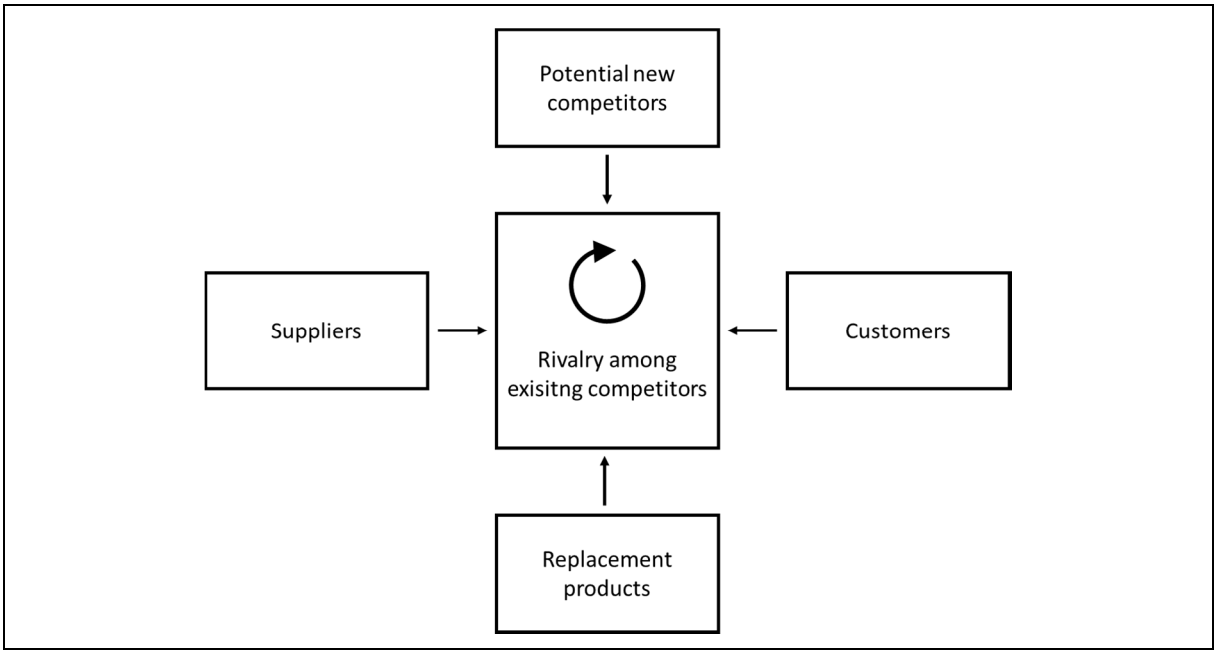

Figure 29: business sector structure model[111]

In addition to rating the attractiveness of a branch, the model also provides a plan for important future actions. If the five competition forces are strong, the branch is considered unattractive. Because the competition is big, generating profit seems unrealistic. For the company it is important to positon itself within the branch to secure from competition forces.[112]

[109] Cf. Nagl (2015) p. 20
[110] Cf. Cf. Ibid. p. 17
[111] Based on Ibid. p. 17
[112] Cf. Vorbach (2015) pp. 152–153

5.3.1 Risk of market entry (potential new competitors)

New market participants bring new capacities into the branch. Effects could be down prices or increased costs of established competitors, which further results into a decrease of the profitability. The probability that new competitors enter the market depends on the altitude of the market entry barrier as well as the expected reaction of established competitors. The threat of entry is low when barriers are high and strong countermeasures of established competitors are expected.[113]

Economy of Scale

Economy of scale effects could occur almost in all areas of a company (e.g. production, purchase, R&D). Low production volumes can lead to significant disadvantages in purchases.[114]

For the Ackerl Co., the volume of purchases of products for the agricultural services are possible through the long company history. The utilization of equipment will be low in the beginning and the financing requirements for the acquisition of the machinery will be high for the new business branch.

Product differentiation

Product differentiation of established companies is defined through the degree of familiarity of the brand and the buyer loyalty. New rivals require significant means to reach and build up this degree of familiarity of a brand and customer loyalty.[115]

Through the long history of the Ackerl Co. in the field of the agricultural market segment, the company is well known in the region. Moreover, customer fluctuation is kept on a small level.[116]

Capital requirements

The entry in different branches is attached to significant financial expenditures, which are necessary for risky and irretrievable investments like R&D or advertisement.[117]

For the entry in the agricultural service segment, the Ackerl Co. has to invest mainly in machinery equipment. The respective costs are, of course, high in the beginning and call for high capital requirements, but the investments are retrievable, at least the temporary value of the machines. Capital requirement for infrastructure and administration can be kept small through the integration of the mentioned departments in the existing infrastructure of the Ackerl Co. Advertisement costs, which are irretrievable, can be kept to a low level in the beginning, when advertising the new services by mouth propaganda.

[113] Cf. Cf. Ibid. p. 153
[114] Cf. Cf. Ibid. p. 153
[115] Cf. Cf. Ibid. p. 154
[116] Interview/Conversation with: Ackerl, Bernhard (22.02.2017)
[117] Cf. Vorbach, et al. (2007) p. 154; accessed 10.11.2016

Access to distribution channels

Existing distribution channels are occupied by established companies. Newcomers must be accepted by distributors in order to ensure their products. Wholesale and retail trade are often strong related to established competitors, which means newcomers often have the only possibility to create a new distribution channel.[118]
The Ackerl Co. has different possibilities for procurement of products. Distribution channels for plant protection products and lime sand products are defined and can be used.

Government policy

The government can limit market entries through, for example, license compulsory or environmental requirements.[119]
The Ackerl Co. has all rights and fulfills all requirements for trading agricultural products. For trading plant protection products, a special education for the employees is necessary, which was taken by the employees of the Ackerl Co.[120] The business for agricultural services is a free business, which means there is no regulation when opening an agricultural service business.[121] Only the commercial registration is necessary and the yearly registration fee is due.

5.3.2 Rivalry among existing competitors

Rivalry among existing competitors is seen in strategies such as price competition, advertisement battles, placement of new products and better service and warranty offers. Cooperating of multiple structural factors leads to an intensive rivalry.[122]

Number of competitors

If there is a high number of competitors of the same size in the market segment, one competitor will want to dominate the others. This danger doesn't exist in intensive market segments with a low number or no dominating companies.[123]
There is a high number of competitors in the region of Ackerl Co. for the agricultural trading segment. The size of the competitors differs and the product portfolio differs from one competitor to another. Some of the competitors try to dominate others and the market, but since customers are mostly loyal, the rivalry among the existing competitors in the trading segment is high. For the agricultural service branch, the size of the competitors is difficult as the Maschinenring follows a completely different business model compared to agricultural service contractors. Through the low number of competitors in the field for plant protection services and dry lime sand services, the rivalry between competitors is on a low level.[124]

[118] Cf. Vorbach (2015) p. 154
[119] Cf. Ibid. p. 154
[120] Interview/Conversation with: Ackerl, Bernhard (22.02.2017)
[121] Cf. Bundesministerium für Wissenschaft, Forschung und Wirtschaft, (online); accessed 08.03.2017
[122] Cf. Vorbach (2015) p. 154
[123] Cf. Ibid. p. 154
[124] Interview/Conversation with: Ackerl, Bernhard (22.02.2017)

Growth of the market segment

If there is slow growth of the market segment, the competition is substantially higher compared to fast growing markets.[125]

The situation for the Ackerl Co. is also already laid out in chapter 1.1, which describes that the growth of the agricultural trading market is stagnating and competition is high. This situation leads to the plan of offering agricultural services as whole packages form procurement until application.

Missing product differentiation

If product differentiation is missing, purchase decisions are mainly based on price and service. Thereby intensive competition is generated, which could be compensated through product differentiation.[126]

Due to the low product differentiation between competitors, which also is already mentioned in Chapter 1.1, the Ackerl Co. is considering adapting their product/service portfolio along agricultural services.

High market exit barriers

Exit barriers are factors (strategic, economic, emotional), which cause a company to stay in a branch, although yields are low or even negative. Reasons for exit barriers include high fixed capital costs for the exit, emotional barriers (identification of the management with the branch, loyalty to employees) and administrative and social restrictions (e.g. worry about loss of workplace). High exit barriers prevent the dismantling of over capacities and cause companies without competition opportunities to stay within the branch. Among this, the profitability of the whole branch suffers.[127]

The exit barrier for the Ackerl Co. is moderately high. Fixed capital which is bound in buildings is difficult to recover, but in case of exiting the market segment, buildings can be used for rental purposes. Fixed capital which is bound in machinery and inventory can be recovered quickly. Investing in agricultural machinery and equipment leads to high fixed capital expenditures, which can be recovered quickly in case of a market exit of the agricultural service branch.

5.3.3 Pressure through substitution products (replacement products)

Replacement products (substitutes) are products, which have the same function as the product of the branch. Companies that provide substitutes are competitors for all companies within a branch. Substitution products define an upper price limit for the product of the relevant branch and thereby the profit potential. Replacement products that offer a better price-performance ratio compared to the product of the relevant branch deserve special attention. Companies can strengthen their position through joint initiatives (advertisement to fight substitute back).[128] An

[125] Cf. Vorbach (2015) p. 155
[126] Cf. Ibid. p. 155
[127] Cf. Ibid. p. 155
[128] Cf. Ibid. p. 155

example for a substitute product is the medical innovation of laser eye surgery compared to glasses or contact lenses.[129]
Substitution for the plant protection service would be, for example, if new legislation dictated that all crops in Austria must be cropped biological. This substitution would not be a product itself, but would extinguish the whole plant protection industry segment in Austria rapidly. A substitution product for plant protection service would be, when seed would be resident against fungicides and insecticides, and seed stain would protect the plants from weeds.
For the lime sand segment, providing a spreader rental would not be a substitution for the lime sand spreading service, it would be rivalry between competitors of different lime sand business models. An existing replacement product for the lime sand spreading service is slurry lime. This lime type can be put into the slurry and can spread out with the slurry tanker. The application is limited, only for cattle slurry this type of lime is possible. Moreover, the effective mechanism of slurry lime is limited compared to other lime sand products.

5.3.4 Negotiation strength of customers

Customers can influence companies' profitability through the demand in low prices, higher quality or better performance. The strength of customers depend on characteristics of the market situation and the quantity of their purchases compared with the total purchased quantity within a branch.[130]

Concentration of customers

Customers are strong, if relatively few big customers appoint the main part of the turnover.[131]
Through the high number of customers for the different business branches of the Ackerl Co., the concentration of customers can be described as low. Yet major customers are still important for the company which is already described in Chapter 1.1.

The products have a high amount of the total costs of the customers

If products have a high amount of the total costs of the customers, customers search for suppliers with low prices and are more selective with the choice.[132]
Since lime sand spreading and the plant protection are only parts of the whole agricultural cropping process, the risk that farmers are selective with their choice will be moderate in the beginning. It can be assumed, that once farmers are satisfied with the provided service quality at an appropriate price level, they will be loyal customers.

Standardized or not differentiated products

When products don't differ, it is not difficult for customers to look for alternative products.[133]

[129] Cf. Nagl (2015) p. 19
[130] Cf. Vorbach (2015) p. 155
[131] Cf. Ibid. p. 155
[132] Cf. Ibid. p. 155
[133] Cf. Ibid. p. 156

As already mentioned in Chapter 1.1, the products are similar and comparable between the competitors in the trading field. The Ackerl Co. wants to create differentiation through providing products combined with the direct application on the crops.

Low conversion costs

If there are no conversion costs when switching from one supplier to another, customers are not bounded to one supplier.[134]
Customers which demand agricultural products have low or no conversion cost when changing their supplier. For the Ackerl Co., this means that the business is interchangeable for the customers. Also for the planned agricultural services are low conversion costs for customers.

Low profits

Customers are forced to lower their purchasing costs through low profits.[135]
For the whole agricultural market segment, prices are swaying and relatively low.[136] In addition, the Ackerl Co. acknowledged that farmers look at their purchasing costs more and more.[137]

Product is irrelevant for the product of the customer

If the quality of a customer's product strongly depends on the product of the supplier, customers will be less price-sensitive. If this not the case, the negotiation strength of the customer is higher.[138]
If farmers outsource lime sand spreading or the plant protection, the quality of the delivered service strongly influences the crop, especially the plant protection application. Therefore, farmers require high quality services.

5.3.5 Negotiation strength of suppliers

The negotiation strength of suppliers is to threaten with higher prices or lower quality. For suppliers it is possible to lower the profitability of a market segment, if a cost transfer of the branch is not possible.[139]

Concentration of suppliers

If a low number of suppliers face a high number of customers, their influence on prices, quality and delivery conditions is big.[140]
In Austria there is a small number of wholesalers for plant protection products since this is a high environmental and governmental regulated market. But through the fact, that there are imports for plant protection products allowed, the wholesale suppliers for plant protection

[134] Cf. Ibid. p. 156
[135] Cf. Ibid. p. 156
[136] Cf. Schubert. 2017, (online); accessed 09.03.2017
[137] Interview/Conversation with: Ackerl, Bernhard (22.02.2017)
[138] Cf. Vorbach (2015) p. 156
[139] Cf. Ibid. p. 156
[140] Cf. Ibid. p. 156

products are also under pressure. The situation for lime sand is different, there is a high number of limestone companies in Austria.[141]

Supplier product is important for customer

If the product of the supplier is an important input for the product of the customer, the power of the supplier increases.[142]
The situation for the Ackerl Co. is almost the same for wholesalers. All market segment participants are dealing with equal products, and companies are interchangeable.

Threat of forward integration

If suppliers threaten with forward integration, the suppliers become direct suppliers on the market and open, for example, distribution sites.[143]
Through the fact, that there is still a high number of farmers in Austria, the entry barriers for suppliers to act as direct suppliers is high, because of the wide distribution network of agricultural trading companies and Lagerhaus branch offices.

5.4 Unique selling propositioning (USP)

Markets are saturated if new products do not provide more or different features than already existing products. These are known as “me too” products. Alternatives to “me-too” products are products or services with USP -- products which provide something which other products not have.[144] The USP-strategy is a management method that ensures an increase in earnings and innovations. Embossed through the continuous race with competitors, the USP can be used to set oneself apart from competitors and to build barriers for imitators. The method should be especially applied in the market entry phase and growth phase of new products as well as in the planning frame for the sustainability of the product portfolio.[145]

[141] Interview/Conversation with: Ackerl, Bernhard (22.02.2017)
[142] Cf. Vorbach (2015) p. 156
[143] Cf. Nagl (2015) p. 18
[144] Cf. Großklaus (2015) pp. 1–5
[145] Cf.Grimm, et al. (2014) p. 97

An approach to secure or to enforce a company's position on a hard competed market is to follow one of the following strategies:[146]

- Concentration on existing products and markets (there are still profitable turnovers possible in the current market)
- Differentiation (Take off from competitors through recognizable benefits for the customers)
- Standardization (thereby products can be sold on a low price level and a cost leader position may is possible)

5.4.1 Positioning variant

In the following paragraphs the most important positioning variants and modes are introduced.

Market leader position

The market leader has a solidified position since it was the first on the market. Being the first on the market means having a fix place in the mind of people when they think about the corresponding product category. The market leader is strongly anchored to the awareness of customers. The hardest track is to get into the brain of customers, particularly without being the market leader. But also being the first on the market has its risks. The reality of the market nowadays shows that being consequent is often more important than being the first on the market.[147]

Follower position

Even if market leaders are strong in the market, there is a possibility for followers or challengers to search for a chance. If followers want to attack market leaders, they have to analyze the strengths and weaknesses of the market leader. Not being better, but rather being different is the secret for being successful. The second business can be successful, as long as it is creative and courageous.[148]

Me-too positioning

Many companies operate in the me-too position. They hang on to the successful existing positioning from competitors. Such strategy often acts with an advantageous price-benefit-relation to claim itself on the market.[149]

Price positioning

Price is a crucial factor for purchasing or not purchasing a product. Price positioning is often a part of the me-too positioning. There are several possible strategies within price positioning.

[146] Cf. Hering (2014) p. 31
[147] Cf. Großklaus (2015) pp. 15–16
[148] Cf. Ibid. p. 18
[149] Cf. Ibid. p. 19

For example a higher price for prestige, higher quality for the same price, equivalent products for a lower price or less performance for a lower price.[150]

Niche positioning

A market niche can be designated as a market segment with less, slimmer but more special products. For example organic or diet products would be a niche market.[151]

5.4.2 USP for the Ackerl Co.

For the planned agricultural service branch of the Ackerl Co., the most outstanding characteristics are that the company or the head of the company is both a farmer and an agricultural service provider in addition to being an agricultural trading business as well. Thus, the Ackerl Co. provides the services practicable and with the needed level of expertise and the general understanding for farming.

The Ackerl Co. would not have the market leader position for the plant protection since the Maschinenring already has a strong crosslinked network. But for the lime sand spreading service only for dry lime sand types in the closer region to the company's location, the Ackerl Co. would be first on the market upon its initial offer. For the plant protection services the Ackerl Co. has a follower position in general. But as a commercial service contractor in this field, there is low competition and even less competition for the whole plant protection process chain (procurement until application and documentation) as independent provider.
The Ackerl Co. does not invent the planned services itself, meaning that the company offers a "me-too" product. But to create differentiation within the branch, the company wants to provide agricultural services which has the selling of needed products for applying the services in the background.

Through the given situation for the Ackerl Co., the company could communicate:

- "We know the needs and requirements of farmers through the own farming experience"
- "We would never recommend agricultural products which we wouldn't use in our own farming business"
- "We provide full problem solving solutions for plant protection as well as for calcification measures."

[150] Cf. Ibid. p. 19
[151] Cf. Ibid. p. 20

6 Marketing

Marketing is the consequent direction definition of a whole company according to market requirements. Through high competition intensity, the dynamic of the market, the market saturation and the ongoing internationalization, it is more and more difficult to assert a company in the future. [152]

For the planned business extension for the Ackerl Co. important marketing topics need to be discussed and planned.

The immateriality of the performance of services requires special consideration in marketing. The 4 Ps of Marketing for material products need to be extended to 7 Ps for services. The 7 Ps for service marketing are:[153]

- Product
- Price
- Place
- Promotion
- People
- Process
- Physical Facilities

In the following chapters, the 7 Ps for services are described and strategies for the Ackerl Co are developed.

6.1 Product

Services can be more individualized compared to material products. Depending on the customer requirement, the service can be adopted to the customer's needs. At the same time, the different expectation of services from the customer view makes it more difficult to provide standardized services. Compared to material products, services are tendentially heterogenic. The quality of the service can differ, for example, through the integration of the customer (different tax clearance documents), different competencies of employees (foreman or trainee) or also the "day-form" of the service employees. [154]

In the following chapter, the description for the planned plant protection services (crop spraying and spreading slug pellets) and the lime sand spreading service for the Ackerl Co. are given.

[152] Cf. Bruhn (2012) p. 13
[153] Cf. Scheuer Marketingberatung, (online); accessed 19.03.2017
[154] Cf. Walsh, et al. (2009) p. 427

6.1.1 Crop protection services

The crop protection services for the Ackerl Co. includes the crop spraying service and the spreading of slug pellets.

6.1.1.1 Crop spraying service

There are different types of crops and thus different types of equipment and processes necessary to fulfill the demand of the customer. For example, to apply plant protection products on grapevines or orchards, a mist blower (mounted or trailed) is most of the time in use. For high performance need, self-propelled air jet sprayers are obtainable. To protect field crops, boom sprayers are used. There are mounted, trailed and also self-propelled types available. Figure 30 shows a common used crop spraying equipment, a standard tractor with a mounted boom sprayer.

Figure 30: Mounted boom sprayer[155]

For the crop spraying service, the payment is result oriented and the customer accounts for the service usually per hectare. Since there are mainly field crop farmers in the region of Ackerl Co., only the crop spraying service for normal field crops will be considered.

6.1.1.2 Spreading slug pellets

The risk of slug damage to small canola plants or greenery crops can be high. The most effective way to protect the crops from slugs is to apply slug pellets between after seeding and before 4 leaves stadium.[156]

There are different possibilities to apply slug pellets. It is possible to spread the pellets with a standard fertilizer spreader, but the setting to spread the right small amount is not always adjustable. The better option to apply the small amount of the pellets are small disc spreaders, which are also in use for cultivation intercrops (greening). Those small and light spreaders can

[155] Ackerl (06.11.2016) (picture of sprayer, farm Ackerl Johann)
[156] Cf. APV - Technische Produkte GmbH. 2016, (online); accessed 10.11.2016

be mounted on tractors or even on small SUVs as well. Figure 31 shows a small disc spreader mounted on a small off-road vehicle.

Figure 31: Slug pellets spreader mounted on a small off-road vehicle[157]

6.1.2 Lime sand spreading service

Lime is a soil improver; it has a stabilizing effect on the soil organism. In soil with low pH-values, spreading lime improves the nutritional household, lifts the plant available nutrients level and encourages the soil structure. Lime is available in different forms: carbonic acid lime, burnt lime and the mixtures of these two types.[158]
For spreading limes in in dry form, a trailed lime spreader is in use. In seldom cases there are also mounted spreaders and self-propelled spreaders available. The lime types which are mentioned are in powder form. There are some recent possibilities to have lime also granulated. Against dust emissions for the powdered lime, special distribution augers are in use.

Figure 32: Trailed lime spreader[159]

[157] Lehner Agrar GmbH. 2016, (online); accessed 10.11.2016
[158] Cf. Landwirt Agrarmedien GmbH. 2016, (online); accessed 10.11.2016
[159] Gutzwiller - Group. 2016, (online); accessed 11.11.2016

For spreading moist lime products, disc plate spreaders are in use. Lime spreaders can be equipped parallel with disc plates and distribution augers. This leads to a universal usable spreader for dry and moist lime products as well as for fertilizer and compost.

6.2 Price

Price policy decisions are influencing turnover and further the income situation of a business. Prices are thereby the accordance of product offers (performance of a company) and the demand (compensation of the customers).[160]
The service oriented characteristics influence the pricing of the services. More than for material products, the price level for a service signals the quality level from the customer's perspective.[161]

The Pricing is also influenced by the standardization of the service.

- Range of services for all customers are the same:[162]
  The pricing can be done analog to material products, if the performance of the service can be calculated and if the service process is for all customers the same.
- Range of services varies from customer to customer:[163]
  The variation is through the integration of external factors (customer or goods of customer) and through different conditions and requirements of customers. For example, a talented guitar student needs less lessons to master the music instrument compared to less talented students. In this case, often an agreement for the case in costs per hour is fixed.

Agricultural services also depend on external factors which are different driving distances to the farmers and the average field size. For the crop protection services usually a fixed price per hectare is in use depending on the average size of fields and on the driveway distance to the farmer. The lime sand spreading business is usually charged in euros per spreaded lime tons.

The agricultural services will vary from customer to customer for the Ackerl Co. as well. But as already mentioned, usually a fixed price per hectare for the crop protection services and a price per spreaded lime ton for the lime sand spreading service is common and therefore, the Ackerl Co. is following these price policies.

Further cost calculations are made in Chapter 8 and the pricing itself for the different agricultural services is presented in Chapter 10.

[160] Cf. Bruhn (2012) p. 165
[161] Cf. Walsh, et al. (2009) p. 436
[162] Cf. Ibid. p. 436
[163] Cf. Ibid. p. 436

6.3 Place

The decision space for the distribution policy for service businesses is since services are intangible and the storage as well as the transport of the service is not possible. As the main target of the placement strategy for services, customers need to have the possibility to take the advantage of the services. Therefore, long driveways are not expected and the location of the service business has a high importance, as the location of the business defines the potential customer circle.[164]

There is a low importance of indirect distribution channels for services. For the Ackerl Co. the distribution will be exclusively a direct distribution to the farmer. The agricultural services are "mobile service deliveries" and the service process is made on site of the customer.

The planned market for the Ackerl Co. is through the location of the company in Sattledt and the surrounding municipalities (see Chapter 4.3.1).

6.4 Promotion

The aim of the communication policy is to generate attention, transport information, convince the customers of benefits and build up permanent relationship between customers and the supplier. Advertisements (television, radio, internet, telephone marketing, outdoor advertising, etc.), sales promotions (display-material/promotion documents), public relations (Networking, etc.) and trade fairs are some of the communication tools.[165]

Due to the immateriality of the service and therefore the connected difficulty to visualize the service, the success of the promotion tools strongly depend on the communication of the provided services, as well as the benefits and the quality of the service.[166]

The focus targets of the communication policy are:[167]

- Information about the provided offers
- Conviction of the uniqueness and the differentiation from competition
- Creation of motivation to contact the service contractor and to buy the service
- Customer care of existing customers for the purpose of after-sale-marketing

For the Ackerl Co. the communication of the different provided services will initially be word of mouth advertising. After the fulfillment of the first jobs, small advertisement boards are placed in the farmer's applied fields to visualize the service.

[164] Cf. Ibid. p. 437
[165] Cf. Nagl (2015) pp. 46–48
[166] Cf. Walsh, et al. (2009) p. 438
[167] Cf. Ibid. p. 438

The word of mouth propaganda plays an important role, because the evaluation of the services through friends are for many customers more trustful than advertisement activities, which are directly from the company.[168]

To create long-term customer relationships, continuous communication and customer care will be important for the Ackerl Co. Further advertisement tools to strengthen the “Ackerl-service-brand” will be advertisement gifts for long-term customers like branded jackets.

The communication policy is a permanent process and can be separated into 6 tasks which are:[169]

1. Target definition for the communication policy
2. Definition of target groups
3. Setting a budget
4. Selecting activities and advertising media
5. Execution
6. Review and assessment

The Ackerl Co. will follow the displayed task process above to control marketing and communication instruments well.

6.5 People

Employees are “the face” of the service business, especially for services like hair cutting, etc. As such, the need for the “right person” can be derived who acts customer oriented and is “service suitable”.[170]

From the strategic view of the service provider, employees are a possibility to differentiate itself from competitors. In addition, customers identify the company through employees and project their attributes (e.g. unkindness or untidiness) onto the company. An important goal of the personal policy is the guarantee of a high competence of the service employees.[171]

The Ackerl Co. is currently at the stage where Martin Ackerl and Johann Ackerl have a high expertise for agricultural products, especially for plant protection products through the long activity in this industry field. But soon, Johann Ackerl will be retired, and additional employees with a high competence for agricultural products, especially for plant protection products will be needed. Also, if the company is expanding the plant protection service with additional application machinery, additional skilled and well trained employees will be needed.

[168] Cf. Ibid. p. 439
[169] Cf. Nagl (2015) p. 46
[170] Cf. Walsh, et al. (2009) p. 440
[171] Cf. Ibid. pp. 440–442

6.6 Physical Facilities

The surrounding area of a service influences the customer's perception of the service quality. Through a consistent design of for example of branch offices, or a dress-code of employees, an uncertainty of the service quality can be decreased. The surrounding of a service can be separated in following segments:[172]

- The external appearance, including for example, the location, the condition of the facility, sign postings, etc.
- The internal appearance, including the design, the condition of the equipment and the resources which are necessary to provide the service.
- The tangible assets, including all material values like business cards or company brochures.

The Ackerl Co. will invest in new and modern service equipment and the whole business is in a continuous process of improving company appearances. Therefore, a high level of the service quality should be recognized by the customer.

6.7 Process

The primary target in the process policy is to ensure the high quality of the service process. Therefore, the processes need to be as good as possible and free of mistakes. In combination with the target to arrange the service process at a low cost level, the profitability can be increased and/or the price level of the service can be lowered.

The following two chapters explain the planned processes for the different agricultural services.

6.7.1 Crop protection services

Farmers need a valid authorization statement for handling plant protection products. If farmers want to outsource their complete crop protection chain, from procurement of the products until the documentation of the application, they do not need any valid authorization statement anymore. To fulfill this complete chain in crop protection, it is necessary to provide both crop spraying services and the service of spreading slug pellets. The larger part will be crop spraying, applying herbicides, fungicides and insecticides on crops.
In practice, most of the time, the current service which is provided on the market is to do only the application on the crop. Documentation, guidance and harm observation is often not provided and happens usually on the side of the service.[173] [174]

Both the crop spraying service and the spreading of the slug pellets will follow the same process scheme. Figure 33 will serve to get a better understanding of the whole process chain.

[172] Cf. Ibid. p. 442
[173] Cf. Vorbach, et al. (Juni 2007) p. 51; accessed 10.11.2016
[174] Cf. Ibid. p. 83

The service includes the whole process chain from procurement of the plant protection products to the lawful documentation as one full package. Individual arrangements for the service will be also available (e.g. only the application).

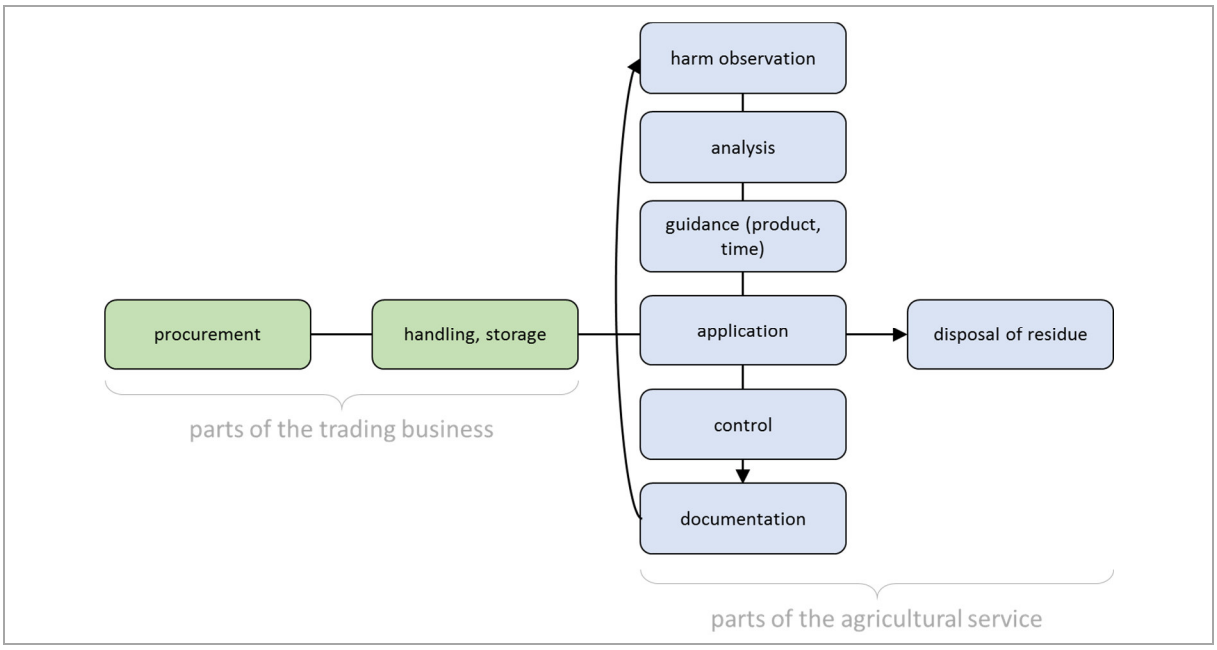

Figure 33: Process of crop protection services (crop spraying, spreading slug pellets)[175]

The procurement, the handling and the storage of the plant protection products will be provided form the trading part of the Ackerl Co. The observation of damaged crops, the analysis and the application of the plant protection at the right time will be parts of the agricultural service. Also the evaluation of the effectiveness and the documentation of the plant protection application will be provided. The disposal of possible residues of the plant protection products are also done as a part of the provided service package.

For the crop spraying operation, the water and the plant protection products will be filled at the company's location. Plant protection products can be taken with the tractor and further sprayer fillings can be made at the farmers' places. Therefore, the farmer has to provide the water.

As the application rate for slug pellets is about 5kg/ha. The daily necessities of slug pellets can get picked up. There is either the possibility to put the spare slug pellets into the container of the slug pellets spreader or to put the slug pellets bags anywhere on the vehicle.

6.7.2 Lime sand spreading service

The lime sand spreading service is based on the process schema of the plant protection services. The observation of damaged crops, the analysis, the evaluation and documentation

[175] Based on Ibid. p. 156

is not applicable due to the reason, that the application of lime sand is not mandatory to be recorded. Also lime sand has usually no hazardous environmental impact.

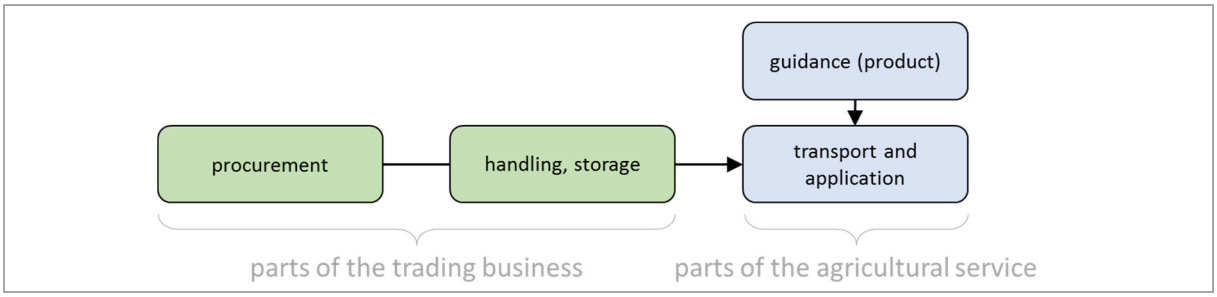

Figure 34: Process of lime spreading service[176]

The procurement, the handling and the storage of the lime spreading service will be parts of the trading business. The guidance of the product, the transportation and application of the lime will be parts of the agricultural service.

Since there is a limestone company located in Sattledt, the lime sand will be loaded there. For further distances, there is the possibility to transport the lime sand with trucks to the field boarder and overload the lime sand into the spreader.

[176] Based on Ibid. p. 156

7 Scoring method

To find appropriate application equipment and technique for the different agricultural services, a scoring method for each service is applied. Therefore, a maximum of three different possibilities and variants for each service are compared in the following chapters.

The Scoring method is an instrument for decision making. If diverse aspects need to be considered or rather more people are included in the decision process, the scoring method assists through a refined method to find the optimal solution for a company.[177]

For the economic decision making, rational decisions are often more successful, than nor rational decision making processes. But through the fact, that complex tasks are difficult to structure and to follow, people can be overwhelmed and not rational decision making process like the scoring method are therefore giving better results. Also to communicate and display an easy to follow decision process, the scoring method is an ideal model.[178]

The scoring analysis for the different agricultural services were performed separately by Johann Ackerl, Martin Ackerl and Bernhard Ackerl. The average values of the three scoring analysis were used as final benefit values.

7.1 Approach for the scoring method

In the following chapter, the scoring method itself will be introduced. In addition to the theoretical part of the scoring method, the practical results for the different agricultural services of the Ackerl Co. will be represented in the next chapters.

The scoring method can be used for two different decision problems. First, the scoring method is used to decide a selection problem and second, it is used to score a defined amount of alternatives and then prioritize.[179]
The scoring method can’t solve issues regarding tendency or gradual decision. Typical questions for a selection problem could be: “Selection of an advertising agency” with the goal definition: “Selection of the agency with the best performance/price-ratio”.[180]

On the process, anyone who has the power for decision making for their department or anyone who is able to bring in specific expertise, is allowed to take part. The number of participants should include at least 3 and no more than 20 persons. The participants of the decision making process do not need knowledge about the scoring method, but they have to follow the instructions of the moderator.[181]

[177] Cf. Kühnapfel (2014) p. 1
[178] Cf. Busse von Colbe, et al. (2015) pp. 307–311
[179] Cf. Kühnapfel (2014) pp. 6–7
[180] Cf. Ibid. p. 8
[181] Cf. Ibid. p. 5

The participants of the decision making process are Johann and Martin Ackerl in addition to the moderating function of Bernhard Ackerl. Both of them have specific expertise and the best experience in the different agricultural service in the Ackerl Co.

Figure 35 shows the procedure of the scoring method. The following sub-headings describe the different steps of the procedure.

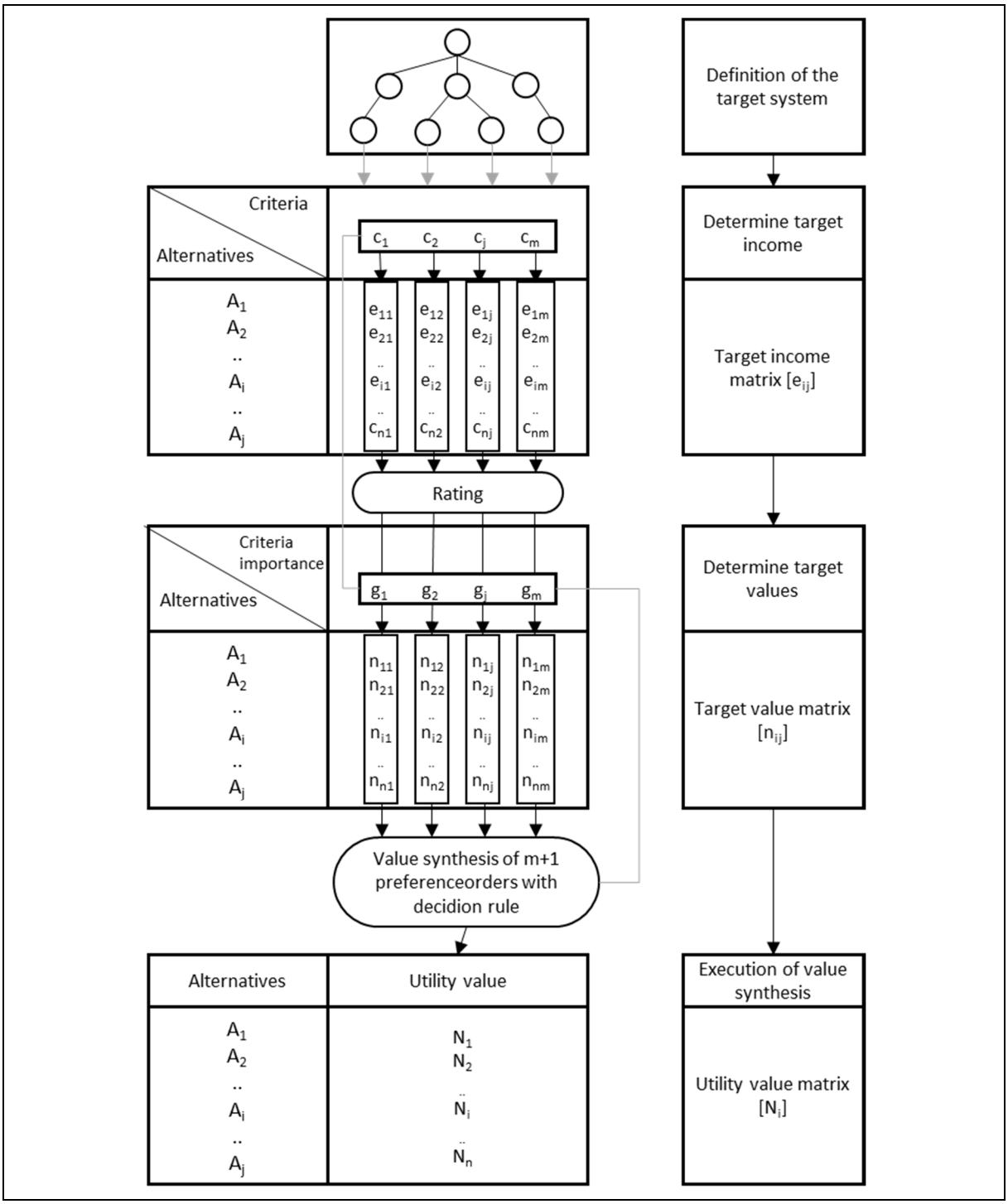

Figure 35: Procedure of the Scoring method[182]

[182] Cf. Müller-Herbers (April) p. 43; accessed 13.12.2016

Definition of the target system

First, the determination of the target system needs to be defined. A general approach to define the target system doesn't exist. It is rather "art than science" to get a useful result. A hierarchical process for the target system can be applied. Goals can be separated into smaller partial targets or rather partial targets can be summarized to main goals. The dismantling of targets leads to a bigger effort in determining target incomes. Therefore the dismantling process should be stopped when the partial targets have reached the operationality.[183]

Determination of target income

In the second step of the scoring method, the target income values for each target criteria and for each alternative are determined. It is primarily a process to determine data, which mostly depends on the target criteria as well as on the alternative possibilities. The result of the second step of the scoring method should be the target income matrix, in which each target income e_{ij} is depict by the expected consequences of the target criteria k_j and alternative possibility A_i.[184]

Determination of target values

In the third part of the scoring method the target income values are rated through scaling and those target income values are passed over into target values. The result of this step is the target value matrix. In this context, scaling means assigning numbers to target income values e_{ij}. The otherwise not comparable target income values can be compared after assigning a comparable dimension.[185]

The definition of the scale is decisive for the total result of the scoring process. For the participant circle of the scoring process, the 10s scale is understandable and clear to follow.[186]

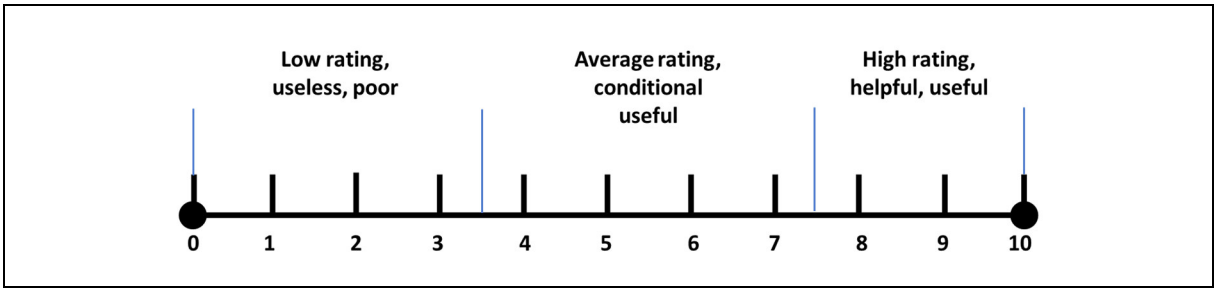

Figure 36: 10s-rating-scale[187]

Determination of criteria weighting

Since the target criteria often varies in terms of importance, they are verified with different rating weights. The weighted targets then goes into the total benefit rating. To determine the criteria weighting, the pairwise comparison is as practical application in use.[188]

[183] Cf. Ibid. pp. 42–44
[184] Cf. Ibid. p. 45
[185] Cf. Ibid. p. 45
[186] Cf. Kühnapfel (2014) p. 17
[187] Based on Ibid. p. 17
[188] Cf. Müller-Herbers (April) p. 45; accessed 13.12.2016

Execution of the value synthesis

In the fifth work step of the scoring method, the partial benefits of each alternative are summed up to the total benefit.[189]

The target values are multiplied with the criteria weightings. The sum of all values for each alternative possibility leads to the total benefit value for each alternative. The alternative with the highest benefit value is the result of the scoring method.[190]

7.2 Crop spraying equipment

In beginning of the following chapter, the different crop spraying equipment options are introduced. The second part will show the results of the scoring method for the crop spraying equipment. The alternative with the highest benefit value will be further calculated in the cost accounting. In this way, the optimal crop spraying equipment and technique to provide a high quality service level for customers is in the foreground.

Crop spraying equipment alternatives

For the Ackerl Co., there are three considerable alternatives for the crop spraying equipment to provide the service. The first alternative is having a mounted crop sprayer behind a standard tractor, which is displayed in the Figure 30.

The size of the mounted crop sprayer can differ in spraying volume ability and width of the spraying boom. The size of the tractor needs to be adapted according to the size of the crop sprayer to guarantee a legal authorization for traffic regulations and to be able to operate the crop sprayer at difficult field conditions.

For the introduced alternative above, a crop sprayer with 1,050 liters of volume with a 15 meters boom width and a standard four wheel drive tractor with 4 cylinder engine and 95 hp is chosen. The additional features of the boom sprayer are standard features with some additional accessories.

The second alternative would resemble the first option with the exception of an additional tank in the front of the tractor to have a higher broth volume capacity. Figure 37 shows such a crop spraying constellation.

[189] Cf. Ibid. p. 47
[190] Cf. Kühnapfel (2014) p. 19

Figure 37: Mounted crop sprayer behind standard tractor with additional tank in the front[191]

The tank in the front usually contains a volume of 1,000 liters. To guarantee ideal driving conditions considering the weight distribution of the front and back axle of the tractor, at least a sprayer in the back with a volume of 1,500 liters is advantageous.[192]
For this possible equipment alternative, the Ackerl Co. choose a crop sprayer with a 1,000 liters tank in the front and a crop sprayer in the back with 1,920 liters and a boom with 24 meters width. As a result of this heavy equipment, a standard four wheel drive tractor with 4 cylinders and 145 hp was chosen. The technical stand of the chosen crop sprayer is on the state of things (GPS supported single nozzle switch off). Due to the high volume capacity it makes sense to invest in additional features to relieve the driver beside increased performance.

The most professional alternative to provide the crop spraying service is using a self-propelled sprayer which is displayed in Figure 38.

[191] AMAZONEN-Werke H. Dreyer GmbH & Co. KG, (online); accessed
[192] Fischereder (11.02.2017)

Figure 38: Self-propelled crop sprayer[193]

The chosen self-propelled sprayer provides 2,500 liters broth volume and has a boom width of 24 meters. The engine has 175 hp out of 4 cylinders. The sprayer has an average level of additional features. The Grim Co., which would be the supplier of this specific compact self-propelled sprayer is behind the level of other competitors, comparing possible technical additional features.

Scoring method results of crop spraying alternatives

The target system with the different weightings is pictured below. The overall target is to find an optimal solution for crop spraying to be able to provide this service at a high quality level. The first sub-target which is the acceptance of customer and society is influenced by the impression of the whole crop spraying equipment. Especially the size, the total weight and the modern state of the technology is essential for the customer while the general size of the crop sprayer influences the society's perception and acceptance. The objective and subjective performance characteristics and features mainly influence the flexibility and throughput of the service. Furthermore, the performance characteristics influence the economic considerations in addition to the purchase price of the different alternatives.

[193] Grim S.r.l., (online); accessed 16.03.2017

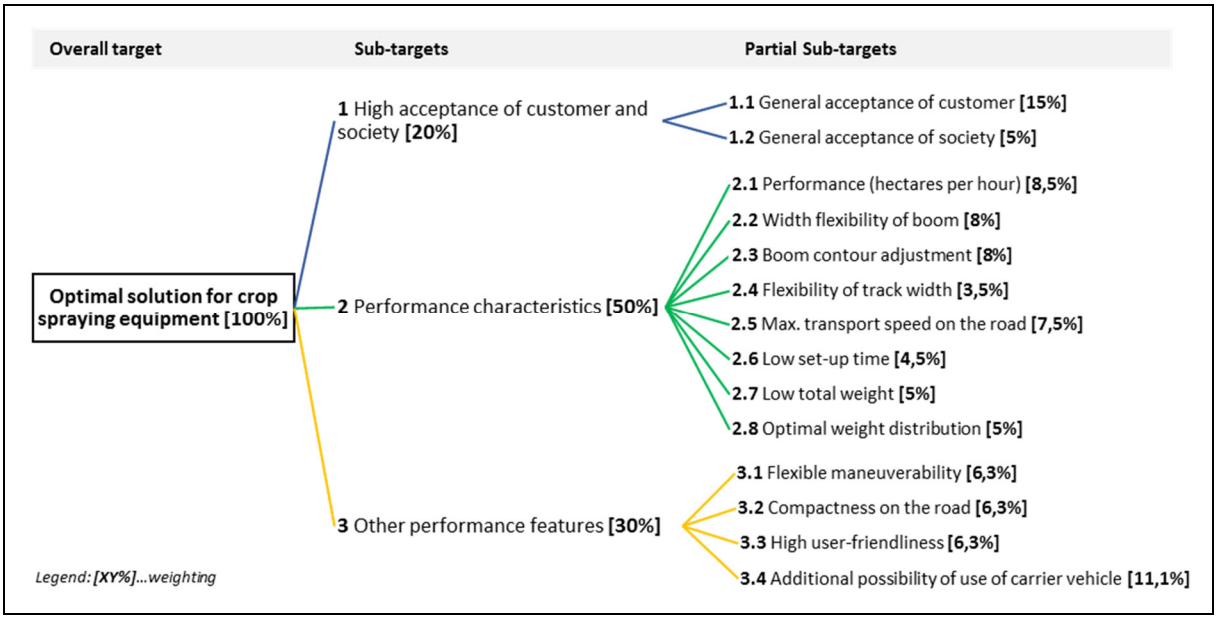

Figure 39: Definition of the target system

The benefit value calculation is given below. For the target values, the 10s system is used, which is displayed in Figure 36.

Target criteria	Weight-ing	Alternatives					
		Mounted sprayer		Front and Back-Mounted sprayer		Self-propelled sprayer	
		Points	Benefit value	Points	Benefit value	Points	Benefit value
1.1 General acceptance of customer	15%	8	1.200	6	0.900	6	0.900
1.2 General acceptance of society	5%	9	0.450	6	0.300	3	0.150
Sub-Target 1 total	20%		1.650		1.200		1.050
2.1 Performance (hectares per hour)	8.5%	5	0.425	9	0.765	10	0.850
2.2 Width flexibility of boom	8%	6	0.480	9	0.720	5	0.400
2.3 Boom contour adjustment	8%	5	0.400	9	0.720	6	0.480
2.4 Flexibility of track width	3.5%	2	0.070	2	0.070	4	0.140
2.5 Max. transport speed on the road	7.5%	6	0..450	9	0.675	6	0.450
2.6 Low set-up time	4.5%	5	0.225	4	0.180	7	0.315
2.7 Low total weight	5%	8	0.400	6	0.300	6	0.300
2.8 Optimal weight distribution	5%	3	0.150	8	0.400	9	0.450
Sub-Target 2 total	50%		2.600		3.830		3.385
3.1 Flexible maneuverability	6.3%	6	0.378	6	0.378	10	0.630
3.2 Compactness on the road	6.3%	8	0.504	5	0.315	9	0.567
3.3 High user-friendliness	6.3%	4	0.252	10	0.630	7	0.441
3.4 Additional possibility of use of carrier vehicle	11.1%	6	0.666	8	0.888	1	0.111
Sub-Target 3 total	30%		1.800		2.211		1.749
Overall target total	100%		6.050		7.241		6.184

Table 6: Scoring analysis for crop spraying equipment

According to the scoring analysis for the crop spraying equipment, the alternative with the mounted sprayer in the back and front of a standard tractor is the best solution for the Ackerl Co. in terms of performance. A big benefit of the front/back sprayer combination is that the tractor can be used for many other diverse jobs due to its average size.

7.3 Slug pellets spreading equipment

For the slug pellets spreading equipment, there are two alternatives which the Ackerl Co. is considering. After the short description of the two different alternatives, the scoring analysis is made to calculate the highest benefit value.

Slug pellets spreading equipment alternatives

The difference between the alternatives lie in the difference of the carrier vehicle for the small disc spreader.

For the small disc spreader, only a double plate spreader will be considered since they have much better distribution results. Therefore, the double plate spreader won't be further analyzed in the scoring analysis.[194]

The first alternative to a carrier vehicle is to mount the spreader on a compact SUV. Figure 40 below displays such a combination. For the specific analysis, a Suzuki Jimny with 85 hp and four wheel drive is considered.

Figure 40: Small disc spreader mounted on compact SUV[195]

The second alternative for spreading lime sand is to use a small off-road vehicle which is already introduced in Chapter 6.1.1.2. The specific small off-road vehicle, which is ranked, is an Explorer Argon 750 with four wheel drive.

Scoring method results of slug pellets spreading alternatives

The figure below shows the target matrix for the slug pellets spreading equipment alternatives. The overall target is to find the optimal solution for slug pellets spreading is separated into two performance sub-targets. The performance characteristics are more concrete as opposed to the other performance features, which are more subjective. But for the subjective performance parameters, the additional possibility of use of the carrier vehicle is most important.

[194] Cf. APV - Technische Produkte GmbH, (online); accessed 17.03.2017
[195] Cf. Max Meyer Internetdienste UG, (online); accessed 16.03.2017

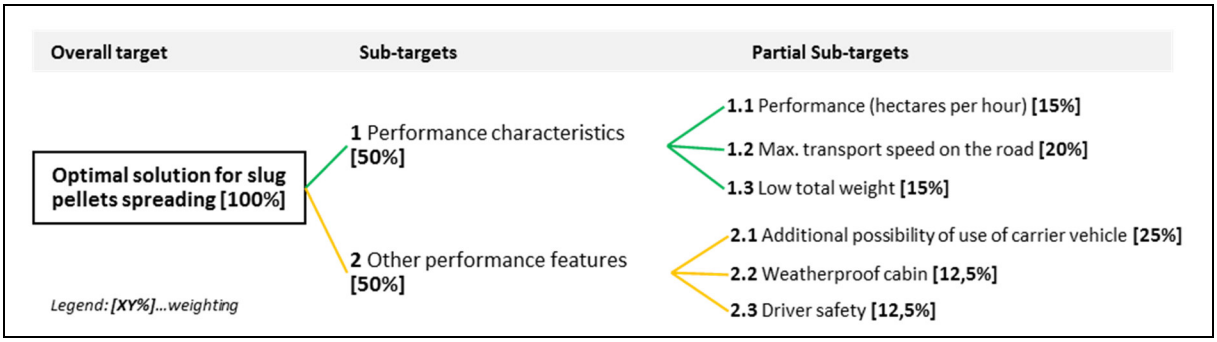

Figure 41: Target matrix for slug pellets spreading equipment

In the following table the scoring analysis for the slug pellets spreading equipment is conducted. For the rating of the target values, again the 10s system is used.

Target criteria	Weight-ing	Alternatives			
		Compact SUV		Small of-road vehicle	
		Points	Benefit value	Points	Benefit value
1.1 Performance (hectares per hour)	15%	5	0.750	6	0.900
1.2 Max. transport speed on the road	20%	9	1.800	3	0.600
1.3 Low total weight	15%	4	0.600	6	0.900
Sub-Target 1 total	50%		3.150		2.400
2.1 Additional possibility of use of carrier vehicle	25%	6	1.500	4	1.000
2.2 Weatherproof cabin	12.5%	10	1.250	2	0.250
2.3 Driver safety	12.5%	8	1.000	2	0.250
Sub-Target 2 total	50%		3.750		1.500
Overall target total	100%		**6.900**		3.900

Table 7: Scoring analysis for slug pellets spreading equipment

For the slug pellets spreading equipment as carrier vehicle a small SUV will be further considered in the economic approach. The small SUV has the greatest advantage in terms of maximum speed on the road as well as additional possibilities of use, like using the SUV for winter service or as common car. Since the small compact SUV has a waterproofed cabin and is in general safer for the driver, the result of the benefit value is plausible.

7.4 Lime sand spreading equipment

Also for the lime sand spreading equipment, the best solution to provide the service on a high level is in the foreground alongside the economic view, which is considered in detail in the following chapters.

Lime sand spreading equipment alternatives

The lime sand spreading equipment for dry lime sand is standard for the spreading itself. There are differences in the combination of the carrier vehicle. It's possible for the lime sand spreader to be towed behind a tractor or for the spreading unit to be mounted on a truck. For this reason, the following scoring analysis ranks the difference between the carrier vehicles.

A towed lime sand spreader behind a tractor is pictured in Chapter 6.1.2. This alternative is the most common used technique in the area of the Ackerl Co. The biggest advantage of the trailed lime sand spreader is that the tractor can be easily used for additional operations at low set-up times for coupling and uncoupling of the towed lime spreader. The specific towed lime sand spreader considered is a Bruns MBA 16,000 lime sand spreader with a 9 meter auger distribution and a volume of 12,000 litres.

The second variant which is considered in the scoring analysis uses a truck as a carrier vehicle for the spreading unit. The big advantage of using a truck as a carrier vehicle is the higher maximum speed and thus, the distances between customers or fields can be reached much faster. The MAN truck TGM with 250 hp and the mounted spreader with an auger width of 9 meters and a container content of 7,000 liter is considered more in detail.

Figure 42: Lime sand spreader mounted on truck[196]

[196] Land24 GmbH, (online); accessed 17.03.2017

Scoring method results of slug pellets spreading alternatives

Figure 43 shows the target matrix for the lime sand spreading equipment to find an optimal solution for providing the lime sand spreading service. The four sub targets are further separated into partial targets.

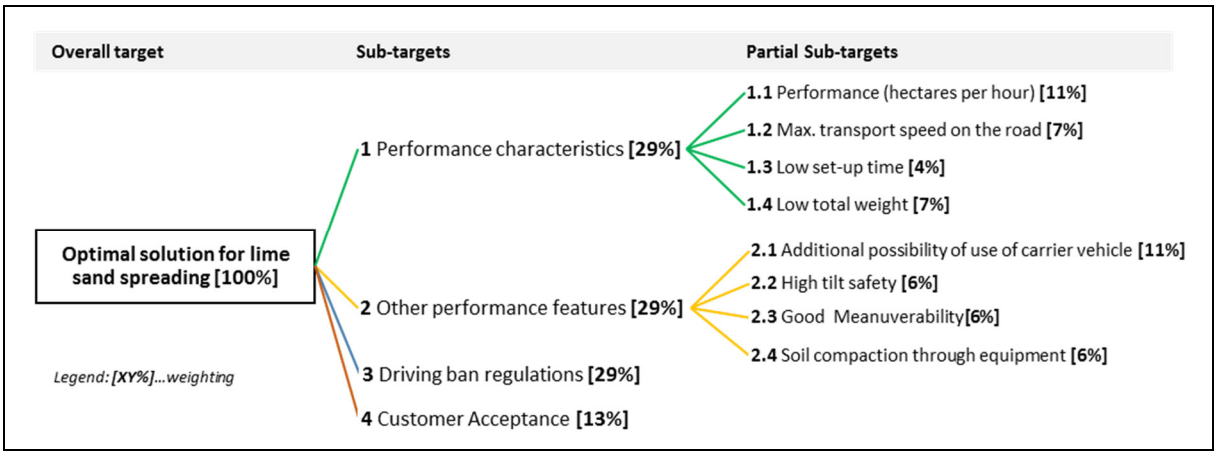

Figure 43: Target matrix for lime sand spreading equipment

In the following table the scoring analysis for the lime sand spreading equipment is conducted. For the rating of the target values, the 10s system is used.

Target criteria	Weight-ing	Alternatives			
		"Truck-Spreader"		Towed Spreader	
		Points	Benefit value	Points	Benefit value
1.1 Performance (hectares per hour)	11%	9	0.990	6	0.660
1.2 Max. transport speed on the road	7%	9	0.630	5	0.350
1.3 Low Set-up time	4%	3	0.120	5	0.200
1.3 Low total weight	7%	7	0.490	5	0.350
Sub-Target 1 total	29%		2.230		1.560
2.1 Additional possibility of use of carrier vehicle	11%	3	0.330	8	0.880
2.2 High tilt safety	6%	4	0.240	9	0.540
2.3 Good Maneuverability	6%	3	0.180	5	0.300
2.3 Soil compaction through equipment	6%	5	0.300	8	0.480
Sub-Target 2 total	29%		1.050		2.200
3 Driving ban regulations	29%	1	0.290	9	2.610
4 Customer Acceptance	13%	5	0.650	6	0.780
Overall target total	100%		4.220		**7.150**

Table 8: Scoring analysis for lime sand spreading equipment

The most important advantage of the towed system compared to the truck spreader is that there are no driving bans for agricultural equipment on weekends on Austrian roads. Another benefit is that the tractor can be easily used for additional jobs.

8 Cost accounting calculation

In this chapter, the cost accounting calculation for the different agricultural services is given. The appropriate machinery equipment is already defined through the scoring analysis in the previous chapter.

The potential utilization degrees for the different services are based on the market volume as well as the market potential. The utilization calculation is given in the appendix.

For the utilization degree of the carrier vehicle (tractor and compact SUV), a part of the total utilization is assumed, which is for other operations (farming business of Johann Ackerl) or for rental purposes. Therefore, this utilization part, which is not directly intended for the agricultural service business, is not considered in the following calculations.

The cost calculation for machines is based on the "ÖKL-Richtwerte 2016".[197]

Purchase prices for the different agricultural machineries are determined through written offers, meetings with agricultural machinery dealers and research on the Internet.

To have liability insurance for the agricultural service business, supplemental liability insurance in addition to liability insurance for the trading business is necessary. This liability insurance for the agricultural business costs 1,000€ per year.

The labor costs of 22.50 €/h are calculated for a net income of the employee of 1,550 € (5 weeks holiday, 10 days additional absence).[198] The 5% proportion based on the labor costs for overhead administration is assumed for all agricultural services.

8.1 Cost accounting calculation for crop spraying service

Table 9 shows the calculated net costs for the crop spraying service. In the table, there are the calculated total net costs for the different machinery parts, as well as the cost proportion for the liability insurance, labor costs and administrative overhead costs.

As you can see in the appendix, the average utilization for the crop spraying business will be 1,034 hectares for the next 5 years.

[197] Cf. Hauer, et al. (2016)
[198] Cf. Atikon, (online); accessed 23.03.2017

	Total net costs for tractor		21.05 €/h
+	Total net costs for slim tires		2.52 €/h
+	Total net costs for crop spraying equipment		76.75 €/h
=	**Machinery costs**		**100.32 €/h**
+	50% Proportion of liability insurance for service business		2.90 €/h
+	Labor costs		22.50 €/h
+	Administrative overhead costs	5% of labor costs	1.13 €/h
=	**Calculated net costs for crop spraying**		**126.85 €/h**

Table 9: Cost accounting calculation for crop spraying

The biggest cost impact is the crop spraying equipment. This cost proportion and the costs for the slim tires must be fully attributed to the crop spraying service. Only the total net costs of the tractor are divided up as the tractor is in use for other operations (operations for the farming business, lime sand spreading service) in addition to the crop spraying service.

The proportion of the additional insurance fee for the liability insurance for the service business is calculated with a 50% proportion of the total 1,000 € insurance fee.

The calculated net costs for crop spraying hectare related are given in the following table.

	Calculated net costs for crop spraying	126.85 €/h
/	Average performance for crops spraying	6.00 ha/h
=	**Calculated net costs for crop spraying**	**21.14 €/ha**

Table 10: Calculated net costs for crop spraying hectare related

The average performance for the service of crop spraying is assumed with 6 hectares per hour. Since Johann Ackerl provides the crop spraying service as a neighborhood assistance service (different machinery), there is already practical knowledge of the average performance.

For further details of the cost calculation for the different cost parts, there is a detailed cost calculation for every machine or operation equipment in the appendix.

8.2 Cost accounting for slug pellets spreading service

The cost accounting calculation for the slug pellets spreading service is given in the following table. The cost inputs are summarized and listed for each cost factor. Further cost calculation details are in the appendix.

	Total net costs for compact SUV		9.97 €/h
+	Total net costs for slug pellets spreader + GPS track guide		27.35 €/h
=	**Machinery costs**		**37.32 €/h**
+	25% Proportion of liability insurance for service business		8.05 €/h
+	Labor costs		22.50 €/h
+	Administrative overhead costs	5% of labor costs	1.13 €/h
=	**Calculated net costs for spreading slug pellets**		**69.00 €/h**

Table 11: Cost accounting calculation for spreading slug pellets

The biggest cost impact is the carrier vehicle of the spreader which is a compact SUV. There is only a cost proportion of the SUV in the slug pellets service considered, as the vehicle can also be used as common car. The costs for the track guide equipment and the slug pellets spreader are fully charged directly to the calculation

For the liability insurance, 25% proportion is charged to the slug pellets spreading service.

The calculated net costs for spreading slug pellets hectare related are given in the following table.

	Calculated net costs for slug pellets spreading	69.00 €/h
/	Average performance for spreading slug pellets	6.00 ha/h
=	**Calculated net costs for spreading slug pellets**	**11.5 €/ha**

Table 12: Calculated net costs for spreading slug pellets hectare related

The average performance value for spreading slug pellets is assumed with 6 hectares per hour.

For further details of the cost calculation of the different cost parts, there is a detailed cost calculation for every machine or operation equipment in the appendix.

8.3 Cost accounting for lime sand spreading service

The cost accounting calculation for the lime sand spreading service is given in the following table. The cost inputs are summarized and listed for each cost factor. Further cost calculation details are in the appendix.

	Total net costs for tractor		21.05 €/h
+	Total net costs for lime sand spreader		56.98 €/h
=	**Machinery costs**		**78.03 €/h**
+	25% Proportion of liability insurance for service business		1.12 €/h
+	Labor costs		22.50 €/h
+	Administrative overhead costs	5% of labor costs	1.13 €/h
=	**Calculated net costs for spreading slug pellets**		**102.78 €/h**

Table 13: Cost accounting calculation for spreading lime sand

The biggest cost impact is the lime sand spreader itself. The chosen lime sand spreader can only be used for spreading dry lime sand. Therefore, the full costs are considered for the provided service.

For the liability insurance, 25% proportion are charged to the lime sand spreading service.

The calculated net costs for spreading lime sand hectare related are given in the following table.

	Calculated net costs for lime sand spreading	102.78 €/h
/	Average performance for lime sand spreading	4.00 ha/h
=	**Calculated net costs for spreading lime sand**	**25.70 €/ha**

Table 14: Calculated net costs for spreading lime sand hectare related

The average spreading amount of lime sand per hectare is in average 2 tons per hectare.[199] Thereby there are calculated costs for the lime sand spreading of 12.85€ per ton.

For further details of the cost calculation for the different cost parts, there is a detailed cost calculation for every machine or operation equipment in the appendix.

[199] Cf. Bodenkalke Gen. 2017, (online); accessed 08.01.2017(Average amount of burnt lime and mixed lime)

9 Pricing

The pricing strategy and the price calculation for the Ackerl Co. are given in this chapter.

The price as decision criteria has become more and more important in recent years, because no other marketing instrument influences short-term sales, turnover and profit to the same extent. The low qualitative difference between competing products in many businesses as well as the globalization of competition has intensified the price pressure.[200]

9.1 Pricing strategy

When choosing the appropriate price strategy, a continuous strategy for the whole portfolio should be recognizable, considering differentiation for the customer.[201]

Premium pricing

This strategy is often used for brand offers to address a specific group of buyers and their need of high quality products. A high price can maximize earnings, build up image and generate customer loyalty. Therefore, there must be an appropriate amount of familiarity with the products and the harmony of business image with the price policy.[202]

The Ackerl Co. tries to differentiate itself from competition through intensive product consultation and service, and extreme premium price strategy will be hardly possible due to intense market competition. But positioning the prices slight above competitors on the market signals a high quality standard a customer can expect. Therefore, a slight premium price strategy will fit for the Ackerl Co.

Low price strategy

Low price strategies are often applied for saturated markets when competitors have already established leading positions or if their own USPs do not offer important benefits for the customers and therefore, a cost leadership would form a new USP.[203]

For the Ackerl Co., having a low price as USP is not a strategy target and thereby, the low price strategy is not a primary issue. But having an appropriate price level for customers is important for the Ackerl Co. due to the high competition in the agricultural business field.

Dynamic pricing

The dynamic price policy does not stick to one defined price strategy, but is adapted constantly according to different factors, like market-, customer-, environment-, or company internal

[200] Cf. Decker, et al. (2015) p. 125
[201] Cf. Grimm, et al. (2014) p. 137
[202] Cf. Ibid. p. 137
[203] Cf. Ibid. p. 137

factors. Examples are season-based pricing models, regional pricing models or work load based pricing models.[204]

In many companies the premium price strategy and low price strategy are mixed. This is done to increase the production volume and thereby reduce costs per product unit.[205]

9.2 Price calculation

In this chapter, three different methods to define and identify an appropriate price are introduced.

Cost oriented pricing

The cost oriented pricing uses all costs of production (direct costs, indirect costs and additional costs) to determine the market price for a product.
A price policy which is based on costs gives the possibility to decide whether a product is worth pursuing. But it does not, however, consider possible synergy effects or market potentials. Thereby this method is often used to define a lower price limit which enables a comparison to market oriented prices and provides information about the profitability of the product.[206]

The cost oriented pricing for the different agricultural services of the Ackerl Co. could be based on the cost calculations which are given in Chapter 8. But defining the market price based on costs, for the Ackerl Co. it is only a possibility to have exact knowledge about costs and thereby the lower price limit.

Market oriented pricing

The market oriented pricing strategy defines the price after a detailed market analysis. Market factors like competition, power of purchase, market requirements or patents within the market are included to define the price.[207]
If the market price should be well above the competition, the company has to create an unrivaled benefit for the customer, in order for the customer to be willing to pay more.[208]

The market oriented pricing will be the primary strategy to define the market prices for the different agricultural services. For the Ackerl Co., to position the prices for the service at an appropriate level for which a customer is willing to pay is crucial to win customers.

[204] Cf. Ibid. p. 137
[205] Cf. Ibid. p. 138
[206] Cf. Ibid. p. 139
[207] Cf. Ibid. p. 139
[208] Cf. Grußleitner, et al., (online); accessed 24.03.2017

Customer oriented pricing

In addition to the cost oriented and market oriented pricing strategy, customer orientation is an important factor for the pricing.[209]
With this method, the price is determined by investigating what price a customer is willing to pay. It can be investigated by simply asking the customers. These prices represent a good definition for the upper price limit.[210]

The customer oriented pricing strategy is not important for the Ackerl Co. since there is already competition and comparable services on the market in the field of agricultural services.

9.3 Price definition for the agricultural services

In the following chapters the lower price limit for the different agricultural services are given through the cost oriented pricing strategy. The obtained information of the market analysis of competitors' market prices are given before defining appropriate market prices of the Ackerl Co. for the different provided agricultural services.

9.3.1 Pricing for crop spraying service

Cost oriented pricing

For the lower price limit for the crop spraying service of the Ackerl Co., the cost oriented pricing based on the cost calculations of Chapter 8.1 is given in the table below.

	Calculated net costs	21.14 €/ha
=	**Price before tax**	**21.14 €/ha**

Table 15: Calculation of the lower price limit for crop spraying service

The calculated net costs of 21.14 €/ha represent the lower price limit for the crop spraying service.

Market oriented pricing

Through different sources of information, the prices of competitors for the field of crop spraying could be investigated. The table below summarizes competitors' prices with tax.

[209] Cf. Nagl (2015) p. 42
[210] Cf. Grimm, et al. (2014) pp. 139–140

Provider	Description	Price
Maschinenring / Neighborhood assistance	The provided crop spraying service of the Maschinenring is provided as full service (product + service).	26.00 €/ha including 13% sales tax
Steinwender Agrar Service GmbH	The provided crop spraying service of the Steinwendner Co. is provided as full service (product + service). The price model differs within a price range depending on number and average size of fields.	30.00 €/ha – 35.00 €/ha included 20% sales tax

Table 16: Market prices of crop spraying service

Defined market price for the Ackerl Co.

Since there is already competition in the market field of crop spraying, the price for the Ackerl Co. will be at the level below competition. Considering that the Ackerl Co. has additional revenues through the sales of the plant protection products, the defined price for the service of 28.00 € per hectare (20% value added tax included) will be appropriate for entering the market with a high quality full service for the customer.

For the set price, a margin of 2.19 € per hectare can be obtained. Still, a possible synergy effect could be, for example, the marketing effect of the Ackerl Co. in the field of plant protection trading.

9.3.2 Pricing for slug pellets spreading service

Cost oriented pricing

For the lower price limit of the slug pellets spreading service also the cost oriented pricing which is based on the cost calculations of Chapter 8.1 is given in the table below.

	Calculated net costs	11.50 €/ha
=	**Price before tax**	**11.50 €/ha**

Table 17: Calculation of the lower price limit for spreading slug pellets

The calculated net costs of 11.50 €/ha represent the lower price limit for the slug pellets spreading service.

Market oriented pricing

Because the market for slug pellets spreading is quite small, there are not a high number of competitors in this market field. Only the market price of the Maschinenring could be investigated.

Provider	Description	Price
Maschinenring / Neighborhood assistance	The provided slug pellets spreading service of the Maschinenring is provided as full service (product + service).	15.00 €/ha included 13% sales tax

Table 18: Market prices of slug pellets spreading service

Defined market price for the Ackerl Co.

The Ackerl Co. plans to enter the market with the given market price from competition with 15.00 €/ha included 20% sales tax (12.50 €/ha net).

The set price brings a margin of 1.00 € per hectare for the slug pellets spreading service.

9.3.3 Pricing for lime sand spreading service

Cost oriented pricing

For the lower price limit of the lime sand spreading service of the Ackerl Co., the cost oriented pricing which is based on the cost calculations of chapter 8.1 is given in the table below.

	Calculated net costs	25.70 €/ha
=	**Price before tax**	**25.70 €/ha**

Table 19: Calculation of the lower price limit for lime sand spreading

The calculated net costs of 25.70 € per hectare is the lower price limit for this service. As already mentioned in Chapter 6.2, the usual market price for lime sand spreading is based on price per spread lime sand ton. Therefore, when considering an average spreading amount of 2 tons per hectare, the lower price limit is 12.85 € per spread lime sand ton.

Market oriented pricing

Through different sources of information, the prices of competitors for the field of lime sand spreading could be investigated. The table below summarizes competitors' prices.

Provider	Description	Price
Andreas Schaumberger Co.	The Andreas Schaumberger Co. is providing a full service (lime sand product + spreading service) for dry lime sand types.	24 €/ton included 20% sales tax
Kirchmayr Kompost und Energie GmbH	The Kirchmayr Co. is only providing the spreading of wet lime sand types. Therefore a usual lime sand amount of 8 tons per hectare is common.	6 €/ton included 20% sales tax

Table 20: Market prices of lime sand spreading

For the Schaumberger Co., the price of average dry lime sand amount of 2 tons per hectare, is 48 € per hectare. The Kirchmayr Co. receives also 48 € per hectare but there is less performance due to the high amount of lime sand per hectare.

Defined market price for the Ackerl Co.

The Ackerl Co. sets a lower market price for lime sand spreading than its competition as there is a high density in spreader rental services around the Ackerl Co. which are indirect competitors in this field. The market price will be 20.50 € per ton included 20% sales tax. This market price should be appropriate, in that farmers will be willing to pay the provided full service instead of renting a spreader by their own.

The set price of 20.50 € per ton included 20% tax is gaining a margin of 4.23 € per ton.

10 Break-even point analysis

A break-even analysis visualizes first hints that a new product is promising and will potentially bring economic benefit. This analysis method presupposes the assumptions of relevant calculation data (sales volume, etc.).[211]

In the following chapters, the break-even point analysis for the different planned agricultural services are given. In addition to the basis scenario, there is also a worst and best case scenario displayed.
For the worst case scenario, the assumptions that the calculations are based consider 10% less contribution margin and 10% higher fixed costs. The assumptions for the best case scenario consider 10% higher contribution margins and 10% less fixed costs.

The results of the break-even point analysis give the needed applied hectares per year. Further details about the different scenario details are given in the appendix.

The calcuations for the break-even point analysis is based on calculations from Tiedtke Hischer.[212]

[211] Cf. Walsh, et al. (2009) pp. 78–79
[212] Cf. Hischer, et al. (2016) pp. 176–180

10.1 Break-even point analysis for crop spraying service

In Figure 44 the break-even point analysis for the crop spraying service is displayed. According to the basis scenario, from 839 applied hectares, the investment is profitable and all fixed costs are covered. If the business of crop spraying runs on the level of the worst case scenario, another 187 hectares are needed to operate for this business to be profitable. For the best case scenario profit can be made from 687 hectares.

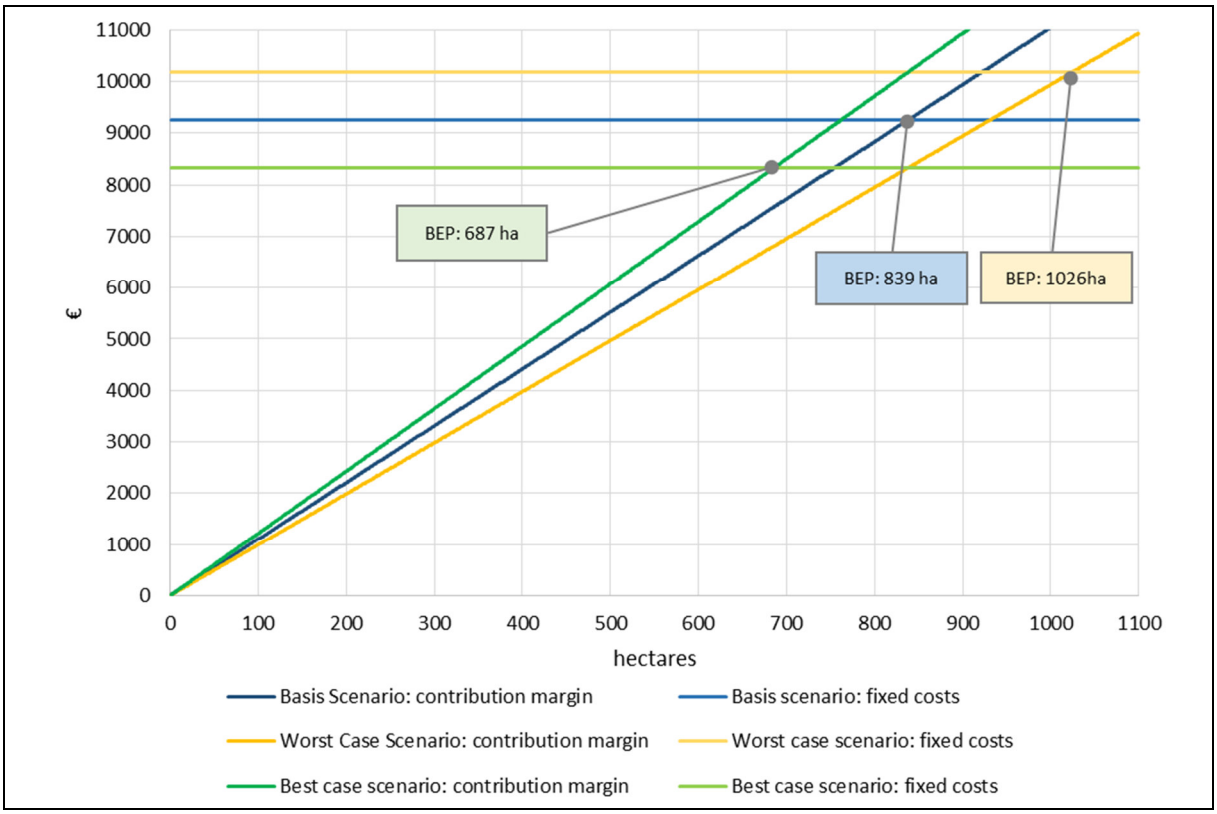

Figure 44: Break-even point analysis for crop spraying service

The fixed costs of the tractor are adequate, taking into account the utilization through the crop spraying service.

10.2 Break-even point analysis for spreading slug pellets

Because the fixed costs for the SUV for the slug pellets spreading service are not fully taken into account of the cost calculation, the total fixed costs are low. Otherwise, buying a SUV only for providing this service would not be profitable at all.

The break-even point for the basis scenario can be reached with applying 152 hectares per year. For the worst case scenario additional 34 hectares need to be applied, while for the best case scenario 124 hectares already bring the break-even point.

If the worst case scenario occurs, the 186 hectares demand just cover the costs.

The figure below displays the analysis for the slug pellets spreading service.

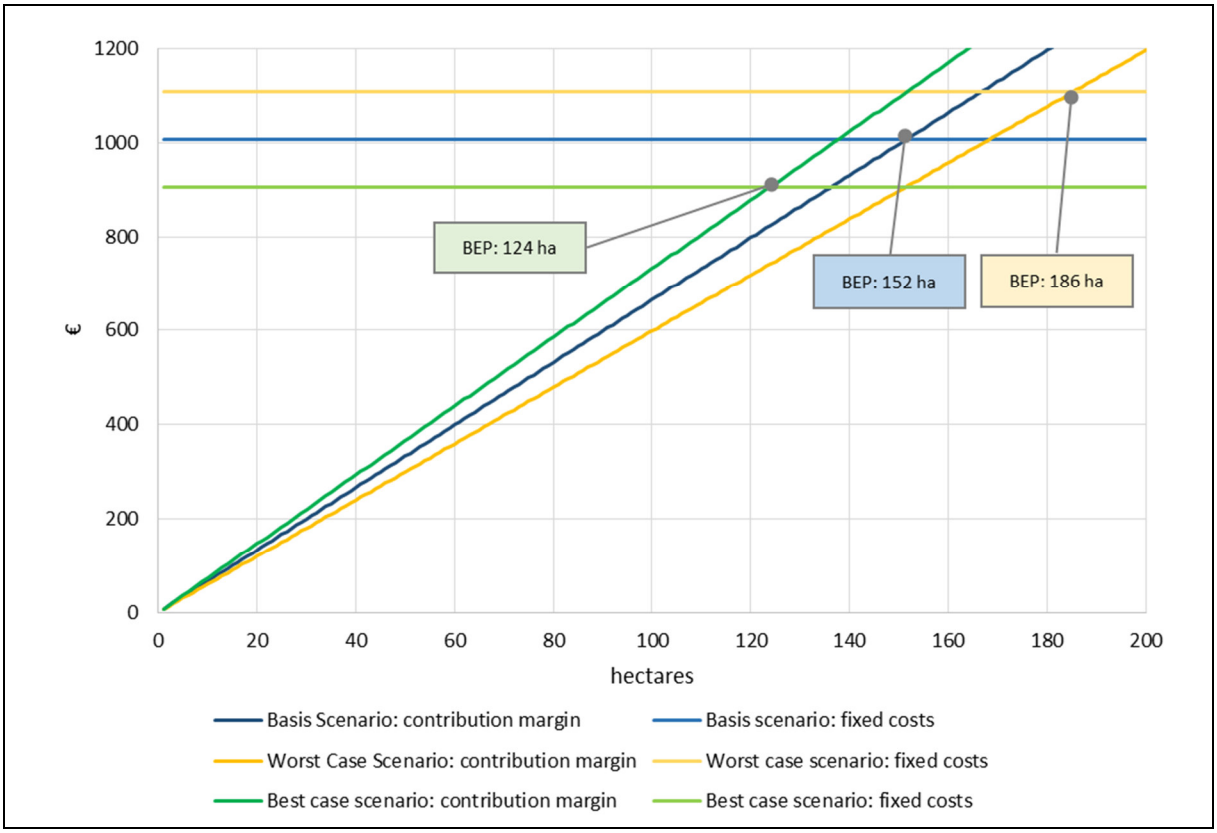

Figure 45: Break-even point analysis for spreading slug pellets

10.3 Break-even point analysis for spreading lime sand

Figure 46 displays the break-even point analysis for the lime sand spreading service.

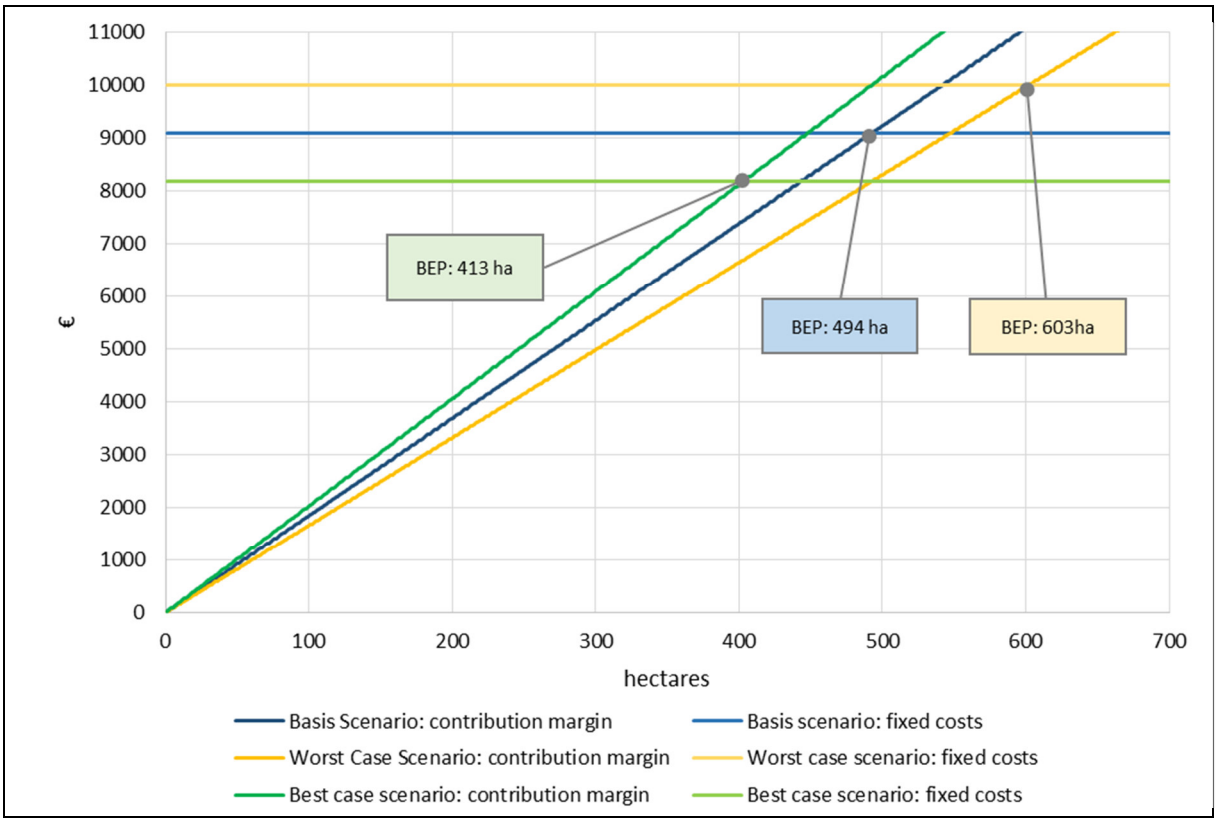

Figure 46: Break-even point analysis for spreading lime sand

The break-even point for the basis scenario is reached by 494 hectares. If the business runs under the best case scenario 413 hectares already cover all costs. For the worst case scenario 603 hectares are necessary to reach the break-even point.

11 Financial planning

In the previous chapters, different aspects were introduced to promote the realization of the business extension along agricultural services. Nevertheless, in the end, the business field extension has to be profitable.

In this chapter, gathered information from previous chapters will be transferred to one concrete financial plan. The individual plans build on already predefined assumptions which are already done in the previous chapters. The planning period includes five fiscal years.

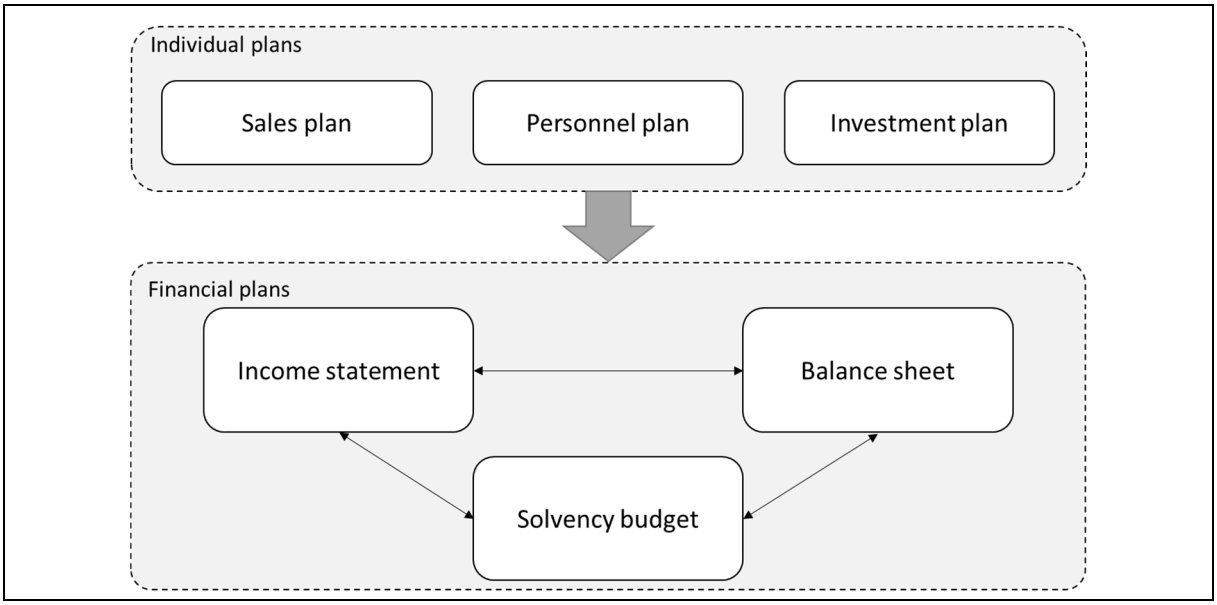

Figure 47: Components of the financial planning[213]

The financial plan consists of the income statement, the balance sheet and the solvency budget. The income statement displays the profit and loss of the different planning periods. The balance sheet describes the asset situation of the company and the solvency budget visualizes the financing requirements.[214]

All costs and defined prices are assumed to be static over the five planning years.

11.1 Sales plan

The sales plan is based on the assumptions of the utilization planning for the different agricultural services. Those assumptions are based on the market volume, market potential and the market forecast which are researched and given in previous chapters. The following table summarizes the assumptions.

[213] Based on: Nagl (2015) p. 62
[214] Cf. Ibid. p. 63

Service	1st year [ha]	2nd year [ha]	3rd year [ha]	4th year [ha]	5th year [ha]	Total
Crop spraying service	903	997	997	1,137	1,137	**5,171**
Slug pellets spreading service	133	165	170	206	211	**885**
Lime sand spreading service	573	805	805	936	986	**4,105**

Table 21: Sales plan for the first five fiscal years[215]

The defined market prices for the different services from Chapter 9.3 are given in Table 22 below.

Service	Price [€]
Crop spraying service per hectare	23.33
Slug pellets spreading service per hectare	12.50
Lime sand spreading service per hectare	33,33

Table 22: Market prices for the different services provided by the Ackerl Co.

The following table is calculated by combining the sales plan with the different prices for the agricultural services.

Service	1st year [€]	2nd year [€]	3rd year [€]	4th year [€]	5th year [€]
Crop spraying service	21,072.82	23,254,.4	23,254.64	26,527.38	26,527.38
Slug pellets spreading service	1,662.50	2,058.75	2,121.25	2,580.00	2,642.50
Lime sand spreading service	19,111.42	26,813.99	26,813.99	31,183.55	32,850.05
Sum	**41,846.74**	**52,127.38**	**52,189.88**	**60,290.92**	**62,019.92**

Table 23: Revenue of the different agricultural services[216]

[215] Based on: Ibid. p. 65
[216] Based on: Ibid. p. 71

11.2 Personnel plan

The personnel plan below results from the sales plan and the assumptions for the average performances (see tables in Chapter 8) for the different agricultural services.

Service		**1st year [h]**	**2nd year [h]**	**3rd year [h]**	**4th year [h]**	**5th year [h]**
Crop spraying service	Application	150.5	166.1	166.1	189.5	189.5
	Administration	7.5	8.3	8.3	9.5	9.5
Slug pellets spreading service	Application	22.2	27.5	28.3	34.4	35.2
	Administration	1.1	1.4	1.4	1.7	1.8
Lime sand spreading service	Application	143.4	201.1	201.1	233.9	246.4
	Administration	7.2	10.1	10.1	11.7	12.3
	Sum	**331.9**	**414.4**	**415.3**	**480.7**	**494.7**

Table 24: Personnel plan for administration and application for the different services[217]

The displayed working hours are calculated through the average performance of the service per hectare and the planned sales volume for the different services. The working hours for administration are blanket costs calculated with 5% of the working hours for fulfilling the service.

For the salaries and wages, 22.50 € per hours is calculated (1550 € net per month, 5 weeks holidays, additional 10 days absence).[218]

[217] Based on: Ibid. p. 72
[218] Cf. Atikon, (online); accessed 23.03.2017

Service		1st year [€]	2nd year [€]	3rd year [€]	4th year [€]	5th year [€]
Crop spraying service	Application	3387.19	3737.89	3737.89	4263.94	4263.94
	Administration	169.36	186.89	186.89	213.20	213.20
Slug pellets spreading service	Application	498.75	617.63	636.38	774.00	792.75
	Administration	24.94	30.88	31.82	38.70	39.64
Lime sand spreading service	Application	3225.38	4525.31	4525.31	5262.75	5544.00
	Administration	161.27	226.27	226.27	263.14	277.20
Sum		**7466.88**	**9324.87**	**9344.55**	**10815.72**	**11130.72**

Table 25: Personnel costs for the business field extension

Over the five years, the personnel costs will increase due to the expected increasing demand for the different services.

11.3 Investment plan

The investment costs and the yearly depreciation for the different machinery and equipment is given in the following table.

Machine / Equipment	Purchase price [€]	Period of use (Accounting purposes) [years]	Depreciation per year [€]
Tractor 160hp	100,000.00	12	8,333.33
Slim tires	4,500.00	11	409.09
Crop sprayer (front/heck)	55,900.00	11	5,081.82
Lime sand spreader	57,100.00	11	5,190.91
SUV	12,500.00	8	1,562.50
Small disc spreader + GPS track guide	4,600.00	11	418.18
		Sum	**20,996.45**

Table 26: Depreciation table (accounting purposes)

11.4 Income statement

The date related balance sheet weighs assets and capital, while the income statement compares income and expense. The income statement provides insights into the structure of the net income or loss of the financial period.[219]

The following table displays the income statement for the five planned financial years.

	[€]	1st year [€]	2nd year [€]	3rd year [€]	4th year [€]	5th year [€]	Sum
1	Revenue	41,846.74	52,127.38	52,189.88	60,290.92	62,019.92	**268,474.84**
2	Increase or decrease in inventories	0	0	0	0	0	**0**
3	Own work capitalized	0	0	0	0	0	**0**
4	Other operating revenue	0	0	0	0	0	**0**
5	Raw materials used	0	0	0	0	0	**0**
6	Staff costs	7,466.88	9,324.87	9,344.55	10,815.72	11,130.72	**48,082.74**
7	Depreciation	20,996.45	20,996.45	20,996.45	20,996.45	20,996.45	**104,982.25**
8	Other operating charges	7,857.12	8,942.48	8,950.06	9,799.69	9,984.01	**45,533.370**

9[219] Cf. Sicherer (2016) p. 111

9	Operating profit	5,526.29	12,863.58	12,898.82	18,679.06	19,908.74	**69,876.48**
10	Share of associates profit	0	0	0	0	0	**0**
11	Interest income	0	0	0	0	0	**0**
12	Revenue on disposal of investment properties	0	0	0	0	0	**0**
13	Chare of associates losses	0	0	0	0	0	**0**
14	Depreciation of financial assets	0	0	0	0	0	**0**
15	Interest expenses	0	0	0	0	0	**0**
16	Financial profit	5,526.29	12,863.58	12,898.82	18,679.06	19,908.74	**69,876.48**
17	Net operating income or loss	5,526.29	12,863.58	12,898.82	18,679.06	19,908.74	**69,876.48**
18	Tax on profit	-2,210.51	-5,145.43	-5,159.53	-7,471.62	-7,963.49	**-27,950.59**
19	After-tax profit or loss	3,315.77	7,718.15	7,739.29	11,207.44	11,945.24	**41,925.89**
20	Other taxes	0	0	0	0	0	**0**
21	Net income or loss for the financial year	3,315.77	7,718.15	7,739.29	11,207.44	11,945.24	**41,925.89**
22	Reversal of financial reserves	0	0	0	0	0	**0**
23	Reversal of revenue reserves	0	0	0	0	0	**0**
24	Established revenue reserves	0	0	0	0	0	**0**
25	Returned earnings or losses brought forward	0	0	0	0	0	**0**
26	**Unappropriated result**	3,315.77	7,718.15	7,739.29	11,207.44	11,945.24	**41,925.89**

Table 27: Cost categories oriented income statement for the first five fiscal years[220]

The tax rate on profit is assumed with 40%, as the additional income of the service business increases the already existing profit of the Ackerl Co.

For the “other operating costs,” the fuel costs according to the yearly utilization and 3500 € yearly lump sum for repair costs and liability insurances are used.

The business field extension, based on the assumptions and decisions of the previous chapters, brings profit for the Ackerl Co.

[220] Cf. ADVOKAT Unternehmensberatung Greiter & Greiter GmbH Based on, (online); accessed 04.04.2017

11.5 Balance sheet

Data from the income statement and individual plans are used to generate the balance sheet, which will provide insights into the sources and usage of funds.[221] The usage of funds is called “assets” and includes long-term fixed assets and short-term current assets. The sources of funds are called total equity and liabilities and contain long-term equity and loan capital. The sum of the assets as well as the equity and liabilities have to be equal.[222]

Assets			**Equity and liabilities**	
Fixed assets			**Equity**	
Intangible assets [€]			Common stock [€]	213,603.55
Tangible fixed assets [€]	213,603.55		Retained profit [€]	3,915.77
Current assets			**Foreign capital**	
Inventories [€]			Liabilities	
Requests from deliveries and services [€]			Bank credit [€]	
Cash [€]	3,915.77		Provisions [€]	
Sum [€]	217,519.32		**Sum [€]**	217,519.32

Table 28: Balance sheet after the first fiscal year for the planned service business part

As the planned balance sheet can only visualize the financial situation for the business field extension of agricultural services, further balance sheet representations for the following business years are not that indicative of the overall business results. But the investment in machinery and equipment to be able to provide the services bring a balance sheet extension which is reduced by the depreciations of the tangible fixed assets (machines, equipment).

11.6 Solvency budget

The need for cash in a specific period can be calculated by subtracting the payments of receipts in this period. Underabsorptions or overabsorptions can be the results as shown in the figure below for one period.[223]

For the Ackerl Co., the solvency budget will be created for five years.

[221] Cf. Nagl (2015) p. 70
[222] Cf. Ibid. p. 71
[223] Cf. Grimm, et al. (2014) pp. 261–262

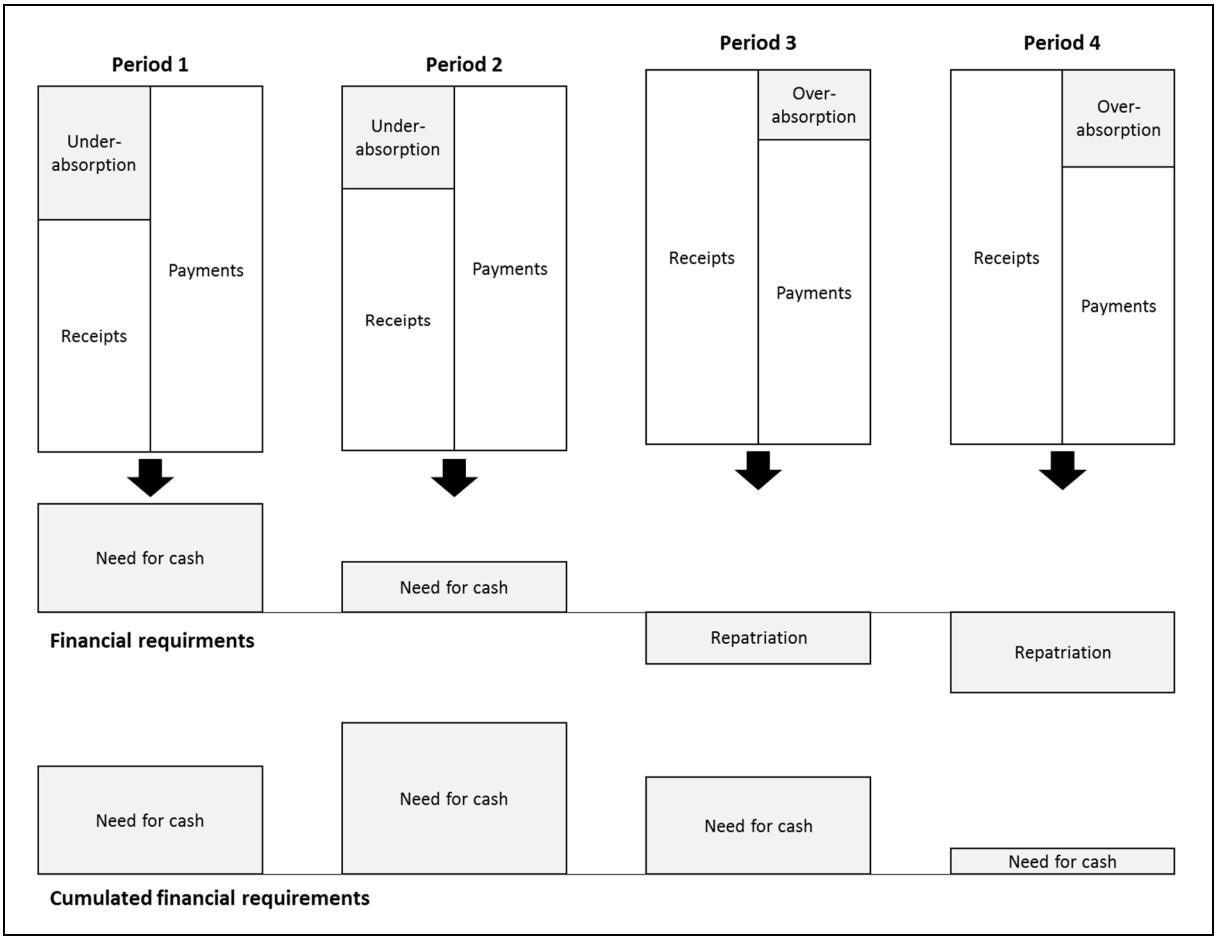

Table 29: Structure of a liquidity plan[224]

The liquidity plan for the Ackerl Co. for the planned business field extension is shown in the following table.

	Investment	1st year [€]	2nd year [€]	3rd year [€]	4th year [€]	5th year [€]
Receipts						
Revenue		41,846.74	52,127.38	52,189.88	60,290.92	62,019.92
External finance		0	0	0	0	0
Payments						
Purchased fuel		-4,357.12	-5,442.48	-5,450.06	-6,299.69	-6,484.01
Personnel		-7,466.88	-9,324.87	-9,344.55	-10,815.72	-11,130.72
Repair costs and other costs		-2,500.00	-2,500.00	-2,500.00	-2,500.00	-2,500.00
Liability insurance		-1,000.00	-1,000.00	-1,000.00	-1,000.00	-1,000.00

[224] Based on: Ibid. p. 261

Investments	-234,600.00		0	0	0	0
Interest/Extinction		0	0	0	0	0
Taxes		0	0	0	0	0
Needed cash	-234,600.00	26,522.74	33,860.03	33,895.27	39,675.51	40,905.19
Needed cash cumulated	0	-208,077.26	-174,217.23	-140,321.96	-100,646.45	-59,741.26

Table 30: Liquidity plan for the service business field extension[225]

As shown in the table above, the biggest financial requirements are needed in the year of investing into the machinery and equipment. After this big investment, the yearly revenues cover all costs. But also after the first five years, there are still financial requirements.

To avoid such a big investment and thereby financial requirements, leasing offers for the machinery would be an option or the purchase of used machinery to reduce purchasing costs.

[225] Based on: Nagl (2015) p. 76

12 Summary and outlook

The purpose of the thesis is to develop a business strategy plan for a business field extension along agricultural services. The Ackerl Co. is a traditional trading company with its roots in the agricultural business field. To create differentiation, extending the business along agricultural services, the owner of the company, Johann Ackerl, is considering the possible business extension. The given business plan should provide helpful information for Johann Ackerl to make decisions about the realization and provide knowledge of the agricultural service business field.

The thesis consists of 11 chapters, each of them dealing with specific aspects of a business plan. Each chapter after the introduction of the thesis presents a theoretical background, followed by the practical application.

The introduction chapter provides the current situation of the Ackerl Co., the targets and tasks of this thesis the study area and the procedure.

Chapter Two is divided into three parts. First, it displays the company history of the Ackerl Co and examines its roots. Second, the inducement factors for the business idea are given. And as the final part of the second chapter, the term “agricultural service contractor” is defined.
Important inducement factors for the Acker Co. are the business roots in the agricultural branch as well as the personnel interests of Johann Ackerl and his employees.

The third chapter deals with the mission and vision statement for the planned business extension for the Ackerl Co. The vision and mission statement for the planned business part for the Ackerl Co. are created and it points out that in addition to economic and strategic reasons, the passion for farming in general drives the founder and employees of the Ackerl Co. for further challenges.

The market analysis is given in the fourth chapter. After the theoretical approach for the market research process, the results of the customer analysis and the market analysis are introduced. For the customer analysis, a survey by means of a questionnaire was conducted with 108 customers of the Ackerl Co. The main statements of the customer analysis are:

- 37% of the asked farmers have already outsourced or consider to outsource the plant protection
- 63% of the asked farmers have already outsourced or consider to outsource the spreading of slug pellets
- 33% of the asked farmers have already outsourced or consider to outsource the spreading of lime sand in the future
- Especially for smaller farms and farmers which operate their farming business as part time business, the outsourcing the defined agricultural service is more interesting than for bigger farmers.

- If farmers outsource one of the defined cropping process, they demand in general full services which means the entire service from procurement, storage, application until documentation of the fulfilled operation.

The results of the market size analysis can be summarized with the following points:

- There is a market potential of total 16897 ha arable land for the neighboring and defined closer municipalities of Sattledt and Sattledt itself.
- The existing market volume for crop spraying is 4463 hectares and the market forecast for the future are additional 4676 hectares.
- There are currently 301 hectares market volume for slug pellets spreading and additional 317 hectares in the forecast.
- For the lime sand spreading part, there is a current market volume of 301 hectares and a forecast of 1311 hectares.

The fifth chapter introduces the competitor analysis and strategy. Competitors within a circle of 10km of the company's location are considered and analyzed. To know more about the current situation for the planned business extension, a SWOT analysis and Porter's five forces analysis were conducted before defining the unique selling proposition of the Ackerl Co.

If the Ackerl Co. is providing the plant protection services, they will place itself as "me-too" provider in this market field, if providing the lime sand spreading service, the company would be the first on the market for dry lime sands in the region of central Upper Austria. For the plant protection service as current main competitor on the market is the Maschinenring. The main competition point for the lime sand spreading service is the rental offers of lime sand spreaders from serveral competitors around the Ackerl Co. Traditional agricultural trading companies around the Ackerl Co. are only indirect competitors for the planned services.

In the sixth chapter of this thesis, the Marketing 7 Ps are given. The products/services are introduced in greater detail and the market price strategy is defined. Moreover, the placement of the services, the promotion and the investments in people and physical facilities are discussed as well as the process schema for the different services.

The main resources the company need to purchase and organize are the appropriate machines to provide the services, additional working forces as well as a promotion concept. Other aspects like the definition of the place and available physical facilities like a storing hall for products as well as for the machines are already existing in the present company.

Chapter Seven discusses the decision process for the right equipment for the different planned services. The decision making process is carried out with the scoring method.

For the crop spraying service, a standard 4WD tractor with a front/back-combination mounted sprayer is the best solution for the Ackerl Co. A SUV with a mounted small disc plate spreader is the best option for slug pellets spreading while a towed lime sand spreader behind a standard tractor is the best for lime sand spreading.

The cost accounting calculations for the different services are introduced in Chapter Eight. The calculated net costs are based on an estimated utilization for the next five years.
The machines are chosen according to the results of the scoring method and the calculations are based on the “ÖKL-Richtwerte”. The utilization of the different machines are based on the market analysis. Additional utilization options for the machinery would reduce costs and should be thereby considered.

Based on the cost calculation, the price is determined in Chapter Nine. After a short introduction of the different pricing strategies, the prices for the three planned services are defined, based on costs and competition.
The price for crop spraying is defined with 28€ per hectare, the slug pellets spreading price is defined with 15€ per hectare and the lime sand spreading service price can be placed with 20.50€ per lime sand ton (20% tax included). Compared to competitors, the prices for the plant protection services are above competitors. Those higher costs for customers should be compensated through higher quality standards in product consultation and higher technical standards of the machines as well as the benefit for customers to have one competent partner for the service and the products. For the lime sand spreading service, the Ackerl Co. can place the market price below competition.

In Chapter Ten, break-even point analysis for the different services are given. For each there are three different scenarios carried out. The worst case scenarios are assumed with 10% less contribution margin and 10% higher fixed costs based on the basis scenario. The best case scenario is assumed with 10% higher contribution margin and 10% lower fixed costs based on the basis scenario.
For the crop spraying service, considering the basis scenario, all fixed costs are covered after 839 hectares application per year, and the investment becomes profitable.
The slug pellets spreading is profitable and covers all fixed costs after 152 applied hectares per year.
Spreading lime sand is after 494 applied hectares per year profitable and all fixed costs are covered when considering the basis scenario.

The final chapter concentrated on the development of an exemplary financial plan for the first five fiscal years. The financial planning process is divided into individual plans (sales plan, investment plan, and personnel plan) which represent the basis for the income statement, the balance sheet and the solvency budget. Although the individual plans are based on several assumptions, it represents a possible scenario for the business extension of agricultural services for the Ackerl Co.
Especially the financial requirements for the investments for the machines are strongly influencing the financial situation of the company. Further calculations with leasing-purchase options instead of a traditional purchase would be an option to reduce the financial requirements in the first years.

Considering all aspects in this thesis, it is clear that the business field extension is associated with some risks. The crop protecting services are not new to the market and there is already existing market volume as well as additional customers for this service. Compared to the crop protection services, the kind of lime sand spreading service the Ackerl Co. is planning to provide is new to the market in the region of Sattledt. Therefore, this service type is moderately risky, depending on whether customers will be willing to take advantage of the service. Furthermore, the need for additional cash for investments in equipment for the different services influences the financial situation of the Ackerl Co. Last but not least, further calculations and thoughts about leasing options for different machines as well as additional utilization options (e.g. winter services) would be useful to lower and compensate investment costs.

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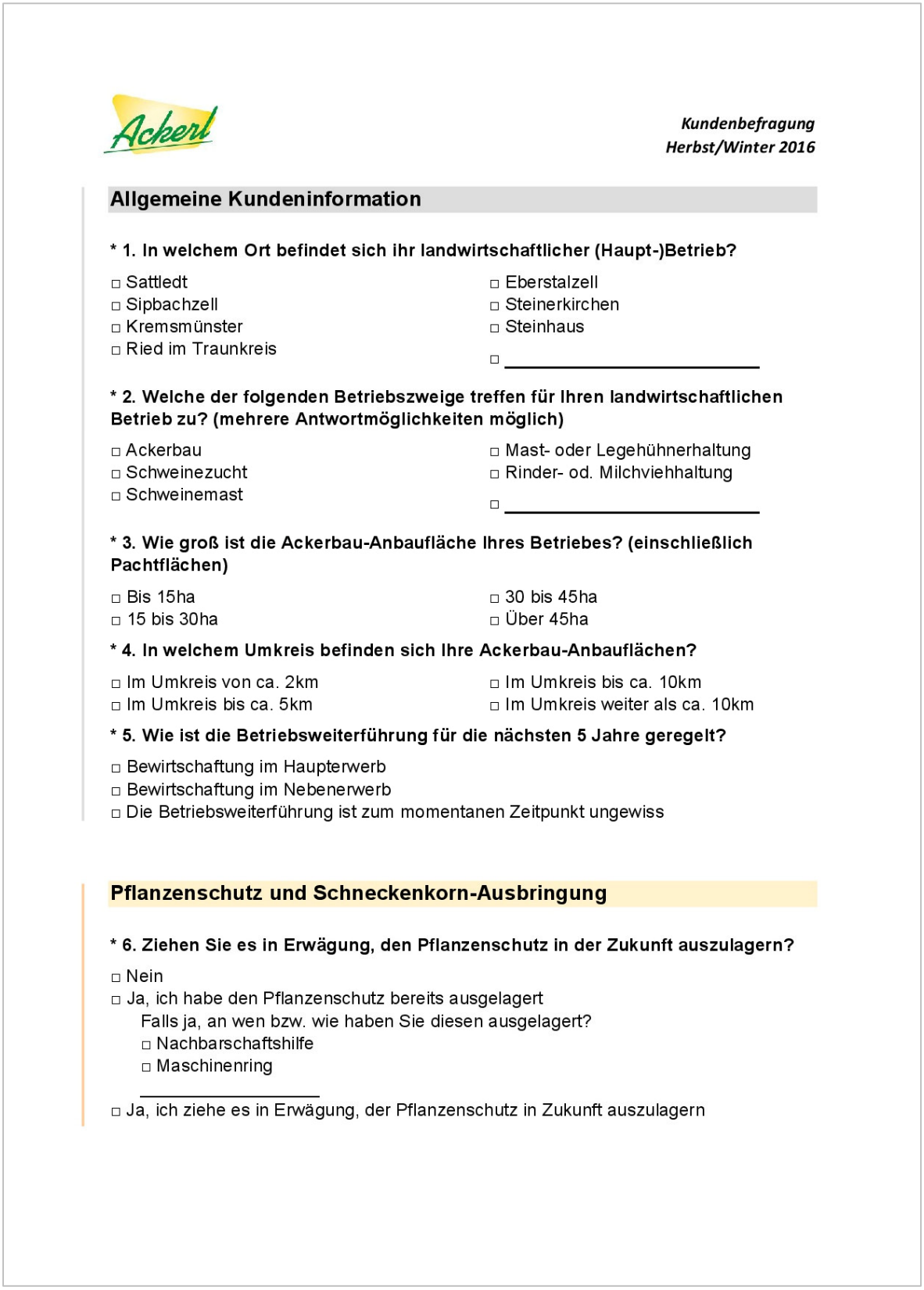
List of abbreviations

AG	Aktiengesellschaft
BEP	Break-even point
Cf.	Confer (compare)
Co.	Company
etc.	et cetera
EUR	Euro
e. g.	Exempli gratia (for example)
GmbH	Gesellschaft mit beschränkter Haftung
GPS	Global positioning system
h	Hour
Ha	Hectare
Hp	Horse powers
Ibid.	Ibidem (mentioned previously)
Km	Kilometer
OÖ	Oberösterreich
ÖKL	Österreichisches Kolloqium der Landtechnik
pH	Potential hydrogenii
RWA	Raiffeisen Ware Austria
R&D	Research&Development
SUV	Sport utility vehicle
SWOT	Strength-Weankness-Opportunity-Threat
US	United States
USP	Unique selling propositioning

Appendix

Appendix 1: Customer survey

For the customer survey, a questionnaire for each asked customer was set. The survey was accomplished by 108 customers of the Ackerl Co., guided by employees of the company.



Ackerl

Kundenbefragung
Herbst/Winter 2016

Allgemeine Kundeninformation

*** 1. In welchem Ort befindet sich ihr landwirtschaftlicher (Haupt-)Betrieb?**

□ Sattledt
□ Sipbachzell
□ Kremsmünster
□ Ried im Traunkreis
□ Eberstalzell
□ Steinerkirchen
□ Steinhaus
□ _____

*** 2. Welche der folgenden Betriebszweige treffen für Ihren landwirtschaftlichen Betrieb zu? (mehrere Antwortmöglichkeiten möglich)**

□ Ackerbau
□ Schweinezucht
□ Schweinemast
□ Mast- oder Legehühnerhaltung
□ Rinder- od. Milchviehhaltung
□ _____

*** 3. Wie groß ist die Ackerbau-Anbaufläche Ihres Betriebes? (einschließlich Pachtflächen)**

□ Bis 15ha
□ 15 bis 30ha
□ 30 bis 45ha
□ Über 45ha

*** 4. In welchem Umkreis befinden sich Ihre Ackerbau-Anbauflächen?**

□ Im Umkreis von ca. 2km
□ Im Umkreis bis ca. 5km
□ Im Umkreis bis ca. 10km
□ Im Umkreis weiter als ca. 10km

*** 5. Wie ist die Betriebsweiterführung für die nächsten 5 Jahre geregelt?**

□ Bewirtschaftung im Haupterwerb
□ Bewirtschaftung im Nebenerwerb
□ Die Betriebsweiterführung ist zum momentanen Zeitpunkt ungewiss

Pflanzenschutz und Schneckenkorn-Ausbringung

*** 6. Ziehen Sie es in Erwägung, den Pflanzenschutz in der Zukunft auszulagern?**

□ Nein
□ Ja, ich habe den Pflanzenschutz bereits ausgelagert
Falls ja, an wen bzw. wie haben Sie diesen ausgelagert?
□ Nachbarschaftshilfe
□ Maschinenring
_____
□ Ja, ich ziehe es in Erwägung, der Pflanzenschutz in Zukunft auszulagern

Ackerl

Kundenbefragung
Herbst/Winter 2016

*** 6.1. Falls ja, wie werden Sie den Pflanzenschutz in Zukunft auslagern?**

□ Teilweise Auslagerung (im Rahmen der Nachbarschaftshilfe)
□ Auslagerung des gesamten Pflanzenschutzes (Beschaffung, Lagerung, Ausbringung, Dokumentation)

*** 7. Haben Sie in Ihrer momentan geplanten Fruchtfolge, Kulturen, in welchen eine Schneckenbekämpfung gewöhnlich notwendig ist?**

□ Nein
□ Ja, bis 3ha
□ Ja, von 3 bis 5ha
□ Ja, von 5 bis 10ha
□ Ja, mehr als 10ha

*** 7.1. Falls ja, ziehen Sie es in Erwägung, die Schneckenkorn-Ausbringung in Zukunft auszulagern?**

□ Nein
□ Ja, ich habe das Schneckenkorn-Streuen bereits ausgelagert
□ Ja, ich ziehe es in Erwägung, die Schneckenkorn-Ausbringung in Zukunft auszulagern

*** 8. Falls Sie den Pflanzenschutz bzw. die Schneckenkorn-Ausbringung auslagern, wie wichtig sind Ihnen folgende Eigenschaften?**

	Entscheidend	Sehr wichtig	Einigermaßen wichtig	Weniger wichtig	Überhaupt nicht wichtig
Eigenständige und zeitgerechte Durchführung der Pflanzenschutz-Maßnahmen	□	□	□	□	□
Schlagbezogene Dokumentation der Anwendung lt. gesetzlicher Vorgaben	○	□	□	□	□
Pflanzenschutzgerät am modernsten Stand der Technik	□	□	□	□	□
Fachliche Beratung über die Auswahl der Pflanzenschutzmittel	□	□	□	□	□
Günstiger Komplett-Preis (Dienstleistung + Produkt)	□	□	□	□	□

Kundenbefragung
Herbst/Winter 2016

Kalkdüngung (Trockenkalke)

*** 9. Ziehen Sie es in Erwägung, die Kalkdüngung in der Zukunft auszulagern?**

□ Nein
□ Ja, ich habe die Kalkdüngung bereits ausgelagert
Falls ja, an wen bzw. wie haben Sie diese ausgelagert?

_____

□ Ja, ich ziehe es in Erwägung, die Kalkdüngung in Zukunft auszulagern

*** 9.1. Falls Sie die Kalkdüngung in Zukunft auslagern, wie werden Sie diese auslagern?**

□ Teilweise Auslagerung (zum Bsp. nur die Ausbringung wird ausgelagert, Beschaffung und Lagerung werden selbst organisiert)
□ Auslagerung der gesamten Kalkdüngung (Beschaffung, Lagerung, Ausbringung, Dokumentation)

*** 10. Falls Sie die Kalkdüngung auslagern, wie wichtig sind Ihnen folgende Eigenschaften?**

	Entscheidend	Sehr wichtig	Einigermaßen wichtig	Weniger wichtig	Überhaupt nicht wichtig
Eigenständige und zeitgerechte Durchführung der Kalkdüngung	○	○	○	○	○
Beschaffung und Lagerung der Kalkdüngemittel als Teil der Dienstleistung	○	○	○	○	○
Dokumentation der Anwendung	○	○	○	○	○
Kalkstreuer am modernsten Stand der Technik	○	○	○	○	○
Fachliche Beratung über die Auswahl der Kalkdüngemittel	○	○	○	○	○
Günstiger Komplett-Preis (Dienstleistung + Kalk)	○	○	○	○	○

Appendix 2: Utilization calculation

Crop spraying service

Market volume (stand 2016) *4463 ha ("Overrun-factor 2" included)*
Market forecast (stand 2016) *4676 ha ("Overrun-factor 2" included)*

	planning period					
	2018	**2019**	**2020**	**2021**	**2022**	**Average value over 5 planning years**
Rel. proportion of market volume	15%	15%	15%	15%	15%	15%
Abs. proportion of market volume	669 ha	669 ha	669 ha	669 ha	669 ha	669 ha
Rel. proportion of market forecast	5%	7%	7%	10%	10%	8%
Abs. proportion of market forecast	234 ha	327 ha	327 ha	468 ha	468 ha	365 ha
Total utilization	**903 ha**	**997 ha**	**997 ha**	**1137 ha**	**1137 ha**	**1034 ha**

Slug pellets spreading service

Market volume (stand 2016) *229 ha ("Overrun-factor 1" included)*
Market forecast (stand 2016) *317 ha ("Overrun-factor 1" included)*

	planning period					
	2018	**2019**	**2020**	**2021**	**2022**	**Average value over 5 planning years**
Rel. proportion of market volume	10%	10%	10%	10%	10%	10%
Abs. proportion of market volume	23 ha	23 ha	23 ha	23 ha	23 ha	23 ha
Rel. proportion of market forecast	30%	40%	40%	50%	50%	42%
Abs. proportion of market forecast	95 ha	127 ha	127 ha	159 ha	159 ha	133 ha
Assumption of contracts from farmers further away	15 ha	15 ha	20 ha	25 ha	30 ha	30 ha
Total utilization	**133 ha**	**165 ha**	**170 ha**	**206 ha**	**211 ha**	**186 ha**

Lime sand spreading service

Market volume (stand 2016) *301 ha ("Overrun-factor 1/3" included)*
Market forecast (stand 2016) *1311 ha ("Overrun-factor 1/3" included)*

	planning period					
	2018	**2019**	**2020**	**2021**	**2022**	**Average value over 5 planning years**
Rel. proportion of market volume	10%	10%	10%	10%	10%	10%
Abs. proportion of market volume	30 ha	30 ha	30 ha	30 ha	30 ha	30 ha
Rel. proportion of market forecast	30%	40%	40%	50%	50%	42%
Abs. proportion of market forecast	393 ha	524 ha	524 ha	656 ha	656 ha	551 ha
Assumption of contracts from farmers further away	150 ha	250 ha	250 ha	250 ha	300 ha	300 ha
Total utilization	**573 ha**	**805 ha**	**805 ha**	**936 ha**	**986 ha**	**881 ha**
Amount of tons (average 2to* per hectare)	**1147 to**	**1609 to**	**1609 to**	**1871 to**	**1971 to**	**1761 to**

*recommended amounts: burnt lime (1500-2500kg/year), mixed lime (2000-2500kg/year)
http://bodenkalk.at/index.htm

Appendix 3: Machinery cost calculations

Cost calculation for a tractor			
Type	**4WD, 165 hp, GPS steering system**		
Purchase price	**100 000,00**	**€**	
Resale value	**40 000,00**	**€**	
Depreciation value	**60 000,00**	**€**	
Period of use	**10,00**	**years**	
Utilization through crop spraying	*172,68*	*hours*	
Utilization through lime sand spreading	*220,25*	*hours*	
Utilization through other farm work (rental purposes, etc.)	*450,00*	*hours*	
Total utilization	**842,93**	**hours**	
Fixed costs			
Costsof interest	3 000,00	€	(according to ÖKL 3% from purchase price)
Insurance and storage	2 000,00	€	(according to ÖKL 2% from purchase price)
Depreciation	6 000,00	€	
Total fixed costs	**11 000,00**	**€**	
Fixed costs per hour	**13,05**	**€ per hour**	
Variable costs			
Repair costs	8,00	€ per hour	(according to ÖKL 0,8% per 100h from purchase pric
Variable costs per hour	**8,00**	**€ per hour**	
Total costs per hour	**21,05**	**€ per hour**	

Cost calculation for slim tires			
Type	**slim tires, 270/95 R32,320/90 R46**		
Purchase price	**4 500,00**	**€**	
Resale value	**1 500,00**	**€**	
Depreciation value	**3 000,00**	**€**	
Period of use	**10,00**	**years**	
Utilization through crop spraying	**172,68**	**hours**	
Fixed costs			
Costsof interest	135,00	€	(according to ÖKL 3% from purchase price)
Insurance and storage	90,00	€	(according to ÖKL 2% from purchase price)
Depreciation	300,00	€	
Total fixed costs	**525,00**	**€**	
Fixed costs per hour	**3,04**	**€ per hour**	
Total costs per hour	**3,04**	**€ per hour**	

Cost calculation for a crop sprayer

Type	**front/heck-combination, 2800l volume, 24 boom width, GPS switch-off**		
Purchase price	**55 900,00**	**€**	
Resale value	**24 000,00**	**€**	
Depreciation value	**31 900,00**	**€**	
Period of use	**10,00**	**years**	
Utilization through crop spraying	**172,68**	**hours**	
Fixed costs			
Costs of interest	1 677,00	€	(according to ÖKL 3% from purchase price)
Insurance and storage	1 118,00	€	(according to ÖKL 2% from purchase price)
Depreciation	3 190,00	€	
Total fixed costs	**5 985,00**	**€**	
Fixed costs per hour	**34,66**	**€ per hour**	
Variable costs			
Repair costs	27,95	€ per hour	(according to ÖKL 5% per 100h from purchase price
Fuel consumption	14,00	liters per hou	(according ÖKL values)
Fuel price	1,01	€ per liter	*
Variable costs per hour	**42,09**	**€ per hour**	
Total costs per hour	**76,75**	**€ per hour**	

*https://www.bmwfw.gv.at/EnergieUndBergbau/Energiepreise/Seiten/MonitorTreibstoff.aspx?Report=3

Cost calculation for a dry lime sand spreader

Type	**16to, 9m distribution auger**		
Purchase price	**57 100,00**	**€**	
Resale value	**15 000,00**	**€**	
Depreciation value	**42 100,00**	**€**	
Period of use	**15,00**	**years**	
Utilization through crop sprayin	**220,25**	**hours**	
Fixed costs			
Costs of interest	1 713,00	€	(according to ÖKL 3% from purchase price)
Insurance and storage	1 142,00	€	(according to ÖKL 2% from purchase price)
Depreciation	2 806,67	€	
Total fixed costs	**5 661,67**	**€**	
Fixed costs per hour	**25,71**	**€ per hour**	
Variable costs			
Repair costs	17,13	€ per hour	(according to ÖKL 3% per 100h from purchase price
Fuel consumption	14,00	liters per hour	(according ÖKL values)
Fuel price	1,01	€ per liter	*
Variable costs per hour	**31,27**	**€ per hour**	
Total costs per hour	**56,98**	**€ per hour**	

*https://www.bmwfw.gv.at/EnergieUndBergbau/Energiepreise/Seiten/MonitorTreibstoff.aspx?Report=3

Cost calculation for a SUV

Type	**Suzuki Jimny, 4WD**		
Purchase price	**12 500,00**	**€**	
Resale value	**2 500,00**	**€**	
Depreciation value	**10 000,00**	**€**	
Period of use	**10,00**	**years**	
Utilization through slug pellets spreading	*31,06*	*hours*	
Utilization through other purposes (rental purposes, etc.)	*150,00*	*hours*	
Total utilization	**181,06**	**hours**	
Fixed costs			
Costs of interest	375,00	€	(according to ÖKL 3% from purchase price)
Insurance and storage	250,00	€	(according to ÖKL 2% from purchase price)
Depreciation	1 000,00	€	
Total fixed costs	**1 625,00**	**€**	
Fixed costs per hour	**8,97**	**€ per hour**	
Variable costs			
Repair costs	1,00	€ per hour	(according to ÖKL 0,8% per 100h from purchase price
Variable costs per hour	**1,00**	**€ per hour**	
Total costs per hour	**9,97**	**€ per hour**	

Cost calculation for small disc spreader and GPS track guide

Type	**2 plate spreader, 15m, GPS track guide**		
Purchase price	**4 600,00**	**€**	
Resale value	**1 500,00**	**€**	
Depreciation value	**3 100,00**	**€**	
Period of use	**10,00**	**years**	
Utilization through slug pellets spre	**31,06**	**hours**	
Fixed costs			
Costs of interest	138,00	€	(according to ÖKL 3% from purchase price)
Insurance and storage	92,00	€	(according to ÖKL 2% from purchase price)
Depreciation	540,00	€	
Total fixed costs	**540,00**	**€**	
Fixed costs per hour	**16,88**	**€ per hour**	
Variable costs			
Repair costs	1,38	€ per hour	(according to ÖKL 0,8% per 100h from purchase price
Fuel consumption	9,00	liters per hour	
Fuel price	1,01	€ per liter	*
Variable costs per hour	**1,38**	**€ per hour**	
Total costs per hour	**27,35**	**€ per hour**	

*https://www.bmwfw.gv.at/EnergieUndBergbau/Energiepreise/Seiten/MonitorTreibstoff.aspx?Report=3

Appendix 4: Break-even point calculations

Crop spraying service	scenarios		
Fixed costs per year	basis	*worst*	best
	100%	110%	90%
Tractor (20.5% utilization for crop spraying)	2 255 €	*2 481 €*	2 030 €
Slim tires	525 €	*578 €*	473 €
Crop sprayer	5 985 €	*6 584 €*	5 387 €
Liability insurance (50% proportion)	500 €	*550 €*	450 €
Total fixed costs per year	**9 265 €**	***10 192 €***	**8 339 €**
Variable costs per hour			
Tractor repair costs	8,00 €		
Fuel costs	14,14 €		
Crops sprayer repair costs	27,95 €		
Labor costs	22,50 €		
Administrative labor costs	1,13 €		
Total variable costs per hour	**73,72 €**		
Performance hectare per hour	6		
Total variable costs per hectare	**12,29 €**		
Market price net per hectare	**23,33 €**		
Contribution margin per hectare	**11,04 €**	***9,94 €***	**12,15 €**

Slug pellets spreading service	scenarios		
Fixed costs per year	*basis*	*worst*	best
	100%	*110%*	*90%*
SUV (16,7% utilization for lime sand spread.)	217 €	*239 €*	*196 €*
Small disc spreader + GPS track guide	540 €	*594 €*	*486 €*
Liability insurance (25% proportion)	250 €	*275 €*	*225 €*
Total fixed costs per year	**1 007 €**	***1 108 €***	***907 €***
Variable costs per hour			
SUV repair costs	1,00 €		
Fuel costs	9,09 €		
Small disc spreader repair costs	1,38 €		
Labor costs	22,50 €		
Administrative labor costs	1,13 €		
Total variable costs per hour	**35,10 €**		
Performance hectare per hour	6		
Total variable costs per hectare	**5,85 €**		
Market price net per hectare	**12,50 €**		
Contribution margin per hectare	**6,65 €**	***5,99 €***	***7,32 €***

Lime sand spreading service	scenarios		
Fixed costs per year	*basis*	*worst*	best
	100%	110%	90%
Tractor (26% utilization for crop spraying)	*2 860 €*	*3 146 €*	2 574 €
Lime sand spreader	*5 985 €*	*6 584 €*	5 387 €
Liability insurance (25% proportion)	*250 €*	*275 €*	225 €
Total fixed costs per year	***9 095 €***	***10 005 €***	**8 186 €**
Variable costs per hour			
Tractor repair costs	*8,00 €*		
Fuel costs	*14,14 €*		
Lime sand spreader repair costs	*17,13 €*		
Labor costs	*22,50 €*		
Administrative labor costs	*1,13 €*		
Total variable costs per hour	*62,90 €*		
Performance hectare per hour	*4*		
Total variable costs per hectare	***15,73 €***		
Market price net per hectare (2to/ha)	***34,17 €***		
Contribution margin per hectare	***18,45 €***	***16,60 €***	**20,29 €**