Analysis and development of customer segmentation criteria and tools for SMEs

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A thesis submitted to the

University of Gloucestershire

in accordance with the requirements of the degree of

Doctor of Business Administration

in the Faculty of Business, Education & Professional Studies

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March 2018

Abstract

In order to use the limited resources of sales and marketing optimally, and to provide customers with the best services, effective customer segmentation is of prime importance. This thesis deals with methods for analysing and comparing the individual values of customers for SMEs (Small Medium Enterprises), because not all customers bring the same value to the company and not every customer can be treated in the same way. The different segmentation models are judged by different criteria.

Which segmentation method allows a company to treat customers in the best possible way based on their value for the company? To answer this question first requires the SME company to determine whether they know the monetary or non-monetary value of their customers.

The researcher examined if the size of the company influences the choice of segmentation criteria and method. To determine this, it is necessary to address which companies are SMEs. The main methods are reviewed extensively likewise available software models were evaluated and included in the research, and the advantages and disadvantages are compared. For this research topic, a mixed-method design was chosen. The researcher carried out one-to-one semi-structured expert interviews and, parallel to the qualitative research, quantitative data from a technical retailing company's database was analysed. The company has data from more than 10,000 customers in the business warehouse and CRM system.

The results of this research provide new thoughts to reflect on whether the segmentation methods of the existing literature are useful for SMEs in the B2B business and provide the basis for further research and development in this field.

The new segmentation method, identified and confirmed through follow-up interviews in this research, will be of immense value to practitioners. Especially for sales and marketing managers working in this field.

Keywords: SME, ABC analysis, customer value, customer segmentation, scoring method, customer lifetime value

Acknowledgements

First and foremost, I would like to thank Dr Aftab Dean from the Leeds Beckett University and Prof. Dr. Lentz from the FH des Mittelstands in Bielefeld for being my supervisors and mentors. Without their continuous professional support and constructive critiques, this thesis would not have been the same.

My special thanks go to my beloved wife, who always encourages and supports me throughout my 'DBA journey'.

Sebastian Schubert

'I learned the value of hard work by working hard.'
Margared Mead

'Your most unhappy customers are your greatest source of learning.'
Bill Gates

Author´s declaration

I declare that the work in this thesis was carried out in accordance with the regulations of the University of Gloucestershire and is original except where indicated by specific reference in the text. No part of the thesis has been submitted as part of any other academic award. The thesis has not been presented to any other education institution in the United Kingdom or overseas.

Any views expressed in the thesis are those of the author and in no way represent those of the University.

Signed:

Date:

04 March 2018

Request for an Embargo

The researcher requested an embargo of 2 years from the date of the viva voce examination. In this DBA thesis the researcher is going to use strictly confidential data.

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List of Abbreviations

ACF   = Autocorrelation Function

ARIMA = Autoregressive Integrated Moving Average

ASM   = Area Sales Manager

AWU   = Annual Work Unit

BCG   = Boston Consulting Group

B2B   = Business to Business

B2C   = Business to Consumer

DB   = Contribution Margin

CIC   = Complementary Identification Code

CNC   = Computer Numerical Control

CRM   = Customer Relationship Management

CTR   = Click-Through-Rate

DINK   = Double Income no Kids

ERP   = Enterprise-Resource-Planning

EU   = European Union

EUR   = Currency Euro

FMCG   = Fast Moving Consumer Goods

GVL   = Gebietsverkaufsleiter (Area Sales Manager)

HGB   = Handelsgesetzbuch (German Code of Commercial Law)

HR   = Human Resources

IFM   = Institut für Mittelstandsforschung (Institute for SME Research)

IT   = Information Technology

KAM   = Key Account Management

KPI   = Key Performance Indicator

LCL   = Lower Confidence Level

LOHAS = Lifestyles of Health and Sustainability

LOVOS = Lifestyles of Voluntary Simplicity

NACE   = Nomenclature statistique des activités économiques dans la Communauté européenne

NC   = Numerical Control

NPS   = Net Promoter Score

OLAP   = Online Analytical Processing

PACF   = Partial Autocorrelation Function

R&D   = Research and Development

RFM   = Recency, Frequency and Monetary Value

RO   = Research Objective

RQ   = Research Question

SIC   = Standard Industrial Classification

SME   = Small Medium Enterprise

SPSS   = Statistical Package for the Social Sciences

SoD   = Share of Deliveries

UCL   = Upper Confidence Level

VAT   = Value-Added Tax

VW   = Volkswagen

Yollies = Young Old Leisure People

Yuppies= Young Urban Professional

WTO   = World Trade Organisation

3D   = Three Dimensional

1   Introduction

1.1   Research problem

In the 1960s, Theodore Levitt, a leading economist and academic, suggested that the future of business and marketing objectives was to win and keep customers (Levitt, 1960). This was later confirmed by Payne (1995), Freter (2008), Reichheld (2011), Homburg and Wieseke (2011), and Kotler, Keller, and Opresnik in 2015, who declared that traditional marketing and sales now focus on winning and keeping customers. Hence, customer analysis and customer segmentation are still significant issues in marketing (Homburg & Wieseke, 2011; Bruhn, Georgi, Treyer, & Leumann, 2000).

The outcomes of such analysis and segmentation are particularly important to ensure that key customers are given the appropriate resources and attention. Treating the customer in the best possible way and providing optimal customer service is still a major issue in small- and medium-sized enterprises (SMEs). This is because monetary and non-monetary resources in sales and marketing are limited, especially for SMEs (Lemon & Mark, 2006).

Reichheld (2011) argued that 'acquisitions, aggressive pricing strategies, product line extension, cross-selling strategies, new marketing campaigns, and all the other implements in a CEO's toolkit may give a company a short-term boost. But if these gambits do not ultimately result in delighting customers, the growth won't last' (Reichheld, 2011). 'It is now widely accepted that the real purpose of business is to create and sustain mutually beneficial relationships with selected customers' (Ryals & Knox, 2005) and that 'some customers are more profitable than others. Conversely, some are downright unprofitable. Knowing which is which is the all-important question' (Epstein, Friedl, & Yuthus, 2009). This demonstrates that customer or market segmentation in SMEs, especially in manufacturing and technical retailing, is becoming increasingly important for the proper distribution and utilization of the company's limited human resources (HR) and marketing resources. Furthermore, this not only refers to human resources and working hours, which are only available to a limited extent, but also to the available sales and marketing budgets per customer (Lemon & Mark, 2006).

Customer segmentation and orientation have evolved into a general principle of corporate governance in recent years. Customer segmentation and orientation aim at stabilizing a company and giving it an economic advantage over the long term. Thus, the company has to

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recognize how much a customer is worth or whether the customer has no worth at all (Tonge, 2001). In this context, the phrase 'how much a customer is worth' can be used interchangeably with 'customer value'.

'Customer value' can be understood as the perceived and weighted contribution of a customer towards the achievement of the monetary and non-monetary goals of the supplier (Helm & Günter, 2006). Though it is difficult to identify the exact value of a customer, it can be defined as a measure of the economic importance of a customer, i.e. his/her direct or indirect contribution to achieving the objectives (Cornelsen, 2000). As a result, customer segmentation and customer value are frequently discussed research topics. How can a company's profitability be optimized with these limited resources? How can these resources be allotted in the company? How can suitable customer orientation be ensured (Krafft & Albers, 2000)? Most companies are aware that they should not treat all customers in the same way, but how do they identify the correct segmentation method?

There are already several approaches to provide solutions to these questions, such as the ABC analysis, different scoring approaches (e.g. RFM), clustering techniques, Net Promoter Score (NPS), etc.

Most of these models are based on retrospective data, such as revenue, contribution margin, offer hit rate, loyalty, etc. Only the customer lifetime value (CLV) approach attempts to include the entire customer relationship period (past and future). In particular, the future potential of the customer is essential for classification. However, this is also the weakness of the CLV approach.

The potential estimates include significant inaccuracies. Because sales and marketing resources are limited in SMEs, it is especially important for them to develop a simple segmentation process to minimize these inaccuracies and also to utilize the resources properly.

To answer all the above questions and to give SMEs more options in the field of customer segmentation for safe monetary and non-monetary resources, this DBA thesis will focus on identifying and proposing adequate segmentation methods for SMEs and identifying the

effectiveness of current practices of segmentation within this sector. The key questions to be researched include:

1. What approach should be adopted to analyse, evaluate, and develop customer segmentation tools in SMEs?

2. What segmentation methods are appropriate for SMEs in relation to their stage of growth?

3. How do SMEs recognise/identify the value of their customers?

4. How, if at all, can SMEs employ customer lifetime value analysis for segmentation purposes?

Answering the above questions is important to identify key customer segments and help SMEs develop more profitable customer relationships. And this leads the researcher to the following five research objectives:

1. To assess the current state of customer segmentation analysis in SMEs

2. To identify meaningful criteria to segment customers in SMEs.

3. To adapt current segmentation techniques to develop a useful and pragmatic segmentation framework for SMEs

4. Determine whether SMEs know and calculate the value of their customers

5. Identify whether and how SMEs evaluate customer lifetime value and what segmentation techniques are used

The researcher will discuss the topic of research objectives and questions in more detail in Section 3.2.

1.2   Research Design Framework

This thesis can be seen as a continuation of the development process of the researcher in relation to the topic of customer segmentation in SMEs.

This development process began with the writing and submission of a master thesis at the Ashridge Business School. However, this DBA thesis at the University of Gloucestershire treats the topic at a higher level. Nevertheless, in the course of the DBA thesis, some small elements of the master thesis will be considered in Chapter 2.

In general, a research design framework is like a blueprint of a research thesis. The research design framework of this DBA thesis is defined by the scope of the five research objectives and the four research questions. In the figure below, the researcher terms 'create research objectives' and 'create research questions' as the starting points and the priorities of the research design framework of this DBA thesis.
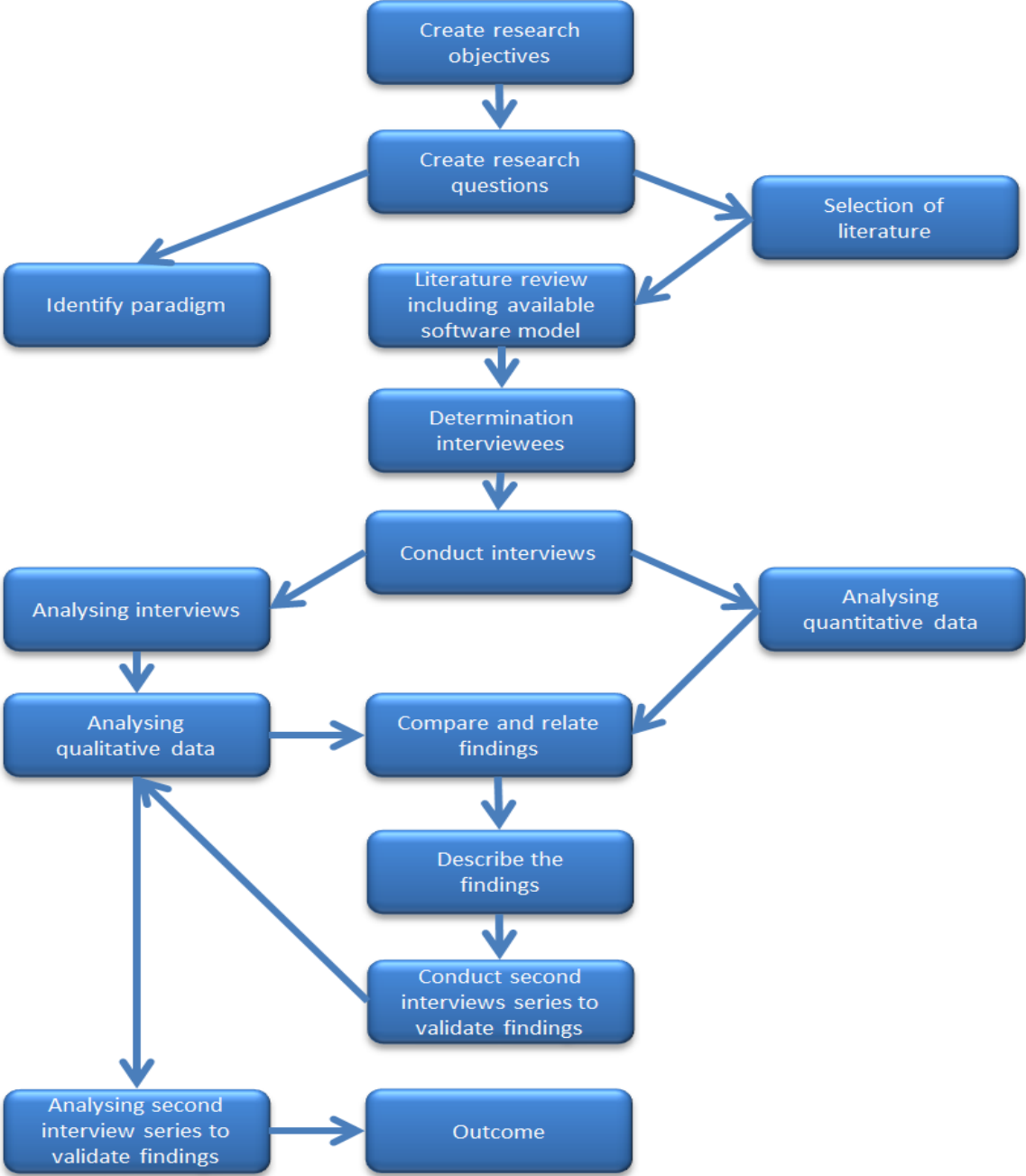
Figure: 1 Research design framework

This framework helped the researcher stay on track and focus on the relevant aspects. This was important because one can lose focus from the actual work or the subject in the course of the research journey. In retrospect, this was an important tool to obtain the desired result.

1.3 Search strategy and selection criteria

Research in the field of customer value and customer segmentation is often related to different industry sectors. The researcher did not find any significant study pertaining to the professional field of technical business-to-business (B2B) retailing and hence, focused on the general findings of well-known international marketing management textbooks and journals. According to the Hirsch-Index, The Journal of Marketing, The Journal of Business Research, The Journal of Consumer Research, The Journal of Marketing Research, and the Journal of Relationship Marketing are the best-known academic journals in the field of customer value and segmentation. The researcher searched the following online databases and online journals to find a comprehensive bibliography of scientific literature on customer value and segmentation:

- Business Monitor
- Business Source Complete
- Dawsonera
- Emerald
- Google Scholar
- Visual Library
- Technical University of Brunswick
- University of Gloucestershire

The online literature search was based on key words like 'customer value', 'customer cluster', and 'customer segmentation'. All irrelevant documents and articles on these topics, such as bachelor and master theses, were disregarded. This is because published scientific articles, dissertations, and abstracts of textbooks offer the best and most scientifically valuable information.

The researcher focused only on the most widely used segmentation methods in business, because a lot of companies work with modified versions of these main methods.

The online search for already existing customer segmentation models is explained in detail in Section 2.8.

1.4   Document structure

This DBA thesis is structured into seven chapters. Every chapter begins with a brief introduction to guide the reader into the main contents of that chapter, and ends with a brief summary that recapitulates the main points discussed in that chapter.

1. Introduction

    This introductory section explains the research problem, including the research objectives and the research questions. Furthermore, the search strategy, the selection criteria, and the structure of the DBA thesis are described.

2. Literature review

    In the first part of Section 2, the researcher defines basic assumptions, like the company size of SMEs. With regard to the current status of the research topic, an overview of previous work done in this area, particularly work on which the thesis is based or with which it is associated, is explained. The literature review describes different segmentation methods in detail, including advantages and disadvantages. As well the online search for existing customer segmentation models is carried out here.

3. Research methodology

    This section builds the theoretical basis, which introduces the main theoretical ideas on which the quantitative and qualitative research is based. This section also describes and justifies the methodological choices made, and introduces the position of the researcher.

4. Data gathering and analysis

    The first part describes the current state of a German SME in relation to the research topic. Furthermore, various segmentation methods are simulated with the available quantitative data and different statistical analyses based on SPSS and MS Excel.

5. Analysing expert interviews

    This study is further developed by conducting 14 interviews in the first interview series and 5 resp. 4 interviews in the second interviews series with experts from different fields, including CEOs, sales and marketing experts, and university professors. The researcher conducted the expert interview analysis based on the Meuser & Nagel method, and also carried out a narrative analysis of the interviews.

6. Comparing and relating the findings of the interviews and the quantitative data

After outlining the literature review, the theoretical basis, and the quantitative and qualitative analysis, Chapter 6 compares and relates the findings. The research also explains the limitations of the data analysis.

7. Summary, findings, further work and personal reflection

Finally, contributions to knowledge and practice are presented, along with proposals for further work and a personal reflection in which the research recalls the entire DBA journey.

Introduction	• Research problem • Conceptual framework • Document structure
Literature review	• Definitions and deeper concept • Assessment of customer segmentation methods
Research methodology	• Research questions and objectives • Research paradigm • Adapted research design
Data gathering and analysis	• Current state in a German SME • Secondary data analysis
Analysing expert interviews	• Analysis according to Meuser & Nagel • Narrative analysis
Comparing and relating findings	• Limitations • Conclusion data analysis
Summary, findings, further work and personal reflection	• Findings • Contribution to knowledge and practice • Further work and personal reflection

Figure: 2 Document structure

2   Literature Review

The literature review provides the reader with important background information on the research topic. This includes:

- SMEs

- Marketing in SMEs

- Customer value

- Customer Relationship Management

- Key Account Management

- Market and customer segmentation

- Common segmentation methods

- Available customer segmentation software models

This information is necessary to limit the research to related topics. Without these definitions and delimitations, the result of the research could be misinterpreted.

2.1   Definition of SMEs

In 2005, Günter Verheugen—former member of the European Commission and the person responsible for Enterprise and Industry in the European Union—pointed out the importance of the SME in the European market and business: 'Micro, small, and medium-sized enterprises are the engine of the European economy. They are an essential source of jobs, create entrepreneurial spirit and innovation in the EU, and are thus crucial for fostering competitiveness and employment.'

This confirms that SMEs play a major role in the European economy by boosting innovation, entrepreneurial skills, and employment.

But how should one define SMEs? What should be the criteria for the definition?

SMEs are a very heterogeneous group and include a wide variety of firms (Hallberg, 2000). This is one reason why different institutions have given separate definitions of SMEs. SME (or 'Mittelstand' in German) is a very positive term in business because almost all of Germany's SMEs are family-owned and mostly managed by their owners. Their business policies tend to have a long-term orientation (German Federal Ministery of Economics and Technology, 2012). Therefore, a lot of companies claim to be SMEs though they are not.

To set a definition, institutions like the European Union (EU) as well as German law use the same criteria:

- Headcount-Annual Work Unit (AWU):

  This covers full-time, part-time and, seasonal staff, and includes employees, managers, partners, and subordinates. Students, apprentices, and trainees are excluded.

- Annual turnover:

  This is the income an enterprise earned during the previous year, excluding value added tax (VAT).

- Annual balance sheet total

  The annual balance sheet total refers to the value of a company's main assets.

STAFF HEADCOUNT

+/-

BALANCE SHEET

ANNUAL TURNOVER
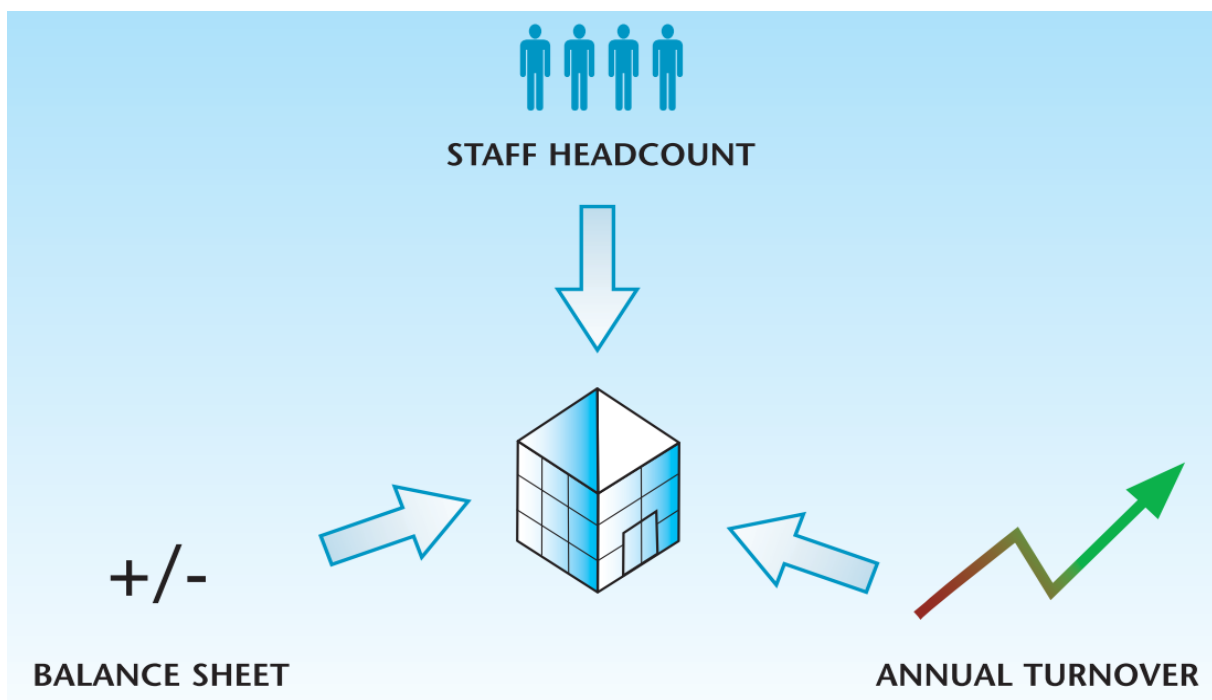
Figure: 3 Criteria to define an SME (European Commission, 2003)

The review of SME definitions have been summarised in Table 1 which provides FOUR main definitions of the term 'SME'. The Deloitte Consulting SME Institute and the Institute for SME Research (IFM) are both private organisations that focus on topics pertaining to SMEs. The problem of the differences in the definitions given by these two institutes is clearly evident. The difference in the headcounts given by the two amounts to 2,500 employees and that of annual turnover is EUR 550 million. These are major differences that can distort the results of the studies. According to the Deloitte definition, a lot of companies are SMEs. Comparing the German Law §267 and the Deloitte definition, the difference is even higher. The researcher has decided that the definition given by the European Commission for Enterprise and Industry is suitable for this research because it is internationally accepted. According to this definition,

as well as the one given by German law, companies can choose between annual turnover and annual balance sheet total. This is helpful because enterprises in the trade and distribution sectors have higher turnover figures than their counterparts in the engineering or manufacturing sectors. Providing an option between this criterion and the balance sheet total, which reflects the overall wealth of an enterprise, ensures fair treatment of SMEs engaged in different types of economic activities (European Commission, 2003).

Definition	Headcount: Annual Work Unit (AWU)	Annual turnover	Annual balance sheet total
Institute for SME Research (IFM)	< 500	< 50 Mio. €	n/s
EU	< 250	< 50 Mio. € OR	< 43 Mio. €
German Law HGB (§267)	< 250	< 3.5 Mio. € OR	< 19.25 Mio. €
Deloitte Consulting SME Institute	< 3000	< 600 Mio. €	n/s

Table: 1 Definition of SMEs

The European Commission classifies SMEs into three subcategories—medium-sized, small, and micro enterprises. The criteria for medium-sized enterprises are the same, but the defining figures are lower for small and micro enterprises. Small enterprises must have fewer than 50 employees and a turnover or annual balance sheet total of less than EUR 10 million. A micro enterprise should have fewer than 10 employees and a turnover or balance sheet total of less than EUR 2 million. These are typically start-ups or craft businesses.

Enterprise category	Headcount: Annual Work Unit (AWU)	Annual turnover	Annual balance sheet total
Medium-Sized	< 250	< 50 Mio. € OR	< 43 Mio. €
Small	< 50	< 10 Mio. € OR	< 10 Mio. €
Micro	< 10	< 2 Mio. € OR	< 2 Mio. €

Table: 2 Definition of SME by the European Union (European Commission, 2003)

2.2 Marketing in SMEs

The next section concerned with marketing in SMEs and the special circumstances for SMEs in this topic.

2.2.1 SME marketing

Small and medium enterprises (SMEs) are the most widespread business organizations in Europe (Marcati, Guido, & Peluso, 2010). There are approximately 4.8 million SMEs in the UK, accounting for over 99% of all companies, which provide 59.3% of all private sector employment (Department for Business, Innovation and Skills , 2013). Together, they account for more than 50% of total sales in the UK (Behavioural Evidence & Insight Team, 2010) and these figures have increased in the recent past (Eurostat, 2017). In 2014, 99.6% of Germanys companies are dedicated to the field of SMEs (Institut für Mittelstandsforschung , 2017). This means that the small and medium-sized enterprises are the backbone of the economy, not just in the UK and Germany but across Europe (Harrigan, Ramsey, & Ibbotson, 2012).

Management and marketing competencies play an important role in business and are of high priority (Carson & Gilmore, 2000), both in large organizations and SMEs (Hogarth-Scott, Watson, & Wilson, 1996). The skills do not differ fundamentally from those required in the larger companies, but other activities and priorities must be set for SMEs (Gilmore, Carson, & Grant, 2001; Harris & Deacon, 2011). There are certain specific characteristics of SME management (Prymon, 2014) which are often associated with the characteristics of the owner and his behaviour (Gilmore, Carson, & Grant, 2001).

SMEs cannot compete with large companies by using economies of scale (O'Dwyer, Gilmore, & Carson, 2009), since their market is characterized by smaller sales volumes, smaller market areas, and niches. In addition, there is the difference in the availability of resources with which they must face a highly competitive environment (Lackman & Lanasa, 2013, Harrigan, Ramsey, & Ibbotson, 2012). SMEs need to use their limited resources and develop appropriate marketing strategies to achieve their goals. The marketing strategies used are often developed from previous knowledge and experience, often based on learning by doing (Dew, Read, Sarasvathy, & Wiltbank, 2009) instead of the professional marketing competencies.

Both SMEs and larger companies should deal with the basic principles of marketing (Siu & Kirby, 1998; Reynolds, 2002). These are, for example, the 4 Ps or the 7 Ps. At the same time, marketing in SMEs is also particularly crucial (Fillis, 2002, Gilmore, Carson, & Grant, 2001) and

perhaps even more crucial for business success than in large organizations. 'The success of an SME to some extent is influenced by the elements of effective marketing. Marketing and promotion is the basis of any growth of a business (Anas, 2014 p. 78). '

In the course of this section, the advantages and disadvantages of SMEs in marketing, the importance of the SMEs, and their future tasks in marketing are described.

2.2.1.1 Advantages of SMEs in the field of marketing

The research has outlined the differences between SMEs and large companies. However, these differences can also result in advantages for SMEs, which they should use consistently. The high flexibility, specialization, and customer orientation (Prymon, 2014, Marcati, Guido, & Peluso, 2010) are emphasized again and again. The strength of many SMEs in sales (O'Dwyer, Gilmore, & Carson, 2009; Guersen, 1996), networking (Carson, Gilmore, & Rocks, 2004), and the formation of customer relationships via word-of-mouth marketing (Atanassova & Clark, 2015) come from this customer orientation.

Especially in Germany, SMEs are particularly known for its large number of hidden champions (Reinemann, 2011; Economist, 2012). These are characterized by the introduction of customer-oriented products and services; they are often developed in cooperation with the customer. Through this special cooperation and the resulting products, SMEs can optimally occupy markets and thus differentiate themselves from other companies (Prymon, 2014, Brouthers, Andriessen, & Nicolaes, 1998). According to Atanassova and Clark (2015) SMEs focus on opportunity recognition and exploitation, placing knowledge of their customers at the heart of their business. Further advantages and opportunities can be identified:

- Occupation of market niches
- Ability to innovate
- Non-bureaucratic structure
- Short decision-making processes within the company
- Long-term goals in the company
- High employee identification
- Special service orientation

In addition to these opportunities and advantages of SMEs, there is also another chance in the area of online marketing. For SMEs, the financial resources needed for a meaningful campaign here are lower than the traditional campaigns. For SMEs as well as for larger organization, the

marketing campaigns based on online technologies have the same basic rules and benefits as analogue campaigns.

2.2.1.2 Disadvantages of SMEs in the field of marketing

According to Marcati, Guido, & Peluso (2010), SMEs are more reluctant to adopt a professional marketing approach compared with larger companies.

In highlighting the key disadvantages of SMEs, in the field of marketing, the following points are often enumerated (Harrigan, Ramsey, & Ibbotson, 2012; O'Dwyer, Gilmore, & Carson, 2009; Reinemann, 2011; Jones, Suoranta, & Rowley, 2013; Harris & Deacon, 2011; Gilmore, Carson, & Grant, 2001; Marcati, Guido, & Peluso, 2010; Atanassova & Clark, 2015):

- Lack of financial resources
- Lack of marketing know-how
- Company structure
- Limited influence on the external environment

In addition to these points, Carson (1990) said that in a large company, the decisions in the field of marketing are made more formally, professionally, and structurally, in contrast to SMEs. Here, the processes are informal, instinctive, and not so theoretical (Carson, 1990).

However, according to Marcati, Guido, & Peluso (2010) and Reinemann (2011), marketing in SMEs is often associated with sales, advertising and / or product policy equality. Other fields of marketing are often neglected by SMEs or there are deficits in the implementation of other marketing areas (Reinemann, 2011). This neglect comes, in many cases, from the corporate structure of the companies.

Since the creation of a marketing department is considered to be unprofitable in most SMEs, the marketing tasks are often carried out under the direction of the sales team resp. sales manager (Rumler, 2002). According to a study by Telegate in 2011, the marketing part for two thirds of the SMEs is handled by the CEO or the top management (Marcati, Guido, & Peluso, 2010), although this may not be among their core competencies. This is confirmed by O'Dwyer, Gilmore, and Carson (2009). A study from the *Review of Management and Economic Engineering* found that in 42.5% cases, the CEO supervised the marketing (Izvercianu & Miclea, 2015). The decisions that the CEO then takes are made without the expertise of other employees and are strongly dependent on the current circumstances of the company. This implies that these decisions are rather arbitrary and chaotic (Carson & Gilmore, 2000). It can

thus be concluded that there is a low degree of professionalization in marketing in SMEs (Absatzwirtschaft, 2002). Another reason why this area is neglected is because the SMEs often lack the necessary financial resources for extensive marketing campaigns; this is true, according to Reinemann (2011) and Rumler (2002), particularly in the B2B area. Due to the lack of resources, for instance, only the microanalysis is focused on and the macro analysis rather neglected for marketing analysis on the whole. Hallberg (2000) and Harrigan, Ramsey, & Ibbotson, (2012) report that the lack of financial resources also jeopardize the growth and the competitiveness of SMEs, as larger companies can finance their activities more easily (Prymon, 2014).

SMEs also have difficulties in defining their marketing objectives, which are hardly well-formulated and elaborated (Homburg, Schäfer, & Schneider, 2012; O'Dwyer, Gilmore, & Carson, 2009). This is also confirmed by a study from 2015 on marketing practice in SMEs. This study shows that a marketing plan is missing in 25% of SMEs and 50% of companies have only short-term or sporadic marketing targets.

According to Carson and Gilmore (2000), Gilmore, Carson, and Grant (2001), O'Dwyer, Gilmore, and Carson (2009), and Atanassova and Clark (2015), the marketing decisions are often made haphazard, non-sequential, and unstructered and thus, lead to spontaneous, reactive, and little thought-out actions. In the context of SMEs and researchers in the field of marketing, Carson et al. (2002) assumed that 'small businesses do not understand our words because we talk in the language of academia; there is a need to develop theory in a language that is relevant to small businesses' (Carson, et al., 2002). This also means marketing in SMEs often does not correspond to the conventional marketing characteristics of theories in marketing textbooks (Gilmore, Carson, & Grant, 2001; Atanassova & Clark, 2015). A study by Marcati, Guido, & Peluso (2010) showed that 75% of the entrepreneurs behind the SMEs have marketing approaches that do not correspond to specific marketing literature. Often, an unconventional approach is chosen, which deals primarily with the increase in sales.

2.2.1.3 Status of Marketing in SMEs

In larger companies, marketing competes with other departments and strategic options; this competition is lower in SMEs (Prymon, 2014). The fact that the marketing sector in SMEs still is not valued enough is shown by the study of the consultancy Telegate in the year 2011.

The study found that most SMEs have an advertising budget of between 1,000 and 5,000 euros per year; only a few companies have a five-digit marketing budget. Companies rarely rely on a broader marketing mix, focusing instead on sales. But the budget is always being questioned, as 40% of the companies wait for the results before they release new budgets (Seign, 2011). Furthermore, the study shows that CRM and social media marketing play a minor role, although there are many opportunities in this area. Only 31% of companies are registered with social networks like Facebook, only 10% use social media for business, and 28% say this will be interesting in the future.

The analysis of marketing measures is also carried out very sporadically in many SMEs. While marketing professionals use technically highly-specialized tools and methods to measure the efficiency of advertising, 55% of German SMEs do not even assess whether their budgets are successful at all. According to Seign (2011), these are the reasons:

- No time – 53%

- Too much effort – 61%

- Difficult to measure – 61%

- We do not need that – 92%

Also, the prevalent mindset is that marketing in SMEs is not necessary and does not help. This is justified by the fact that one has only a few selected customers and directly supervises them. This is especially true for small and micro companies. However, some of the medium companies are already highly professional in international marketing strategies. According to Deakins and Freel (2009), this can be explained by the following reasons:

- Further development and growth of SMEs

- Searching for new markets and customer

- Customer expectations (Deakins & Freel, 2009)

In general, it can be said that the international markets offer the SMEs good opportunities in marketing. Furthermore, a study by the American Marketing Association shows that international marketing has a positive effect on other areas such as market planning and strategies for product and service conception, pricing, promotion, and distribution. This is confirmed by the World Trade Report 2016 by the World Trade Organisation (WTO) (World Trade Organisation, 2016).

2.2.1.4 Future tasks of Marketing in SMEs

The importance of marketing in SMEs has now been presented, but also the problems that SMEs have to face in this area. The question that arises from this is how SMEs can address and reduce the problems in marketing. Stromeyer (2017) gives the following answers:

- Build professional structures
- Provide financial resources
- Develop marketing strategies, review them at regular intervals, and adjust if necessary
- Work closely with customers and / or suppliers and create synergies in the 4 or 7 Ps area (Stromeyer, 2017)

According to Kleindl, Mowen, and Chakraborty (1996), O'Dwyer, Gilmore, and Carson (2009), SMEs should focus on innovative marketing, 'doing something with new ideas, products, service, or technology and refining these ideas to a market opportunity to meet the market demand in a new way (Kleindl, Mowen, & Chakraborty, 1996, p.214).' Harris and Deacon (2011) suggest that SMEs should return to the roots of SME marketing because they represent at least 90% of the companies (Harris & Deacon, 2011).

2.2.1.5 Conclusion

The SMEs should follow the same marketing rules as corporations, and the same tools are available. But these tools should be adapted to the specific needs of SMEs and then used professionally. SMEs, on the other hand, constrain themselves to just a few instruments and rules because of their smaller budgets.

This disadvantage certainly influences the SMEs in the implementation of their marketing strategies (Gilmore, Carson, & Grant, 2001). Izvercianu and Miclea (2015, p.414) say in this respect that 'insuffcient human and financial resources and a lower turnover, determines them not to pursue marketing activities.' But SMEs must also deploy the haphazard, unstructured, spontaneous, and reactive behaviour in marketing (Gilmore, Carson, & Grant, 2001). Alongside, they should rely heavily on developing suitable and appropriate competencies for marketing. Such competencies, because of the characteristics of the SME, 'must either be different or at least have different emphasis and priority within an SME' (Carson & Gilmore, 2000, p. 1).

It should be noted that the willingness and ability to do professional marketing in SMEs still have to continue to be successful. This also applies to the areas of customer relationship marketing and key account management. This can be ensured, however, by a simple and practicable approach that is affordable and efficient (O'Dwyer, Gilmore, & Carson, 2009).

2.2.2 Definition of customer value

Suppliers traditionally create value for their customers with the products or services offered; however, '[…] products come and go, but customers remain. The secret to success is maintaining a profitable relationship with the customer, regardless of what products are involved' (Rust, Zeithaml, & Lemon, 2000, p. 6). From the supplier's perspective, this is the most important point for value creation. But customer value or value creation can be viewed from three different perspectives—value creation for the customer, value creation for the supplier, and a joint buyer-seller value creation (Ulaga, 2001).

What kind of benefit does the relationship offer from the supplier's perspective? Customer value is more than the achieved turnover or contribution margin. A customer can create value not only in sales, but also in other departments like purchasing, logistics, or technical departments like research and development (R&D)—for example, in joint ventures between suppliers and customers (Günter & Helm, 2003). In this work, the researcher discusses customer value only from the supplier's perspective.

2.2.3 Base for market or customer segmentation

Homburg, Schäfer, and Schneider (2012) argued that diversity of customers can generally be seen from two different perspectives. The first perspective is the market process view. In accordance with this, the range of products and services should correspond exactly to the wishes and requirements of a customer group or segment. The entire heterogeneous market is divided into homogeneous sub-markets based on relevant customer characteristics.

The second is the economic point of view, which mandates that an enterprise must determine the kind of sales and marketing activities that should be done for each customer group or segment, the budget for each customer in the segment, and the kind of discounts and benefits to be offered to each customer from the segment (Homburg, Schäfer, & Schneider, 2012). According to the consulting firm Bain & Company (2017) customer segmentation is the subdivision of a market into discrete customer groups that share similar characteristics.

Tynan and Drayton (1987) highlighted seven different non-monetary areas as bases for market segmentation

1. Geographic bases, in which markets are divided into geographic units
2. Demographic bases, which include segmentation studies based on age, sex, socio-economic group, family size, life cycle, income, occupation, education, etc.
3. Psychological bases, in which personality factors, attitudes, risks, motivations, etc. are used to divide the market
4. Psychographic bases, which include lifestyle, activities, interests, opinions, needs, values, and preferences as market delineators
5. Behavioural bases, which consider brand loyalty, usage rate, benefits sought, and occasions of use
6. Industrial segmentation
7. Product segmentation

These seven non-monetary points are the bases of most segmentation groups in SMEs. However, the disadvantage of these bases is that the groups do not show a company the worth of a customer (Tynan & Drayton, 1987).

2.2.4   One-dimensional and multidimensional methods

The goal of any customer segmentation is to treat or serve customers according to their assigned segment and thus, to increase the efficiency of sales and marketing activities. This also involves separating economically valuable or cost-covering customers from non-valuable customers. In certain extreme cases, it may imply permanently severing business ties with unprofitable customers. But first, a company has to decide when a customer is uneconomical—and, how much a customer is worth at all.

This is because customer value can be determined by various calculations, the results of which then enable the segmentation of the customer. The value of the customer can also be expressed in monetary and non-monetary values. The monetary method assesses customers on quantitative values, such as monetary units like turnover in sales, contribution margin, etc. In the non-monetary method of calculating customer value, the assessment is based on factors such as a reference customer, an entering customer, and a customer with great strategic importance.

Another important point is whether the valuation methods are retrospective, i.e. based on data from the present and past, or whether they are based on data from prospective future forecasts based on existing information (Heinemann, 2008).

	Individual	Cumulated
One-dimensional	• Turnover analysis • Contribution margin analysis • Customer Lifetime Value	• ABC analysis
Multidimensional	• Scoring Methods • RFM Methods • Customer Portfolio analysis	• Scoring Methods • Customer Portfolio analysis

Table: 3 One-dimensional vs. multidimensional matrix (Kleinaltenkamp, Fließ, & Jacob, 1996)

Another approach to distinguish among customer valuation models is the comparison between one-dimensional and multidimensional models. The one-dimensional model considers a single important value on the basis of which the assessment is carried out. This value can be monetary or non-monetary. On the other hand, a multidimensional model allows for a more differentiated evaluation with different values. It can include both monetary and non-monetary measures. An example of one-dimensional method is the ABC analysis. An example of multidimensional method is the RFM analysis (Krafft & Albers, 2000; Freter, 2008).

	Retrospective	Prospective
Monetary	• Turnover analysis • Contribution margin analysis • RFM Methods	• Customer Lifetime Value • Contribution margin potential analysis
Non-Monetary	• Scoring Methods • Customer Portfolio analysis	• Scoring Methods • Customer Portfolio analysis

Table: 4 Monetary vs. non-monetary matrix (Kleinaltenkamp, Fließ, & Jacob, 1996)

It is highly recommended that the dissolution of all business relationships with a customer and prospective decisions on the methods for segmentation are first discussed with all internal stakeholders. It may make sense to shift a customer to a segment that has the lowest economic costs for the company. The client remains active but generates minimum costs. This also makes it possible to renew the customer relationship without the complexities of new customer re-preparation later on. Furthermore, the responsible sales manager should be consulted before a major decision is made (Krafft, 2007).

2.2.5 Monetary and non-monetary vs. quantitative and qualitative customer value

More often than not, customer value is interpreted as a benefit—in most cases, as the overall benefit for the company from the entire business relationship. Customer value does not stem only from the profit generated by the customer (Günter & Helm, 2003). Rather, this value is built in many different ways, making the customer useful or profitable. For example, if the customer is a reference customer, he/she is a strategic entry customer and a driver of innovation. It can be argued that each of the enumerated benefits could count in sales, but could also be counted for different customers (Homburg & Wieseke, 2011).

In this study, benefit could be understood as the total increase of value which came into being through an activity. In this case, it refers to the additional benefit resulting from the customer segmentation. In contrast to effort this is defined as the monetary value-based consumption of goods, services or manpower. In this study, it refers to the additional effort resulting from the customer segmentation.

Customer value can be measured in terms of quantitative and/or qualitative values (Cornelsen, 2000). The acquisition of values in monetary terms is a lower level of quantitative variation. Monetary sizes could include, for example, gross or net incomes, as well as customer-related net values such as cash flows or contribution margin (DB). The main difficulty in gathering quantitative and monetary customer value lies in the fact that the data is from the present or the past. Assessments and forecasts of the duration of a business relationship and the resulting revenue are used to calculate CLV based on customer behaviour and other environmental factors. These also include operational and strategic decisions of the company (Reinartz & Kumar, 2000).

Quantitative and non-monetary customer value can be gathered in one, two, or three dimensions in the customer value cube. Monetary dimensional methods often rely on key performance indicators (KPIs) such as sales revenue or contribution margin. Non-monetary methods rely on variables like sales volume, required hours for customer service, or similar data. Apart from KPIs relating to the customers, the quantitative method to determine customer value also needs indicators that affect the company. This is especially true for the quantitative mapping of resources that must bring the company into the business relationship. After the acquisition of new customers, a complex process of integration occurs in the business processes (Kleinaltenkamp, Fließ, & Jacob, 1996). This process results in trade-offs between each customer and the company value, and a part of the customer value and resource consumption of the company are subtracted from each other. The cost of collecting these numbers makes it difficult to determine the quantitative customer value and does not justify economic usefulness.

Qualitative variables can be included in customer value calculation in different ways. The simplest way is to make a checklist of qualitative factors. It is easy and quick to compare different customers through such checklists.

Two-dimensional methods based on scoring models should be used to link the quantitative and qualitative data. With this kind of models, qualitative values are converted into

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quantitative values. Another method is to use quantitative corrections on the qualitative data. This can be done, for example, by using risk premiums or discounts.

A basic problem with the inclusion of qualitative data is that it relates to the characteristics and behaviour of customers. It is also influenced by the customer's environment and the conditions of the company. Another point is the greater diversity of factors, making them difficult to categorize. In addition, these factors are often subject to personal assessments. However, there is no reason to exclude qualitative data from customer value analysis (Freter, 2008).

2.3 Customer Relationship Management

Customer Relationship Management (CRM) describes the careful handling of detailed information on individual customers and all customer touch-points, including customer segmentation (Kotler, Keller, & Opresnik, 2015). The goal of CRM is to increase profitability and customer loyalty (Reinartz, Krafft, & Hoyer, 2004). Bruhn (2013) says that the goal is to control long-term customer relationships, which means that the pure product-orientation and the focus on acquiring new customers are replaced by a holistic approach (Bruhn, 2013). In addition to these, CRM has the following other goals according to Weis (2013):

- Maintaining customer relationships
- Increasing the purchase volume and share of wallet among individual customers
- Optimization of customer relationships
- Increase in contribution margin
- Acquiring interesting new customers
- Optimizing cross-selling (Weis, 2013)

In addition to these goals, Riggert (2006) also considers the segmentation of target groups as one goal of CRM. That customer segmentation is a mandatory part of CRM is shown by Mack, Mayo & Khare (2005) in their CRM Diamond. A role of this segmentation in CRM is also to identify the customers who are the most profitable for the company in the long term (Wollenweber, 2012). As this doctoral thesis deals with the segmentation of customers in SMEs, the topic of CRM is dealt with more closely.
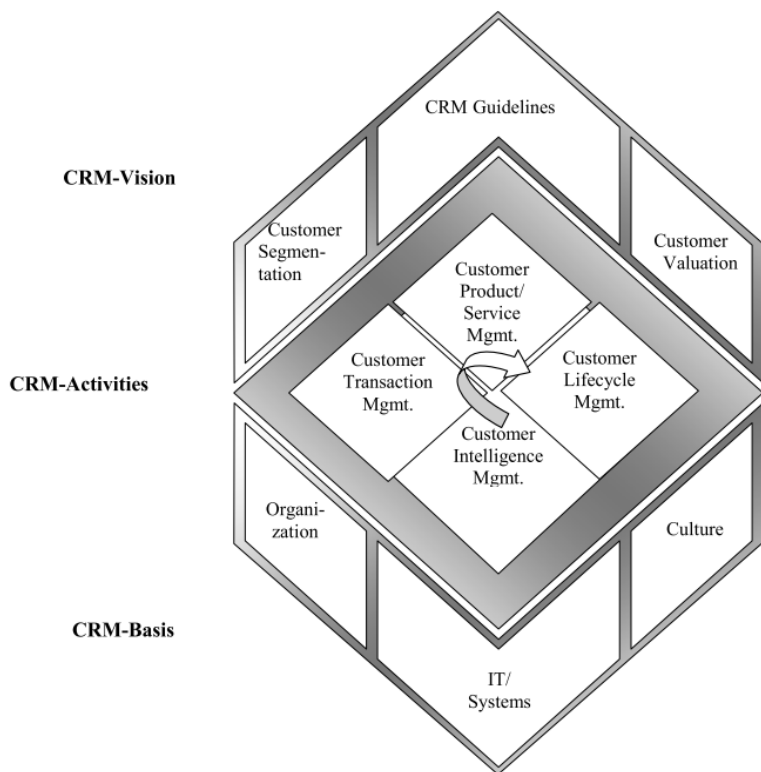
Figure: 4 CRM Customer diamond (Mack, Mayo, & Khare, 2005)

It is crucial for every company to attract customers, strengthen their loyalty, and recapture lost, attractive customers (Matzler, Stahl, & Hinterhuber, 2009). Strengthening customer loyalty is essential for companies in light of the general trend of decreasing customer loyalty (Kreutzer, 2013). In general, CRM can be seen as a tool for increasing loyalty and profitability. The use of information and communication technologies is the most powerful lever to increase profitability in sales. The focus here is on the mentioned CRM systems, which handle the analysis and tracking of existing customer contacts. With these systems, it is possible to carry out sales analyses, order probabilities, and success measurements of customers (Lippold, 2016).

Furthermore, CRM allows companies to offer customers very good services by effectively using the existing individual information effectively. Based on this existing information, customers can receive optimal services (Kotler, Keller, & Opresnik, 2015). Another reason CRM is particularly important is that the aggregate value of the customer base is an important driving force for the profitability of a company (Lanning, 1998). It can therefore be said that sustainable and strong working customer relationship management are essential for companies.

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2.3.1 Definitions of CRM

The concept of CRM—developed in the 1990s—which comes from the term Computer Aided Selling Systems (CAS), is becoming increasingly important (Hofbauer & Hellwig, 2012; Scharf, Schubert, & Hehn, 2015). Factors responsible for the introduction of CRM systems are the high competitive pressure for companies with partly global competition, the often-saturated markets in industrialized countries, ever shorter product lifecycles, and technological upheavals. Added to this is the great degree of transparency in services and conditions provided by the Internet (Wollenweber, 2012).

For B2C markets, further complexity is added by increasingly heterogeneous customer groups and hybrid buyers with high demands and low loyalty. This increases the management expenses and reduces margins. This aspect, however, is not further elucidated since this work focuses on the B2B area.

As mentioned above CRM is a concept that is rapidly becoming increasingly important and necessary in the area of customer-oriented focus on customer profits and customer loyalty marketing (Weis, 2013). CRM is to be understood as a strategic approach used for the complete planning, control, and execution of all interactive processes with the customers. CRM encompasses the entire enterprise and the entire customer lifecycle and includes database marketing and the corresponding CRM software as a control instrument (Holland, 2017). For Winkelmann (2013), CRM means short and concise 'integrated customer management' (Winkelmann, 2013). Wessling (2001) also focuses on the customer, but his definition includes the stakeholders as well: 'CRM is the active establishment and maintenance of long-term profitable customer relationships through interaction with the customer. The interaction is achieved through the use of suitable technologies, value-enhancing business processes for all stakeholders and satisfied customers' (Wessling, 2001, p. 4).

According to Matzler, Stahl, and Hinterhuber (2009), CRM is a holistic approach to the strategic orientation of a company to its customers. This concept focuses on customer-orientation. By focusing on profitable customer relationships, the company's success can also be increased. This focus can also be referred to as segmentation in this context. Engelbrecht, Hippner, and Wilde (2013) define CRM as a customer-oriented corporate strategy that—with the help of modern information and communication technologies—tries to build and

consolidate profitable customer relationships through holistic and individual marketing, sales, and service concepts over the long term (Englbrecht, Hippner, & Wilde, 2013). As can be seen from similar but different definitions, a uniform scientific definition has not yet been applied. The understanding of CRM ranges—in the field of science and especially in the field of operational practice—includes the designation of an IT system, the limitation of a sales function, and a comprehensive approach of the company management (Bruhn, 2013). In principle, however, CRM is a holistic approach. It encompasses all measures that a company takes with its employees in order to communicate with customers, satisfy them, and bind them to the company. Above all, it is about collecting, managing, and finally utilizing customer information. These data describe the customer through customer communication, acquisition, customer care and support marketing, sales, and customer service (Leußer, Hippner, & Wilde, 2011).

2.3.2 Structure of CRM Systems

The starting point of CRM is the strategic planning process, including the steps of objective setting, analysis, planning, and controlling. This represents the interface between company management and the marketing and sales function. It is up to the CRM in a strict sense to implement the strategic requirements through the operational processes. The analysis process provides the informational basis for the strategic level and operative CRM (Leußer, Hippner, & Wilde, 2011). CRM systems have many functions with different application fields, but all CRM systems focus on four main objectives:

1. Improved customer data analysis
2. Business process optimization in customer management
3. Creation of innovative services for the customer
4. Campaign management and support for new marketing and sales instruments (Helmke, Uebel, & Dangelmaier, 2008)

The various functionalities of CRM systems can be divided into the three components—collaborative, operational, and analytical CRM.

Collaborative CRM

Collaborative CRM includes the management of all communication channels between customers and companies (telephone, internet, email, direct mailing, etc.). The various communication channels are used in a synchronized, controlled, and targeted manner to enable bidirectional communication between customers and companies. This approach is also referred to as multichannel management (Grabner-Kräuter & Schwarz-Musch, 2009).

Operational CRM

The goal of the operational level of CRM is to set up customer contacts, gain valuable customer information, and maintain them. The analysis and preparation of the data, however, take place in the analytical phase of CRM. In this way, the gap between the communicative and analytical parts of CRM is closed.

Analytical CRM

Analytical CRM includes components for the collection, integration, and subsequent preparation of customer data, as well as the customer analysis. The goal of analytical CRM is the control and continuous optimization of operational CRM processes through the closed-loop approach, which is achieved by the provision of relevant knowledge.

The components of analytical CRM are the data warehouse and analysis tools such as online analytical processing (OLAP) and data mining, each with different tasks in the context of knowledge generation and decision support for customer-oriented processes (Hippner & Wilde, 2001).

2.3.3 CRM Trends

Apart from these three constant components, according to a study conducted by the Institut der deutschen Wirtschaft (2013), other trends in CRM can be identified. These will further influence the implementation and use of CRM systems:

- Mobile CRM-Solutions
- Integrated CRM solutions as a feature of existing Enterprise Resource Planning (ERP) systems
- Standalone CRM solutions
- Open-source CRM solutions

- Cloud CRM solutions (Institut der deutschen Wirtschft, 2013)

In addition, the area of business intelligence is also mentioned, but this is in many CRM systems only an added function (Riedel & Wiesner, 2014).

2.3.4 Implementation of CRM systems

According to Hippner and Wilde (2011), in order to successfully implement CRM, a company has to define its strategy, its processes, and its information systems in terms of customer relationships (Hippner & Wilde, 2001). All three areas are important for successful implementation. First, a strategic CRM concept has to be developed, which describes 'what with which customer, by which measures over what period should be reached' (Merzenich, 2005, p. 23).

In order to successfully implement a CRM system, it is also particularly important to overcome the fears and resistances of employees against the new CRM concept. This problem can be reduced by using a solution or software that is already familiar to the employee (Homburg, Schäfer, & Schneider, 2012).

In this context, the implementation of a CRM system should be seen as a project, and the project team should include employees from all departments, who can also deal with CRM later on.

Since the introduction of a CRM system has project characteristics and is a one-time, time-limited effort with a complexity that goes far beyond the day-to-day business, it often overstocks the resources of the SME. The smaller a SME—i.e. the smaller the management, sales, and administration departments, the more likely it is that the time opportunities are just as missing as the required CRM and project management know-how. However, this is only one reason that SMEs are afraid to introduce CRM systems (Wollenweber, 2012; Winkelmann, 2013; Busch, 2017). As a result, the SME should use external consulting services to implement complex CRM systems. The problem is, however, that family businesses and SMEs do not trust external consultants and large software vendors. The most common prejudice is that they are too large or too expensive and offer or sell only standardized services (Trauthig, 2010; Gloger, Rohrbeck, & Selbach, 2012).

The implementation of a CRM system in a company is therefore like any restructuring and related costs. The costs can vary greatly—even with the use of the same software—since it is

still necessary to clarify which processes are to be depicted, which IT infrastructure exists, and whether a connection to an existing IT system is possible for the company control ERP system. According to Wollenwebber (2012), the cost distribution for CRM systems is as follows:

- 30% purchase of software licenses—in the case of Internet-based solutions, no purchase costs other than rental fee
- 30% hardware
- 10% system implementation
- 15% training
- 5% maintenance and data maintenance
- 10% consulting

However, these values are only indicative, as they differ from company to company. In addition to the introduction, set-up, and change management costs, the possible increase in administrative efforts must be considered. SMEs in particular must be extremely careful to ensure that the degree of detail and complexity of the CRM is justified by its use. It remains to be noted that a successful implementation requires a balanced approach between technology, processes, and people (Finnegan & Currie, 2010; Vasiliu, 2012). According to Fisher (2001), 'the people side of CRM is probably the most important part' (Fisher, 2001, p. 12).

2.3.5 CRM in SMEs

CRM systems are common in large companies nowadays, but not yet in SMEs (Loh, Koo, Ho, & Idrus, 2011). This work is especially concerned with SMEs, due to which the CRM area in SMEs is examined more closely by several studies, to answer the question of Loh et al. (2011). Just because CRM systems have become very popular does not mean that the implementation is always successful—this would be illusory (Vasiliu, 2012). In the past, a number of researchers have investigated the perceived failure in implementing and using CRM systems (Peppers, Rogers, & Dorf, 1999; Giga, 2001; Patton S. , 2001; Kim, Lee, & Pan, 2002; McCalla, Ezingeard, & Money, 2003; Bull, 2003; Mack, Mayo, & Khare, 2005; Finnegan & Currie, 2010; Giannakouris & Smihily, 2013).

Customer proximity and service are regarded as one of the outstanding success factors of SMEs. For this purpose, large companies primarily use IT-supported customer information systems as the basis for their respective customer management.

Many SMEs try to implement CRM-Systems but immediate benefits and improvements in business performance have not been forthcoming (Love, Edwards, Standing, & Irani, 2009). But even if the implementation of these CRM systems in SMEs has not yet taken place in a comprehensive manner, and often the success does not occur extensively, SMEs should also deal with this topic compellingly.

Many SMEs are aware that their customer acquisition, sales organization, and customer management processes are no longer up-to-date and have not kept up with company growth. A weakness typical to SMEs is that although the benefits of systematic, IT-based customer relationship management are obvious, small businesses in particular neglect the opportunities offered by the introduction of CRM systems (Brendel, 2003; Wollenweber, 2012).

While nearly 60% of large enterprises in the EU used CRM systems in 2007, only 20% of SMEs used CRM. According to a Eurostat study, these values have only marginally changed until 2015.
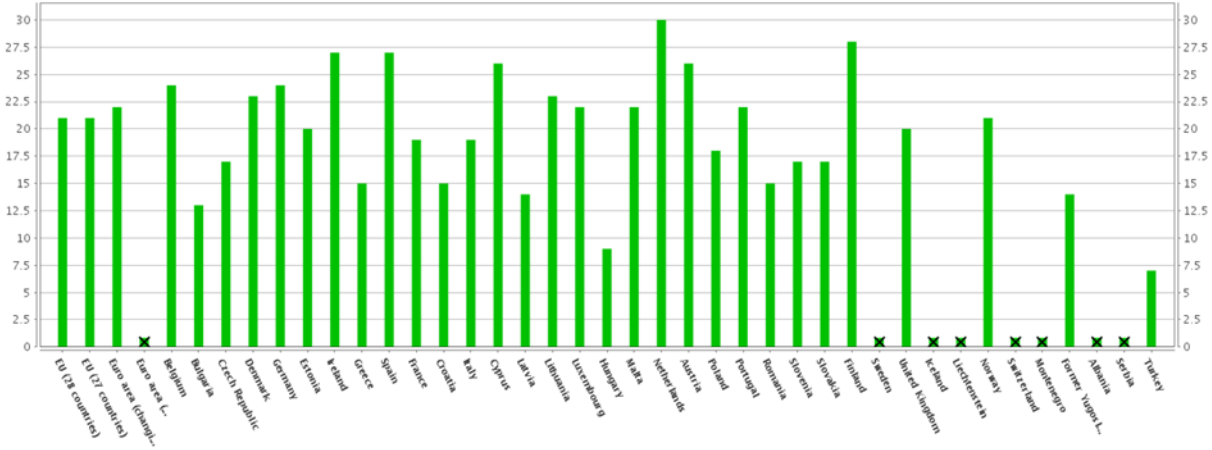
Figure: 5 Average CRM use per country (Eurostat, 2016)

A study commissioned by the German Federal Ministry of Economics and Technology and carried out by Duscha (2007) differs from the results of the Eurostat study (Duscha, 2007). This study shows that about 50% of the 232 surveyed SMEs use a CRM system. With regard to CRM used in a company, however, it is necessary to distinguish between operational and analytical CRM; the values differ, as evidenced by a Eurostat study by Giannakouris & Smihily (2013).
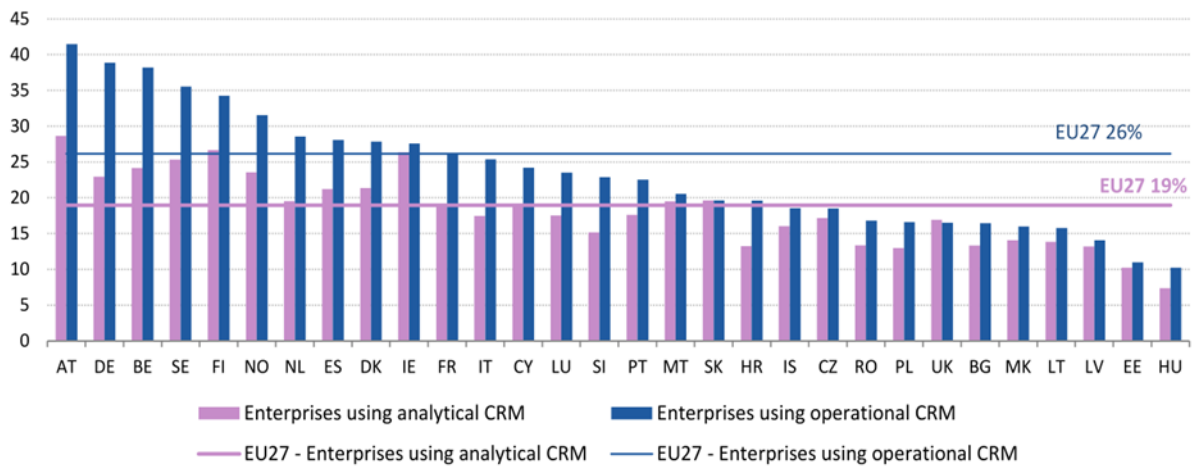
Figure: 6 Average use of analytical and operational CRM per country (Eurostat, 2016)

If only such a small percentage of SMEs use CRM systems, the question of utility and practicality arises for SMEs. For large companies, the benefits of CRM are largely undisputed and have been sufficiently investigated. However, this is not the case for SMEs, although many branches of industry are direct suppliers to large companies and thus have a close involvement through their supply chain and quality management (Wollenweber, 2012). The question is— why do SMEs not use CRM systems consistently, although the systems are often presented by providers as economically meaningful and promising in the form of powerful but also costly software packages (Kosch, Zakhariya, & Breitner, 2013)?

This question is also a focus of two studies from the Institut der deutschen Wirtschaft and the business consultancy Capgemini.

Duscha (2007) show the reasons why CRM is not implemented in SMEs.
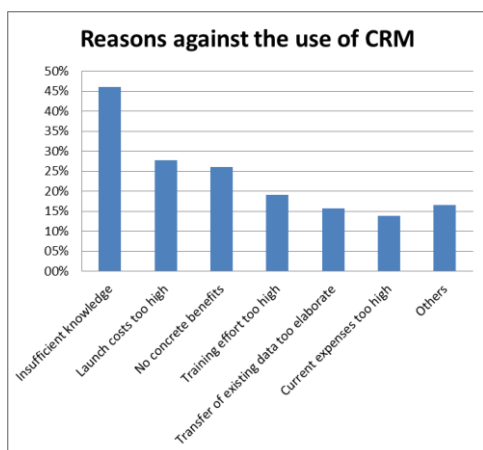
Figure: 7 Reasons against the use of CRM (Duscha, 2007)

Additionally, the importance of the organization, the integration of all company functions, and the motivation of the affected employee to make the CRM successful are considered. Sales

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employees in particular must be convinced of the benefits to the company and to themselves. It is also often a problem for sales staff to make their accumulated knowledge available to all employees via a CRM system. Furthermore, CRM introductions often fail due to lack of acceptance and as a result of poor data management in the sales department (Institut der deutschen Wirtschft, 2013).

For sales employees who do not consider the CRM application to be advantageous, the data entry only means an additional effort, which is kept as low as possible in the case of a lack of acceptance.

The resistance by SMEs towards the introduction of CRM is often based on the argument that much of the information to be collected and processed was already present in the company previously. In addition, the sales team obviously understood the business well so far, otherwise the company would never have been able to compete (Capgemini, 2008). This can be countered by the fact that knowledge about the customers and the processes are indeed available without CRM, but only implicitly—in the minds of the experienced employees, especially in the sales and service department. But it requires the involvement and acceptance of the entire organization (Wollenweber, 2012). Another reason that up to 50% of CRM implementations fail is that, since the goals are not defined exactly before the implementation, customer requirements are not taken into account and there is no organizational or staff training (Duscha, 2007).

The study by the German Federal Ministry of Economics and Technology shows that companies are using the CRM to generate 70% of the most positive experiences and to achieve most of the CRM-related objectives. It is also the case that many SMEs do not consider CRM itself as a holistic customer relationship management but rather as a rudimentary system for customer acquisition, with which only individual marketing measures are carried out without customer-specific coordination (Duscha, 2007). In the Deutsche Bank study on e-commerce in the EU, Stobbe (2009) criticizes the fact that Western European companies do not make sufficient use of e-business applications. The results show that most use only simple applications that do not require adaptation of business processes (Stobbe, 2009). Due to the low use of CRM systems, an overwhelming number of European companies will not be able to exploit sales opportunities; this can result in networked applications in conjunction with organizational adjustments.

The Deutsche Bank study also shows that more complex internal information and communication technology-based processes are only used by 20–25% of all companies. Even interconnectedness with external partners (customers and suppliers) is currently not planned by most companies. The backlog of SMEs is particularly pronounced—this is not only true for CRM. As a EUROSTAT study shows, only 21% of SMEs in Europe use CRM systems. In Germany, the ratio has even declined from 2007 (30%) to 2015 (24%). In the United Kingdom, the figures are even lower—in 2007 it was 13% and in 2015 it went up to just 20% (Eurostat, 2016). The data of the study are included in the appendix.

According to Vasiliu (2012), one certain reason for this low rate is that there is no model or guidance to support the companies in the implementation (Vasiliu, 2012). This deficit has already been recognized in 2011 by the German Federal Ministry of Economics and Technology respectively Energy. In 2011 and 2014, guidelines for implementation and use of CRM systems in SMEs were published in cooperation with various institutional guidelines for the selection. With regard to the obstacles of implementation in SMEs, according to Stobbe (2009), nearly 60% of the enterprises state that they are too small to need a meaningful IT application, while 54% of small businesses and 75% of micro companies gave the same answer. Approximately 30% considered the technology to be too complicated and too expensive, more than 20% had security concerns or could not find a suitable service provider, and almost 20% considered the IT systems to be incompatible (Stobbe, 2009).

This opinion was also represented by Winkelmann (2008) in an article in the Handelsblatt, where he said that SMEs have a hard time with the implementation of CRM systems due to escalating project duration, lack of knowledge and acceptance of employees, high costs, and lack of apparent benefits. According to his information, the costs for SMEs amount to about EUR 200,000, not including the monthly follow-up costs (Busch, 2017). According to Mitchell (2000), the costs can also be up to EUR 430,311, plus the follow-up costs (Mitchell, 2000). Ramaseshan and Kiat (2008) also state the high cost of hardware and software as a reason for deciding against a CRM system in SMEs (Ramaseshan & Kiat, 2008). This is another reason CRM projects fail in SMEs (Kosch, Zakhariya, & Breitner, 2013) when these costs are not met by the CRM system. For smaller companies, therefore, the question arises not only of the fundamental benefits of customer relationship management and the use of CRM software but also of whether the CRM system is too complex or at all adaptable with reasonable effort and

cost. For SMEs, it is essential to be able to attain the maximum achievable success with small, precise means.

According to a study by the Gartner Group and AMR Research, approximately 60% of the CRM implementations does not achieve the return on investment (Love, Edwards, Standing, & Irani, 2009). However, the opinions of the researchers also differ—according to Basu (2001), the implemented CRM systems often achieve the return on investment (Basu, 2001).

That the willingness to invest in CRM systems in SMEs is high, this shows the IKT study of 2013. This investment demonstrates the necessity of the study by the Institut der deutschen Wirtschaft in terms of customer-specific data. Although only two percent of the companies surveyed say that they do not store customer-specific data, only a quarter of the surveyed small and medium-sized enterprises (27%) use a CRM solution for data storage and processing. More often, however, SMEs store their customer-specific data on different media, such as address databases or Excel tables (65%), and 6% store the customer data on local or private hard disk drives (Institut der deutschen Wirtschft, 2013). In terms of the importance of IT applications, CRM ranks third among the issues of investment readiness as well as importance. According to the study, little knowledge about CRM in SMEs is one reason for the low use of CRM systems. Also, Loh et al. (2011) stated as the reason the lack of knowledge about CRM or lack of resources or expertise to implement CRM.
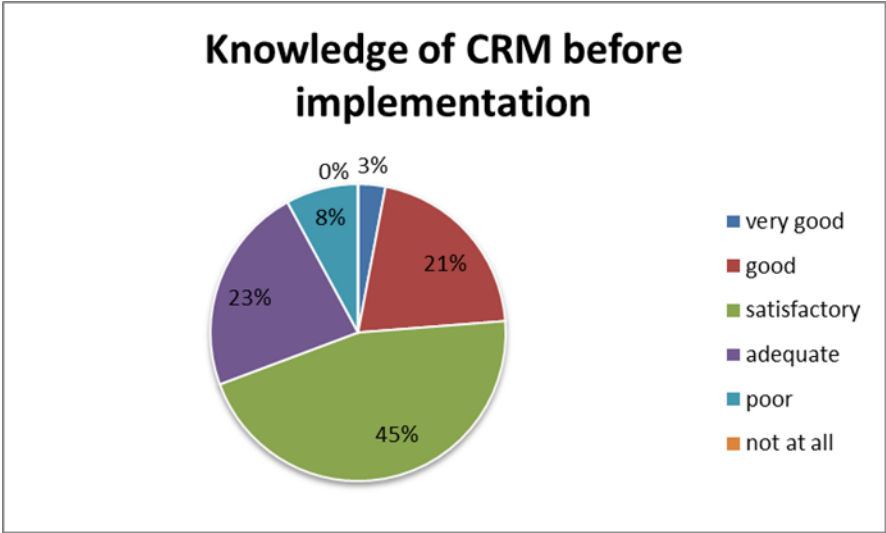
Figure: 8 Knowledge of CRM before implementation (Loh, Koo, Ho, & Idrus, 2011)

An obvious reason for the lack of competence is that only 15% of the SMEs employ IT specialists. In most cases, management takes over the task of implementation. But efficient selection and implementation of CRM systems are crucial because 50–75% of all CRM projects

fail in this area (Stokburger & Pufahl, 2002). The main reason is insufficient strategic planning and goal setting. Added to this is the fact that individual departments—not least the IT department—attempt the implementation without relying on the knowledge and experience of other departments. Another reason approximately 80% of the CRM projects fail after their implementation or are not accepted and used by employees is that they do not meet the requirements of the salesperson or of the company as a whole. This can be prevented at the beginning of the project by means of a detailed target analysis involving all relevant departments (Stokburger & Pufahl, 2002; Duscha, 2007; Riedel & Wiesner, 2014) assumes that the half of the CRM projects must be classified as failure because of the lack of goal setting, customer orientation, and organizational implementation (Duscha, 2007). According to the study conducted by the Institut der deutschen Wirtschaft (2013), the most common problems in the introduction of CRM systems are:

- Unclear targets for the launch—81.6%

- Lack of acceptance of CRM systems by employees—78.9%

- Unclear data structure before the introduction—83.8%

- Problems with integration into existing systems—62.2%

Love, Edwards, Standing, & Irani (2009) and Kale (2004) confirm these results; while parts of these results are a confirmation of the study by Duscha (2007). Here, it is shown in 60% of the cases it comes due to limited perception to the software and information technology to a critical evaluation of the CRM system. As a further problem, it is often mentioned that the CRM system demands a change and a willingness to learn, even from employees who do not cope with innovations and ambiguity. In particular, according to the studies, CRM projects also fail when inadequately supported by the top management (Duscha, 2007; Ramaseshan & Kiat, 2008; Loh, Koo, Ho, & Idrus, 2011). Also, Mack, Mayo & Khare (2005) identify the following three main reasons for the failure of CRM projects: 'no or only vague objective targets, too narrow or too technical project focus, and lack of implementation and missing commitment of top management' (Mack, Mayo, & Khare, 2005, p. 16).

The successful introduction of a CRM system in SMEs is therefore not just a question of software or technology. Although complex systems of software and technology are used for CRM, the decisive factor is—besides the costs—the human factor. According to Capgemini (2008) the main reasons for the lack of success are inadequate strategic goal, planning, and

preparation, lack of concretization, lack of linkage between the company levels, lack of support from the management team up to the executive board, insufficient communication between sales department and the IT team, and the lack of commitment and know-how of the company. Bull (2003) even goes so far as to say that the employees are afraid of the CRM system (Bull, 2003). However, it is clear that the introduction and use of CRM are much more than the installation of expensive software (Vasiliu, 2012). Duscha (2007) illustrates in a study the main aspects to implement CRM and who are the main user in SMEs.
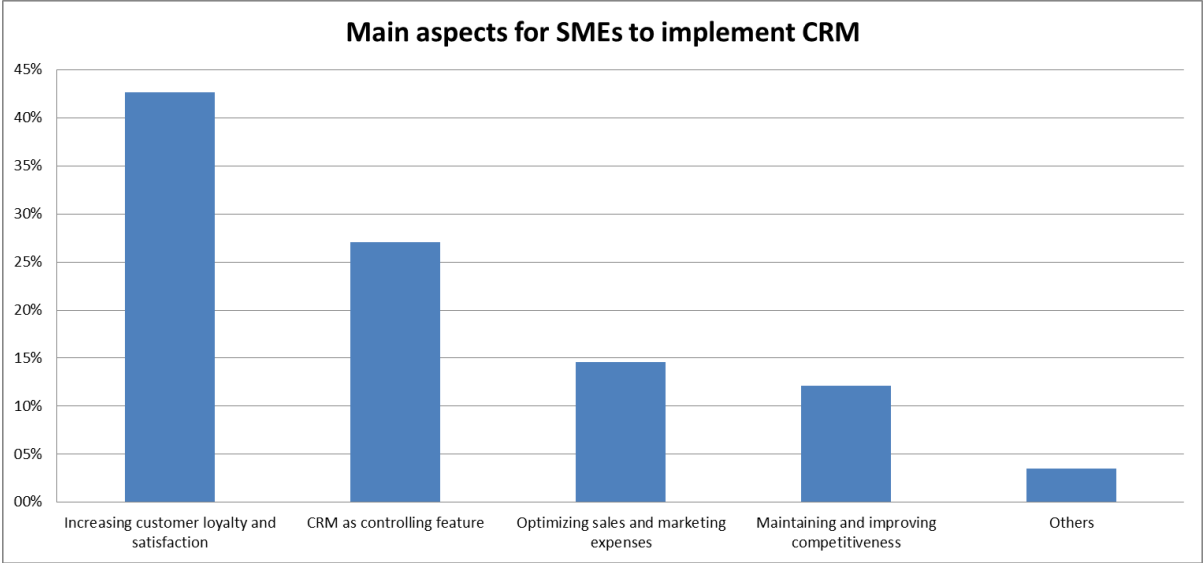
Figure: 9 Main aspects for SMEs to implement CRM (Duscha, 2007)
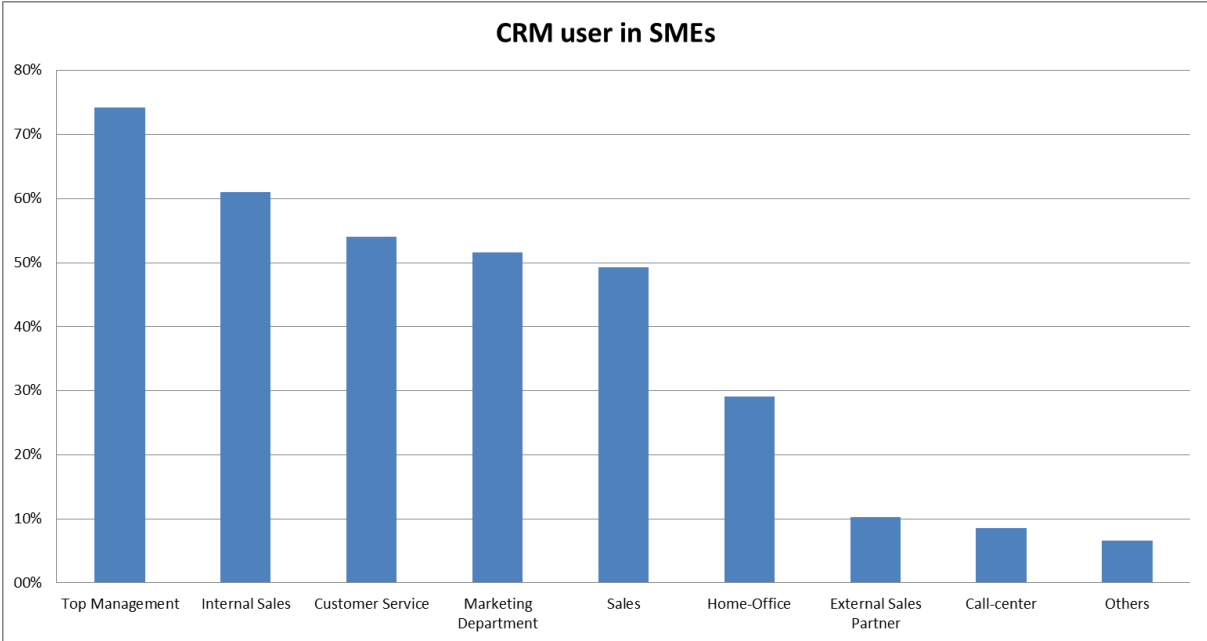
Figure: 10 CRM user in SMEs (Duscha, 2007)

Additionally various researchers (Basu, 2001; Chen & Popovich, 2003; Riggert, 2006; Borchert, 2006; Love, Edwards, Standing, & Irani, 2009; Jayashree, Shojaee, & Pahlavanzadeh, 2011; Loh, Koo, Ho, & Idrus, 2011; Vasiliu, 2012) have dealt with the advantages and disadvantages of implementing a CRM system.

Advantages of the implementation of CRM systems:

- Reduced advertising cost

- Better focus on customer needs

- Better effectiveness of campaigns

- Providing better service

- Focus on profitable customer

- Optimizing commercial channels

- Satisfying customer requirements

- Optimizing organization's profitability and revenue

- More systematic acquisition

- Giving personalized and customized service to specific groups

- Defining different customer groups

- Customer loyalty and profitability

- Keeping up with all the information about customers

- Increasing sales efficiency

- Knowledge about potential customers

- Creating value and profitability by managing the right customer

- Improved response time to customer requests

- Immediate access to order status

- Greater breadth of solutions options

- Meeting the needs of various customer segments

- Greater marketing productivity

- Greater willingness and ability among marketers to engage in long-term relationships with customers

Disadvantages of the implementation of CRM systems

- The classic 'Red Queen' syndrome

- Overload of unnecessary information

- Cannot succeed with only newly entered data

- Implementation of the project

- Could lead to inadequate internal activities

- Decreasing face-to-face communication

- Over-automation

- High introductory and consequential costs

- High time expenditure

- Often high system requirements (too high for SMEs)

After evaluating all the advantages and disadvantages, however, it must also be made clear that the implementation and the use of CRM systems alone will not result in a competitive advantage (Carr, 2003) and no new customer can be won in this way. Also, there is no evidence that CRM leads to improvements in stock returns or profitability (Love, Edwards, Standing, & Irani, 2009), despite the claims of other researchers. If, for any reason, an SME decides against the implementation of a CRM system or the implementation has already failed, this means that these errors must be avoided during the implementation of customer segmentation.

2.4   Key Account Management

Many different strategies and tools are available to the sales force in order for a company to be successful. One of these is Key Account Management (KAM). Companies like Xerox and IBM introduced the concept in the 1970s. It was then seen as a sales management method for large customers (Gosselin & Bauwen, 2006). In the last few decades, however, KAM has developed into one of the most important concepts in B2B marketing (Pardo, Henneberg, Mouzas, & Naude, 2006; Gounaris & Tzempelikos, 2012) and it is typically associated with B2B customers (Ojasalo, 2001).

Xerox and IBM coined the term 'key accounts' in sales, in which they named their most important customers. Initially, the key accounts were selected according to geographical spread, vertical segmentation, and sales data (Management Centre Europe, 2013). However, current findings say that this is no longer sufficient (Ketzler, 2007; Murzin & Reiser, 2014), since customers and markets have become more complex and fast-moving.

KAM is more detailed in this work because it is also a kind of customer segmentation. It treats the key accounts as a separate customer group. Since the company supplies quantitative data, a separate KAM team is employed for these customers.

KAM definitions

Within CRM, a long-term customer relationship is a major goal. The importance and achievement of this goal are especially important in the B2B sector (Hofmaier, 2008; Gounaris & Tzempelikos, 2013). Ojasalo (2001) stated that KAM is a marketing approach based on relationship management and represents an organizational method for an individual support to the key accounts (Buck, 1998) to achieve the goal of a long-term customer relationship.

KAM's has become so important today in marketing and sales, is because 'the world is changing at an increasingly rapid pace, and the interdependence between organizations and economies is growing and becoming increasingly strong. To maintain competitiveness in this environment, an organization needs to innovate, improve continuously, and manage the needs and expectations of its stakeholders', and respectively, the customer (Calvo-Mora, Navarro-García, Rey-Moreno, & Perianez-Cristobal, 2016). According to Murzin & Reiser (2014), another reason for this is the cross-industry megatrends of globalization, professionalization on the customer side, concentration processes, and increased customer expectations. Sieck (2016) described the changes in SMEs and the reasons for KAM.

- The number of decision-makers in companies is increasing. There is often a buying centre, and not only one decision-maker.
- The customers are international and the sales processes have become more complex.
- There are often purchasing alliances now and they bundle their purchasing power. As a supplier, a pure relationship management is no longer enough.
- Decisions are taken by the end customer, i.e., the customer's customer.
- Lead buyer concepts.
- One must be listed as a supplier to sell to the customer.

To meet these changes and challenges optimally, KAM is important, especially for SMEs (Sieck, 2016).

The Management Centre Europe in Brussels (2013) also mentions that the changes in the business world are the main reasons for the increased importance of KAM. The examples here are globalization, commoditization, sophistication, consolidation, and the increasing negotiating power of customers. According to Ahmmed and Noor (2014), an efficient KAM is crucial in today's business world. It is even more important if the customer is strategically

important for the company. They described KAM as 'a supplier-company-initiated approach, targeted at the most important customers to solve their complex requirements with special treatment that eventually ensures both parties' financial and nonfinancial objectives' (Ahmmed & Noor, 2014).

Winkelmann (2013, p. 40) defined KAM as follows: 'Strategically important key customers concentrated on highly qualified sales employees to get into the business with these key customers (...), to achieve the highest potential exploitation (...) and secure the business relationship in the long term.' According to Bruhn (2002, p. 34), KAM is '(...) the grouping of all activities relating to the customer relationship under a single responsibility' (Bruhn, 2002). And, according to Kühn and Siebert (2010, p. 3), KAM '(...) is a holistic, methodological approach in the field of strategic customer retention development' (Kühn & Siebert, 2010). McDonald et al. (1997, p. 737) defined KAM as 'an approach adopted by selling companies aimed at building a portfolio of loyal key accounts by offering them, on a continuing basis, a product/service package tailored to their individual needs'. KAM, however, means limiting the scarce company resources to the most important strategic customers. However, this also means that the other customers can be discriminated against or separated from one another (Sieck, 2016).

KAM objectives

Before a company thinks about the implementation of KAM, the goals and objective it would like to achieve should be clarified during the introduction.

According to Weis (2013), with KAM, manufacturers try to improve their position with respect to the major customers resp. buyers. This means better support for the customers who have a significant importance, strategically and economically, for the company (Weis, 2013). The task of the KAM is to provide better support to the major customers who play a significant role for the company. Besides the objectives set out in the definitions, KAM, according to Weis (2013), has the following objectives:

- Optimizing the relationship with the customer
- Improving the competitive position
- Improving customer orientation
- Securing and expanding sales and the contribution margin

- Improving information about the customer

But KAM is not only an organizational method for the individual support of key accounts. It also has the goal of creating, securing, and building long-term business relationships (Hofbauer & Hellwig, 2012), these goals are in line with CRM.

These objectives are an important aspect for determining whether the implementation was successful.

The reasons and objectives for a company to implement KAM should also be communicated openly in the company to make its importance clear at the outset.

KAM implementation

Several decisions have to be made before introducing KAM in an SME:

1. For which customers has the KAM been installed?
2. What will be done about the key accounts?
3. How systematic will the KAM be?
4. Who will be responsible for key accounts?
5. Which departments and persons will be involved in the KAM?

According to Ojasalo (2001), the first important step in the implementation of a successful KAM is careful selection of the key accounts. Intuition (gut feeling) is not a good guide here, though it often still dominates, especially in SMEs (Betz & Werner, 2013). That 'gut feeling' is not a good guide or self-evident. Nevertheless, many companies can answer the question why a key account is a key account is not plausible. They often refer to a purely sales-related ABC analysis (Kappler, 2007; Murzin & Reiser, 2014).

But KAM also includes the systematic search for the matching key accounts (Barrett, 1986). And the turnover-related ABC analysis is equivalent to short-term thinking.

Each company defines differently which customers it would count among the key accounts and which it would not. Campbell and Cunningham (1983) set the following criteria for the selection of key accounts:

- Sales volume
- Use of strategic resources
- Age of relationship
- Suppliers' share of the customers' purchases

- Profitability of the customer-supplier (Campbell & Cunningham, 1983)

Hofbauer and Helwig (2012), as well as Homburg, Schäfer, and Schneider (2012), gave some general criteria more than 20 years later. These must be divided into proactive and reactive criteria.

Proactive criteria

- Economic potential of the customer
- Economic importance of the customer
- Knowhow of the customer
- Image of the customer
- Growth and customer market potential
- National and international customer status

Reactive criteria

- Customers' request for key account status
- Internal problems in the processing of the customer

These criteria were based on Kappler (2007) and supplemented by Murzin & Reiser (2014):

- 'Important' customers
- Strategic customers
- Indispensable customers
- Own position with the customer compared with the competitors'
- Payment morale of the customer

KAM is, therefore, primarily concerned with business relationships with customers who are important to the company. According to Kappler (2007), KAM is about developing a systematic orientation towards key customers with the aim to building and maintaining long-term relationships with them. This does not mean, however, that it is a purely sales or marketing concept. It goes well beyond that (McDonald, Millman, & Rogers, 1997; Lockau, 2000; Peymani & Bijan, 2012; Management Centre Europe, 2013; Winkelmann, 2013; Belz, Müllner, & Zupancic, 2015).

Through KAM, a company changes from being an interchangeable supplier to a strategic partner. This selection is not done through price. The company develops and offers individual solutions tailored to the customer's needs.

This also means that KAM has an impact not only on sales and marketing but also on the organizational structures of the company and its employees (Gounaris & Tzempelikos, 2013; Marcos-Cuevas, Nätti, Palo, & Ryals, 2014; Wilson & Woodburn, 2014). The role of marketing and sales must be calibrated and redefined in this context. To do this, cross-functional key account teams from different departments are recommended (Backhaus & Voeth, 2011; Biesel, 2013; Management Centre Europe, 2013). KAM should not be seen as a competition between the various departments (Wong, Thoo, Muharam, & Sulaiman, 2016). This would reduce its effectiveness, and the customer would not be cared for as best as possible. Cheverton (2015) also pointed out that KAM is often implemented individually. Thus, it may differ among organizations in terms of their restructuring (Cheverton, 2015).

The section on CRM has described why the implementation of a new approach may fail. The implementation of KAM often fails due to the lack of communication in the company and employees' rejection of the new approach (Belz, Müllner, & Zupancic, 2015). In many cases, the implementation of KAM means the transfer of customer information personally collected over the years by employees. This is a major transition and challenge for the sales manager (Management Centre Europe, 2013). This also means that its introduction by decree from the top management is condemned to failure. However, the top management must support the implementation as best as possible (Wong, Thoo, Muharam, & Sulaiman, 2016).

In principle, the following points should be considered during implementation. There must be enough time for the introduction. Toscano (2012) called for a period of two years. This includes the recruitment, training, and education of employees in the KAM. To reduce the lead time, the tools and software to be used should be clearly defined, available, and known (Kappler, 2007). In principle, a KAM should only be implemented if the company also wishes to give special priorities and advantages to the key accounts compared with the normal customer (Murzin & Reiser, 2014). If this is not the case, the implementation is redundant. Ojasalo (2001) called for four basic elements for its successful implementation:

1. Identifying the key accounts
2. Analysing the key accounts
3. Selecting suitable strategies for the key accounts
4. Developing operational-level capabilities to build, grow, and maintain profitable and long-lasting relationships with them

The selection and analysis of the key accounts are in focus here as well. If customers are assigned to the KAM, but they do not enjoy priorities or advantages but only more attention, then the KAM is referred to as pseudo-KAM (Häberle, 2014; Rentsch, 2008; Winkelmann, 2013). Kappler (2007) pointed out the two basic forms of the KAM in the organization. One is the institutional form, in which the key accounts manager is exclusively concerned with the management of his key accounts. The other is the functional KAM, in which the key accounts manager takes on further activities within the company. According to Kappler (2007), this is common and useful for SMEs.

Also, the sequence of analysis, planning, implementation, and control must be observed in the implementation of the KAM (Kaiblinger, 2009).

Analyze
- Collection and preparation of customer-specific information
- Analysis of customer needs and strategies
- Analysis of improvement potential in the customer relationship

Planning
- Planning of long-term strategy for the development of the customer
- Planning of medium-term measures to increase customer loyalty
- Planning of measures to optimize the customer relationship

Implementation
- Implementation of the planned measures
- Dissemination of customer-specific information in the company
- Integration of other departments into the KAM
- Analyse problems and weaknesses and make adjustments

Monitoring
- Review of customer profitability
- Estimation of costs of the KAM
- Control of the effectiveness of the KAM
- Control of the quality of the business relationship with the customer

Figure: 11 CRM implementation process (Kaiblinger, 2009)

In addition, the Management Centre Europe (2013) named the imperatives for strategic key account management.

- Strategy
    - Derive the key account strategy from the company strategy
    - Create a growth strategy for the KAM
- Organization
    - Create cross-functional teams
    - Define a new role for sales and marketing
- Management
    - Demonstrate serious management involvement of senior managers
    - Understand and accept KAM as a sales strategy
- Measurement
    - Measure the progress and success of the KAM regularly
    - Define KPIs
    - Strive for a full costing measurement
- People
    - Provide understanding and trust of the new sales strategy
    - Define tasks and responsibilities
    - Offer training and education
- Processes and Tools
    - Create KAM structure plan
    - Create KAM reporting plan

Furthermore, in the implementation of KAM, the question that is of central importance is what should be done for the defined key accounts. This is important because the internal expenses and costs have to be planned. Internal activities can differ in terms of:

- Information-related activities:

    How big is the exchange of information with the customer?

- Logistic activities:

    Which processes should be optimized or adjusted for the customer?

- Price-related activities:

    How far should prices, condition systems or financing offerings be adapted to the customer?

- Service-related activities:

What are the additional services provided to the customer?

- Product-related activities:

    To what extent are the products adapted to customer requirements?

- Joint marketing activities with the customer:

    Are there any joint activities in this area?

- Internal measures:

    Do educational courses, seminars, training courses, etc. take place in cooperation with the customer?

The KAM excellence model of Sieck (2016) subdivided KAM into eight key areas, which should be considered during implementation.

Figure: 12 KAM excellence model (Sieck, 2016)

The Sieck (2016) KAM model and the implementation steps outlined above clearly demonstrate that the systematic introduction and implementation of KAM is a major challenge for SMEs. That is because a company has to consider a lot of things.

Wengler, Ehret, & Saab (2006) found that 80 per cent companies have not implemented a KAM. They deal with their important customers without changing the organizational form or sales activities. These cases represent hidden KAM (Wengler, Ehret, & Saab, 2006).

If a company decides to implement KAM, it needs a clear plan for strategy and implementation. Also, the whole organization should support the implementation (Marcos-Cuevas, Nätti, Palo, & Ryals, 2014).

KAM in SMEs

What has been the 'standard procedure' for large companies for long is increasingly becoming unavoidable for small and medium businesses. Especially for SMEs, KAM may provide the course for more sales and marketing productivity and efficiency (Kaiblinger, 2009).

Many SMEs look after their top customers intensively. But according to Wengler, Ehret, & Saab (2006), they usually do not do this in the form of an organizationally anchored KAM. They do it in a traditional way, through sales (Anderegg & Grob, 2012). However, if only the sales department takes care of the key accounts in SMEs, the other important things belonging to the KAM—for example, the analysis and selection of key customers, and the elaboration of concepts and measures for the processing of the key accounts—are neglected. Especially, the strategic selection of the key accounts is neglected in SMEs. They rather rely on the proven ABC analysis by turnover whereby the A customer is the key account (Kaiblinger, 2009). However, this one-dimensional analysis does not tell SMEs whether the current customers with the highest turnover will be the most attractive customers in the future. As mentioned above, the selection of the key accounts is complex but very important, especially for SMEs. Because of the complexity of the selection and implementation of KAM as a whole, this should be considered as a project (Toscano, 2012).

According to Anderegg & Grob (2012), the managing director, in cooperation with an assistant, takes care of five to 10 key accounts in SMEs. The sales management takes care of the support of the other key accounts. In larger SMEs, the regional sales managers also take over parts of this task. But if an SME is responsible for more than 10 key accounts, according to which this information has to be ascertained, the selection of the key accounts should be rechecked since they are probably too many.

No company can make it right for all customers, and certainly not for many key accounts with very different needs, which quickly overwhelm the organization of an SME. It is, therefore, all the more important to focus on strategic priorities and specific customer needs and try to develop unique features that differentiate one from the competition. With these concepts, SMEs can again withdraw from the competitor since these are often closer to the market and maintain a closer customer relationship (Kaiblinger, 2009).

Hence, some advantages and disadvantages may arise from the introduction of KAM. These have to be carefully considered when an organization decides whether to implement KAM.

Advantages

- Use of synergy effects and the combination of individual efforts into a comprehensive solution
- Coordination of internal sales activities
- Better impact on the customer
- Optimization of the relationships between manufacturers and users in all product segments
- Uniform and close appearance to the customer
- The immediate adaptation of new developments to the customer's needs
- Better identification of customer requirements
- Faster and more flexible response to customer support through systematic procedures (Hofbauer & Hellwig, 2012)
- Development not only of single-selling potential, but also of cross-, up-, and strategic selling potentials
- Use of knowhow transfer from the customer
- Use of opinion leaders and product development advantages
- Targeted establishment of a 'preferred supplier' position
- Better mutual understanding between the customer and supplier
- Improving customer loyalty and customer relationship
- Reduction of non-value-added activities (Hofbauer & Hellwig, 2012)

Risks and disadvantages

- Transfer of knowhow to the customer
- Dependency on key accounts (Comment: Was the dependency already given? It will be only organized by KAM!)
- Incorrect estimates due to incorrect analysis and evaluation of customers
- Too many customers: it is nothing special anymore
- Product-oriented products often have limited usability for other users

- High coordination effort

- High requirements for key account managers (Hofbauer & Hellwig, 2012)

- Increased bureaucracy

- Loss of flexibility (Vanharanta, Gilchrist, Pressey, & Lenney, 2014)

Conclusion

Key account management is a company-wide approach that involves not only the distribution and marketing of products but also an individual and intensive customer service (Gounaris & Tzempelikos, 2013). Characteristics of the KAM approach of Ojasalo (2001) have been shown in the table below.

	Emphasis	Equally emphasized	Emphasis	
Transactional marketing/ short-term approach			■	Relationship marketing/ long-term approach
Strategic		■		Operational
Theoretical/descriptive		■		Managerial/normative
B2C market			■	B2B market
Goods		■		Services
Goals: profitability and shareholder value	■			Goals: sales volume, market share, margin, etc.

Table: 5 Characteristics of the KAM approach (Ojasalo, 2001)

Many researchers share the opinion that a properly performed KAM increases the efficiency of the employees and increases the revenue per key account (Ahmmed & Noor, 2014; Gosselin & Bauwen, 2006; Pardo, Henneberg, Mouzas, & Naude, 2006; Wong, Thoo, Muharam, & Sulaiman, 2016; Yip, Montgomery, & Villalonga, 1998). However, Abratt and Kelly (2002) noted that not every KAM programme in each company is effective, nor is it always applied correctly (Abratt & Kelly, 2002). Betz and Werner (2013) confirmed that if this is the case, some customers may even be more unprofitable than the so-called B customers. In principle, however, it can be said that the success of KAM depends on customer satisfaction (Ahmmed & Noor, 2014).

Around 80 per cent of the enterprises studied by Wengler, Ehret, & Saab (2006) did not implement KAM.

In order to reduce this percentage and to ensure successful implementation, it should be done in as uncomplicated, employee-friendly, and customer-friendly a manner as possible. KAM's implementation in SMEs makes any sense only if this can be ensured.

2.5 Distinctions between CRM/KAM and customer segmentation

The terms CRM, KAM, and customer segmentation are often not clearly distinguished in SMEs, thus leading to ambiguities and misunderstandings among employees. In the following two sections, this research will try to identify a conceptual differentiation between CRM/KAM and customer segmentation.

2.5.1 Distinctions between CRM and customer segmentation

According to the Business Dictionary (2017), CRM is a 'management philosophy according to which a company's goals can be best achieved through identification and satisfaction of the customers' stated and unstated needs and wants' (Business Dictionary, 2017).

Kotler, Keller, and Opresnik (2015) describe CRM as the process of careful handling of detailed information on individual customers and all customer touch-points including customer segmentation, which they also described as touch-point. This is confirmed by Bruhn, Esch, and Langner (2016), they also designate customer segmentation as a customer touch-point (Bruhn, Esch, & Langner, 2016). But the goals of CRM, as indicated by Weis (2013), include acquiring interesting new customers and optimizing cross-selling (Weis, 2013) and they clearly show the differences between customer segmentation and CRM. Customer segmentation is only a part of CRM—this has been confirmed by Mack, Mayo, & Khare (2005) in their illustration of the CRM diamond.

Furthermore, CRM is to be understood as a strategic approach used for the complete planning, control, and execution of all interactive processes with customers (Holland, 2017). Engelbrecht, Hippner, and Wilde (2013) define CRM as a customer-oriented corporate strategy. Matzler, Stahl, and Hinterhuber confirm this by describing CRM as a holistic approach to the strategic orientation of a company to its customers.

Customer segmentation can be seen as a supporting tool, but not as a management philosophy or strategy.

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If one considers the three components of CRM—collaborative, operational, and analytical—it should become clear that these are very important in combination. But customer segmentation results only from analytical CRM. Because as mentioned in the CRM section collaborative CRM dealt with management of all communication channels and goal of the operational level of CRM is to set up customer contacts, gain valuable customer information, and maintain them.

The distinction is, therefore, very clear: CRM can be viewed as a holistic approach or even strategy, while customer segmentation is the result of analytical CRM and should be seen as a tool for better and more effective customer processing.

2.5.2 Distinctions between KAM and customer segmentation

Many different concepts are available to the sales force to make a company successful. One such concept is that of KAM. The Financial Times (2017) described KAM as a customer-oriented coordination unit within a company, in which marketing activities associated with very important customers are consolidated (Financial Times, 2017). According to Ojasalo (2001), it is a marketing approach based on relationship management and represents an organizational method. Customer segmentation is not a customer-oriented coordination unit, or marketing approach nor an organizational method. As already described, it is a tool for customer processing.

In many companies, however, key accounts are an independent customer segment with the most important customers because SMEs want to give these customers a special support. According to Winkelmann (2013), these customers should be rated in accordance with their strategic importance for the company and not just by the turnover and/or the contribution margin. According to Kühn and Siebert (2010), KAM is a holistic, methodological approach in the field of strategic customer retention development. Even if the goals of customer segmentation and KAM agree in many points, such as optimizing the relationship with the customer, the improvement of customer orientation and the sales and contribution margins, differences are clearly visible.

While the KAM approach concentrates on the most strategic customers and thereby can be treated as a separate customer segment, all customers are included in customer segmentation. Thus, in the normal case, several segments with different customer groups are formed instead of only one segment with key accounts. As described above, strategic key

customers can not be segmented solely with key figures such as turnover or contribution margin.

The implementation of the KAM approach is more complex than the implementation of customer segmentation. This can be attributed to the fact that KAM is a company-wide approach that not only includes the distribution and marketing of products, but also provides individual and intensive customer services (Gounaris & Tzempelikos, 2012).

2.6 Concepts of market and customer segmentation

2.6.1 Market segmentation process

'A market segment comprises a group of customers who share a similar set of needs and wants...' (Kotler, Keller, Brady, Goodman, & Hansen, 2009, p. 334). Freter (2008) suggested that market segmentation should be divided into three basic types. In the first type, a heterogeneous market is divided into homogeneous sub-markets by using specific criteria. The second type puts marketing activities in the foreground. The market is divided into homogeneous sub-markets in terms of the company's marketing activities. The third one combines the two previous types. This includes the allocation of a market for the product in different market segments. These segments are selectively processed with various marketing concepts.

The market basically comprises four layers of different sizes:

a) Market capacity

The first and biggest layer is market capacity. It measures the number of consumers and their average consumption and frequency of use, without considering their buying power. Hence, it is a purely theoretical value and seldom gives a view of the real market opportunities of a product. That is because, in this definition, a consumer never buys the same product again. Market capacity, however, is necessary to calculate other KPIs (Beyer, 2013). Market capacity includes the second layer—market potential.

b) Market potential

Market potential is the sum of the actual potential demand for a product or service in a market. It indicates the number of items of a particular product that can be sold in a defined market or the turnover that can be achieved with the product in this market. This assumes that all buyers equipped with the necessary purchasing power would buy the product, and

consequently identifies the optimal form of marketing (Schneider & Hennig, 2008). The market potential leads to the market volume for a particular product or service.

c) Market volume

Market volume is defined as the total of the actual demand for products and services, i.e. the quantities sold by all providers (own company and competitors) in a defined market during a given period (Jolibert, Mühlbacher, Flores, & Dubois, 2012). A company's market share of the entire market volume based on sales is the sales turnover.

d) Sales turnover

Sales turnover is the sales volume of a company for a given product during a given period.
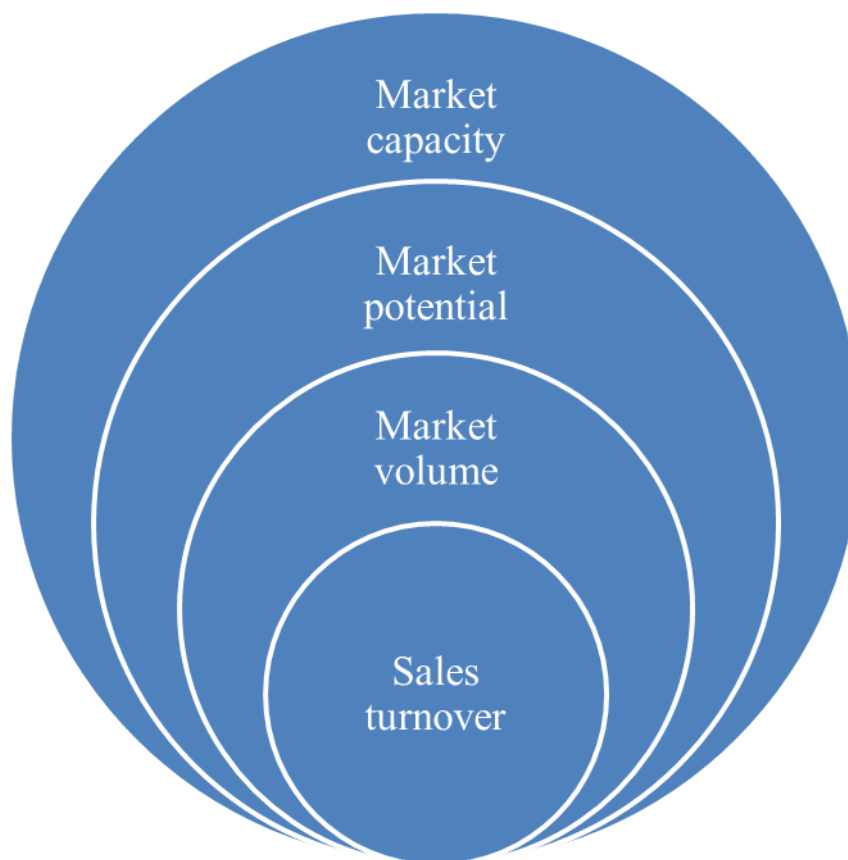
Figure: 13 Market layers (Beyer, 2013)

2.6.2 Customer segmentation process

In both the economic and the academic worlds, there are different processes for customer segmentation. According to Hlavacek and Reddy (1986), segmentation is a three-step process. The first step is segment identification, which involves defining the different segments according to what is important for the customer and for the company. The second step is segment qualification. It concerns the extent to which the emerging customer groups can be

operationalized (Dibb & Simkin, 2010). The last phase is segment attractiveness, which fits in with the targeting decisions about resource allocation and segment priorities (Hlavacek & Reddy, 1986; Tonks, 2009).

Cuadros and Dominguez (2014) focused on the process in the CLV approach. This process has seven different phases:

1. Customer specification: defining the scope
2. Sales identification and payments done by customer: calculating financial information of the customer
3. Representative cost identification in customer relationship: identifying direct and indirect costs
4. Calculation of CLV
5. Calculation of Customer Earned Value

$$\text{Customer earned value} = \frac{\text{gross sales-arrear}}{\text{time of analysis}}$$

6. Calculation of customer purchase rotation: number of customer transactions in a defined period (a customer with high rotation is seen as a valuable customer)
7. Designing of self-organisation map (Cuadros & Dominguez, 2014)

Other researchers, such as Mühlbacher (2013), Günter and Helm (2003), and Winkelmann (2013), refer to the fact that customer segmentation includes all (potential) customers who have been identified in market segmentation. They form a homogeneous group of customers who are treated according to their needs and customer value. The objective is to treat customers sustainably for the company's profit, for example, by reducing scattering losses and expenses in marketing, sales, or service, or by depending on the customer segment and initiating specific problem-solving strategies and customer loyalty programmes (Kleinaltenkamp, Fließ, & Jacob, 1996).

Homburg and Wieseke (2011) asserted that segment definitions have to include two main details—the criterion on which a customer is assigned to a particular segment must be clear, and the strategies and measures by which the customer is to be addressed and treated efficiently must be deductible. Customers can be segmented according to several dimensions (for example, customer value, socio-demographics, psychographics, geographies, etc.). To limit these different dimensions, it makes sense to commit to two fundamental criteria. Did the company do the segmentation according to the buying behaviour of the customer or in

terms of the attractiveness of the customer for the company (customer value)? There is no right or wrong solution for segmentation. It depends, for example, on whether the company is operating in the business-to-consumer (B2C) or B2B environment.

```
                        ┌──────────────────────────┐
                        │   Segmentation criteria   │
                        └──────────────────────────┘
          ┌───────────────────────┐      ┌───────────────────────────────────┐
          │    Buying Behaviour    │      │   Customer value for the company   │
          └───────────────────────┘      └───────────────────────────────────┘
              ┌───────────────────┐            ┌───────────────────┐
              │     Geographic     │            │      Turnover      │
              └───────────────────┘            └───────────────────┘
              ┌───────────────────┐            ┌───────────────────┐
              │ Behaviour orientated │          │ Contribution margin │
              └───────────────────┘            └───────────────────┘
              ┌───────────────────┐            ┌───────────────────┐
              │   Psychographics   │            │      Loyality      │
              └───────────────────┘            └───────────────────┘
              ┌───────────────────┐            ┌───────────────────┐
              │  Sociodemographic  │            │ Payment performance │
              └───────────────────┘            └───────────────────┘
```
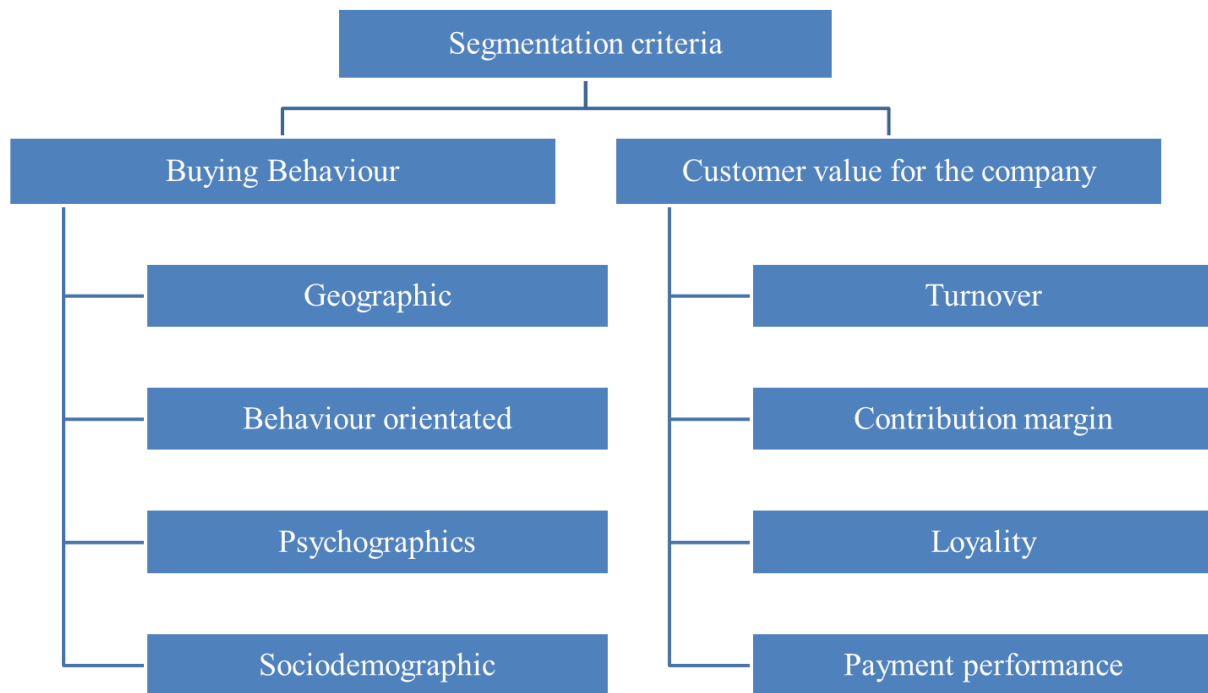
Figure: 14 Basic segmentation criteria (Homburg & Wieseke, 2011)

The various solutions have different types of practical usefulness. It is crucial for the benefit of a segmentation solution like the ones given above that on the one hand, the customer's assignment to a particular segment is unique, and on the other hand, the segment profiles can be translated directly into concrete actions in a precise manner from a business perspective. These segmentation variables must be easily measurable so that a customer can be easily associated with a segment on the basis of the existing or evaluated data. The actions derived from the segment must have direct relation to the factors that can influence the company.

According to Jolibert et al. (2012), the main target of customer segmentation is to improve an organisation's potential and optimize resource allocation. To meet this challenge, the following steps should be properly taken:

```
┌─────────────────────────────────────────┐
│      Definition of the relevant market    │
└─────────────────────────────────────────┘
                    ↓
┌─────────────────────────────────────────┐
│      Choice of basic segmentation approach│
└─────────────────────────────────────────┘
                    ↓
┌─────────────────────────────────────────┐
│   Determination of appropriate segemntation│
│                 criteria                   │
└─────────────────────────────────────────┘
                    ↓
┌─────────────────────────────────────────┐
│        Formation of customer segments     │
└─────────────────────────────────────────┘
                    ↓
┌─────────────────────────────────────────┐
│            Profiling of segments          │
└─────────────────────────────────────────┘
                    ↓
┌─────────────────────────────────────────┐
│   Determination of most important competitors│
└─────────────────────────────────────────┘
                    ↓
┌─────────────────────────────────────────┐
│              Market segment               │
└─────────────────────────────────────────┘
```
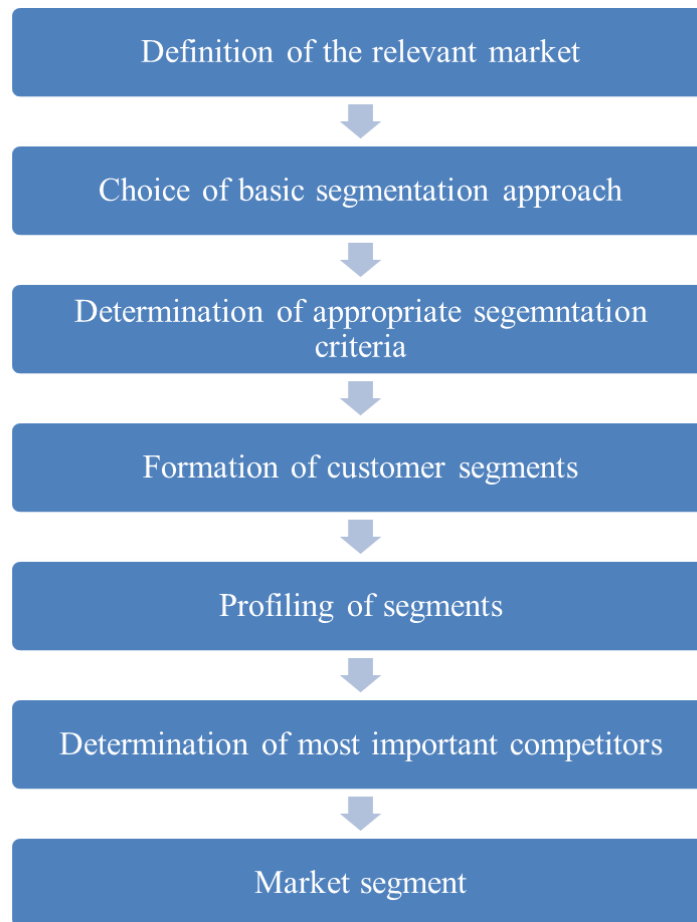
Figure: 15 The segmentation process (Jolibert, Mühlbacher, Flores, & Dubois, 2012)

a) Definition of the relevant market

To define a relevant market and understand how to reach it, the importance of market segmentation for the company has been already mentioned in the section above.

b) Choice of the basic segmentation approach

The choice of the segmentation method is critical to the homogeneity and results of the segmentation. The method is crucial for the accessibility and stability of the segments. The composition of these segments is then decisive for far-reaching marketing and business decisions. As described above, the first decision for market segmentation is whether the segments should be based on buying behaviour or on customer value for the company. If the management opts for the first approach, the attributes of the customer's buying behaviour chosen by the company have a significant influence. If the management decides on the second approach, it must evaluate the customers according to its expectations. This, however, depends only on past experience, because the company cannot know the customers' future expectations (Jolibert et al., 2012).

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c) Determination of appropriate segmentation criteria

While determining individual criteria for customer segmentation, certain requirements must be met. It must be ensured that the chosen criteria are useful for the segmentation and that these can be measured, because subjective evaluations are always subject to 'human' weaknesses. There are many criteria that play a role in the B2B market segmentation. It makes sense to split these criteria into five subgroups (Mühlbacher, 2013).

Subgroups	
Demographic conditions	Industry, size of the company or location
Operational conditions	What kind of technology does the customer use? Does the customer use our products or the products of a competitor? What kind of capabilities—technological, economic, or financial—does the customer possess?
Purchasing conditions	What are is the buying process of the customer and the formal purchasing organization like? Is there a power structure? Does our company have existing relationships with the customer? What are the purchasing policies or purchasing criteria, if any?
Situational conditions	How is the customer prepared financially? Is the customer in a crisis?
Personal relationship	Do we have a good or a bad relationship with the customer? What is the motive for buying or not buying?

Table: 6 Approach to segmenting organisational customers

The personal relationship subgroup must be handled with care because, as mentioned earlier, it includes subjective criteria (Mühlbacher, 2013).

d) Formation of customer segments

Applying the selected segmentation criteria, the (potential) customers are grouped into segments that are apparently very different but internally homogeneous with regard to their expectations and behaviour (Jolibert et al., 2012).

e) Profiling of segments

Segments are based on customer characteristics; the segment profile is a detailed description of the market segment with all the different criteria and factors. It is necessary to provide all the employees of the company with a good understanding of the customer. This helps them to understand why a customer from a particular segment is treated in a certain way and why the marketing and sales strategy is implemented in a specific manner. A customer segment profile also describes all the important aspects of customer needs, wants, behaviour, etc. All the important KPIs of the segment are also included in the segment profile.

f) Determination of the most important competitors and stakeholders

Following the formation of the customer segments and description of the different characteristics and processing instructions, the main competitors and stakeholders are determined. The relevant stakeholders are categorized as either internal or external stakeholders. Other criteria are the power and interest of the stakeholders in the company. Internal stakeholders could include, for example, the area sales manager or the key account manager who is currently working with the customer or has worked with the customer in the past and maintains a good relationship. External stakeholders or influencers include consultants or clients of the company's customer.

The management has to identify the most relevant competitors. It is helpful to discuss this topic with the area sales manager because he knows better than anybody else the customer as well as the other companies competing for this customer. According to Mühlbacher (2013), the relevant competitors could be separated into three groups. The first and most important group includes direct competitors, who sell similar products and goods. These competitors already have a business relationship with the customer and work along with him/her. The second group consists of indirect competitors. These competitors sell different items and services to the customer and have access to his/her budget. For example, the technical department has a fixed budget for a year. It has to decide whether to buy new tools from the SME, or to buy a new machine from an indirect competitor with the same budget, but for a

totally different product. The third group includes future or new competitors. These companies arise as a consequence of the development of new products or services. Such a competitor could also be a company with a new core business or even, for instance, a competitor from the US entering the European market.

The determination of competitors is very important and it takes time to analyse the competitors (in terms of figures, size, market share, position, etc.) in depth to understand what they do and how to tackle them. A method of analysis could be to use Porter's five forces.

g) Customer segment

After the various customer segments are built, they should be ranked. In some cases, a segment would have to be split again into sub-segments based on its size or other characteristics. This ranking should be based on the customer value in the different segments. During the profiling, measures may need to be adjusted again in the light of new findings of the stakeholder and competitive analyses. Following this, the future handling of every segment should be done by the responsible area sales manager, as per an agreement. The handling process agreed upon should be measured and reviewed at regular intervals and checked in the case of deviations.

2.7   Assessment of the different customer segmentation methods

In this section, the researcher describes and analyses different segmentation methods in SMEs. Hassmann (2005), in cooperation with the University of St Gallen, described different methods and provided a ranking with regard to the application level. This ranking is used as a first orientation; however, the researcher has decided not to describe the customer net present value analysis because this is usually used in financial services (Hassmann, 2005). The NPS, share-of-wallet, and relative-share-of-deliveries are, however, analysed in the course of this research.

1. ABC analysis based on turnover (application level 98 per cent)
2. ABC analysis based on contribution margin (65 per cent)
3. Customer net present value analysis (only in financial services)
4. Customer portfolio (23 per cent)
5. Scoring methods, including RFM (14 per cent)
6. Customer Lifetime Value (5 per cent)

This ranking clearly shows the most common segmentation methods in general. But it should be mentioned as well that Hassmann does not refer only to SMEs.

2.7.1 ABC analysis based on turnover

The ABC analysis, since its development at General Electric in the 1950s, has been the most popular method for classification and is still very popular in practice (Keskin & Ozkan, 2013). In an ABC analysis, the evaluation of customers is based only on the expression of a single factor. The ABC analysis is a cumulative, one-dimensional method based on retrospective data, in this case on turnover and contribution margin and monetary customer data. This could include, for example, revenue, contribution margin, or profit. But Ravinder and Misra (2014) mentioned that the ABC analysis is traditionally based on dollar volume, and other criteria can also be important. However, if an SME uses two criteria, the method becomes two-dimensional and thus, more complex. A common analytical technique is an ABC analysis of the entire customer base. With the help of the ABC method, customers or products can be analysed according to their importance for a company's success through its sales. The customers are sorted on the basis of their share in the total sales of the company. Typically, the results for many companies and industries are very similar to the allocations given in Table 6 below. This includes about 20 per cent of the customers who register 80 per cent of the turnover. The next group—Customer Group B—make up about 40 per cent of all customers who bring in another 15–20 per cent of sales. The remaining 40 per cent have a share of only 5 per cent or less on average. This conforms to the Pareto rule, named after Vilfredo Pareto (1848–1923) (Freter, 2008).

In addition to this 80/20 method, there is another method called the 60/90 method. This method is useful when there are very few big customers followed by many medium-sized and small customers. This method puts more emphasis on the average sales range. Under this approach, 60 per cent of the turnover or the contribution margin is achieved by Customer Group A, 30 per cent by Customer Group B, and the remaining 10 per cent by Customer Group C (Winkelmann, 2013).

Later in this study, the researcher uses both the 80/20 and the 60/90 methods. In the current and the following sections, the researcher will explain the 80/20 method, which will be sufficient to understand the approach of the methods. Chapters 4 and 5 discuss the differences between these two methods on the basis of the given secondary data.

Sequence	Customer	Average value per order	Yearly orders	Yearly Turnover	% of the Yearly Turnover	Cumalative %	Category
1	Customer 1	€ 100.00	300	€ 30,000.00	49.4%	49.4%	A
2	Customer 2	€ 60.00	300	€ 18,000.00	29.6%	79.1%	A
3	Customer 3	€ 5.00	1,000	€ 5,000.00	8.2%	87.3%	B
4	Customer 4	€ 20.00	175	€ 3,500.00	5.8%	93.1%	B
5	Customer 5	€ 30.00	50	€ 1,500.00	2.5%	95.5%	B
6	Customer 6	€ 200.00	7	€ 1,400.00	2.3%	97.8%	B
7	Customer 7	€ 70.00	4	€ 280.00	0.5%	98.3%	C
8	Customer 8	€ 10.00	24	€ 240.00	0.4%	98.7%	C
9	Customer 9	€ 50.00	10	€ 500.00	0.8%	99.5%	C
10	Customer 10	€ 25.00	12	€ 300.00	0.5%	100.0%	C
Total				€ 60,720.00	100.0%		

Table: 7 80/20 ABC analysis turnover sample referring to Freter (2008)
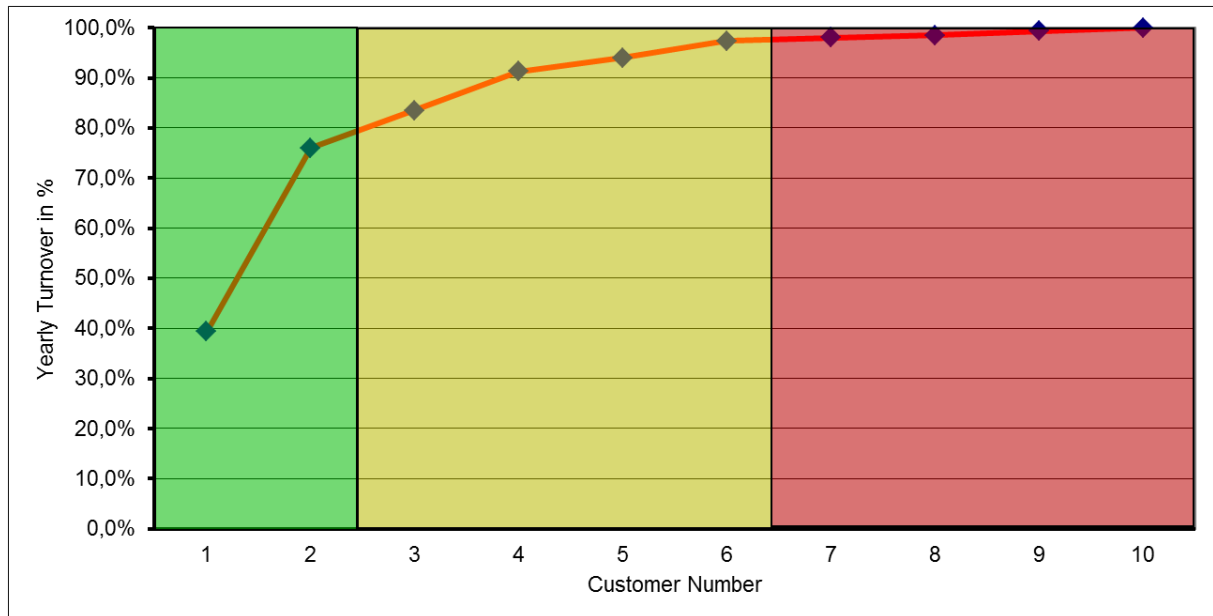
Figure: 16 Diagram 80/20 ABC analysis turnover sample referring to Freter (2008)

The results of the ABC analysis provide important information relating to planning for the whole company. To treat each customer group individually, the marketing department often develops standard strategies for individual customer segments in accordance with the ABC analysis. For example, with regard to customer visits, it may be decided that the sales manager should visit Customer Group A once a week, Customer Group B once a month, and Customer Group C only once a quarter. Though this makes sense, an important aspect—the estimated or calculated potential of each customer—must not be ignored. For instance, if a competitor covers most of the needs of a customer in Group C of a company, it may be prudent to shift

this special customer to the A or B segment because increased marketing efforts are necessary. It is useful to do an ABC analysis using not only current sales figures, but also the estimated and calculated data. Nevertheless, the ABC analysis still plays an important role in structuring the customer segments (Ravinder & Misra, 2014; Winkelmann, 2013).

A positive aspect of this analysis is that it requires only a few resources and it is easy to understand. If a company has a large number of customers with only small differences, the ABC analysis will not be conclusive enough because a customer with a huge turnover is not necessarily a valuable or profitable customer (Freter, 2008). Another disadvantage of this methodology is its sole focus on past data. New customers with great potential or share of wallet end up in the lower ranks because this analysis does not include these aspects. Therefore, the results of an ABC analysis can lead to serious miscalculations and misunderstandings. Only considering the sales turnover involves a great risk, especially in the B2B area. In some cases, customers with the largest turnover generate the lowest contribution margins. As mentioned above, the method generates a snapshot of past data. One big project can shift a Group C customer to Group B though the care and/or treatment could not be justified. Since the potential consideration is disregarded at present, conversions of customers with high potential are low. Consequently, sales rise only to a small extent.

2.7.2 ABC analysis based on contribution margin

Customer contribution margin accounting is a fundamental analytical method for measuring customer value. This method maps customer sales, direct costs, and overhead costs to assess the customer's contribution to the earnings for the entire company (Homburg & Wieseke, 2011).

The starting point for the analysis is always the customer's sales turnover, which should be calculated on the basis of listed or catalogued prices. After deducting customer-specific costs such as rebates, discounts, bonus agreements, and variable costs, it comes to contribution margin 1. This amount indicates the customer's contribution towards covering the remaining fixed and distribution costs. Focusing only on the contribution margin 1 can lead to misperceptions if the customer has high customer-specific fixed and distribution costs. To cover this misjudgement and to obtain the value of contribution margin 2, the customer's fixed costs must be subtracted from contribution margin 1. To determine contribution margin 3, the custom distribution costs must be deducted from contribution margin 2. When the

percentages of non-customized associated costs such as HR and R&D costs are subtracted, the right result for the customer emerges. In the further course of the thesis, the researcher refers to contribution margin 2.

The breakeven method is useful to identify the customer's cost components that can be debited to the greatest extent to achieve the results. Customers with a high price level and a good contribution margin can prove to be unprofitable at the end of the year because they have an agreement for a high bonus that is paid at the end of each year. Furthermore, contribution accounting is a purely static process that does not allow the forecasting of the profitability of customers in future.

The results of the contribution margin analysis can also be shown by an ABC analysis.

Sequence	Customer	Average value per order	Yearly orders	Yearly Turnover	Average gross margin in %	Average gross margin in €	% of the Yearly Turnover	Cumalative %	Category
1	Customer 1	€ 100.00	300	€ 30,000.00	20%	€ 6,000.00	39.4%	39.4%	A
2	Customer 2	€ 60.00	300	€ 18,000.00	31%	€ 5,580.00	36.6%	76.0%	A
3	Customer 3	€ 5.00	1,000	€ 5,000.00	23%	€ 1,150.00	7.5%	83.5%	B
4	Customer 4	€ 20.00	175	€ 3,500.00	34%	€ 1,190.00	7.8%	91.3%	B
5	Customer 5	€ 30.00	50	€ 1,500.00	27%	€ 405.00	2.7%	94.0%	B
6	Customer 6	€ 200.00	7	€ 1,400.00	37%	€ 518.00	3.4%	97.4%	B
7	Customer 7	€ 70.00	4	€ 280.00	34%	€ 95.20	0.6%	98.0%	C
8	Customer 8	€ 10.00	24	€ 240.00	34%	€ 81.60	0.5%	98.5%	C
9	Customer 9	€ 50.00	10	€ 500.00	25%	€ 125.00	0.8%	99.4%	C
10	Customer 10	€ 25.00	12	€ 300.00	33%	€ 99.00	0.6%	100.0%	C
Total				€ 60,720.00	29.8%	€ 15,243.80	100.0%		

Table: 8 80/20 ABC analysis contribution margin sample referring to Freter (2008)
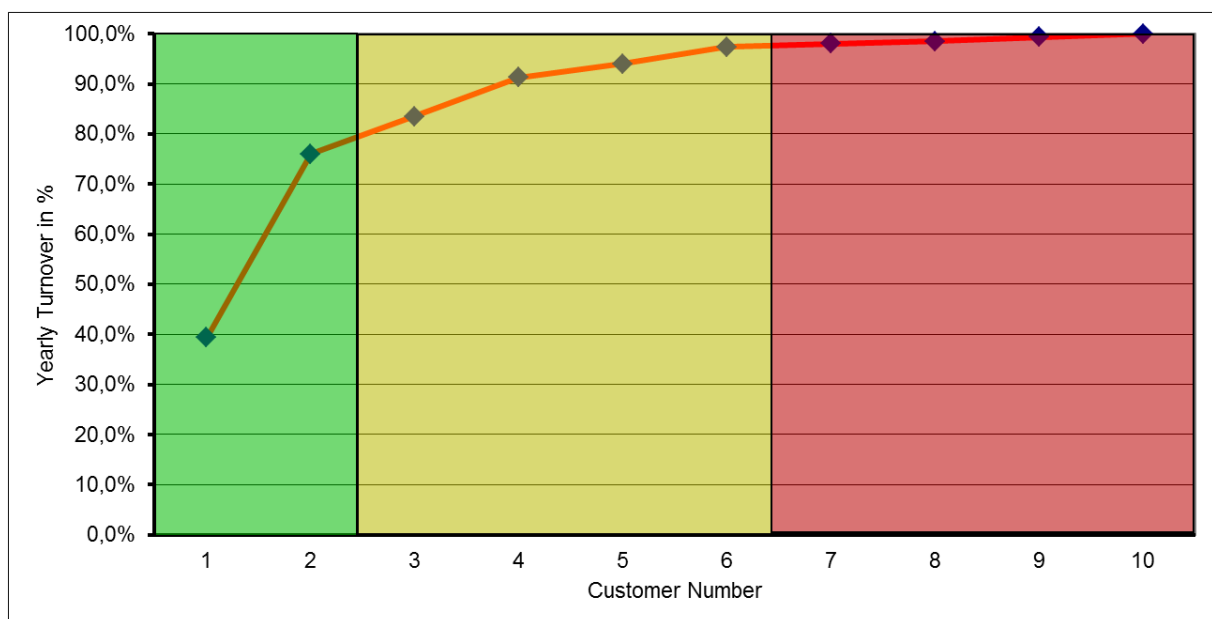
Figure: 17 Diagram 80/20 ABC analysis contribution margin sample referring to Freter (2008)

In addition to the contribution margin analysis based on past data, a potential contribution margin analysis can also be carried out. This method takes into account the current contribution margins and the future potential for development. In this case, the method switches from a retrospective analysis model to a prospective model. This is very common for companies with contractual purchase obligations (Heinemann, 2008). This analysis takes into account the development of a customer during the course of the business relationship. At the beginning, the customer generates a low or even negative contribution margin, but becomes more and more profitable during the partnership. This method, including the future projected contribution margin, can also be used for new or potential customers. If no firm commitments or agreements have been made, such a factor must be considered. Otherwise, the business relationship could grow in a wrong and unplanned direction. There should be a comparison among customers to verify if similar characteristics have shown up in the past.

The results of the ABC analysis based on the contribution margin and contribution margin potential can then be interpreted in a manner similar to the results based on sales turnover. This method has most of the advantages and disadvantages of the ABC analytical methodology. In this method, profitability is considered, but not the size or value of the customer.

Regardless of the turnover or contribution margin, the greatest advantage of the ABC analysis is that it is easy to understand and apply (Cooper & Kaplan, 1991). Another major advantage is that this method is easy to use and simple to comprehend for everyone in the company (Keskin & Ozkan, 2013). Complex issues can be analysed at an acceptable cost with this method by limiting the ABC analysis to the essential factors. For the user or observer, a great deal of company-specific knowledge is not required to identify the main customers. This is because the results are represented clearly. This method is applicable not only to customer or sales data but also to other types of data and factors (Homburg & Wieseke, 2011).

However, Homburg and Wieseke (2011) and Freter (2008) pointed out the disadvantages of this method. First of all, it is a rough segmentation method. If an SME works with a lot of customers, the ABC analysis can generate very large segments. Evaluation with only a single factor is also a great disadvantage because other factors that are important to evaluate the probability and value are not considered. If the company segments the customer by the contribution margin percentage, customers with the highest per cent rate have a low turnover

in many cases because customers with a higher turnover drive a hard bargain and get better (lower) prices. Lower purchasing price for the customer leads to lower turnover and contribution margin.

The three different segments are clear but no useful strategy can be deduced regarding the customer. This is because each segment is appropriate for their different needs and behaviours.

Both kinds of ABC analysis are simple and commonly used across the SME sector. However, in the last few years, 'several methods have been developed to perform multi-criteria ABC analysis that can be quite easily implemented today' (Ravinder & Misra, 2014, p. 257).

2.7.3   Scoring models

In scoring models, a customer is assessed on the basis of evaluation criteria. Each company applies different priorities to measure the value of a customer and hence, chooses its own set of criteria. Depending on these criteria, the scoring models can be either individual or cumulated in a multidimensional context. The chosen criteria also determine whether the scoring model is retrospective or prospective. The criteria can be both quantitative and qualitative (Link, Gerth, & Voßbeck, 2000). These points are added together to get the total number of results, which, in turn, indicate the value of the customer on a predetermined scale. The different criteria can also be weighted to give the SME more control over the method. According to Freter (2008), scoring models should be applied in six steps:

1. Collection of individual evaluation. These criteria should be closely connected to the company's marketing goals
2. Weighting of the criteria where appropriate
3. Determination of the evaluation rules in the form of a rating scale. This can be, for example, a scale of 1 to 10, with better versions getting higher ratings
4. Evaluation of each customer
5. Multiplying with the evaluated weights
6. Summarizing the points for each customer

The assessment criteria are the most important parts of the scoring models. Such criteria could include, for example, turnover, buying volume, credit note, estimated potential, contribution margin, shipping terms, and cost (Mühlbacher, 2013).

For many companies, it makes sense to consider the customer review scoring model as a deal breaker. These are the criteria on which the customer must achieve a certain score to achieve a minimum level (Schneider & Hennig, 2008).

The scoring model, thus, generates a differentiated assessment for each client. The total point value reflects the differences in values among the individual customers, who can now be ranked by points (Krafft & Albers, 2000). In practice, these point rankings are often combined with an ABC analysis to classify customers into different segments.

An enhanced form of the scoring model is the elasticity-orientated scoring approach. It is assumed that reviews of each individual criterion could be expanded to calculate theoretically correct elasticity (Krafft & Albers, 2000).

This is to estimate the percentage of the respective criterion—e.g. turnover—compared to the reference value the customer is using when assessing a factor influencing positive or negative changes. The estimated change is then set in proportion to the percentage increase in the criterion (Verhoef, 2012). For each customer, the total value of the considered judgement criterion can be determined.

Scoring models are multidimensional and include both monetary and non-monetary values, which is a great advantage of this method. This is because non-monetary data is, in many cases, important for segmentation and reasonable treatment of customers. The scoring technique is flexible and can be used for different segments, markets, and industry sectors. Especially if a company handles a large number of customers, scoring models are advantageous as compared with other methods. Also, this is very helpful for an SME that needs to compare customers with each other (Mühlbacher, 2013).

However, Krafft and Albers (2000) pointed out some disadvantages of the scoring method. First, it merely shows the customer's current status and only uses data from the past. The method also assumes that a customer's behaviour does not improve or decline. Like in the ABC analysis, no useful strategies can be deduced; nor can future marketing or sales activities be represented or taken into account. In the evaluation phase of this method, it is important for the weighting factors to be subjective: this may greatly influence customer segmentation. Moreover, an SME with a large number of customers can find proper segmentation difficult because a lot of customers may have the same score but totally different needs (Freter, 2008).

2.7.4 RFM method

RFM stands for recency, frequency, and monetary value. This technique utilizes these three metrics to evaluate customer behaviour and customer value. The RFM method is based on retrospective non-monetary (recency and frequency) and monetary (monetary value) data. This model is used widely in many areas, particularly in direct marketing (Wei, Lin, & Wu, 2010). The RFM model is easy to understand and can be quickly implemented by companies (Bacila & Radulescu, 2014) if the appropriate data is available. The main advantage is that customer behaviour can be investigated without using expensive and difficult software programs (Kahan, 1998; McCarty & Hastak, 2007; Yeh, Yang, & Ting, 2009).

- Recency is a measure of the amount of time since a customer last placed an order with the company.

- Frequency is a measure of how often a customer orders from the company within a defined period.

- Monetary value is the amount that a customer spends during an average transaction.

Lumsdena, Beldona, and Morrision (2008), Marcus (1998), and Fader, Hardie, and Lee (2005) explained the three points as follows. A high score in the field of recency signifies that the customer is very likely to make a repeat purchase. A high frequency rate indicates a high degree of customer loyalty. A higher monetary value is certainly an advantage for the company as well. The monetary value can be the value in currency that the customer has spent in a defined period, the average amount per purchase, or all purchases till now. It is best to use the average purchase amount to reduce the co-linearity of frequency and monetary value. Research has shown that customers with lower recency and higher frequency tend to have lower purchasing potential (Fader, Hardie, & Lee, 2005; Marcus, 1998; Lumsdena, Beldona, & Morrison, 2008). This outcome is very useful for companies.

This method can be used in different ways.

a) Common RFM method

A common RFM method is a simple RFM calculation that splits each recency, frequency, and monetary value into three or more categories. These categories, including timeframe, can be selected freely.

Customer Value Number	Recency	Frequency	Monetary Value
1	Last 3 months	> 20 orders	> 1000 €
2	3 to 6 months	10 – 20 orders	500 – 1000 €
3	More than 6 months	< 10 orders	< 500 €

Table: 9 Recency, frequency, monetary value model (Homburg & Wieseke, 2011)

For example, a customer made the last purchase a month ago, and has placed 12 orders with a monetary value of EUR 450 in the last 12 months. In this case, the customer value number is 123—1 for recency, 2 for frequency, and 3 for monetary value.

The number represents the customer segment. A lower number denotes a more important customer segment. The number 111 indicates the most important customer segment while 333 points at the segment with the least significant customers. Thus, there could be 27 different customer segments, which is too high because each segment has to be treated in a special way. For instance, if the score of one customer is 231 and that of another customer is 211, the second customer should be more valuable for the SME because his score is lower, though both customers have the same recency and monetary value. The difference is that the second customer has ordered more than 20 times and the first one, fewer than 10 times. This means the second one needs more effort and cannot be considered more valuable if the SME focuses only on these figures. The customer score from the common RFM method provides useful information, but is not a good basis for segmenting customers in a proper way.

b) RFM pointing system

Another RFM method is based on a point system. Every customer starts with a fixed number of points, e.g. 25, and the same customer from the above example is used to demonstrate this method.

Recency Last order	Last 3 months +50 Points	3 to 6 months +40 Points	6 to 12 months + 20 Points	12 to 18 months 0 Points	18 to 24 months -10 Points	Over 24 months -20 Points
Frequency in the last 12 months	Number of orders multiplied by 6					
Monetary value in the last 12 months	> 1000 € 50 Points	1000 to 800 € 40 Points	800 to 500 € 20 Points	500 to 300 € 10 Points	300 to 100 € 0 Points	100 to 0 € -10 Points

Table: 10 Recency, frequency, and monetary value model based on points (Krafft & Albers, 2000)

The customer from the above example gets 132 points. The more points a customer gets, the more valuable he is for the company. The customer segments are classified by points, for example:

Top customer	A customer	B customer	C customer	e-business	Customer cut
> 180 Points	130 to 180 Points	100 to 129 Points	50 to 99 Points	0 to 49 points	< 0 Points

Table: 11 Example of customer segments

This kind of RFM method is used mainly in the classic mail order business or internet retail business (Krafft, 2007). Like the common RFM method, this method also has certain disadvantages, such as the frequency being weighted very high. This means that the customer order process in the SME is not fully automatic and every order requires effort, which leads to more cost. Accordingly, fewer orders, or fully automatic orders, would be better for the company. In the classic mail order business or internet retail business, this method is very common and often two additional kinds of criteria are used (Krafft & Albers, 2000).

Cumulated returns	0 to 1 0 Points	2 to 4 - 5 Points	5 to 7 -10 Points	8 to 10 -15 Points	11 to 15 - 20 Points	Over 15 -40 Points
Impulses of last order	Main catalogue / Website +45 Points		Special catalogue / offer +30 Points		Mailing +15 Points	

Table: 12 Additional criteria in mail order and internet selling (Krafft & Albers, 2000)

Cumulated returns are an important criterion for mail order or internet retail businesses like Zalando (German retailer) or Amazon, because every return, whether entitled or not, is an effort and is linked to costs.

Other RFM methods include the customer quintile method and behaviour quintile scoring method (Miglautsch, 2001). These methods are derived from the first RFM method described in this paper.

c) Customer quintiles

A common method for RFM scoring is to divide customers into five equal segments, ranging from best to worst. Each group has the same number of customers, which makes the analysis easier (Miglautsch, 2001). Finally, the company has three tables—one each for recency, frequency, and monetary value.

Customers with a lower number of days since the last purchase get a higher score for recency. A higher number of purchases generate a better frequency score and a higher amount spent is reflected in a better score for monetary value.

5	
4	
3	
2	
1	

Table: 13 Customer quintile segmentation

The top segment is labelled 5; the one after it is 4, and so on. Every customer is presented with a three-digit number. Customers in the best segment have the number 555 while their counterparts in the worst segment have 111 (Wei, Lin, & Wu, 2010). This method generates 125 equal segments, and it would be quite difficult to evaluate and treat each segment independently (Miglautsch, 2001). One possibility is to club some segments together and treat them similarly. But this is a disadvantage of this method, as it tends to group together customers who have totally different behaviours and needs (Yang, 2004).

d) Behaviour quintile scoring

This method was developed by John Wirth, PhD and founder of Woodworker's Supply of New Mexico—a leading hand tool retailer. This method also involves five cells, but each cell has a

different number of customers. However, every cell in the monetary value column reflects the same amount of money.

The frequency and monetary table is sorted by a mean method. Every single purchaser (buy only once) is placed in the lowest cell. Every customer with a total purchase amount under the mean gets a score of two. All customers above the mean are placed in the top three cells.

5	
4	
3	
2	Total purchase or amount under the mean
1	Single Purchaser

Table: 14 Behaviour quintile scoring—frequency and monetary table

In some cases, recency is the most powerful of the three variables because recent customers are the most reliable and important for a certain period. During this period, the customer is often contacted heavily. But after this period, the customer is nearly left alone (Miglautsch, 2001). A long-term customer, who has bought an average amount, moves up in frequency and monetary table (Table 14) from cell 1 to 2. In recency, he can move from 1 to 5. In other cases, the variables of frequency and monetary value are more important (Bacila & Radulescu, 2014; Tsai & Chiu, 2004).

Weighting of RFM figures can compensate for this issue.

Monetary, frequency, and recency values can also be added together (Libey, 1998). An option is to add the scores of the three tables. The best customer has a score of 15 (5+5+5), while the worst scores 3 (1+1+1). But many customers have a medium score of 7 or 8, and it is difficult to segment these customers in a proper way (Miglautsch, 2001). A better option is to have a composite weight score. Each company can individually decide on the most important among recency, frequency, and monetary values. The most important parameter has the highest weight. According to Tsai and Chui (2004), the sum of the weights of each RFM calculation should be equal to one. One such calculation could be:

Score = (recency score*weight)+(frequency score*weight)+(monetary value score*weight)

4.3 = (5*0.5) + (4*0.3) + (3*0.2)

Through the weighted RFM method, an SME can give more power to the more recent names and hence has the opportunity to boost the most relevant score.

A classic RFM calculation looks like the calculation below:

T_{today} = Today

T_{last_buy} = Days since last order

T_{period} = Number of days in a certain period

buy_n = Number of orders

r_n = Turnover

Criteria	Formula	Example	Total
Recency	$T_{today} - T_{last\_buy}$	$312 - 123$	189
Frequency	$\sum buy_1, buy_2,...buy_n$	12	0.0328
	T_{period}	365	
Monetary Value	$\sum r_1, r_2,...r_n$	1264.67	104.389
	$\sum buy_1, buy_2,...buy_n$	12	

Table: 15 Classic recency, frequency, monetary value model (Homburg & Wieseke, 2011)

RFM = R x F x M = 189 x 0.0328 x 105.389 = 646.508

Two methods are generally used to compute RFM. The first method involves sorting customer data from the customer database based on the RFM criteria, grouping them in equal quintiles and analysing the resulting data. However, this number (646.508) does not say anything about the customer value because a high number could be either good or bad for the company. If there is a lower frequency, which is good for the company because of less effort, the total number is lower. In accordance with the assertion of Lumsdena, Beldona, and Morrison (2008) mentioned above, a higher frequency could also be good for the company because loyalty is

higher. If the monetary value is higher, which is also good for the company, the total number will be higher.

The second method is more useful but still unsatisfactory. It involves the computation of relative weights for R, F, and M by using regression techniques and then using these weights to calculate the combined effects of RFM. In other words, RFM can be considered as the sum of the weighted recency, frequency, and monetary value scores for a customer (Homburg & Werner, 1998).

According to Mühlbacher (2013), one way to derive customer treatment strategies from the RFM method is to design a cube with three dimensions.

Recency: The customer's last order was either a long time ago or in the recent past.

Frequency: The customer buys from our company either seldom or often.

Monetary: The value of the order is either high or low.

For each of these criteria, a sensible measurement variable must be found. This could be, for example, the industry average or the in-house average. This value is then defined as the average value.

e) RFM cube

From this three-dimensional matrix, a cube with eight different small cubes is formed. There should be a marketing and sales strategy for each or these plains. For example, if a customer hardly ever buys from the company, the gap between purchases is long, and the revenue per sale is low as well, the customer will fall in the minimal e-business category. On the other hand, if a customer buys at short or regular intervals and the revenue per sale is also higher than the average, then the customer must be retained.
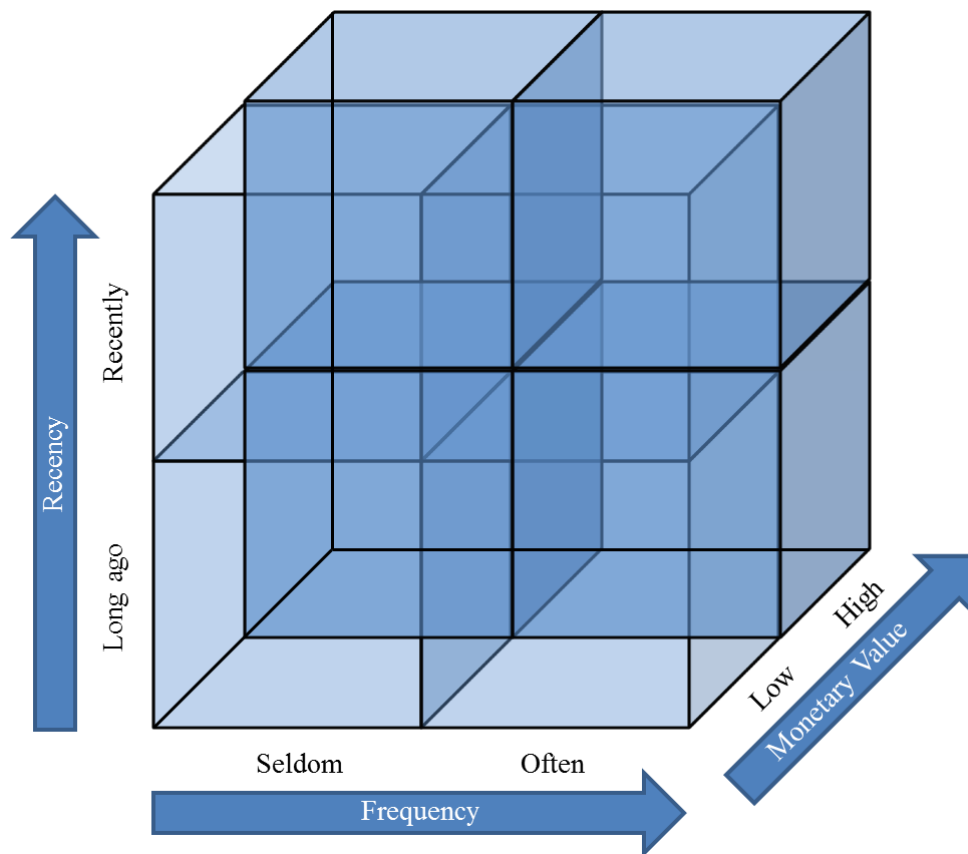
Figure: 18 RFM Cube (Freter, 2008)

The RFM method has some great advantages compared with the two methods mentioned previously. Some researchers (Bacila & Radulescu, 2014; McCarty & Hastak, 2007; Wang, 2010) claimed that the RFM technique and its results are easy to understand. Kahan (1998) explained that the RFM method is cost-effective to understand the behaviour of important customers. Miglautsch (2001) argued that it is easy to quantify customer behaviour, too, through this method. Customer data can be evaluated and stored in an accessible electronic form (Lumsdena, Beldona, & Morrison, 2008). This is helpful for a company that needs to handle several different customers. For the success of an SME, it is very important for the selected method to be able to predict responses and boost profits in a short time (Baecke & Van der Poel, 2011), and this method satisfies both these criteria. This is because only a few variables are needed (Wei, Lin, & Wu, 2010) to get meaningful results, which, in turn, are absolutely necessary to target a particular customer (Kaymak, 2001).

The main disadvantage of the method is that it does not always reflect the real customer value, because it identifies only currently valuable customers; if a customer does not buy often, spends less, or shops at longer intervals, then this method accords the customer no

value (Wang, 2010; Wei, Lin, & Wu, 2010). The RFM method also ignores the analysis of new customers. However, new customers and customers with a low score have a great deal of untapped potential (Miglautsch, 2001). Depending on the industry, socio-demographic and psycho-demographic variables have great influence on customer values, but these indicators are not considered (McCarty & Hastak, 2007). The final disadvantage of the RFM technique is that it is a quantitative method that does not consider qualitative information from different industries (Yeh, Yang, & Ting, 2009). If an SME has a large number of customers ranging from huge corporations to small handcraft businesses, it is not easy to find the right weightage. This is especially a problem for B2B retail companies that often sell their products to a whole range of customers.

2.7.5   Share of wallet or relative share of deliveries

Market share or share of wallet is a key indicator to measure the success of the total organisation, business unit, market segment, product, and customers (Müller-Stewens & Lechner, 2011). The wallet of a customer is defined as the total amount that the customer can spend on a specific product or service category. It is often used as a complementary method. The share of wallet or the relative share of deliveries is important for market planning, sales strategies, and related activities (Illek, 2002). The share-of-wallet model is a one-dimensional, individual model and the share is calculated on the basis of retrospective monetary data.

For instance, if a customer spends an average of EUR 10,000 per month on products, and EUR 3,000 of that amount goes to one company, then that particular company's share of wallet for that customer is 30 per cent in that month. Companies generally do not have access to information about the amount spent by a customer on the goods or services of a competitor. Without knowing the actual sales potential of customers (wallet) and the company's own share in it (share of wallet), it is impossible to identify customer segments that offer unexploited sales opportunities or to formulate strategies for these customers. This knowledge could be obtained from primary market research in the form of customer surveys, which make it possible to estimate and/or calculate the customer potential. The results are then extrapolated to the whole customer base (Rex, Wagner, & Mela, 2007).

In this case, the share-of-wallet concept plays a certain role; it answers questions about the market size and the market share for each individual customer first and then extrapolates this

to the whole customer segment in a bottom-up approach. The market share for the segments can be further differentiated later. Normally, market shares are only one-dimensional and expressed in percentages. The second dimension is described as a power portfolio in Section 2.7.7.

SMEs that work with the share-of-wallet method vouch for the main advantage of this model—every customer segment follows clear strategies and activities that can be deduced for each customer.

To benefit from this advantage, however, a lot of research must be undertaken to obtain useful information about the customer. If a company primarily specializes in a really small market with only a few customers, this method is manageable. But if there are a lot of customers, the investigative effort needed for each customer is too huge. The potential of the customer is either not determined or determined inaccurately because customer potential is difficult to calculate without all the necessary information. Accessing this information is quite difficult. A customer normally does not disclose such information because it would weaken his bargaining position (Illek, 2002). In general, a large share of wallet is worthwhile, but an SME should make sure that an increased share is reflected in an increase in the profits as well. In many cases, the cost of the SME's effort exceeds the income (Müller-Stewens & Lechner, 2011).

Some companies create a mathematical formula to calculate the share of wallet. While this method could be successful, it is also risky, particularly if the companies are focused on one particular branch or industry. For example, it is very difficult to create a useful formula for the technical B2B retailing business because the customers are from totally different industries. An example of such a formula could be that the SME estimates a figure in euro for every industry, e.g. EUR 5000, and multiplies the figure with the number of employees, resulting in the wallet value of the customer.

An SME should try to implement the share-of-wallet method only as a complementary technique to another method, since it evaluates only a single factor.

In Section 4.2, the researcher has described this issue in a deeper context.

2.7.6 Basic model of customer lifetime value (CLV)

The CLV is the holistic customer value for a company over the entire duration of the business relationship. It is in addition to the current value of a customer for a company, and whose

future development could play a significant role as well. It is possible that customers who are unprofitable at present could develop very positively in the future and generate substantial profits (Günter & Helm, 2003). The CLV is an individual, one-dimensional model based on prospective monetary data.

For example, a small customer may have a low value for the company at present, but if he/she is working in a booming industry, it is quite possible that he/she will have a high potential in the future. Neglecting such customers would lead to non-realization of the possible profits from them. The CLV takes both dimensions into account, thus providing a comprehensive picture of the total value of a customer. This information is necessary to decide whether or not to invest in a customer relationship, because the future development of the customer is relevant (Reinartz & Kumar, 2000).

The CLV represents the discounted net inflow of deposits and withdrawal flows of a customer to the company throughout the duration of the customer relationship. The calculation of CLV is based on the principles of calculating the net present value. It is derived from the dynamic investment calculation and is based on the assumption that future payments are worth less than present payments. Future cash inflows and outflows are cumulated and discounted with a defined discount rate for this customer, corresponding to the respective period (Brusco, Cradit, & Tashchian, 2003).

The CLV is composed of two dimensions, the current customer value at time t = 0, based on current and historical data, and the potential value of a customer, which reflects the development of certain values and sizes in future. Both components are individually calculated and assigned to the individual customer data. This makes it possible to generate two dimensions for the assessment and evaluation of a customer (Ryals & Knox, 2005).

$$CLV = \sum_{t=0}^{T} \frac{e_t - a_t}{(1+i)^t} = e_0 - a_0 + \frac{e_1 - a_1}{(1+i)} + \frac{e_2 - a_2}{(1+i)^2} + ... + \frac{e_T - a_T}{(1+i)^T}$$

Figure: 19 Customer lifetime value formula (Homburg & Daum, 1997)

e_t = Expected turnover from a certain customer in period t

a_t = Expected losses from a certain customer in period t

i = Calculation interest rate

t = Period (t = 0, 1, 2, ..., T)

T = Duration of the customer relationship

A major disadvantage of the CLV method is that sales and costs cannot be planned in advance. These can only be forecast, either optimistically or pessimistically. The truth lies somewhere in between these extreme. Since a company cannot know the actual values, the average of these two values is mostly used for the calculation. It serves as a basic value to determine the monetary value of customers.
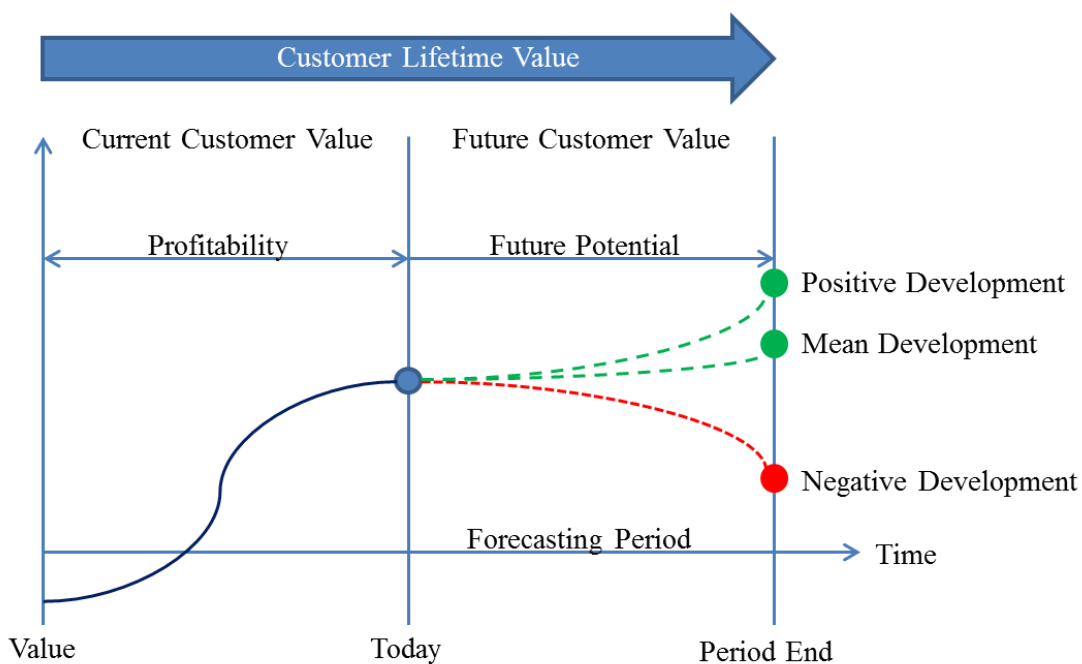
Figure: 20 CLV development (Beyer, 2013)

Turnover or contribution margins are only one aspect of customer value. To evaluate the future potential, other criteria need to be added. Significant questions that must be answered include, for example, whether the client's customers will grow, whether the customer is loyal to the company and to the product, and what the future requirements of customers are. These and other similar factors must be compressed into a meaningful measure. Since the situation may change, such assessments should be repeated at intervals, preferably at the beginning of a new planning period or the fiscal year (Mowerman, 2009).

The CLV method also has some advantages. It is the only model that looks into the future, and can, thus, give much more information about customers than any other method. With such

information, clear strategies and activities can be deduced. However, it is complicated and difficult for an SME to get this information. Another disadvantage of the CLV is the uncertainty of the forecast. A company can do the calculation, but there is no guarantee regarding the result because nobody knows how the business will fare in future. The CLV method is only an assumption (Reinartz & Kumar, 2000). Only the basis model, including the basic calculation, is not convincing enough for proper customer segmentation. A reason for this is that non-customers, i.e. the potential customers in a branch, cannot be included in the CLV method because the company has no data or figures about them. The company can only calculate CLV on the basis of assumptions, which adds an element of uncertainty to the calculations.

Another element of uncertainty is the duration of the customer relationship, which is unknown and also has to be estimated. The last step is to calculate the real cost of a customer. This is especially difficult for an SME because not all costs can be directly attributed to a customer. Cuadros and Dominguez (2014) argued that it is important to identify costs, including all kinds of direct and indirect costs, which have been incurred due to the entire customer relationship. This is, however, difficult for an SME because marketing and sales expenses are ascribed to the sales department and then apportioned to all the customers (Mühlbacher, 2013), making it impossible to calculate the correct lifetime value of a single customer.

2.7.7   Customer portfolio

Customer portfolio reviews resemble the widely used Boston Consulting Group (BCG) matrix and the McKinsey matrix in terms of the evaluation and presentation. The customer portfolio aims to facilitate long-term strategic decisions and plans. Several criteria can be used to evaluate the customer portfolio. Customer portfolios are multidimensional and can be individual or cumulated. These describe customers individually with regard to their worth and potential. Two- or multidimensional client portfolios are created on the basis of the main features of customer reviews. This could be monetary or non-monetary data and could also be either retrospective or prospective in nature.

The values of the matrix's dimensions are obtained by merging multiple criteria through scoring methods. The result is a four- or a nine-field matrix with different customer segments. The designations could be similar to the conventional four-field BCG matrix, like Stars, Cash

Cows, Question Marks, and Poor Dogs. Like the customer value matrix, the two performance variables could be 'customer attractiveness' and 'competitive position' or 'turnover growth' and 'relative share of deliveries'. The so-called 'power portfolio' consists of the following evaluation parameters: 'own turnover share' and 'share of deliveries to the customer'.
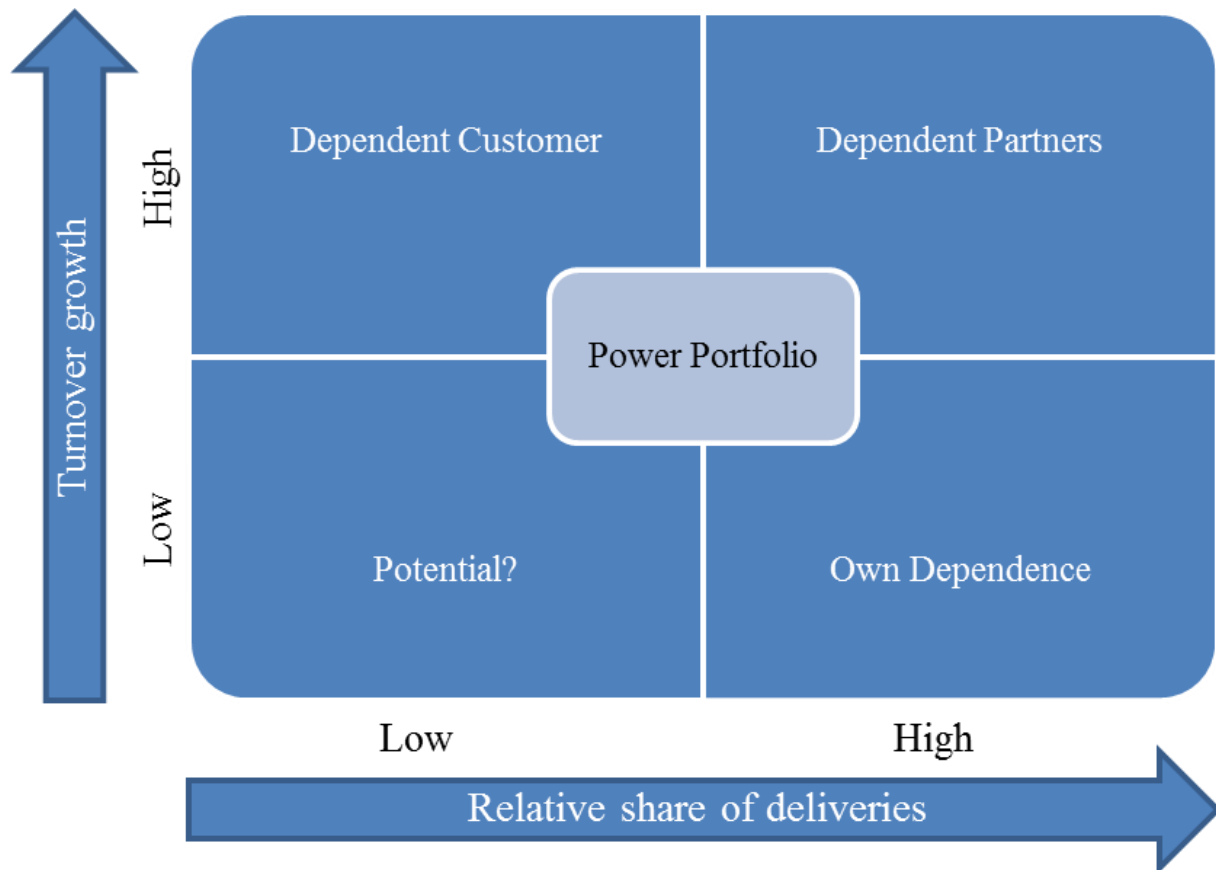
Figure: 21 Power portfolio (Freter, 2008)

Customer requirement is an essential part of the customer attractiveness axis in the customer value portfolio (Figure 22). This is the possible sales volume to potential customers (Homburg & Werner, 1998). It is very difficult to determine the exact sales volume; it should be calculated by a mathematical formula based on customer potential, or else should be estimated. If these two values differ greatly from one another, then a deeper probe into customer value is necessary. The researcher's personal experience says that deviations of up to +/−10 per cent are acceptable.

Other points to determine customer attractiveness could be:
- Volume of the contribution margin
- Estimated growth of the relative share of deliveries

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- Strategic attractiveness of the customer

- Market share

- Innovation power

On the competitive position axis, the share of customer sales volume is shown on a scale of 0 to 100 per cent (estimated or calculated). If the share of delivery of the biggest competitor is known, it could be shown on the competitive position axis as well. This value is calculated as the ratio of the company's own share of delivery to that of the biggest competitor. On this axis, other quality criteria can be used to determine the customer's position (Homburg & Werner, 1998).

The overall rating on the axis is the average of each of these values. This rating can be weighted as well. The number of criteria for the evaluation should be kept as low as possible, since the cost of acquiring data should not exceed the usefulness of effort or lead to compensation effects on the two axes.
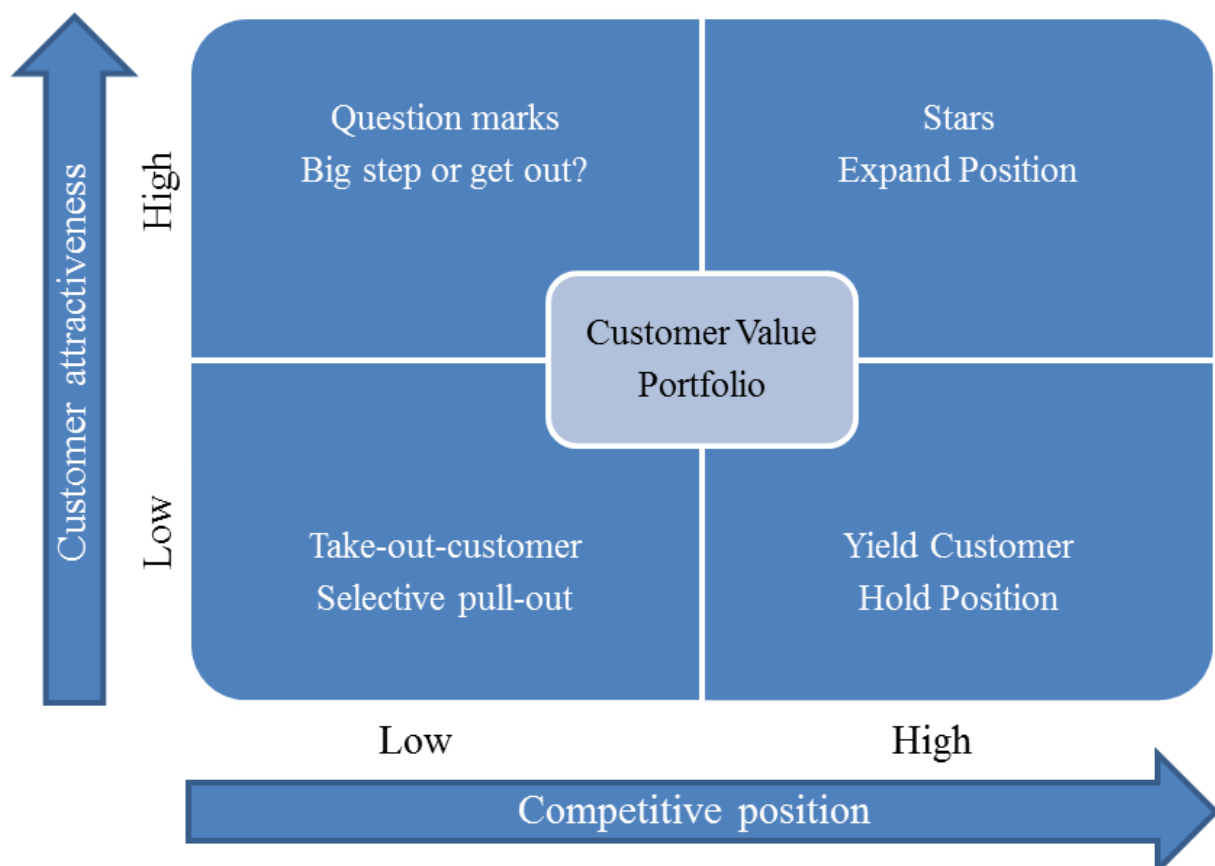
Figure: 22 Customer value portfolio (Mühlbacher, 2013)

By classifying customers into various matrix fields, it is possible to derive fundamental statements about sales and marketing activities. Furthermore, it is possible to formulate rules for sales managers, such as visiting frequency, invitation to customer events, etc., in the different fields.

Stars

Customers located in this quadrant are characterized by high attractiveness and the company itself has a strong position against competition. This should be maintained at any cost—if necessary, by reducing prices and the contribution margin to prevent the penetration of competition for these customers. The company's own position can be additionally secured through long-term purchase agreements. Regular customer visits by the sales manager and invitations to events and marketing activities are helpful too.

Question marks

Like star customers, the question marks are characterized by their attractiveness, but the company's own position against competition is rather weak. The aim must be to significantly improve the company's own position against competition with regard to these customers, and thus, to develop these customers to star customers. In most cases, this is a challenging task and it is not possible in the case of every customer (Homburg & Werner, 1998). On the one hand, internal capacity constraints can hinder the extension of the share of deliveries. On the other, the competition may try to stop the company's increase of share of the deliveries by taking various actions, such as reduced prices, higher rebates, zero services charges, etc. Furthermore, it may not be possible to increase the share of deliveries because some customers may want several suppliers for strategic reasons, for example, to avoid dependency. Again, a customer who knows his attractiveness will expect favours in terms of price, delivery, and support services. Since the claim level is very high, the economic viability of the customer should be checked at regular intervals.

Yield customers

These customers could also be referred to as cash cows. Due to the company's strong position against competition and the high share of deliveries with regard to these customers, their

limited attractiveness must be tried with the least possible effort to keep them in their current position. By ensuring the position of yield customers, the company secures basic business. This can be guaranteed through bonus agreements if these customers order certain quantities. These customers should be periodically invited to customer events.

Take-out customers

'Taking out' does not mean severing the customer relationship or even deleting the customer from the system. Rather, it involves serving customers through a cost-effective measure by shutting down discounts and other services and allocating them to the right customer levels. This could mean, for example, that the customer is not visited at all or is visited only on request. Therefore, as far as possible, the customer will be dealt with solely over the telephone or by in-house employees, and could even be switched to e-business or other electronic order systems. E-business or other electronic ordering methods can enable customers to place orders directly. It ensures that a customer always gets his terms and conditions because the data is in the system. Some customers may not accept this kind of support and may switch to a competitor. The company, however, has to accept this switch; otherwise, it makes no sense to deal with customer portfolios (Homburg & Werner, 1998).

The aim of the customer portfolio should be to have a homogeneous mix of customers in any field. Stars should be the core of the business because these customers have the highest sales potential and promise good contribution margins due to good delivery share. In percentage terms, they may be lower than yield customers, but they are significantly higher in monetary terms. Question marks represent growth potential and the attempt must be to turn them into star customers. Income customers round out a balanced customer structure by ensuring that the basic business is running.

The segmentation method of the customer portfolio is best suited for businesses in the B2B capital goods sector. In this sector, the number of customers is normal or even low (Mühlbacher, 2013). As mentioned before, it is important to ensure the efficiency of segmentation models. In retailing, especially in B2B retailing and the fast-moving consumer

goods (FMCG) industry, this is difficult because the number of customers is significantly higher and the company has less customer information, e.g. about buying behaviour.

Compared with the share-of-wallet technique, the advantage of the customer portfolio technique is that this method is multidimensional—it evaluates two factors. Like all other methods, except the ABC analysis, clear strategies and activities can be derived. However, it is difficult to allocate an accurate potential for a customer, for the same reasons as for the share-of-wallet method. If an SME decides to follow this method of customer segmentation, a lot of research must be undertaken to get useful information to draw the right conclusions and put things on the right track.

2.7.8   Net promoter score

'How likely is it that you would recommend this company/brand to a friend or colleague?' was the ultimate question raised by Reichheld and Sasser Jr. (2003, pp. 46–54).

The NPS is a tool to measure customer satisfaction and predict a company's growth in a one-dimensional and individual way. The data used is non-monetary and retrospective. Schulman and Sargeant (2013) referred to Reichheld's argument that NPS is the perfect measurement tool that can explain everything one needs to know to forecast the company's growth. They go as far as to assert that other survey-based metrics such as customer satisfaction have no link to company growth at all. General Electric CEO Jeff Immelt said, 'This (NPS) is the best customer relationship metric I've seen.' Other companies like T-Mobile International AG, American Express, Philips, Apple, etc. use the NPS tool to measure customer satisfaction and forecast company growth (Keiningham, Cooil, Andreassen, & Aksoy, 2007). They also use it as a customer segmentation method. All customers are clustered into detractors, passives, and promoters, and each cluster is treated in a different manner.

However, studies by Keiningham, Cooil, Andreassen, and Aksoy (2007), Hanson (2011), Sharp (2009), and Schulman and Sargeant (2013) showed that Reichheld's NPS method is not the ultimate method to predict company growth or to segment customers.

How does the NPS work? The answers to the ultimate question raised by Reichheld and Sasser Jr. are calibrated on a scale from 0 (not at all likely) to 10 (most likely). All the answers are then divided into three categories (Barwise & Meehan, 2015).

Likelihood to Recommend
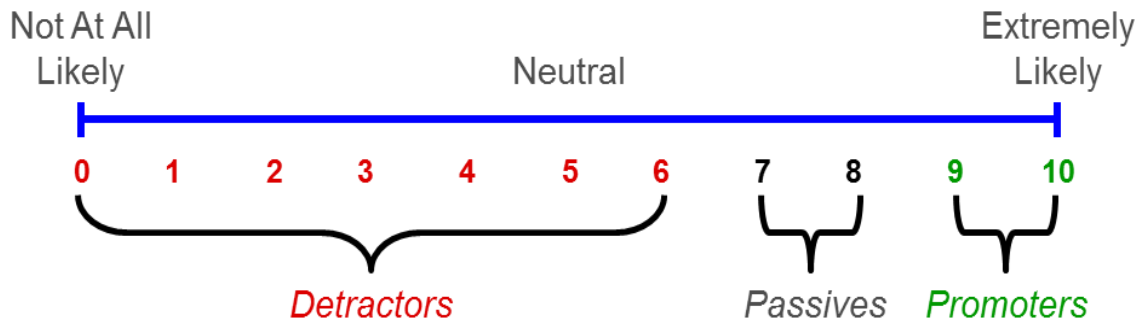
Figure: 23 NPS scale

Those answering between 0 and 6 are termed detractors, answers from 7 to 8 represent passives, and those giving 9 or 10 as answers are promoters.

Calculating the NPS is quite easy. It is simply the percentage of promoters minus the percentage of detractors. Passive customers are completely ignored (Barwise & Meehan, 2015).

The NPS measure can run from −100 per cent (0 per cent promoters, 100 per cent detractors) to 100 per cent (100 per cent promoters, 0 per cent detractors).

Figure: 24 NPS calculation

Reichheld and Sasser Jr. (2003) argued that continuous improvement, i.e. maximizing high scores with respect to performance, minimizing defects, and eliminating low scores and low performances, automatically leads to company growth. In other words, this means increasing the number of promoters and decreasing the number of detractors. However, this approach is short-sighted (Hanson, 2011). First, the measure is fixated on the industry/business unit in which one works (Whitlark & Rhoads, 2011). Overall, the typical measure is between 30 and 40 per cent (Schulman & Sargeant, 2013). Second, there could be an identical NPS for three different scenarios, for example.

- Company A:

  Promoters 20 per cent, passives 80 per cent, and detractors 0 per cent result in an NPS of 20 per cent.

- Company B:

  Promoters 40 per cent, passives 40 per cent, and detractors 20 per cent result in an NPS of 20 per cent.

- Company C:

  Promoters 60 per cent, Passives 0 per cent, and Detractors 40 per cent also result in an NPS of 20 per cent.

Though the various NPSs always equal 20 per cent, the circumstances are totally different and need different approaches (Hanson, 2011).

Researchers claim that the NPS wastes information and does not ask a second pertinent question: 'Why did the customer give us this score?' Another point is that if a company focuses only on the NPS, it may tend to forget the non-purchasers (Feeney, 2015). Barwise and Meehan (2015) argued that NPS wastes important information because it considers only detractors and promoters while ignoring passive customers. Moreover, this tool has no diagnostic value because it does not explain why the customers are satisfied or dissatisfied.

'Reichheld's famous quote about loyalty and profits is clearly nonsense and rather shockingly misleading. In sum, this is snake oil, fake science. The lesson for market researchers and insight directors is just how easy it is to make compelling slogans from incorrect findings. It's scary how many CEOs fell for Reichheld's fallacies, presumably because they were published in Harvard Business Review and presumably because hardly anyone actually read the full article critically' (Sharp, 2009, pp. 2830).

The effects of NPS on businesses and research worldwide are far-reaching and contentious. The questions that must be asked are what the NPS really is and what it is not (Hanson, 2011).

'All of these criticisms are valid, but miss the point that NPS is a brutally simple metric that for perceptual reasons is extremely good at attracting people's attention and highlighting the differences in customer satisfaction over time' (Barwise & Meehan, 2015, pp. 28–30).

2.7.9   Quantity of customer segments

Except Homburg, Schäfer, and Schneider (2012), no other researcher has considered the optimal quantity of customer segments. This researcher handled three segments by the ABC

analysis; four segments were designated by share-of-wallet and customer portfolio methodologies; quintile scoring method gave five segments; and the RFM cube offered eight different segments. However, over-segmentation is also a serious problem, especially in the case of SMEs. This is because each segment is associated with costs, and with an increasing number of segments, the benefits increase only slightly or can even go down. The differences between the customers are only marginal, but the effort to be put in by the employees and the company increases. This effort can be described in terms of several different customer care concepts, different products customized for each segment, and the effort towards internal coordination. Theoretically, the optimal number of segments is the one for which the difference between costs and benefits is the greatest. The red broken line in Figure 25 represents this.
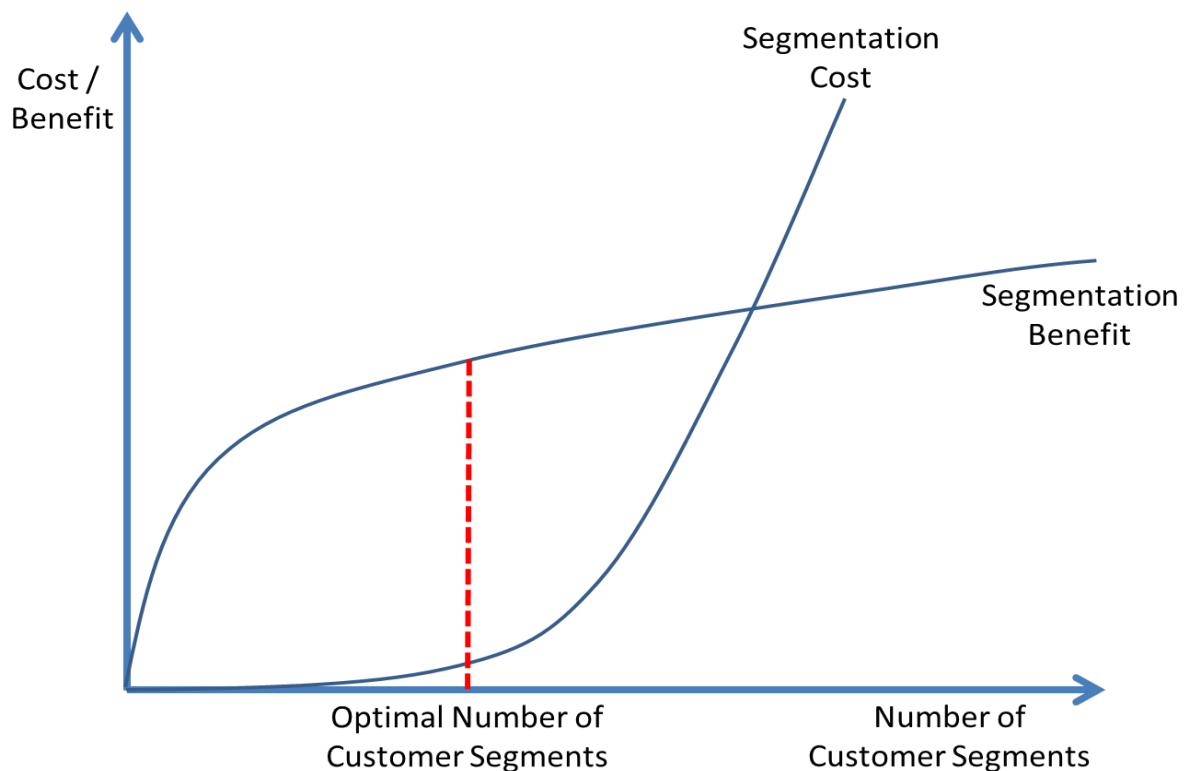
Figure: 25 Optimal number of customer segments (Homburg, Schäfer, & Schneider, 2012)

It is impossible to calculate the optimal number of segments because there are too many criteria, such as the number of customers, differences among individual customers, and so on. It is, however, important for a company to segment customers not only according to the benefits, but also according to the costs and the efforts involved (Homburg, Schäfer, & Schneider, 2012).

2.8 Available software

As mentioned, there are ready-made software applications in the field of customer segmentation in addition to the described models. These applications are examined and described in detail in this section. To identify available software models the Google search engine has been used because as the chart below shows that about 90 per cent of all searches are made on Google.

In October 2016, about four per cent of worldwide internet users searched the web with the online search engine, Bing, and 2.95% with Yahoo. During the same month, the Chinese search engine Baidu had a market share of 0.56%. The Google search engine led with a 90.37% share during this period.
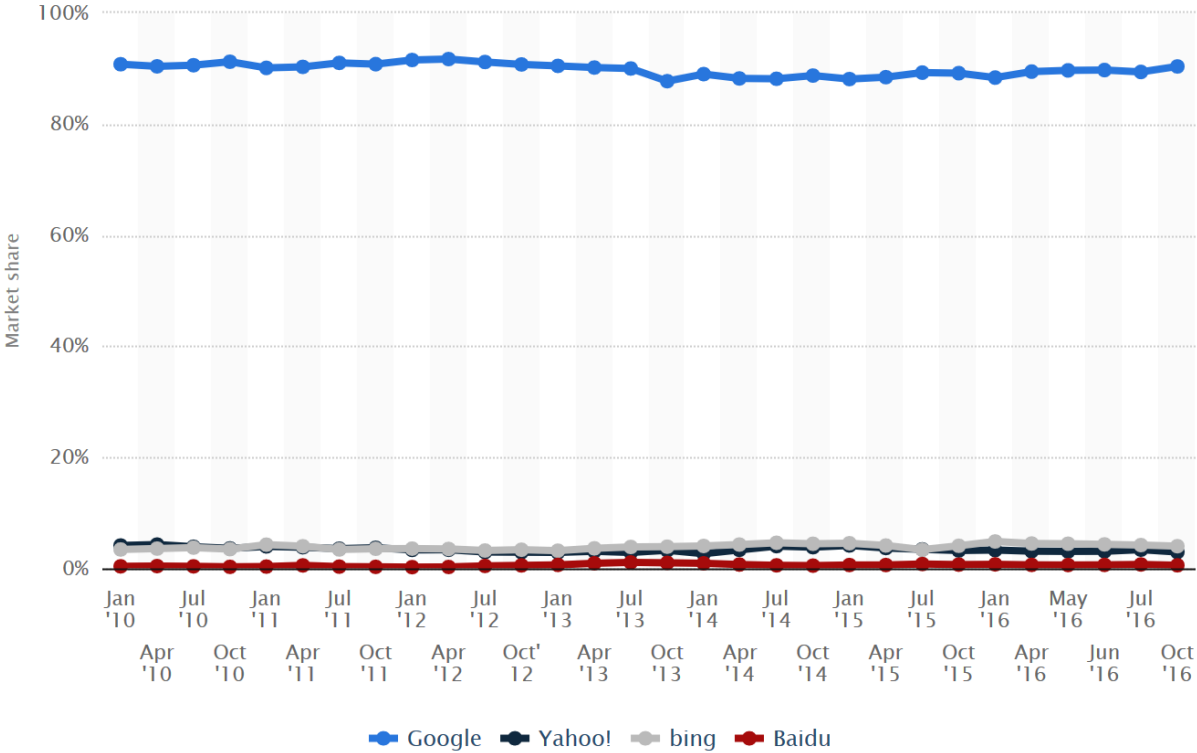
Figure: 26 Market share search engines

Owing to Google's large market share, it can be assumed that all relevant software providers in the field of customer segmentation are to be found there.

2.8.1 Search items

The internet search was carried out on 24 February 2017 at 2.30 pm. The following seven search items were selected by the researcher. These were chosen because they are related to

the topic of the work and, from the viewpoint of the researcher, have the highest probability of adequate search results.

- Customer Segmentation
- Customer Segmentation Software
- Customer Segmentation Model
- Customer Segmentation SME
- Customer Segmentation SME Software
- Segmentation Software
- Segmentation Software SME

The researcher did not search for the term 'market segmentation' because this work deals with the subject of customer segmentation and, here, a differentiation must be made.

When evaluating the search results, only the first page is considered. As is shown in a study conducted by the online service provider, Advanced Web Ranking, by far most users only decide for a result from the first page. As the following graph illustrates, the click-through rate (CTR) is significantly reduced in second-page results.
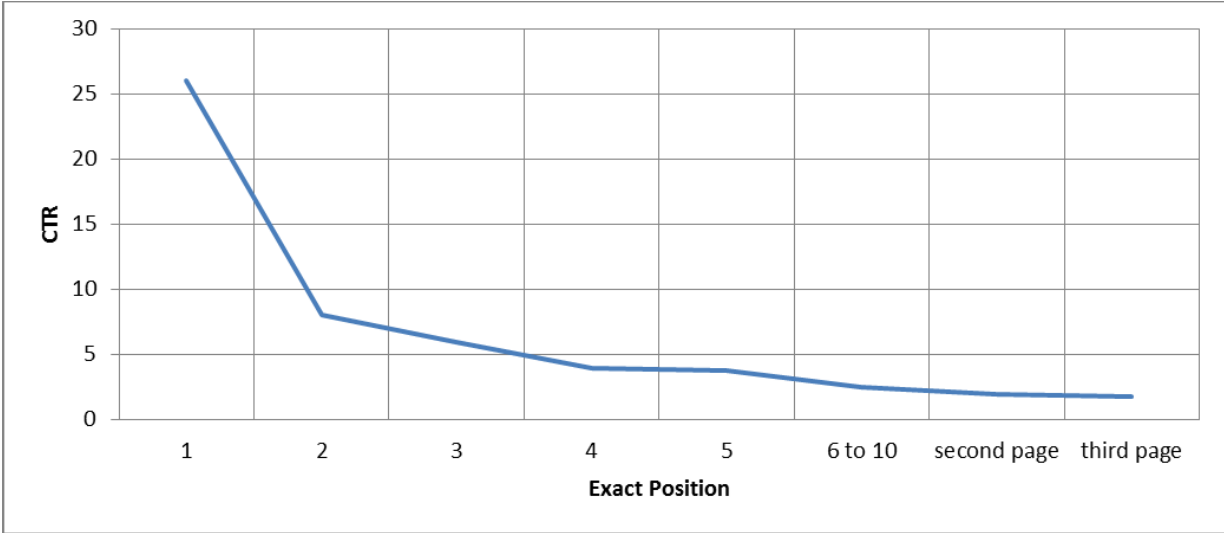
Figure: 27 Click through Rate per position

In the analyses of the search results, search results that do not deal with any available software are not described further. This applies to PDFs and results such as Wikipedia, Slideshare, Business Dictionary, Quora, and the like.

The screenshots of the search results are attached in the appendix. Search results that are found several times are only described in the first result.

In addition to the results from the Google research, the researcher has considered in Section 2.8.2 the four largest CRM providers by market share. Because as mentioned in Section 2.3. customer segmentation is part of CRM.

These are as shown in the figure below, the companies Salesforce, SAP, Orcale and Microsoft.
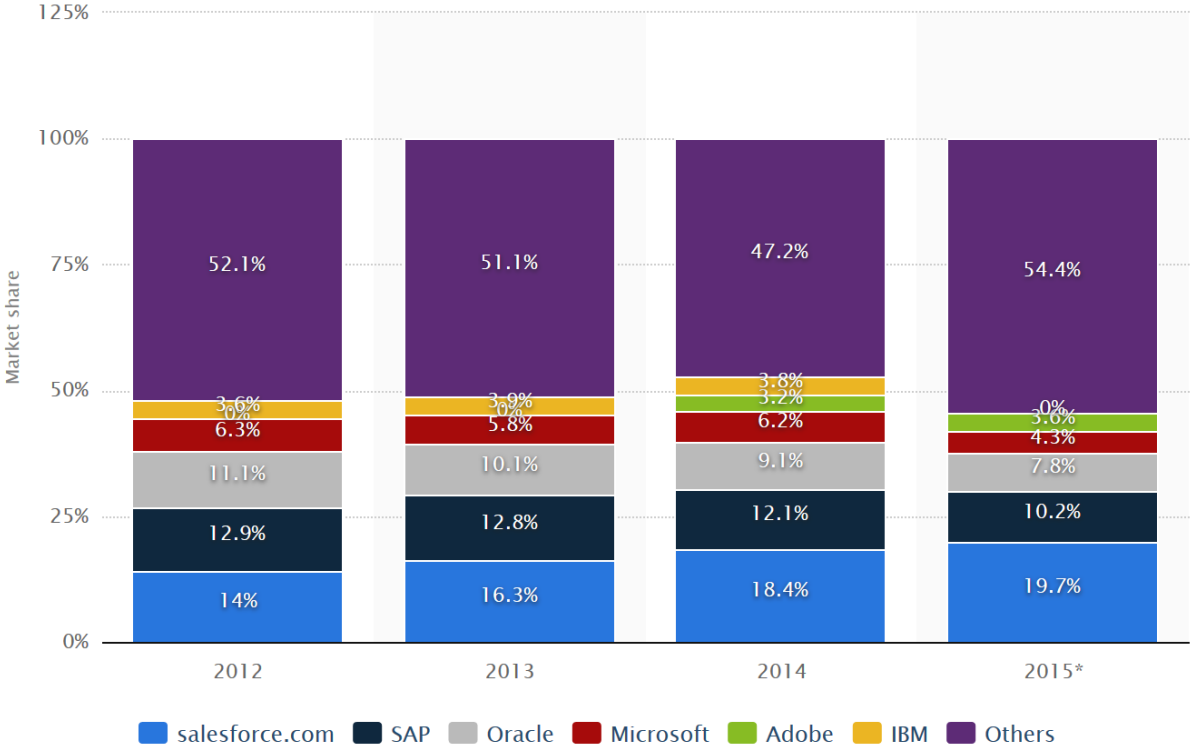
Figure: 28 Market share top 5 CRM providers (Statista, 2017)

The costs of the software packages are not shown on the internet pages and must be requested individually as a potential buyer. The requested companies were not willing to provide information on the cost for the DBA thesis. Therefore, the cost information was availed from freely available sources and it requires verification.

A detailed description of the search results can be found in the appendix.

2.8.2. Salesforce, Oracale, MS Dynamics, and SAP

Even if the following software packages are not found in the search results, they are so important from the viewpoint of the researcher that it is suggested that you consider them. All four are CRM applications, but as mentioned above customer segmentation is part of them.

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- Salesforce

Salesforce was founded by Marc Benioff in 1999. Since then, it has been offering CRM software that has been provided exclusively through the cloud. There is no longer a need to purchase software and hardware for enterprises because everything is in the cloud. However, using cloud-based solutions also means that data privacy is out of the hands of SMEs. Whenever the company wants to access the data, an internet connection is required. Further advantages and disadvantages of the cloud-based solutions are not discussed. It should be noted that SMEs, in particular, need to deal with this topic.

Salesforce offers a wide range of solutions across industries and depending on the size of the company. A distinction is made among:

- o Start-ups and small businesses
- o Medium enterprises
- o Large organizations

There are three or four software packages for start-ups and small businesses and for mid-sized businesses. Their prices range from €25 to €300 per user per month. A customer segmentation option may be booked in the cheap versions of €25 to €75 only as an extra option. In the versions priced at €150 and €300, customer segmentation is included. Customer segmentation at Salesforce provides detailed breakdowns by sector, geography, number of employees, and annual turnover. The customer segmentation diagrams provide a graphical view of the fields that Data.com can potentially provide more up-to-date and more accurate data.

- Oracale

As can be seen from the graphs, Oracle is the third largest CRM provider. However, CRM is just one product that Oracle offers. Furthermore, Oracle offers cloud applications, platform services, and engineered systems. Various solutions result from these areas:

- o Cloud
- o Mobile
- o Technology
- o Business
- o Industry

- o Customer experience
- o Partner

CRM is located in the business solutions, and Oracle offers here a complete and integrated CRM solution that includes marketing, sales, commerce, service, social, and configure, price, and quote (CPQ) applications. Oracle argued (2017) that 'large enterprises and fast-growing midsize companies are looking for ways to streamline the entire opportunity-to-quote process as a critical component of their CRM program (Oracle Corporation, 2017).' From this statement, one can conclude that Oracle is not focused on small companies.

Customer segmentation is integrated into the different areas of CPQ. After the customer data, including the corresponding segmentation rules, is in the system. Oracle promises that the system builds automatically the segments and involves the segments when e.g. the sales create offers. This contains pricing and discounting rules, sales analytics, product-up-selling and cross-selling, and contracts.

At first glance, the Oracle CRM solution is very extensive but a single customer segment is not available.

- MS Dynamics CRM

As the name implies, MS Dynamics CRM is a complete CRM solution.

One major advantage of MS Dynamics is that, like all Microsoft-based solutions, it is tightly interwoven with the Microsoft Office system. This familiar work environment for employees ensures a short training time and high employee acceptance. These points are important for the introduction of new products in order to keep the cost as low as possible. Another advantage of MS Dynamics CRM is that it is used in three different ways. On the one hand, the customer can access the CRM Online program in the Microsoft cloud space. On the other hand, companies can also host the Dynamics CRM in a data centre at a Microsoft partner and cater to customers via the internet. Third, the software can also be set up on the company's own server. With this version, the company does not lose data integrity. This is important, especially in case of sensitive sales data.

In the marketing module that contains the customer segmentation, customers can be segmented according to sales, purchase probability, or other criteria.

According to the price, the cheapest full version of the MS Dynamics CRM comes at €97 per month, and the even more favourable light usage is priced at only €8.40 per month. However, this price is only a guideline and can vary for each company.

- SAP

SAP is a software company based in Germany that specializes in various areas of enterprise software. This includes data, personnel, supply chain, finance, and customer relationship management, among others.

There are many different CRM solutions from SAP that can be purchased individually. However, you always need a basic version of the SAP software. Customer segmentation at SAP is a part of the marketing solutions and, there, it shows real-time customer analysis.

With the SAP Hybris Cloud for customers, SAP also offers cloud-based software to access data directly at the customer's location. Like Microsoft, SAP also offers its customers the option to store data in its data centres or in their own servers.

It is also possible to program the standardized SAP solution according to customer requirements. This can be done in direct collaboration with SAP or with a SAP partner. If a customized solution is desired, there will be some additional cost. This can be very high depending on the effort.

The prices cannot be specified for SAP. The researcher can say from personal experience that the SAP is a cost-intensive software program. In addition to the acquisition and running costs, there are also costs for employee training, as the handling of the software, when one is accustomed to Microsoft, appears unusual.

Conclusion

Many search results that offer a separate customer segmentation solution appear unprofessional and not particularly mature. Important points such as data security or interface compatibility with already used software packages may not always be available here. But these points are important for companies, whether SMEs or larger enterprises. These factors strongly influence the functionality, the user-friendliness, the associated acceptance among the employees, the effort, and the costs. The costs, whether one-time or follow-up, are only transparent in a few software companies.

The only positive solution to evaluate here, from the perspective of the researcher, is the Blue Sheep Company from Cheltenham. Blue Sheep also offers more than just customer segmentation and is more likely to be in the area of CRM. With their solutions and possibilities, they are positive in contrast to others.

Should the SME decide to get a complete CRM solution, there are significantly more possibilities.

On the one hand, SAS offers a web-based solution that possibly leads to considerations regarding data security. Also, the costs incurred upon using SAS are unclear. Another CRM alternative is Dex Media, which offers good solutions at first sight but is classified as expensive. The last positive to be rated as a CRM provider from the search results is Future Simple or Base.

With such a CRM solution, one must consider that the costs significantly higher. From the viewpoint of the researcher, if an SME decides for a complete solution, the MS Dynamics software would be a good solution. The costs are manageable and the acceptance among the employees is likely to be significantly higher than with other systems. In addition, with regard to data security, it is possible to install the software on one's own servers.

Note that a search on Google can give only a first indication. From the point of view of the researcher, the results are unsatisfactory. No general recommendation can be given as the differences and needs of SMEs dealing with customer segmentation have to be included individually in the decision.

2.9   Theoretical framework

Marcati, Guido, & Peluso outlined in 2010 that SMEs are the most widespread business organizations in Europe and management and marketing activities play a major role in business whatever SMEs struggling with the problem of haphazard, unstructured, spontaneous, and reactive behaviour in marketing (Gilmore, Carson, & Grant, 2001). This applies to all areas of marketing but especially, as shown in the lieterature review, to CRM, KAM and customer segmentation. A statistic shows that only 20% of SMEs in the EU use CRM systems (Eurostat, 2016). The study by German Federal Ministry of Economics and Technology shows a different result, in this study 50% of Germanys SMEs use a CRM system. But this result is only slightly better. According to Duscha (2007) the main reasons are insufficient knowledge, too high launch costs and that SMEs do not see concrete benefits.

This also applies to KAM although it has developed into one of the most important concepts in B2B marketing (Pardo, Henneberg, Mouzas, & Naude, 2006; Gounaris & Tzempelikos, 2012). However, KAM is an important part of the research because it is based on CRM (Ojasalo, 2001) and it could be seen as customer segmentation as well. This is also reflected in the objectives, according to Weis (2013), KAM has inter alia the following objectives, optimizing the relationship with the customer, improving competitive position and customer orientation, securing and expanding sales, and contribution margin. And these objectives apply also to customer segmentation in SMEs.

Often SMEs do not use KAM. Main reasons for this are a lack of communication with this employees and that is why the implementation failed (Belz, Müllner, & Zupancic, 2015). Or they rather rely on the proven ABC analysis by turnover whereby the A customer is the key account (Kaiblinger, 2009). But in KAM the systematic search for the matching key accounts (Barrett, 1986) is an important step and the turnover-related ABC analysis is equivalent to short-term thinking. As well it is more than purely sales or marketing concept. It goes well beyond that (Belz, Müllner, & Zupancic, 2015; Lockau, 2000; Management Centre Europe, 2013; McDonald, Millman, & Rogers, 1997; Peymani & Bijan, 2012; Winkelmann, 2013). And this is one reason why 80% of the companies have not implemented a KAM (Wengler, Ehret, & Saab, 2006). SMEs take care of their major customers in a more traditional way, through sales (Anderegg & Grob, 2012). In order to implement KAM in an analytic way it has to be uncomplicated, employee-friendly, and customer-friendly a manner as possible and this applies to customer segmentation as well.

Furthermore, the literature review and the considered models have thrown up some new important criteria. These criteria are crucial for proper customer segmentation in SMEs because if a segmentation method does not comply with them, the purpose of segmentation is not fulfilled. The table below shows that the reviewed methods do not fulfil this purpose. Not every criterion has the same value for SMEs; the worth of a criterion depends on industry, number of customers, and customer background, including industry, financial background, and so on. In general, not every segmentation method is suitable for every SME. However, from the researchers' professional experience in the field of customer segmentation in SMEs, if a company decides on a method, it should fulfil at least six of the seven criteria listed below.

1. Useful customer strategies must be deducible:

   It should be simple to derive clear and useful strategies from the customer segmentation method. If the process is too complex or there are too many different strategies, the method makes no sense for SMEs because too much effort is involved.

2. Practical and realizable for SMEs:

   Creating different customer segments with quantitative and qualitative data should be practical and realizable, which means it should not require complex mathematical formulas and specific (expensive) software.

3. Multidimensional:

   A multidimensional method is helpful to judge a customer in a better way because more criteria play a role in placing the customer in the right segment.

4. Derivation of meaningful segments:

   The different segments must be adequately meaningful or expressive, i.e. there should not be too many or too few customers in one segment. All the customers in one segment should have nearly the same needs and behaviours.

5. Use of past and estimated data:

   Both data from the past and estimated data should be used in the segmentation method.

6. Assimilation in CRM systems:

   The implementation of the segmentation results and the derived strategies and activities should be easy and not require too much effort.

7. Monetary customer value must be deducible:

   It is helpful for an SME if the monetary customer value can be deduced from the segmentation as well.

	Useful Customer Strategies deducible	Practical and Realizable for SME	Multi-dimensional	Meaningful Segments	Data from the Past and Future	Assimilable in CRM Systems	Monetary Customer Value deducible
ABC Analysis Turnover	✗	✓	✗	✓	✗	✓	✗
ABC Analysis Contribution Margin	✗	✓	✗	✓	✗	✓	✗
Scoring Models	✗	✓	✓	✗	✗	✓	✗
RFM Method Classic	✗	✓	✓	✗	✗	✓	✗
RFM Method Common	✗	✓	✓	✗	✗	✓	✗
RFM Method Pointing	✓	✓	✓	✗	✗	✓	✗
RFM Method Quintiles	✓	✓	✓	✗	✗	✓	✗
RFM Method Cube	✓	✓	✓	✓	✗	✓	✗
Share of Wallet	✓	✗	✗	✓	✗	✓	✗
CLV	✗	✗	✗	✓	✓	✓	✓
Customer Portfolio	✓	✗	✓	✓	✗	✓	✗
Net Promoter Score	✗	✓	✗	✓	✗	✓	✗

Figure: 29 Literature review conclusion matrix

The figure illustrates that only one method fulfils five out of the seven conditions (RFM cube method), and some others achieve four out of seven. As mentioned above, this is not sufficient for robust customer segmentation.

In addition to the 12 models reviewed in the literature review and listed in Figure 29 the researcher also considered software models. In addition to the results of an online search, the

4 highest market share CRM providers were considered as well. From this study, further findings revealed but these did not contain a satisfactory result.

From the literature review and online research, the following general conditions may be considered as true:

- Sales and marketing resources in SMEs are limited. Not every customer can be treated like a king (Krafft & Albers, 2000).
- Customers differentiate between requirements and the need for service and support. In general, a higher level of requirements, services, and support is accompanied by the willingness to pay for better services and better products (Homburg, Schäfer, & Schneider, 2012).
- CRM and KAM are often neglected in SMEs
- Customer segments with different values, priorities, and requirements can be distinguished from each other and approached differently.
- The examined 12 models do not meet all relevant criteria
- Various software solutions are offered by large and small vendors

This leads to the main objective of this research—the analysis and development of customer segmentation models for SMEs. And the systematic literature review and online research has been conducted to answer the following research questions:

RQ 1 • What approach should be adopted to analyse, evaluate, and develop customer segmentation tools in SMEs?

RQ 2 • What segmentation methods are appropriate for SMEs in relation to their stage of growth?

RQ 3 • How do SMEs recognize/identify the value of their customers?

RQ 4 • How, if at all, can SMEs employ CLV analysis for segmentation purposes?
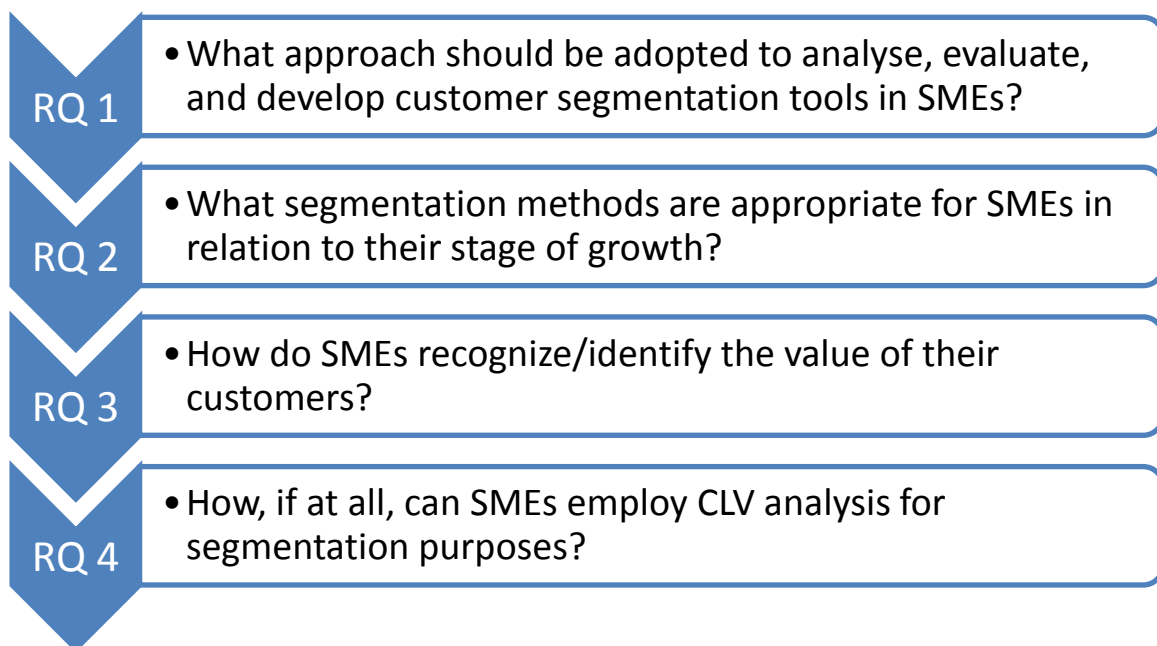
Figure: 30 Research questions

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RQ 1: What approach should be adopted to analyse, evaluate, and develop customer segmentation tools in SMEs?

The literature review shows that neither the examined segmentation approaches nor the available software models adequately satisfy the requirements for SMEs in the B2B area. Every model has its advantages and disadvantages, but not one of them is sufficient from the viewpoint of the researcher.

Based on the theoretical findings from the literature review and the following data analysis, the researcher will answer this question.

RQ 2: What segmentation methods are appropriate for SMEs in relation to their stage of growth?

The demarcation of SME sizes has been explained in Section 2.1. The researcher focuses on the sizing rules of the EU. The EU differs in micro, small, and medium businesses. The literature review clearly showed that neither all approaches nor all available software models are useful for companies of different sizes. More complex methods or methods with high information demand are unfavourable for smaller companies. The researcher would like to settle which models make sense for enterprises of which size.

RQ 3: How do SMEs recognize/identify the value of their customers?

To carry out effective customer segmentation, it is not sufficient to segment customers only according to the turnover. As elucidated in the literature review, the value of the customer is provided (Günter & Helm, 2003). The literature review also shows that only the CLV approach deals with the value of the customer, while all other approaches examined are based on other criteria. The researcher will examine whether and how SMEs determine the value of their customers.

RQ 4: How, if at all, can SMEs employ CLV analysis for segmentation purposes?

As is apparent from the literature review, the CLV is complicated and difficult to calculate for SMEs. Another disadvantage is the uncertainty relating to forecasts—this means that the CLV method is only an assumption (Reinartz & Kumar, 2000). It also becomes clear that customer

value can also be a powerful criterion. So, if SMEs calculate the customer value, how can you apply it to the segmentation approach?

Answering these questions is highly relevant for responsible managers and practitioners in SMEs. The answers can help to make structured, transparent and right decisions within customer segmentation in SMEs. The findings from the literature review show there is a need for action.

2.10   Conclusion - Literature review

This literature review produce new insights regarding customer segmentation in SMEs and ascertained that there is no special segmentation method for SMEs. None of the investigated and described methods focuses on the company size or the stage of growth. This issue plays no role in the individual methods. One can only draw conclusions at this point based on the complexity and data requirements of each method.

The described methods from the online search are partly focused on medium sized companies but not on small businesses or these models have some other disadvantages.

It also became clear that only Homburg, Schäfer and Schneider (2012) have considered the optimal quantity of customer segments. But this point should not be neglected by SMEs because it has a great influence on customer support and the resulting costs.

The findings from the literature review show there is a need for action in the field of customer segmentation in SMEs.

3 Research methodology

3.1 Introduction

The literature review concludes that a number of different customer segmentation models exist, but all of them except the CLV method use past data to segment customer or calculate customer value. The individual advantages and disadvantages of each method are discussed and it turns out that some methods, though they are quite simple, are also too superficial in terms of helpfulness. Other methods are meaningful but complex to handle, perhaps too complex for SMEs. A simple, good, and meaningful customer segmentation method for SMEs has not been discovered.

The deficiency leads the researcher in Section 3.2 to certain research questions and objectives. As well this section shows the different research methods and methodologies, the logic behind the research including the deductive, inductive and abductive approaches, the different approaches to research, and concludes with the research design adapted and conducted by the researcher. It also explains how the applied research design can be used to collect, analyse, and interpret data.

3.2 Research questions and objectives

According to the literature review, in the 1960s Theodore Levitt, a leading economist and academic, hinted that the future of business and marketing objectives is to win and keep customers (Levitt, 1960). This was later confirmed by Payne (1995), Freter (2008), Reichheld (2011), Homburg and Wieseke (2011), and, Kotler, Keller, and Opresnik in 2015, who declared that traditional marketing and sales now focus on winning and keeping customers. Customer analysis and customer segmentation are still significant issues in the field of marketing (Homburg & Wieseke, 2011). The results are particularly important for ensuring that appropriate resources and attention are given to key customers. Providing optimal customer service is still a major issue in SMEs because they have limited monetary and non-monetary resources in sales and marketing (Lemon & Mark, 2006) and some customers are more profitable than others (Epstein, Friedl, & Yuthus, 2009). Therefore, it is essential to segment customers according to their value and treat them accordingly. Based on the literature, the researcher has developed the following research questions and objectives.
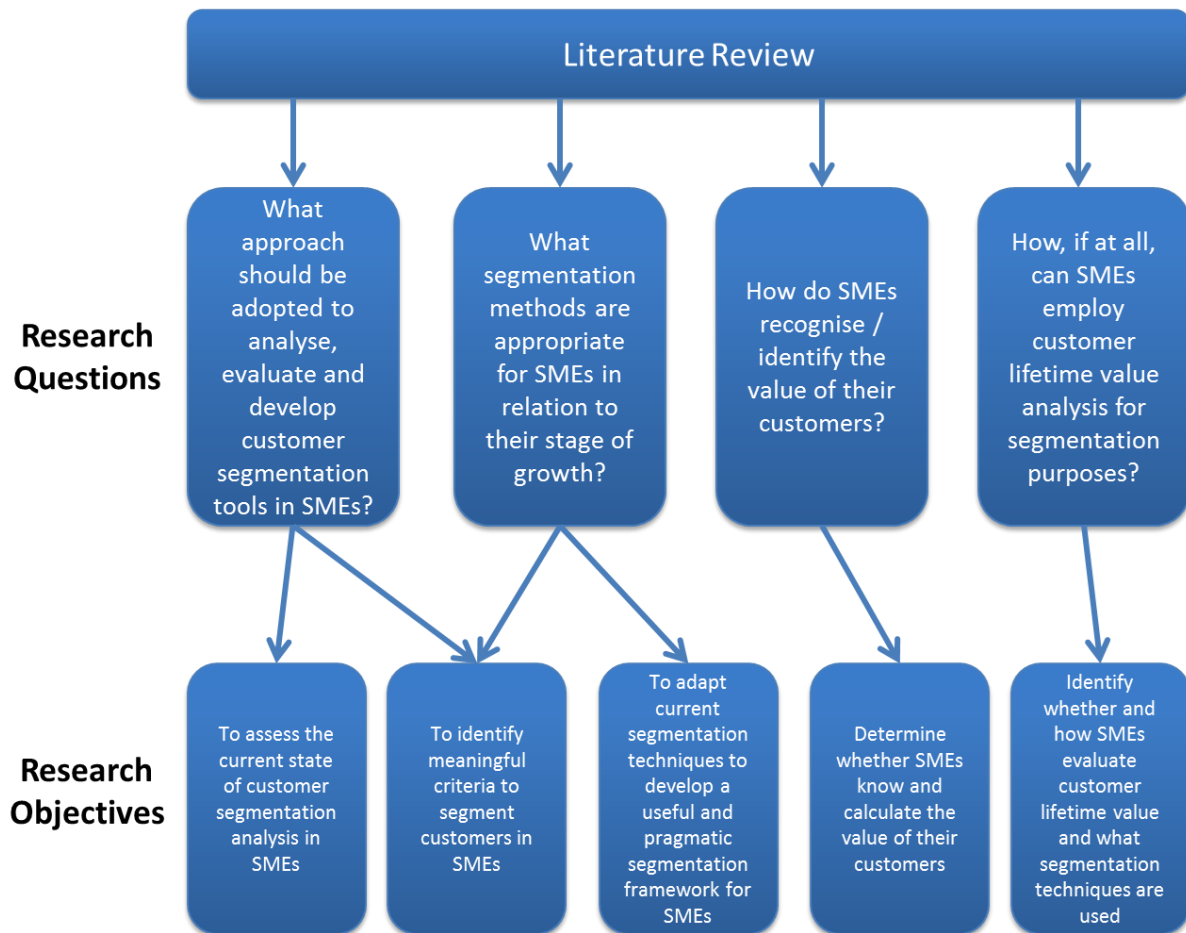
Figure: 31 From literature review to research objectives

This DBA thesis is focused on identifying and proposing adequate segmentation methods for SMEs and determining the effectiveness of the current practices of segmentation within this sector. The thesis issue to be researched include the four research questions and the five derived research objectives.

In the following matrix, this researcher illustrates how qualitative and quantitative research methods have been used to reach the research objectives.

Research Objectives	Segmentation Category	Qualitative	Quantitative
To assess the current state of customer segmentation analysis in SMEs	Popular Segmentation Techniques	Identify the reasoning for the choice of these segmentation preferences	Analyse the current segmentation output from the database
To identify meaningful criteria to segment customers in SMEs	Segmentation Profile Characteristics	Identify what criteria is used to segment customers	Evaluate the current and potential opportunities from the collected criteria
To adapt current segmentation techniques to develop a useful and pragmatic segmentation framework for SMEs	Future Customer Segmentation Profile of customers	Identify what SMEs would like to know about their customers	Undertake advanced modelling to identify potential segmentation profiles
Identify whether and how SMEs evaluate customer lifetime value and what segmentation techniques are used	Customer Lifetime Value	Identify how SMEs measure customer lifetime value	Undertake longitudinal analysis of the data to determine trends of customers
Determine whether SMEs know and calculate the value of their customers	Customer Value	Identify how SMEs assess the value of a customer	Undertake analysis to determine a more holistic inclusion of value based on a number of metrics

Table: 16 Matrix of research objectives

To answer the research questions and to reach the research objectives the further course of this section is as follows.

1. Research philosophy
2. Beliefs of the Nature of Reality, Knowledge and Values
3. Logic of research
4. Methodology
5. Research approaches
6. Adapted research design
7. Data collection methods
8. Quality, validity, reliability, and objectivity

Only when these points have been illuminated does it make sense for the researcher to deal with the topic of data gathering and analysis.

3.3 Research philosophy

Researchers all over the world call this factor by different names. For some, it is the theoretical position, while others refer to it as the research paradigm or the research philosophy.

According to Taylor, Kermode, and Roberts (2007), a philosophy, paradigm or theoretical position is 'a broad view or perspective of something' (Taylor, Kermode, & Robert, 2007, p. 5). Additionally, Weaver and Olson's (2006) definition of paradigm reveals how research can be affected and guided by a certain paradigm: 'Paradigms are patterns of beliefs and practices that regulate inquiry within a discipline by providing lenses, frames, and processes through which investigation is accomplished (Weaver and Olson, 2006, p. 460). Therefore, to clarify the researcher's structure of inquiry and methodological choices, an exploration of the paradigm adopted for this study is discussed prior to any discussion about the specific methodologies utilized in this study. Each tested method can be transferred freely from one research field to another. The findings or scientific observations should be in the foreground, and not the individual data. It is important to deal with existing research, knowledge, and different views of great philosophers like Jung, Freud, Adler, Wittgenstein, Schopenhauer, Propper, Comte, and James and compare the different positions of these philosophers.

3.3.1 Positivist

The positivist philosophy of research into the social reality goes back to the philosophical ideas of the French philosopher Auguste Comte, who believed that observation and reason are means to understand human behaviour. According to Comte, true knowledge can be attributed to the experience of the senses and attained through observation and experiment. Positivist thinkers use this scientific method as a means of generating knowledge and believe that all true knowledge is scientific and hence, best pursued by scientific method. The different principles and assumptions of science include determinism, empiricism, parsimony, and generality.

Determinism is the theory that events are caused by other circumstances. Empiricism involves the collection of verifiable empirical evidence to support theories or hypotheses. A business system involves the explanation of the phenomena in the most economical manner possible. Basically, this is the process of generalizing the observation of each phenomenon to the world. Using these assumptions, the ultimate goal of science is to integrate and systematize knowledge into a meaningful pattern or theory that is considered provisional and not the ultimate truth.

This method is often criticized because it does not consider the particular individual. It believes human behaviour to be passive—controlled and determined by the external environment.

3.3.2 Post-positivist

Post-positivism, also known as anti-positivism, emphasizes that social reality is viewed and interpreted by individuals themselves according to their own ideological positions. Anti - positivists believe that reality exist but it is highly layered and complex. It is argued that in the social world, individuals and groups interpret situations based on their personal experiences, memories and expectations. There is a construction and permanent re-construction of meanings over time through different experiences resulting in many different interpretations. The result of these multiple interpretations is the social reality in which people act.

Post-positivism is marked by three schools of thought in social science research— phenomenology, ethnomethodology, and symbolic interactionism (Guba & Lincoln, 2000). All three schools of thought emphasize the human interaction with phenomena in their daily lives, and suggest that the qualitative and quantitative approach are equal where one can be dominant.

In general, in a management science research study, the post-positivist philosophy has a strong influence because post-positivists believe that a real world exists independent of the observer (Creswell, 2009). Denzin and Lincoln (2000, p. 24) argued that 'post-positivism holds that only partially objective accounts of the world can be produced, because all methods are flawed'.

As well, the researcher believes that all observations in the real world are influenced by bias because of the different subjective views or perceptions of human beings. Thus, post-positivists believe that research (e.g. interviewer) and the object of research (e.g. interviewee) are not independent of each other.

Ryan (2006), and Schratz & Walker (2005) described the following research characteristics of post-positivism:

- Research is more general rather than focused (Ryan, 2006).
- The researcher cannot split this research into theory and practice (Ryan, 2006).
- The researcher's motivations for and commitment to research are central and crucial to the organisation (Schratz & Walker, 2005).
- The idea that research is concerned only with correct techniques for gathering and categorizing information is now inadequate (Schratz & Walker, 2005).

A post-positivist, believes that he cannot aggregate data to get the absolute truth as an answer. The researcher searches for the truth but it is clear for him that the research can be open-ended because he recognizes and bears in mind that there is an ongoing change in life, knowledge, and experience in himself, the researched person, and the real world. Consequently, the researcher needs to be reflexive, i.e. he must reflect and take a critical look at the assumptions in any approach and the limits in the research (Ryan, 2006).

3.3.3 Conclusion research philosophy

Despite this criticism, the researcher of this study believes in the post-positivism paradigm, because he is seeking the best practical solution but the researcher knows there is no absolute truth. And only with this paradigm the researcher has the freedom to choose the best theory and method. The other described paradigm, positivist, do not allow this possibility.

3.4 Beliefs of the Nature of Reality, Knowledge and Values

In this section, the researcher describes the basic beliefs and their relationship with the different paradigms.

3.4.1 Ontology

Ontology is a scientific discipline within philosophy. It is concerned with the theory of being and existing, and describes the philosophical viewpoint and the theory about the nature of reality and being (Remenyi, 1998) and the different kinds of things that exist. Therefore, the starting point of most research studies is to consider the ontological positions of the researcher and the study. Sometimes, ontology and philosophy are even considered identical. Heidegger argued that 'the question of Being' is the only question of philosophy. The researcher shares in general the belief of O´Leary that ontology is 'the study of what exists, and how things that exist are understood and categorized' (O'Leary, 2013, p. 5).

3.4.2 Epistemology

Epistemology deals with various questions in connection with knowledge: How do we create knowledge? What are the conceivable cognitive processes? How is knowledge justified under different conditions? How can one verify whether knowledge is actually being offered on the basis of cognition? The researcher focuses on O´Leary's definition of 'How we come to have

legitimate knowledge of the world—rules for knowing' (O'Leary, 2013, p. 5). In general, epistemology is the science of knowledge, but it is important to remember that knowledge is personal and depends on the researcher. Bateson (1979) argued that 'epistemology is always and inevitably personal. The point of the probe is always in the heart of the explorer: What is my answer to the question of the nature of knowing?' (Bateson, 1979, pp. 81–82)

Heinz von Foerster claimed that 'ontology explains the nature of the world; epistemology explains the nature of our experience of the world' (von Förster, 1985, p. 520). According to Bateson, 'in the natural history of living human beings, epistemology and ontology cannot be separated' (Bateson, 1985, p. 314).

Consequently, the epistemology journey will be adopted in the mixed method approach because both, epistemology and ontology, merge here.

3.4.3 Axiology

Axiology is the philosophy of values and ethics, and was founded in the 19th century. But the roots of the value of thought are already found in the ancient Greek philosophy of Plato and Aristotle. However, an intensive discussion did not take place until the turn of the 20th century through the reception of Friedrich Nietzsche's works, in which the expression often occurs. Basically, the term 'axiology' goes back to Eduard von Hartmann, who used the term first in 1887 in his philosophy of the beautiful.

Axiology focuses on the nature of value and captures the value question of what is intrinsically worthwhile. Heron and Reason (1997) mentioned that axiology deals with 'values of being, about what human states are to be valued simply because of what they are' (Heron & Reason, 1996, p. 287). According to Tomar (2014), axiology focuses on questions about what 'ought to be'. Values and ethics guide human decisions regarding what is good, true, and right. Thus, they depend as much on feelings as on thoughts. These values include the simple difference between right and wrong, a belief in God, and the importance of hard work and self-respect (Tomar, 2014). The researcher's values can influence his worldview, and, thus, the selection of the method and the research results.

A good way to analyse and compare different paradigms is to illustrate their answers to the ontological, epistemological, and methodological questions, as highlighted by Guba and Lincoln (2000).

Item	Positivism	Post-Positivism	Critical Theory	Constructivism
Ontology	Naive realism - "real" reality but apprehendable	Critical realism - "real" reality but only imperfectly and probabilistically apprehendable	Historical realism - virtual reality shaped by social, political, cultural, economic, ethnic, and gender values, crystallized over time	Relativism - local and specific constructed realities
Epistemology	Dualist/objectivist, findings true	Modified dualist/ objectivist, critical tradition/ community, findings probably true	Transactional/ subjectivist, value-mediated findings	Transactional/ subjectivist, created findings
Methodology	Experimental/ manipulative, verification of hypotheses, chiefly quantitative methods	Modified experimental/ manipulative, critical multiplism, falsification of hypotheses, may include qualitative methods	Dialogical/ dialectical	Hermeneutical/ dialectical

Table: 17 Basic beliefs of alternative inquiry paradigms (Guba & Lincoln, 2000)

As well Guba and Lincoln (2000) described the aforementioned basic beliefs in terms of selected practical issues for conducting research.

Issue	Positivism	Post-Positivism	Critical Theory	Constructivism
Inquiry aim	explanation, prediction and control		critique and transformation; restitution and emancipation	understanding; reconstruction
Nature of knowledge	Verified hypotheses established as facts or laws	no falsified hypotheses that are probable facts or laws	structural/ historical insights	individual reconstructions coalescing around consensus
Knowledge accumulation	accretion - "building clocks" adding to "edifice of knowledge", generalizations and cause-effect linkages		Historical revisionism, generalization by similarity	more informed and sophisticated reconstructions, vicarious experience
Goodness or quality criteria	Conventional benchmarks of rigour: internal and external validity, reliability and objectivity		Historical situatedness, erosion of ignorance	Trustworthiness, authenticity and misapprehensions
Values	Excluded – influence denied		Included - formative	
Ethics	Extrinsic – tilt toward deception		Intrinsic – moral tilt toward revelation	Intrinsic – process tilt toward revelation

Table: 18 Paradigm positions on selected practical issues (Guba & Lincoln, 2000)

If a researcher is clear about what kind of paradigm he or she represents, he or she can have a better idea of what kind of research logic he or she has to follow—deductive, inductive, or abduction.

3.4.4 Conclusion Beliefs of the Nature of Reality, Knowledge and Values

The philosophy of the researcher of this study is post-positivism approach in correlation to epistemology. Since this approach is best suitable one to answer the research question and to reach the research objectives.

3.5 Logic of research

In the field of social research, some distinctions should be made between generalization and individualization, validation and discovery, and variance and process (van Wyk, 2010), but a major distinction should be made in the research processes associated with the deductive approach (descending from general to specific), the inductive approach (ascending from the specific to the general), and the hypothetical or abduction approach.

Deduction	Induction	Abduction
Rule: All the carrots from this field are red.	Case: These carrots are from this field.	Rule: All the carrots from this field are red.
Case: These carrots are from this field.	Result: These carrots are red.	Result: These carrots are red.
Result: These carrots are red.	Rule: All the carrots from this field are red.	Case: These carrots are from this field.

Table: 19 Logic of research

3.5.1 Deductive approach

In the deductive approach, a logical consequence takes place through the recognition of a logical rule and a given condition. Thus, deduction involves drawing logical consequences from premises (Ho, 1994). It works from the more general social theory to the more specific fact. It is also called the 'top-down' approach. A deductive approach is typically associated with scientific research. This research studies what other researchers have written about an

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existing theory of the research phenomenon and then tests the hypotheses that emerge from these theories to verify them.
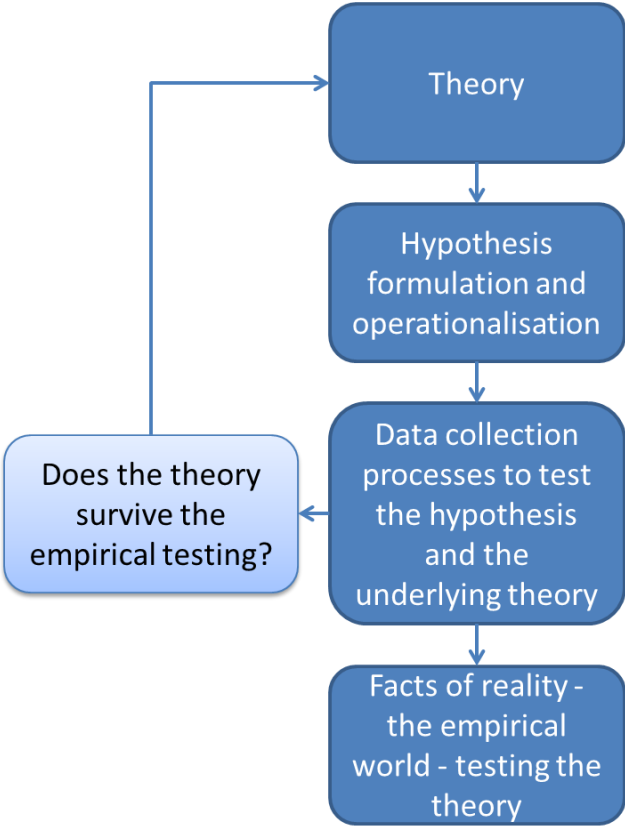
Figure: 32 Process of deductive logic (Gill, Johnson, & Clark, 2010)

3.5.2   Inductive approach

In 2006, Thomas explained that the 'purposes for using an inductive approach are to condense extensive and varied raw text data into a brief, summary format; to establish clear links between the research objectives and the summary findings derived from the raw data and to develop a model or theory about the underlying structure of experiences or processes which are evident in the raw data. The inductive approach reflects frequently reported patterns used in qualitative data analysis' (Thomas, 2006, p. 237). The general inductive approach provides a convenient and efficient way to analyse qualitative data for many research purposes. The approach is evident in several types of qualitative data analyses, especially grounded theory (Strauss & Corbin, 2008). It is similar to the general pattern of qualitative data analysis described by others (e.g. Miles & Huberman, 1994; Pope et al., 2000). Inductive approaches help in understanding the meaning of complex data by developing summary themes or categories from the raw data ('data reduction'). These approaches are evident in many

qualitative data analyses. Some have described their approach explicitly as 'inductive' (e.g. Backett & Davison, 1995; Stolee et al., 1999) while others use the approach without giving it an explicit label (e.g., Jain & Ogden, 1999; Marshall, 1999). The outcomes of the analysis may be indistinguishable from those derived from a grounded theory approach. Some researchers are likely to find the general inductive approach simpler than one of the other common approaches to analysing qualitative data. The induction process follows an order of deduction from the observation of the empirical world to the development of a theory and the explanation of the observation (Gill, Johnson, & Clark, 2010).
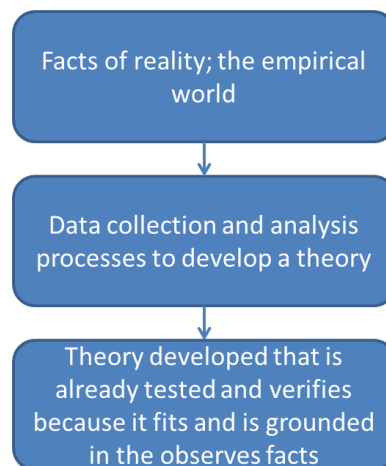
Figure: 33 Inductive development of theory (Gill, Johnson, & Clark, 2010)

A problem of inductive logic is that the extracted general statements are based on individual experiences and not all such individual experiences can be observed. One thus necessary implied prediction is not observed therefore individual cases may not be reliable (Raithel, 2008). This means that one have to formulate results cautiously. For example, the present results may be subject to revision when more data is collected.

3.5.3 Abductive approach

The third approach to research is the abduction approach. It is the approach preferred by most pragmatists.

The epistemological term 'abduction' was essentially introduced into the scientific debate by the American philosopher and logician Charles Sanders Peirce. Peirce explained that abduction is a process in which an explanatory hypothesis is formed (Peirce, 1965). By this, Peirce understood a conclusion that differs from deduction and induction in that it expands

the knowledge. Peirce designed a three-step cognitive logic of deduction, induction, and abduction.

In the history of logic, the idea of the abduction or hypothesis goes back to Aristotle. Thus, Peirce did not introduce the term 'abduction' into the sciences. Rather, he took up a long-forgotten concept and reintroduced it into today's science or language. Peirce's particular achievement is that this conclusion has been scrutinized more closely, making it fruitful for the logic of the scientific process.

There is no well-known rule at the beginning. Instead, there is a surprising event, something that raises serious doubts about the correctness of one's own ideas. Then, in the second step, there is an assumption. The assumption is if there were a rule here, the surprising event would have lost its surprise character. It is decisive for the determination of abduction that the 'elimination of surprise' is the essential thing in it, but the elimination of the surprise by 'a new rule'. A surprise could also be overcome by adopting known rules. But that would not be abduction. The rule has yet to be found or constructed. It was not yet known, at least not at the time when the surprising event was perceived. If the rule had already been presented as knowledge, the event would not have been surprising. In the second part of the abductive process, a hitherto unknown rule is developed. The third step then yields two things: first, that the surprising event is a case of the constructed rule, and second, that this rule has a certain conviction.

3.5.4 Comparison of deduction, induction, and abduction

Peirce (1965) characterized abduction in contrast to deduction and induction as follows: 'Deduction proves that something must be; Induction shows that something actually is operative; Abduction merely suggests that something may be (Pierce, 1965 p. 171).'

According to Fielding, Gilbert and Gilbert (2006) Induction is a method for generating a theory while deduction is a method that uses a theory (Fielding, Gilbert, & Gilbert, 2006). The main difference of deduction and induction is outlined in the figure below:

Process of Deduction **Process of Induction**
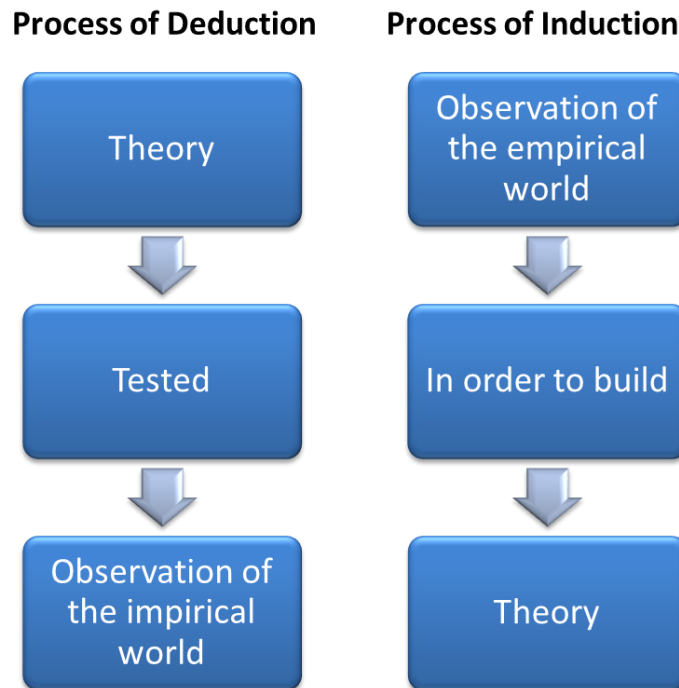
Figure: 34 Deduction vs. induction (Gill, Johnson, & Clark, 2010)

To research in the field of customer segmentation, both methods are applicable. The deductive method can be used to verify all the known and described methods found in the literature review. The results of the literature review would further reveal whether the existing segmentation methods for SME are adequate or require revision. In the induction process involving information from expert interviews and existing customer data, the research adopts existing methods. The researcher carries out both processes with existing quantitative data and then compares the results.

3.5.5 Chosen research approach

Regarding the research approach, the researcher, as pragmatist, has decided to use the deduction approach on the basis of his personal experience and because he believes in the theory that all SMEs use customer segmentation models. Even if the organisation has no official segmentation strategy, sales departments or sales managers use segmentation methods to put their customer in different categories. Sometimes, these methods are subjective or based on gut feelings rather than figures.

Process of deduction logic | Process of deduction logic in this study

```
        Theory                      SMEs use customer
                                    segmentation models

Hypothesis formulation         Customer segmentation
and operationalisation         models often too
                               complex for SMEs

Does the theory   Data collection    Experts argue    Doing expert
survive the       processes to test  that customer    interviews and
empirical         the hypothesis     segmentation is  analysing
testing?          and the            not too complex  existing data
                  underlying theory  for SMEs

Facts of reality - the         Create a new useful
empirical world -              segmentation model for
testing the theory            SMEs and prove it with
                              existing data
```

Figure: 35 Process of deduction logic in this study referring to Gill, Johnson, & Clark (2010)

The hypothesis of this study is that the customer segmentation methods/models are often too complex for SMEs, especially if a lot of statistical sales figures and customer data are needed or if the calculation is very complex. This is particularly an issue if the SME has a lot of customers, e.g. in B2B retail companies the different segments are too big to deduce proper strategies for each segment and to treat every customer right.

Through expert interviews and the analysis of the existing data, this researcher intends to prove this hypothesis. If the hypothesis is correct, this researcher will go on to create a useful segmentation model for SMEs.

3.6 Methodology

To understand methodology, it is important to see it as a collection of information for research purposes and realize that there are three approaches: quantitative research, qualitative research, and mixed methods. Silverman described this topic as 'the choices we make about cases to study, methods of data gathering, forms of data analysis etc. in planning and

executing a research study' (Silverman, 2010, p. 113). Early forms of research originated in the natural sciences, such as biology, chemistry, physics, geology, etc., were concerned with investigating things that can be observed and measured in some way. Such observations and measurements can be made objectively and repeated by other researchers.

'This process is referred to as 'quantitative' research. Years later, along came researchers working in the social sciences: psychology, sociology, anthropology etc. They were interested in studying human behaviour and the social world inhabited by human beings. They found increasing difficulties in trying to explain human behaviour in simply measurable terms. Research which attempts to increase our understanding of why things are the way they are in our social world and why people act the ways they do is 'qualitative' research' (Hancock, 2002, p. 1).

A distinction should be made between field research and desk research. Field research or primary research is used as an empirical method to collect new data that has not been previously collected. On the other hand, desk research or secondary research is the re-analysis of existing data to reproduce and control old results or to answer new research questions with existing data. The following table shows the advantages and disadvantages of field and desk research.

	Field Research	Desk Research
Qualitative methodology	- Expert interviews - Observation of participants	Analysis of public qualitative studies and interviews
Quantitative methodology	Standardized questionnaires	- Public statistics from institutions like the EU - Data from company databases - Data form market research institutions
Advantages	- Research creates the design of the data collection - Data can be collected and analysed due to the study - Many different research methods available	- Easy access - Cheap from of data collection - It takes less time
Disadvantages	- In some cases field research is expensive - Takes time to create the research design - Takes time to find the results of the research - May be difficult to get adequate or enough answers	- Data do not match the research topic exactly - Data was collected for a different study - Data is sometimes too old

Table: 20 Advantages and disadvantages of field and desk research

In this study, the researcher has tried to combine qualitative data, for example interviews, and quantitative data from a CRM system and SAP Business Intelligence system that provides every available kind of customer information. In the researcher's opinion, the combination of the two types of data—quantitative and qualitative—is the key because the researcher can use the quantitative data and reveal further insights using the qualitative data from the interviews. If significant differences are discovered then more interviews can be conducted. In this way, this researcher can understand why the quantitative answers do not match the first answers from the interview.

A mixed method approach has a logical and intuitive appeal, hence providing a platform for bridging the divide between qualitative and quantitative paradigms. This attribute, consequently, has attracted an increasing number of researchers who utilize mixed method

designs in undertaking their studies (Onweugbuzie & Leech, 2006). A mixed method design combines the strength of both quantitative and qualitative research approaches. Neither purely qualitative nor purely quantitative approaches were suitable for this research topic because though quantitative and qualitative methods have some strength on their own, maximum benefits are realized when they are brought together (Connelly, 2009).

An exclusively qualitative research was impossible because this research, as already mentioned, deals with an entire industry that has a variety of different branches and sectors, which in turn consist of completely different companies with different customer profiles. Each of these customers behaves differently and needs to be treated differently. This mandatorily requires a different set of assumptions related to segmentation. A truly meaningful qualitative research is thus beyond the scope of this study.

An exclusively quantitative research is also not feasible. A purely data-based research is not meaningful enough, whether it is historical data or estimated data from the future, like CLV. In this type of research, the human factor is not included at all or to a sufficient extent. If one want include the human factor by observation, for example, this would not be justified in terms of cost and time because hundreds of companies and thousands of customers would have to be observed.

For these reasons, from the researcher's perspective, only a mixed method approach makes sense. It combines qualitative and quantitative research, especially in the creation of data. This research combines semi-structured face-to-face interviews and also historical data from business warehouse software systems. Thus, it includes to a sufficient extent the human factor as well as quantitative data.

3.6.1 Compare qualitative, quantitative, and mixed method approaches

It is a challenge to measure the customer value in SMEs. The customers' behaviour and their personal relationship to the company or the sales manager play a significant role in the sales process. In this case, not only quantitative data is needed for an objective view but also the qualitative data from a social science subjective view. A combination of the two is called the 'mixed method approach'.

Objective quantitative data includes numbers collected through surveys or business warehouse software systems and the research process follows a predetermined pattern.

In the field of subjective qualitative social research, there are numerous data collection and analysis methods available, such as interviews, qualitative methods of observation, case analysis, and qualitative content analysis (Wolf, 1995).

The history of the debate about quantitative, qualitative, and mixed methods is over 100 years old. In the past, researchers in the field of management claimed that human phenomena belong to the world of facts; this leads to some questionable assumptions (Prasad & Prasad, 2002).

The difference between qualitative and quantitative methodology is not always clear (Dixon-Woods, Shaw, Agarwal, & Smith, 2004). This is evident because two of the researchers of the mentioned article see content analysis as a qualitative method while the other two researchers do not. They argued that content analysis is grounded in the quantitative research strategy (Bryman & Bell, 2015). A further point in the discussion is whether open-ended questions should be deemed qualitative or not (Dixon-Woods, Shaw, Agarwal, & Smith, 2004). Creswell (2009) compared the quantitative, qualitative, and mixed method approaches and the different types of data collection. To identify the best research method suited for the research process is a complex decision. Often, researchers call this issue a 'paradigm war' (Buchanan & Bryman, 2007).

Tend to or typically	Qualitative Approaches	Quantitative Approaches	Mixed Method Approaches
• Use these philosophical assumptions • Employ these strategies of inquiry	• Constructivist / Advocacy / Participatory knowledge claim • Phenomenology, grounded theory, ethnography, case study, and narrative	• Post-positive knowledge claims • Surveys, experiments, and data	• Pragmatic knowledge claims • Sequential, concurrent, and transformative
• Employ these methods	• Open-ended questions, emerging approaches, text or image data • Predetermined • Interview data, document data, and audio-visual data	• Instrument-based questions • Emerging methods • Closed-ended questions, pre-determined approaches, numeric data, performance data, attitude data, observational data, and census data	• Both open- and closed-ended questions, both emerging and predetermined approaches, and both qualitative and quantitative data and analysis • Statistical and text analysis
• Use these practices of research, as the researcher	• Positions himself or herself • Collects participant meanings • Focuses on a single concept or phenomenon • Brings personal/subjective values into the study • Studies the context or setting of participants • Validates the accuracy of findings • Interprets the data • Creates an agenda for change or reform • Collaborates with the participants change or reform • Collaborates with the participants	• Tests or verifies theories or explanations • Identifies variables to study • Relates variables in questions or hypotheses • Uses standards of validity and reliability • Observes and measures information numerical • Uses unbiased approaches • Employs statistical procedures	• Collects both qualitative and quantitative data • Develops a rationale for mixing • Integrates the data at different stages of inquiry • Presents visual pictures of the procedures of study • Employs the practices of both qualitative and quantitative research

Table: 21 Qualitative, quantitative and mixed method approaches (Creswell J. W., 2009)

Crotty (1998) stated, to find the right research approach, the researcher has to answer four questions.

1. What type of epistemology gives information to the research?
2. What theoretical perspective lies behind the methodology in questions?
3. What methodology governs your choice and use of methods?
4. What methods—techniques and procedures—do you propose to use?

The four questions show the interrelated levels of the decisions that are important for finding the right research approach (Crotty, 1998).

Creswell (2009) demonstrated it in a process where the three elements of inquiry combine to form different research approaches.
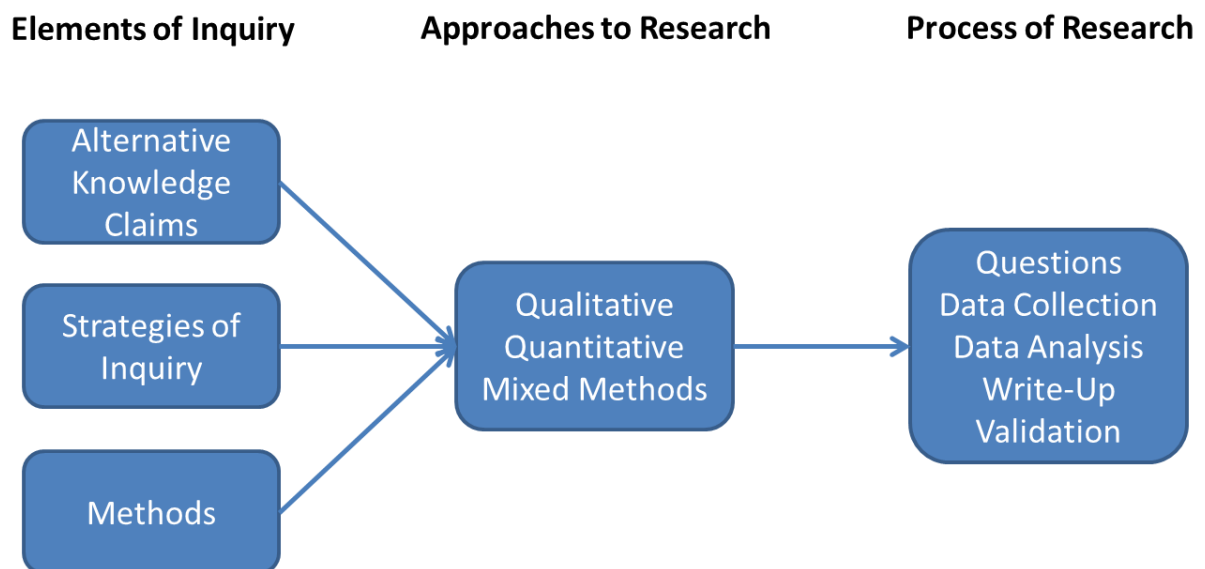
Figure: 36 Knowledge claims, strategies of inquiry and methods leading the approaches and the process of research (Creswell J. W., 2012)

In many journals and articles, the different assumptions about the result of qualitative and quantitative research lead to a debate about philosophical and methodology issues (Sale, Lohfeld, & Brazil, 2002). Researchers like Coxon (2005) argued that the dominance of IT firms and software producers like IBM and their products (like SPSS) allows qualitative and quantitative methods to coexist (Coxon, 2005).

Buchanan and Bryman (2007) outlined different influences on the choice of the research method, especially in organisational research.

Trends in organisational research

Widening boundaries
an unbounded research field, embracing an expanding range of topics and aims

Multiple paradigms
positivist, interpretative, critical, postmodern

Methodological inventiveness
combining conventional with creative new data collection and analysis methods

Research topic
Traditional concern with questions, objectives and norms of practice

Ethical properties
Heightened scrutiny, codes of practice, committee positions

Organisational properties
Size, location, sites professional bureaucracy role and structure stability / instability

Evidential peoperties
Different audiences:
Academic, management, research participants, audience recep

Historical properties
experience and evidence base benchmarks and traditions terminology

Personal properties
Preferences, competencies, networks, relationships

Political properties
negotiated objectives layered permissions stakeholder demands partisan conclusions the politics of publishing

Organisational research methods choice

Figure: 37 The system of influences on choice of organisational research methods (Buchanan & Bryman, 2007)

As seen above, choosing between the different methodology methods involves several steps. There are various strength and weaknesses in every approach; these have to be incorporated into the researcher's decision, which in turn is very closely linked to the research questions. In some cases, it could be a compromise between several assumptions, depending on the resources and data available (Gill, Johnson, & Clark, 2010). To find the right approach and the right method usually involves a compromise between choices that is influenced by resources, existing data, and philosophical assumptions (Gill, Johnson, & Clark, 2010).

3.6.2 Qualitative research

Strauss and Corbin (2008, p. 10) defined qualitative research as 'any type of research that produces findings not arrived at by statistical procedures or other means of quantification.' According to Creswell (2009), qualitative approaches deal with research methods based on the qualitative features of the data. There are different philosophical grounds behind

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qualitative research methodologies. Examples of qualitative research methods are narrative research, phenomenology, grounded theory, ethnography, and case study.

Qualitative research is concerned with finding the answers to questions that begin with 'why', 'how', and 'in what way'. Hancock (2002) described qualitative research as a method concerned with the opinions, experiences, and feelings of individuals producing subjective data, to create or collect data for understanding the social world through sampling techniques concerned with seeking information from specific groups and subgroups in the population (Hancock, 2002).

Qualitative researchers, in their research, try to understand a phenomenon as it occurs in a specific situation. This is called a naturalistic approach (Golafshani, 2003). The main focus of qualitative researchers is to understand and extrapolate similar situations. They are focussed on processes, meanings, and human beings and not on pure data or numbers (Denzin & Lincoln, 2000).

There are different qualitative approaches, such as phenomenology, grounded theory, and ethnography (Flick, 2009). Creswell described the different characteristics of these approaches in the following table:

Characteristics	Narrative Research	Phenomenology	Grounded Theory	Ethnography	Case Study
Focus	Exploring the life of an individual	Understanding the essence of the experience	Developing a theory grounded in data from the field	Describing and interpreting a culture-sharing group	Developing an in-depth description and analysis of a case or multiple cases
Type of Problem Best Suited for Design	Needing to tell stories of individual experiences	Needing to describe the essence of the experience	Grounding a theory in the views of participants	Describing and interpreting the shared patterns of culture of a group	Providing an in-depth understanding of a case or cases
Discipline Background	Drawing from the humanities including anthropology, literature, history, psychology and sociology	Drawing from philosophy, psychology and education	Drawing from sociology	Drawing from anthropology and sociology	Drawing from psychology, law, political science and medicine
Unit of Analysis	Studying one or more individuals	Studying several individuals that have shared the experience	Studying a process, action, or interaction involving many individuals	Studying a group that shares the same culture	Studying an event, program, an activity, more than one individual
Data Collection Forms	Using primarily interviews and documents	Using primarily interviews with individuals, although documents, observations, and art may also be considered	Using primarily interviews with 20 to 60 individuals	Using primarily observations and interviews, but perhaps collecting other sources during extended time in field	Using multiple sources, such as interviews, observations, documents, artefacts
Data Analysis Strategies	Analysing data for stories, "restorying" stories, developing themes, often using a chronology	Analysing data for significant statements, meaning units, textural and structural description, description of the "essence"	Analysing data through open coding, axial coding, selective coding	Analysing data through description of the culture-sharing group; themes about the group	Analysing data through descriptions of the case and themes of the case as well as cross-case themes
Written Report	Developing a narrative about the stories of an individual's life	Describing the "essence" of the experience	Generating a theory illustrated in a figure	Describing how a culture-sharing group works	Developing a detailed analysis of one or more cases

Table: 22 Contrasting characteristics of qualitative approaches (Creswell J. , 2009)

Data collection in a qualitative research approach usually involves direct interaction with individuals on a one-to-one basis or in a group setting (Hancock, 2002).

To collect this data, three main methods are commonly used:

1. Individual interviews

   Interviews can be highly structured, semi-structured, or unstructured. Qualitative interviews are usually semi-structured or unstructured and they should be informal (Hancock, 2002).

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2. Focus groups

Sometimes, it makes sense to collect information from focus groups rather than from individuals. Reasons for this could be limited resources (time and money). Focus groups include a number of individuals who share a common factor and sometimes group interaction has the potential for greater insights (Hancock, 2002).

3. Observation

In some cases, it makes more sense not to interact directly with people. There are different methods to collect data through observations. The researcher can observe the environment, written descriptions, video recordings, photographs, artefacts, or documents.

There are several points of criticism regarding qualitative research. Mays and Pope (1995) described four of these points:

1. Qualitative research is unscientific.

2. Qualitative research is based on personal impressions and very prone to researcher bias.

3. Qualitative research cannot be reproduced.

4. Qualitative research generates a large amount of detailed information about a small number of settings.

Concerning the first point, 'to label an approach is unscientific is peculiarly damning in an era when scientific knowledge is generally regarded as the highest form of knowing' (Mays & Pope, 1995, p. 109). Regarding Points 2–4, there is no guarantee that another researcher will came to the same conclusions, because even researchers are human beings and not machines. Therefore, qualitative and quantitative approaches are fundamentally different (Mays & Pope, 1995). Qualitative research shows the researcher how, and more importantly, why things happen.

Some researchers (Onweugbuzie & Leech, 2006; Töpfer, 2009) argued that mixed methods—i.e. a combination of qualitative and quantitative methods—can produce better results than studies that use only one method. However, according to Flick (2009), qualitative methods do not need quantitative methods to improve or complement the results.

Strengths and weaknesses of qualitative research

Strengths	Weaknesses
The data are based on the participants' own categories of meaning	It is difficult to make quantitative predictions
It is useful for studying a limited number of cases in depth	It is more difficult to test hypotheses and theories
It is useful for describing complex phenomena	It may have lower credibility with some administrators & commissioners of programs
Provides individual case information	It generally takes more time to collect the data when compared to quantitative research
Can conduct cross-case comparisons and analysis	Data analysis is often time consuming
Provides understanding and description of people's personal experiences of phenomena	The results are more easily influenced by the researcher's personal biases and idiosyncrasies
Can describe, in rich detail, phenomena as they are situated and embedded in local contexts	Knowledge produced may not generalize to other people or other settings (i.e., findings may be unique to the relatively few people included in the research study)
The researcher identifies contextual and setting factors as they relate to the phenomenon of interest	
The researcher can study dynamic processes	
The researcher can use the primarily qualitative method of "grounded theory" to generate inductively a tentative but explanatory theory about a phenomenon	
Can determine how participants interpret "constructs" (e.g., self-esteem, IQ)	
Data are usually collected in naturalistic settings in qualitative research	
Qualitative approaches are responsive to local situations, conditions, and stakeholders' needs	
Qualitative researchers are responsive to changes that occur during the conduct of a study (especially during extended fieldwork) and may shift the focus of their studies as a result	
Qualitative data in the words and categories of participants lend themselves to exploring how and why phenomena occur	
One can use an important case to demonstrate vividly a phenomenon to the readers of a report	

Table: 23 Strengths and weaknesses of qualitative research (Johnson & Onwuegbuzie, 2004)

In Table 23, the researcher highlights the strengths and weaknesses of qualitative research. Also, this table makes it clear that the strengths outweigh the weaknesses, this shows the number of strengths and their quality compared to the weaknesses.

3.6.3 Quantitative research

Research methods in social science are often divided into two major types—quantitative and qualitative (Muijs, 2004). Students associate quantitative research with statistics and numbers, but these are only a part of quantitative research. Aliaga and Gunderson (2002, p.1) describe the quantitative research method as:

'Quantitative research is explaining phenomena by collecting numerical data that are analysed using mathematically based methods (in particular statistics).'

Creswell (2009) described quantitative research as follows: Quantitative approaches deal with research methods based on the quantitative features of the data. Quantitative approaches are often taken in connection with the positivist worldview. Typical research methods with quantitative approaches include surveys and experiments.

Aliaga and Gunderson (2002) argued that it does not matter whether quantitative or qualitative research is used to explain phenomena because the main task of every researcher is to explain something (Töpfer, 2009). The next important topic in the definition of Aliaga and Gunderson is numerical data. This point is closely linked to last point in the previous definition: analysis using mathematically based methods. This is the main difference between quantitative and qualitative research. In quantitative research, the researcher uses mathematical methods on numerical data to while in qualitative methods they use words (Muijs, 2004).

Sale, Lohfeld, and Brazil (2002) argued that the quantitative paradigm is based on positivism and positivist induction is applied as an epistemological method. The result on the basis of experience, however, always involves the problem of inductive logic (Sale, Lohfeld, & Brazil, 2002). The researcher has explained the problem of inductive logic in Section 3.5.2.

Raithel (2008) suggested that researchers should use a quantitative method followed by a deductive strategy, which would leave only a few hypotheses to be examined later on. For this purpose, a statistical analysis is normally used. This is an advantage of quantitative methods; in qualitative research, the possibility of statistical analysis is very limited (Raithel, 2008).

Furthermore, numbers are understood universally and worldwide. Currently, quantitative methods dominate in published academic papers (Gill, Johnson, & Clark, 2010). One reason for this, quantitative approaches can be evaluated quickly and easily. Another reason is that quantitative data can be easily administered and evaluated (Yauch & Steudel, 2003).

Silverman (2010) argued that most research methods can be both quantitative and qualitative (Silverman, 2010). Easterby-Smith, Thorpe, and Lowe (2002) explained that there are four main ways to gather quantitative data. Interviews and observations must be considered separately.

Methodology	Interviews	Questionnaires	Test / Measures	Observation
Primary	Qualitative	Quantitative	Quantitative	Qualitative
Secondary	Quantitative	___	___	Quantitative

Table: 24 Main ways to gather quantitative data (Easterby-Smith, Thorpe, & Lowe, 2002)

However, a quantitative method is not suitable for every phenomenon. In some cases, the researcher can design a new research instrument to generate quantitative data, but sometimes it is simply better to work with qualitative methods.

Johnson and Onwuegbuzie (2004, pp. 14–26) discussed the strengths and weaknesses of quantitative research in their paper: 'A Research Paradigm Whose Time Has Come'. The key strengths and weaknesses of the quantitative approach are highlighted in Table 23.

Strengths and Weaknesses of quantitative research	
Strengths	**Weaknesses**
Testing and validating already constructed theories about how (and to a lesser degree, why) phenomena occur	Knowledge produced may be too abstract and general for direct application to specific local situations, contexts, and individuals
Testing hypotheses that are constructed before the data are collected. Can generalize research findings when the data are based on random samples of sufficient size	The researcher may miss out on phenomena occurring because of the focus on theory or hypothesis testing rather than on theory or hypothesis generation
Can generalize a research finding when it has been replicated on many different populations and subpopulations	The researcher's theories that are used may not reflect local constituencies' understandings
Data collection using some quantitative methods is relatively quick (e.g., telephone interviews)	The researcher's categories that are used may not reflect local constituencies' understandings
The researcher may construct a situation that eliminates the con-founding influence of many variables, allowing one to more credibly assess cause-and-effect relationships	
Useful for obtaining data that allow quantitative predictions to be made	
Provides precise, quantitative, numerical data	
Data analysis is relatively less time consuming (using statistical software)	
The research results are relatively independent of the researcher (e.g., effect size, statistical significance).	
Useful for studying large numbers of people	

Table: 25 Strengths and weaknesses of quantitative research (Johnson & Onwuegbuzie, 2004)

In addition to the strengths and weaknesses of qualitative research given in Table 23, Johnson and Onwuegbuzie (2009) also highlight the strengths and weaknesses of quantitative research in Table 25. From the researcher's point of view, it is important to know the strengths and weaknesses of both in order to be able to assess the mixed method approach.

3.6.4   Theoretical review of mixed methods approach

Leech and Onwuegbuzie (2008, p. 265) stated: 'The mixed method paradigm is still relatively unknown and confusing to many researchers.' However, the number of researchers who

prefer the mixed method paradigm is growing so fast that leading research methodologists like Creswell believe that it will be the prevalent paradigm in the near future (Leech & Onwuegbuzie, 2009).

A mixed method approach is a kind of research in which a researcher combines quantitative and qualitative research methods, approaches, and concepts into a single study (Johnson & Onwuegbuzie, 2004). However, it is more than just the sum of the results of the quantitative and qualitative research (Heyvaert et al., 2013; Tashakkori & Teddlie, 2010; Day, Sammons, & Gu, 2008).

For the researcher, it is important to identify the right design for the mixed method approach. In the handbook of mixed methods in social and behavioural research, 35 different methods are listed (Tashakkori & Teddlie, 2010). Greene, Greene, Caracelli, and Graham (1989) analyse 57 different empirical mixed method evaluations and some researchers have their own personal approach to designing mixed methods studies (Creswell et al., 2003). Table 112 in the appendix shows several designs from different researchers. Leech and Onwuegbuzie (2009) argue that most of these methods are complicated, do not include necessary criteria, or do not represent a consistent system. In general, there are two different design categories—the dynamic and the typology-based approach. The typology-based approach is the most commonly discussed design approach in the mixed method literature (Creswell & Plano Clark, 2011).

The mixed method dynamic approaches focus on the mixed method designing process. Maxwell and Loomis (2003) listed five points that a researcher should consider:

- Purpose of the study
- Conceptual framework
- Research questions
- Methods
- Validity considerations

Maxwell and Loomis (2003) also claimed that these five points are the heart of the research process.

3.6.4.1 Decisions in choosing a mixed method design

Creswell et al. (2003), Leech and Onwuegbuzie (2007), and Doyle, Brady, and Byrne (2009) suggested that there are three major decisions to be made before selecting a mixed method design.

1. The first decision is regarding the timing—concurrent or sequential.
2. The second decision is whether the researcher should weight the quantitative and qualitative methods equally or unequally.
3. The third decision is to ascertain where the mixing of the qualitative and quantitative methods will occur.
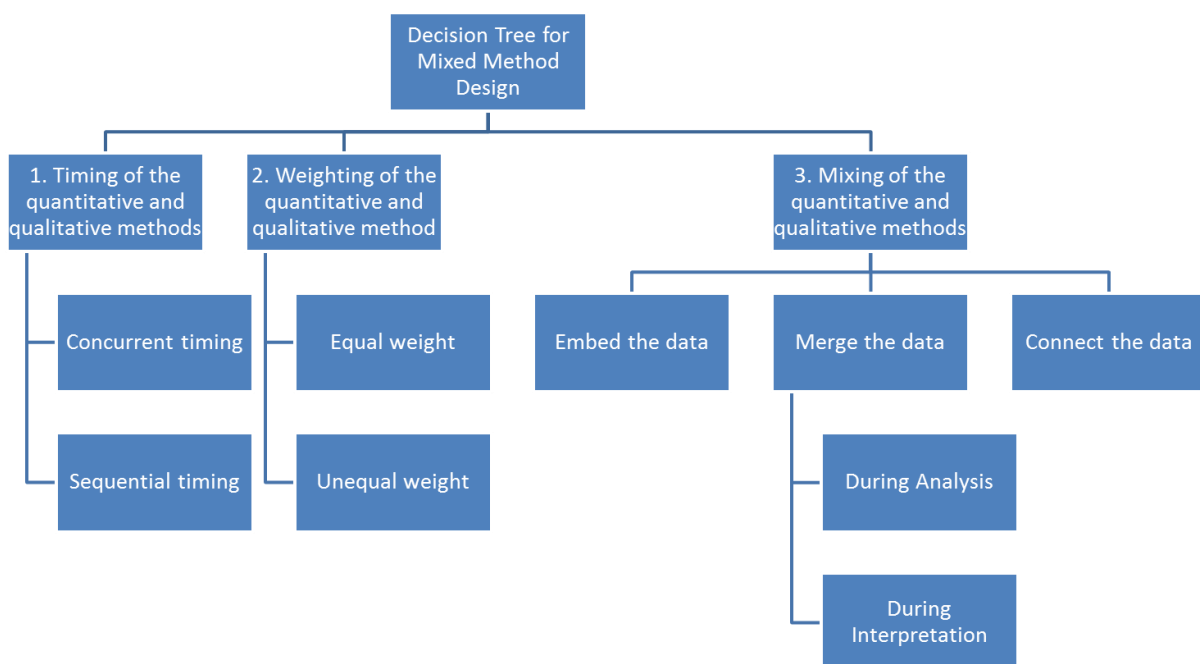
Figure: 38 Decision tree for mixed methods design (Creswell J. W., Plano Clark, Gutmann, & Hanson, 2003)

These decisions are crucial for finding the right mixed method design.

Creswell and Plano Clark (2007) argued that four more important issues must be resolved by every researcher before using the mixed method approach.

- Determine the level of interaction between the quantitative and qualitative strands: The first key step in mixed method research is to determine the level of interaction between the qualitative and quantitative strands. Level of interaction in this context means the independence or inter-activeness of the different strands. Greene (2007, p.

120) argued that this decision is the 'most salient and critical' in designing a mixed method research study.

- Determine the priority of the quantitative and qualitative strands:

  The researcher also has to take a decision about the importance of the qualitative and quantitative strands. Importance in this case means priority. Do the qualitative and quantitative strands enjoy the same level of priority and play the same role in reaching the research objective? Does one play a more important role in reaching the research objective while the other plays a secondary role?

- Determine the timing of the quantitative and qualitative strands:

  In this context, timing can be classified in three ways—concurrent, sequential, or multiphase combination.

  Concurrent means the researcher implements both strands in the same time period.

  Sequential means the researcher collects, analyses, and implements the strands in two distinct time periods.

  A multiphase combination occurs when the researcher uses multiple time periods that include sequential and/or concurrent timing over a programme of study.

- Determine where and how to mix the quantitative and qualitative strands:

  The researcher can mix the quantitative and qualitative strands at four possible points during a research process—interpretation, data analysis, data collection, and design.

From the researcher's point of view, it is important to consider the points listed by Creswell and Plano Clark (2007) before dealing with the four main mixed method designs.

3.6.4.2   Main mixed method designs

After the researcher takes the decisions mentioned in Section 3.6.4.1, he has to come to a decision regarding the mixed method research design. Creswell and Plano Clark (2011) listed four main methods (Figure 39) and six mixed method designs commonly used in practice.

Four main methods

The triangulation design is well known and the most commonly used design (Doyle, Brady, & Byrne, 2009). In this design, quantitative and qualitative approaches are weighted equally and they occur at the same time. The convergence model is mainly used because the data merges during the interpretation.

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The embedded designs are common as well, but by using one of these designs the research have one dominant method, quantitative or qualitative. The less dominant method supports the dominant one but has less influence.

Creswell et al. (2003) explained that the sequential explanatory design consists of two phases; it begins with the quantitative and ends with the qualitative phase. In the follow-up explanatory model, researchers identify specific quantitative findings and use the qualitative data to further explain these findings.

The exploratory design is used for developing and testing instruments or for developing taxonomy models (Doyle, Brady, & Byrne, 2009).
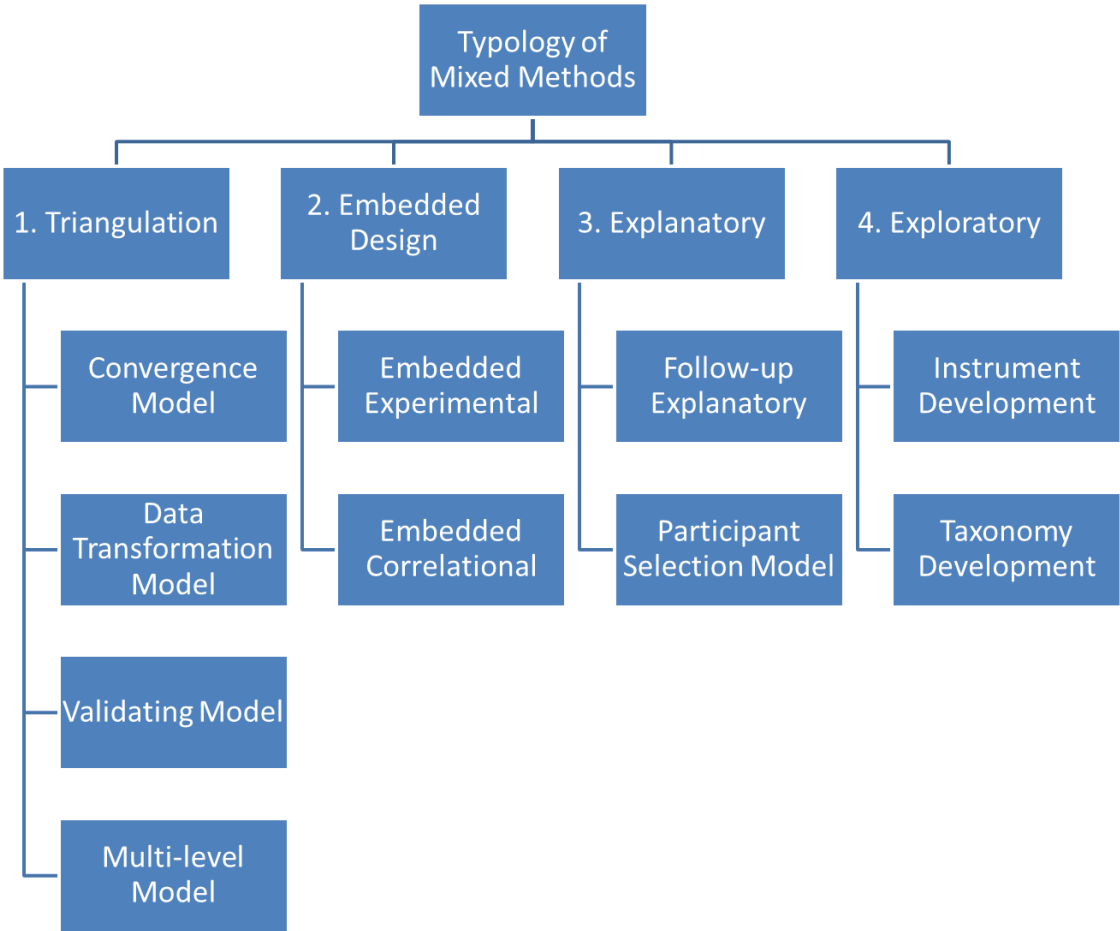
Figure: 39 Four main mixed methods (Creswell & Plano Clark, 2007)

The figure above clearly illustrates the four main methods based on Creswell and Plano Clark (2007).

3.6.4.3 Prototypical versions of the six major mixed method research designs

Among the ten sub–methods, Creswell and Plano Clark (2011) listed six methods that are used in research practice.

The convergent parallel design

The convergent parallel design is used when the researcher analyses the quantitative and qualitative data simultaneously. Both research methods are weighted similarly and the results of the two studies are compared in the next process step. After the data is compared, the interpretation of the overall result follows.
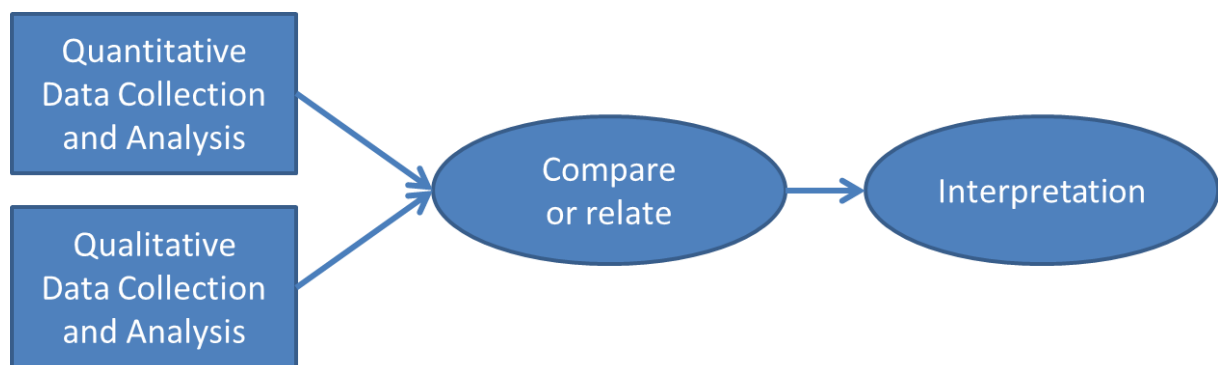
Figure: 40 The convergent parallel design (Creswell & Plano Clark, 2007)

The explanatory sequential design

The explanatory design has two different phases. In the first phase, quantitative data is collected and analysed in a way that is focused towards answering the research questions. After the first step, qualitative data is collected and analysed on the basis of the results of the quantitative analysis. The researchers try to explain the results of the quantitative analysis with the help of the qualitative analysis.
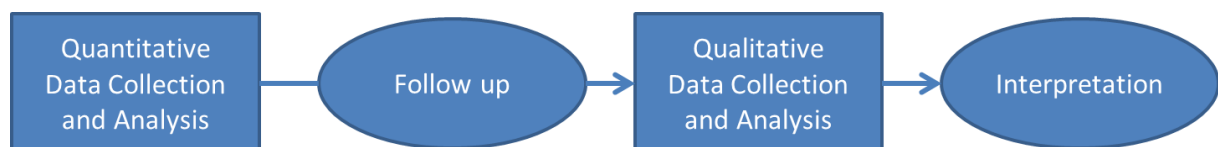
Figure: 41 The explanatory sequential design (Creswell & Plano Clark, 2007)

The exploratory sequential design

The exploratory sequential design also uses sequential timing. It is different from the explanatory design because it begins and prioritizes the collection and analysis of qualitative data in the first phase. On the basis of these results, the researchers conduct a second,

quantitative phase to test or generalize the results of the qualitative phase. The researchers then interpret the quantitative results from the second phase on the basis of the qualitative results.
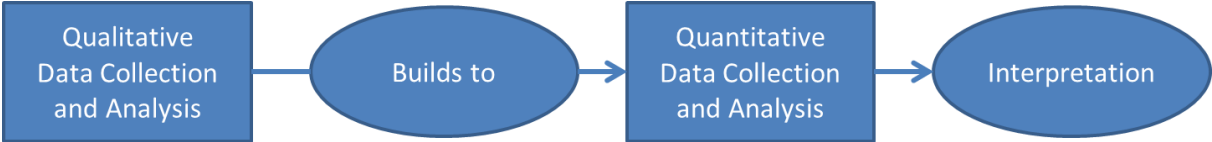
Figure: 42 The exploratory design (Creswell & Plano Clark, 2007)

The embedded design

The embedded design is used if the researcher collects and analyses both quantitative and qualitative data by a traditional quantitative and qualitative design. In this design, the researcher may add qualitative data to a quantitative design, like an experiment, or add a quantitative data to a qualitative design, like a case study. This technique should lead to an improvement in the overall result of the study.
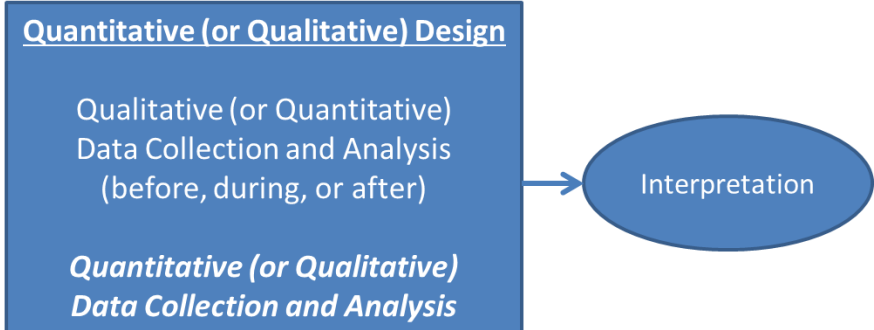
Figure: 43 The embedded design (Creswell & Plano Clark, 2007)

The transformative design

This is a mixed method design shaped by the researcher within a transformative theoretical framework. This design is similar to explanatory sequential design, except that all decisions regarding the design are in the context of the researcher's theoretical framework.
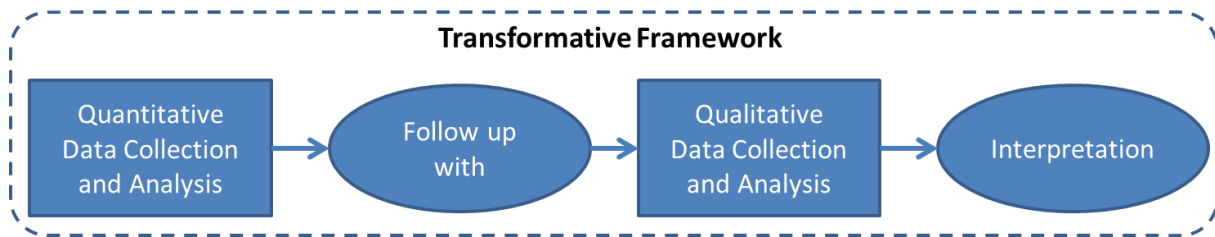
Figure: 44 The transformative design (Creswell & Plano Clark, 2007)

The multiphase design

This type of design combines both types of strands—concurrent and sequential—over the time period taken by the researcher to implement all the steps to reach the overall programme objective. This approach is often used in programme evaluation, where quantitative and qualitative approaches are used over time to support the development, adaptation, and evaluation of specific programmes (Creswell & Plano Clark, 2007).
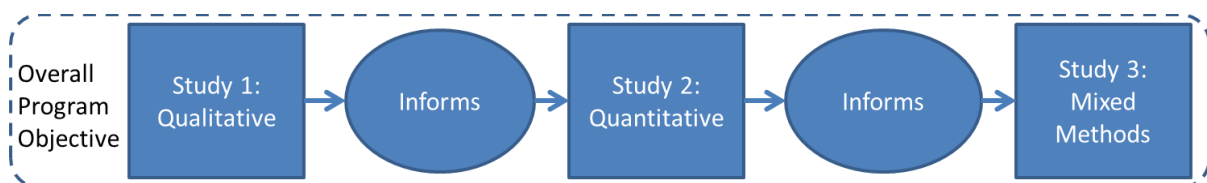
Figure: 45 The multiphase design (Creswell & Plano Clark, 2007)

This brief introduction of the six major mixed method research designs explains only a few important points, but the focus is on the research design process.

In the appendix, Table 113 explains the different research designs in more detail and is focussed on the characteristics, like definition, design purpose, typical paradigm foundation, level of interaction, priority of the strands, timing of the strands, primary point of interface for mixing, primary mixing strategies, and common variants.

For this study, the researcher uses the convergent parallel mixed method design, explained in Section 3.6.4.3, because the analysis of the existing quantitative date and expert interviews is given the same weight in this study. The researcher can analyse the results in parallel.
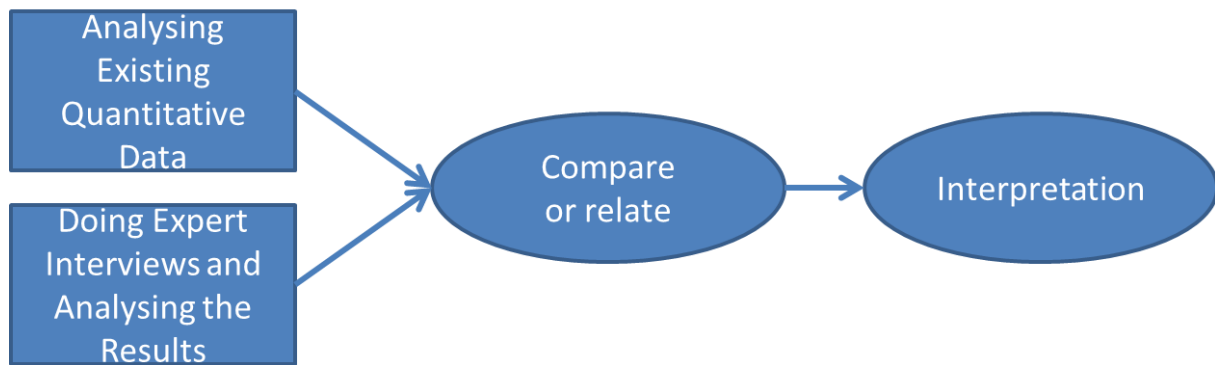
Figure: 46 Used mixed-method design (Creswell & Plano Clark, 2007)

This method has plenty of advantages. It is a time-saving method and the researcher can compare the results directly. From this comparison directly comes the interpretation of the results.

3.7   Adapted research design

The choice of the research design is an important factor in empirical research because the choice of the survey instrument is directly related to the quality of the results. However, each research question requires a special survey method. Due to the lack of scientific information about the subject, this work is exploratory in nature and uses unstructured survey instruments. A quantitative questionnaire, for example, requires a great deal of knowledge. Hypothesis-making and theory-building are classic disciplines of quantitative research, achieved through exploration. Exploring substitution, a preliminary to further study in quantitative, i.e. hypothesis tested, meaning to be understood. The qualitative research refers to such a kind of information collection: 'Exploration draws the comprehensive, in-depth, investigative research exploring the research field [...]' (Kromrey, 2000, pp. 247–255). Such studies are used when the area to be examined is still relatively unexplored, i.e. there is little or no literature about it. One reason for this is that a thorough evaluation and accountability of interpretations of interview-based texts are guaranteed.

Table 26 shows a comparison of the research methodologies, including the researcher's position in the mixed method area close to the border of the quantitative research method. This position is a combination of the post-positivism view of the researcher, described in Section 3.3.2, and the existing limitations given in Chapter 6. The researcher believes this is the best position in the existing conditions and it gives the researcher the freedom of choice

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with regard to the research approach, methodology, data collection method, and research design. In Table 26 the researcher illustrates the different positions in light red.

Quantitative (Single Method)	Mixed Method (Using both Methods)	Qualitative (Single Method)

Researchers position

Quantitative	Mixed Method	Qualitative
Positivism	Post-positivism	Interpretivism
Deduction	Deduction, induction and / or abduction	Induction
Theory / hypothesis testing	Eclectic form to method selection	Theory/hypothesis generation
Standardised data collection	Attempt to legitimate the use of multiple approaches	Researcher as "instrument" for data collection
Statistical data analysis	Expansive and creative	Qualitative data analysis

Figure: 47 Comparison of research methodology, including researcher's position based on study by Onweugbuzie & Leech (2006)

Paradigm	Post-Positivism	Positivism	Realism	Constructivist	Critical Theory		Pragmatism
Research approach	Deductive			Inductive	Abductive		
Research methodology	Interviews	Numerical Data	Mixed Method	Case Study	Action Research	Survey	Grounded Theory
Data collection method	Group Meetings	Meeting with Individuals	Workshops	Expert Interviews	Using Existing Data		Observation
Mixed methods research designs	Convergent parallel design	Explanatory sequential design		Exploratory sequential design	Embedded design	Transformative design	Multiphase design

Table: 26 Theoretical position of the researcher based on study by Saunders, Lewis, & Thornwill (2009)

The table above shows the theoretical position of the researcher (light red marked) in a larger context, including the choices he has made regarding the research process. In the sections above, all different choices are explained in detail.

3.8   Data collection method

The following section focuses on different data collection methods that the researcher has chosen for the mixed-method approach. It begins with the different types of interviews followed the selected and conducted qualitative analysis. In the second part the section deals with the using of quantitative data, conducted quantitative analysis, a section about quality, validity, reliability, and objectivity, and the section ends with the a conclusion.

3.8.1   Interviews

An interview can be conducted at home, in the office, by telephone, by mail or online.
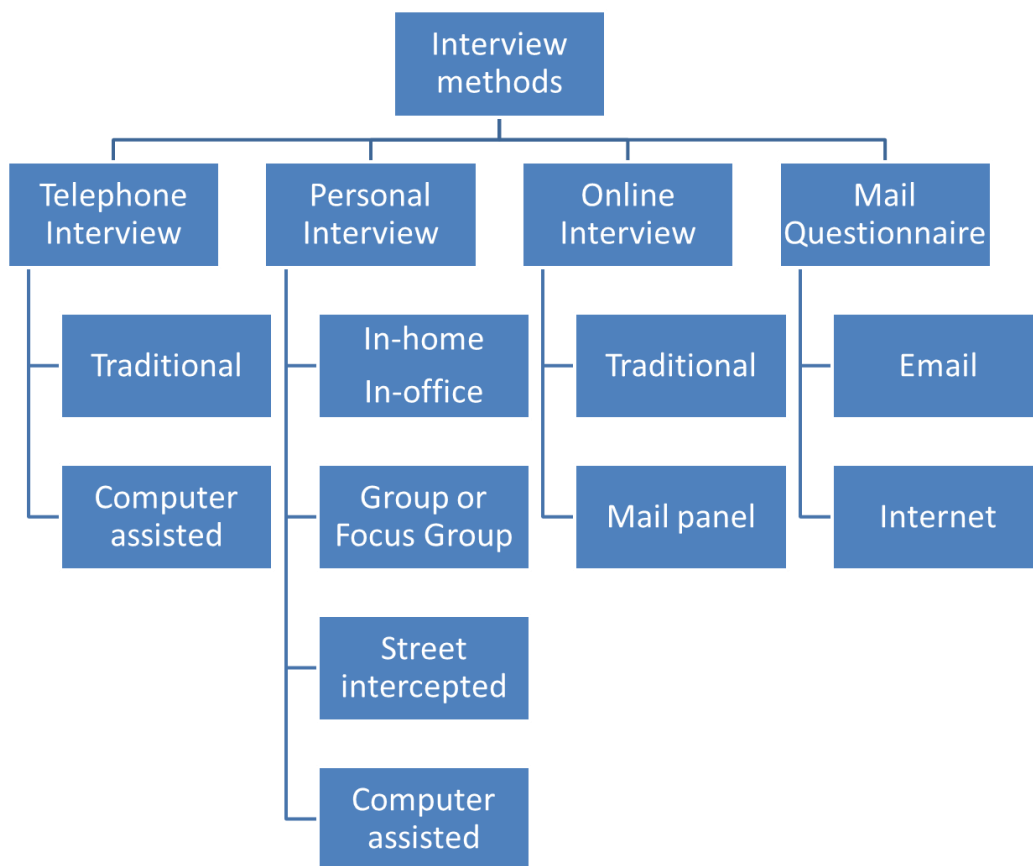
Figure: 48 Interview methods

Doing an interview is one of most natural things in the world, according to Silverman (2010), talking is a basic form of interaction in social life and one of the oldest ways to obtain systematic knowledge from another person (Kvale, 2007). A conversation regarding a research topic can be defined as follows: 'An interview with the purpose of obtaining descriptions of the life world of the interviewer with respect to interpreting the meaning of the described phenomena' (Kvale & Brinkmann, 2008, p. 3). Creswell (2009) and Corbin and Strauss (2009) agreed, an interview can be seen as one of the core data collection methods among qualitative

research methods (Corbin & Strauss, 2009; Creswell J. W., 2009). According to Flick (2009), interviews can be divided into five different types—focused, semi-structured, problem-centred, expert, and ethnographic interviews. Myer and Newman (2007) listed three different types of interviews—unstructured, semi-structured, and structured (Myers & Newman, 2007). Yin (2003) distinguishes between open-ended interviews, focused interviews, and structured interviews. The researcher presents three methods generally used in qualitative research: focus group interviews, semi-structured interviews, and expert interviews.

a) Focus group interviews

Myers and Newman (2007, p. 4) argued that in a 'group interview two or more people are interviewed at once by one or more interviewers. This type of interview can be structured or unstructured'. Patton (2002) described focus group interviews as a special type of group interviews and as a very efficient technique to collect qualitative data. He also defined the focus group as an 'interview with a small group of people on a specific topic'. The colocation of the group is an important step in the technique; usually it is focused on the diversity of participants. Flick (2006) suggested that focus group interviews are difficult to document but this is no longer an issue in the researcher's opinion because of new technical devices. The interview technique has other challenges e.g. identifying individual speakers as well as group dynamics. These issues are not resolved in expert or single interviews. There are only a limited number of questions that the interviewer/researcher can ask during the interview because sometimes answers turn into a discussion and are time-consuming. Patton pointed out another weakness of focus group interviews: 'The focus group interview is, first and foremost, an interview. It is not a problem-solving session. It is not a decision-making group. It is not primarily a discussion, although direct interactions among participants often occur. It is an interview' (Patton, 2014, p. 475).

According to Flick (2008), focus group interviews have some advantages as well. First of all, a focus group interview generates plentiful and substantial data at relatively low cost. Unlike single interviews, this technique stimulates the respondents and allows them to remember special events with regard to the interview topic.

b) Semi-structured interviews

Semi-structured interviews need an interview guide. The interviewer prepares a script before the interview, showing the structure of the interview. The script helps the interviewer guide

the conversation between the interviewer and the interviewee (Myers & Newman, 2007). The questions are prepared before the interview and listed in the script as well. The knowledge of the interviewee includes clear and direct assumptions that they can express spontaneously while answering an open question (Flick, 2009). Thus, during the interview, the structure and the content can be changed. In this case, the interviewer must be flexible but he should be able to bring the interview back on track. The prepared questions need not be ask in a chronological order. Generally, semi-structured interviews start with an open question and end with a confrontational one.

c) Expert interviews

In expert interviews, the script, in addition to showing the structure and the questions, has another function. The script familiarizes the interviewer with the topic and it helps the interviewer to talk like a quasi-expert.

For this DBA thesis, the researcher has decided to do expert interviews. Meuser and Nagel (2002) claimed, this technique is a special form of semi-structured interviews. An advantage of this interview technique is, the researcher is flexible in designing and refining the interview guideline. Other general advantages are, in the exploratory phase, the researcher has quick access to a new and unknown research field. It is a fast method to obtain specific information. Another advantage is, technique allows the researcher to strengthen the credibility of the responses concerning the research topic (Horton, Richard, & Struyven, 2004).

An interview guideline will mention the topic-focused conversation. The main idea of this technique of data gathering is based on the assumption that 'the perspective of others is meaningful, knowable, and able to be made explicit' (Patton, 2014, p. 426).

Expert interviews are suitable in case of a small number of respondents—sometimes just one person—and questions to the expert are mostly open. Marshall and Rossman (1999) claim that an interview, especially an expert interview, generates a lot of information in a relatively short period (Marshall & Rossman, 1999) from a person who has special knowledge and insights about the topic. According to Meuser and Nagel (2009), an expert is a person who is responsible for the development, implementation, and control of solutions/strategies/policies and who has privileged access to information about groups of persons or decision processes (Meuser & Nagel, 2009). Another definition is, an expert has high insight and/or specific knowledge (van Audenhove, 2007). Deeke argued: 'The answer to the question, who or what

are experts, can be very different depending on the issue of the study and the theoretical and analytical approach used in it. [...] We can label those persons as experts who are particularly competent as authorities on a certain matter of facts' (Deeke, 1995, pp. 7–8).

To do a semi-structured expert interview, the researcher has to follow a process. The academic world promotes several types of interview processes. In this DBA thesis, the researcher describes the dramaturgical model given by Erving Goffman (1959) and two different processes given by Brinkmann and Kavle (2015), and van Teijlingen (2014) respectively.

Erving Goffman (1959) mentioned that a face-to-face interview is a social exchange and a social interaction. His theory describes this interaction as a drama in a theatre with a stage, actors, audience, script, entry, exit, and performance. Researchers like Myers and Newman (2006) believed that this theory is highly applicable for qualitative interviews.

Concepts	Description
Drama	The interview is a drama with a stage, props, actors, an audience, a script and a performance.
Stage	A variety of organisational settings and social situations although in business settings the stage is normally an office. Various props might be used such as pens, notes or a record device.
Actor	Both the interviewer and the interviewee can be seen as actors. The researcher has to play the part of an interested interviewer; the interviewee plays the part of a knowledgeable person in the organisation.
Audience	Both the interviewer and the interviewee can be seen as the audience. The researcher should listen intently while interviewing; the interviewee should listen to the questions and answer them appropriately. The audience can also be seen more broadly as the readers of the research paper produced.
Script	The interviewer has a more or less partially developed script with questions to be put to the interviewee to guide the conversation. The interviewee normally has no script and has to improvise.
Entry	Impression management is very important, particularly first impressions. It is important to dress up or dress down depending upon the situation.
Exit	Leaving the stage, possibly preparing the way for the next performance (finding other actors – snowballing) or another performance at a later date (e.g. perhaps as part of a longitudinal study).
Performance	All of the above together produce a good or a bad performance. The quality of the performance affects the quality of the disclosure which in turn affects the quality of the data.

Table: 27 The interview as a drama (Goffman, 1959)

In light of this dramaturgical model of the qualitative interview, they created seven guidelines for a qualitative interview.
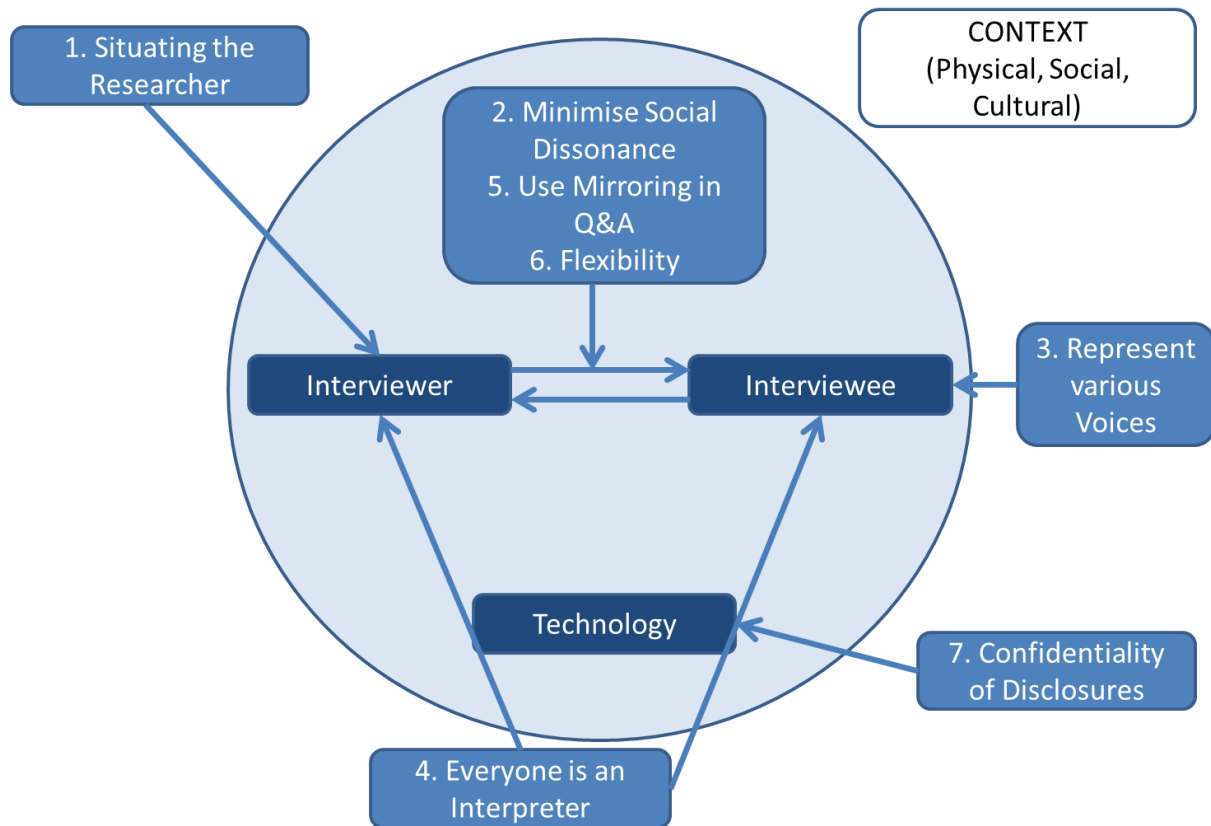
Figure: 49 Seven guidelines for a qualitative interview referring to Myers and Newman (2007)

1. Situate the researcher as the actor

   Before starting the interview, the interviewer has to find his own role in the process. It could be helpful for the interviewer to ask some questions before the interview: Who I am? What is my role in this interview? What is my background?

2. Minimize social dissonance

   Create a comfortable and warm atmosphere during the interview. The interviewer has to play different roles for different interviewee e.g. one role for a CEO and a different role for an office clerk.

3. Represent various voices

   The researcher has to find different interviewee from different departments in the organisation. If the researcher does expert interviews, he has to find experts from different organisations, industries, or branches. This is helpful for including different points of view into the research.

4. Everyone is an interpreter

   The interviewer and the interviewee are interpreters of their own worlds and of the world of the other person.

5. Use mirroring in questions and answers

   Let the interviewee explain their world in their own words. This helps to get more valuable information. Asking open rather than closed questions is a good common practice. It makes sense to come from a general issue to a specific point.

6. Flexibility

   As mentioned above, in semi-structured and expert interviews, the interviewer has to be flexible but has to steer back to the main topic after a period of time.

7. Confidentiality of disclosures

   Even if it is not discussed before the interview, it is an act of honour to keep all information, scripts, and records confidential and secure.

The seven guidelines from Myers and Newman (2006) have helped the researcher to conduct successful interviews and get the best possible and valuable information. This reduces the effort of doing interviews and saves time and money.

Valenzuela and Shrivastava (2008), and Brinkmann and Kavle (2015) described the interview process in seven steps.

Interview process phase	Activities
Thematising	Defining purpose and subject matter, deciding on method
Designing	Planning the study and all seven stages of the investigation
Interviewing	Preparation and execution of the interviews
Transcribing	Preparation of the material for analysis
Analysing	Deciding and applying the mode for analysis
Verifying	Ascertaining validity, reliability and generalizability of the findings
Reporting	Communicating the findings and methods applied

Table: 28 Interview process (Brinkmann & Kvale, 2015; Valenzuela & Shrivastava, 2008)

The defined process could be used for expert, structured, or semi-structured interviews.

1. Thematising

   In the first step, the researcher has a clear overview and enough existing knowledge regarding the research topic. In this stage, only the contribution and the purpose of the study are clear. The decision regarding the research method is not finalized yet.

2. Designing

   In this phase, the researcher has to focus on the 'big picture'. If qualitative interviews are considered to be the best choice, the research now has to plan how the interviews will be constructed, documented, analysed, and reported and how many interviewees will be needed

3. Interviewing

   Preparing the questions and the interview guideline and conducting the interviews is the purpose of this phase.

4. Transcribing

   This involves converting recorded audio files to a written format. The level of detail of the transcription depends on the researcher—it could be a word-to-word copy or simply a collection of statements given during the interview.

5. Analysing

   The researcher has to select the type of analysis to be applied. He can focus on key-words, statements, or text segments. Brinkmann and Kvale (2015) insist that is important to know how interviews will be analysed before they are conducted because the analysing technique influences the interview guidelines, script, process, and transcription.

6. Verifying

   This step involves ascertaining the validity, reliability, and generalizability of the findings. Does the researcher investigate what was intended before the interviews? Do the interviews have the requested and needed quality? Are the results transferable to other subjects, contexts, and situations or it is possible to put the results into quantitative data?

7. Reporting

   The written report for every interview should act as a conclusion of the findings and the connection to the research questions and objectives.

Van Teijlingen (2014) described the interview process as having four phases.

Planning phase
- Formulating relevant questions
- Designing motivating questions
- Establishing an communicative atmosphere

Doing phase
- Delivering the question
- Listening to the interviewee
- Observing the interviewee's non-verbal behaviour
- Evaluating the response
- Probing the response
- Recording the information

Reflecting phase
- Identifying information gaps
- Preparing for the next interview

Analysis phase
- Transcribing the interview
- Making interview records
- Analysing one's own interviewer behaviour

Figure: 50 Interview cycle (van Teijlingen, 2014)

In the planning phase, the researcher has to formulate and design relevant and motivating questions. It is best to carry out every interview in the same location because the communicative atmosphere can influence the interview and the answers.

The second phase is the doing phase, in which the interviewer asks the questions and listens to the interviewee. It makes sense to record the interview to listen to the important statements again. The nonverbal communication of the interviewee is useful for getting additional information. This is an advantage of a face-to-face interview as opposed to telephone interviews.

Analysing the interview is the third step. What kind of answers/data is useful for the research? What are the differences with other already-completed interviews?

The reflecting phase is concerned with these differences. Where are the gaps? Is it necessary to overwork the interview? Here is the difference comparing to the interview process from

Brinkmann and Kavle (2015). Because they do not have these step in there process, that means the cognitions from the interview will not be incorporated.

There is a strong debate against using qualitative methods like interviews in the social sciences. The question is: How objective is this kind of data collection? An interview is a social interaction between a questioning and an interviewed person, in this case an expert. But social interaction is never just restricted to knowledge exchange. Interactions serve a variety of purposes simultaneously. The interaction partners bring interests and personal problems and power relations are regulated. The respondent always performs a specific role in a specific institutional context.

Researchers like Webb, Campbell, Schwartz, and Sechrest (1966), Buchanan, Boddy, and McCalman (1988), Miles and Huberman (1994), Heiskanen and Newman (1997), and Fontana and Frey (2000) pointed out different problems that can occur during a qualitative interview.

Artificiality of the interview	The interviewer could create an artificial environment and he can manipulate or influence the interviewee with asking subjects to create opinions under time pressure.
Lack of trust	Mostly the interviewer is a stranger and the interviewee may do not know if he can trust the interviewer. So the interviewee decided to not to divulge some critical od sensitive information. To avoid this matter in many cases it is useful to sign a confidential agreement.
Time issues	If the interviewer set the interviewee under time pressure he will not gather all information/data. The opposite issue is if the interviewee set the interviewer under time pressure he has the feeling that some information/data are missing. The analysis of interviews is often time consuming
Entry level in an Organisation	The level of entry in an organisation is important, if the researcher start to interview office clerks first it could be difficult to interview management staff afterwards. The opposite may have the same problem. In some organisations it could be an issue to talk with union member first as well. It is quite helpful if the interviewer has influence to the gatekeepers in the different departments.
Upper management bias	If the researcher only interview certain manager from the top-management he understand there point of view but he may neglected important information/data from the lower management.
Hawthorne effects	Some interviewer are intrusive and set the interviewee under pressure or push him in one direction, sometimes involuntary, because he is not invisible or neutral. The interviewer is one part of a social interaction and influence the situation.
Constructing knowledge	Interviewee construct there knowledge, they create stories and reflect on situations from the past. It is part of the interviewer to identify all useful information/data from these stories.
Sender / Receiver issue	Sometimes the researcher do not understand exactly what the answer of the interviewee because of language or wording. But it is also possible that the interviewee do not understand the question or he misinterpret the question.
Interviews can go wrong	If the interviewer has a commitment for an interview and after a while it will be clear the interviewee is not longer interested in the interview. The interview expert is not really an expert and the interview make on sense.

Table: 29 Interview problems

The researcher has tried to avoid all these problems by preparing the interview properly, this was made possible by the planning and doing phase of the van Teijlingen interview process.

In this study, the researcher conducts face-to-face expert interviews with researchers and managers from Germany and Switzerland. The selection of the experts is described in Section 3.8.2.1. For every group, the researcher creates and uses an interview script/guideline to collect the primary qualitative data.

For the purpose of this research, the researcher compares two methods for expert interview analysis. One is the thematic analysis method given by Braun and Clark (2006) and second method is given by Meuser and Nagel (2009). Some of the phases of qualitative data or interview analysis are similar (Braun & Clarke, 2006), like the phases of the following methods. The step-by-step guide to do a thematic analysis according to Braun and Clarke (2006) is as follows:

1. Familiarizing yourself with your data

   Familiarizing, in this case means transcribing the primary or secondary qualitative data. Afterwards the researchers should read the data many times to become familiar with it, start the coding, and write down first initial ideas.

2. Generating initial codes

   After the researchers have generated a brief list of ideas, they start coding important and interesting topics in the data in a systematic way. Another step is to sort the important and relevant data for each code.

3. Searching for theme

   From these codes, the researchers create meaningful themes and gather relevant data/information for each of them.

4. Reviewing themes

   This step checks whether the themes work in the context of the coded extracts and the entire data set. According to Braun and Clarke (2006), it is helpful to create a so-called thematic 'map' of the analysis.

5. Defining and naming themes

   In Step 5, researchers have to elaborate the specific parts of every theme. This includes the generating of definitions and names.

6. Producing the report

Final step is the selection of good examples for the final analysis of the extracts and fitting the analysis with the research questions and the literature review. Then, researchers have to write the final report, including findings and conclusions of the entire analysis.

Braun and Clarke (2006) highlighted the advantages of thematic analysis in the following table. This researcher tested these advantages in his qualitative analysis of expert interviews.

Advantages of Thematic Analysis
Flexibility.
Relatively easy and quick method to learn, and do.
Accessible to researchers with little or no experience of qualitative research.
Results are generally accessible to educated general public.
Useful method for working within participatory research paradigm, with participants as collaborators.
Can usefully summarise key features of a large body of data, and/or offer a 'thick description' of the data set.
Can highlight similarities and differences across the data set.
Can generate unanticipated insights.
Allows for social as well as psychological interpretations of data.
Can be useful for producing qualitative analyses suited to informing policy development.

Table: 30 Advantages of thematic analysis (Braun & Clarke, 2006)

Meuser and Nagel (2009) focused on expert interviews instead of the thematic analysis and created six steps to analyse expert interviews.

1. Transcription

   The researcher has to write out the spoken text. However, there is no need to take into account non-verbal communication, pitch of voice, etc. because it is not a narrative interview. Thus, the researcher has to write out only the relevant parts of the interview, because in some cases the interviewee proves may provide a lot unimportant information. But the researcher has to record the full meaning of the interview (van Audenhove, 2007).

2. Paraphrasing

Paraphrasing is a technique used by the researcher to confirm or clarify something the interviewee has said or implied. There are three levels of paraphrasing:

First level confirms or clarifies expressed thoughts, feelings, emotion, and content.

In the second level, the researcher summarizes and organises the interviewee comments.

Third level of paraphrasing is shifting conceptual focus of thinking by surfacing assumptions, beliefs, core values, and mental models (Kee, Anderson, Dearing, Harris, & Shuster, 2010).

3. Headlining

The paraphrased passages of the interviews are now to be provided with headings. Here, the terminology of the interviewee should be used. Similar passages will be summarized and one passage could have more than one headline.

4. Thematic comparison

In this step the different passages will be compared. The different headlines will be unified and redundancies will be deleted (Meuser & Nagel, 2009).

5. Scientific conceptualisation

Now there is a separation of the text and the terminology of the interviewees. The text-extracted terms and headers are now translated sociologically to allow a connection to the interpretation of general disciplinary discussions.

6. Theoretical generalization

At this level, the researcher detaches from the interviews and passes on to scientific theories.

The literature shows that different analysis methods do not fulfil the demand of the researcher for an analysis of expert interviews in this study. To weight the expert comments, the researcher believes that it is important to examine the interviews in this area. This is the reason why the researcher has decided to use an adapted six-step method. This method is inspired from Meuser and Nagel (2009) and Braun and Clarke (2006) as well and is highlighted in the following table.

The table compares the six step methods by Meuser and Nagel (2009), Braun and Clarke (2006) and the six steps which the researcher is going to use.

Expert Interview Analysis Methods		
Meuser and Nagel (2009)	Braun and Clarke (2006)	Researcher
1. Transcription 2. Paraphrasing 3. Headlining 4. Thematic comparison 5. Scientific conceptualisation 6. Theoretical generalisation	1. Familiarising yourself with your data 2. Generating initial codes 3. Searching for themes 4. Reviewing themes 5. Defining and naming themes 6. Producing the report	1. Transcription 2. Paraphrasing 3. Coding / Headlining 4. Numerical analysis of the headings 5. Narrative Analysis 6. Conclusion Expert Interviews

Table: 31 Expert interview analysis methods

After the last step, the researcher must report the findings. 'This report presents the argumentation, main findings, and an evaluation of the validity, reliability and generalizability in mind (analysis and verification). The report should close with a discussion of the results and connect the findings to the original research questions as well as the theoretical and practical implications of the findings' (Spottke & Abrell, 2014, p. 4).

3.8.2 Conducted qualitative analyses

As described above there are different qualitative analysing methods available for interviews. But prior to the analysis method used by the researchers and the performance of the actual analysis that is described in Chapter 5, the expert interviews have to be prepared. This part of the research has been divided into four sub-items; these include expert selection, preparation of the interview guideline, interview planning, and conducting the interview.

3.8.2.1 Selection of experts

First step should be in any case the selection of the experts. In order to make a selection of the experts for the interviews, the first step is to determine who counts as an expert. According to Meuser & Nagel (2009) an expert is a person who is responsible for the development, implementation or control of solutions, strategies, policies and a person who has privileged access to information about groups of persons or decision processes. According to Bogner, Littig, & Menz (2009) experts are people who, with specific practical knowledge or experience from a specialist area, have influenced this area in a meaningful and structured manner (Bogner, Littig, & Menz, 2009). In 2013, Littig made this statement 'an expert has special expert knowledge which is related to a special professional field. This includes

expertise as well as implicit /tacit knowledge about maxims of action, rules of decision-making, collective orientations and social patterns of interpretation and has at least partially the chance to be realised in practice. (Littig, 2013)' The Technical University of Kaiserslautern describe in the manual for expert interviews during scientific research experts as individuals who have specific knowledge / skills due to many years of experience, at least 10 years (Kurzrock, 2014). This area-specific knowledge is the essential criterion that should be met when selecting experts. Other areas of knowledge or general education are not relevant to the selection (Mieg & Näf, 2005).

The researcher selected the experts for this study according to the following criteria:

- Experience in a responsible position in sales and / or marketing (at least 10 years')
- The firm had been in operation/institution for more than five years
- Specific knowledge
- Reputation and current position

The first interview partners in Germany come from the researcher's personal network. All others are based on recommendations from the interviewed experts. All meet the three criteria.

The second round of interviews was conducted to explore the validity of the conclusions. In these interviews, another criterion was added. The experts also had to be in a position and to be able to introduce a new customer segmentation model.

3.8.2.2 Preparing the interview guideline

In preparing and creating the guideline, the researcher sets the following rules for the interviews and the way in which they should be conducted. The interviews should be recorded to facilitate later transcription. There should be 10–15 questions in the guideline; these should be open or interrogatory questions so that the interviewee cannot answer the questions with the responses 'yes' or 'no'.

The researcher decided to start the guideline with a simple introductory question; this was chosen to induce ease of conversation and simultaneously connect the discussion to the main subject. The main portion included questions on individual topics, such as customer segmentation and customer value as well as other related topics. Finally, the review/outlook was composed on the basis of conversation and support.

3.8.2.3 Planning the interviews

Planning the interviews was quite a challenge for the researcher. Above all, this was a consequence of the fact that the interviewees come from different countries or regions, and were very busy with their jobs. Nevertheless, the researcher was able to complete the first series of interviews within three weeks.

The second series of interviews could be carried out as there were fewer interviewees after two weeks.

3.8.2.4 Conduction of the interviews

For the interview itself, the researcher set the following goals to carry out a successful interview:

- Requesting narration
- Sending active listening signals
- Accepting and tolerating the interviewee taking breaks
- Citing from other sources (external opinions)
- Asking hypothetical questions ⬚ Suppose it were ...; what would be different then?
- Questions about visions or utopias ⬚ What if ...; how would you...?

The interview began with an acknowledgement of thanks for the opportunity to interview, the reference to the audio recording, the assurance of anonymity, the idea with a name, the task and position, and the introduction of the topic of work. The expert was also told why his opinion were important and how long the conversation was bound to take. If the expert had no questions before the interview, the interview was conducted after a short small talk with the help of the guideline.

During the interview, the main task of the interviewer was to steer and control the conversational process; this refers to nonverbal reactions of the respondent as well as closely assessing how one's own reactions were closely followed. Steer and control do not mean that the interviewer makes any prescriptions or assessments regarding the statements of the interviewee. It is important to allow the interviewee to speak freely but he/she should be guided cleverly by questions from the interview guideline, without pushing the interviewee into a corner. The talks ended with a note of thanks, the opportunity for further questions, and further interaction.

During the interviews, the researcher had to flexibly react to different people and be able to 'work' with them, which, in some situations, was presented as a challenge.

The researcher is going to evaluate the qualitative expert interviews according to the Meuser and Nagel method and as mentioned on page 173 and 174, Meuser and Nagel created six steps to analyse expert interviews. But as shown in the table above the researcher will adapt the method. A detailed description of each step of the applied method follows in the next sections.

3.8.2.5 Transcription

'The transcription process is obviously paradoxical: with the aspiration to accurately represent the multi-faceted verbal discourse, you create a written text that is a linear, one-dimensional document. Ultimately, producing a transcript is a dilemma oscillating between realistic representation and practically possible presentation or compression (Dresing, Pehl, & Schmieder, 2015, p. 21).'

A transcription can never reflect the full interview situation. Too many different factors occur during the interview. These are, for example, smell, room situation, facial expressions, or gestures. These cannot all be given back and thus the researcher should concentrate on what is essential and important for the interview analysis.

A transcription before analysis was necessary because exploratory, qualitative studies usually produce large amounts of data and transcription along with data reduction. The researcher translated the German interviews into English after transcription. This will not create any problem during the evaluation because the researcher has decided to do a simple description. This type of transcription will be explained below in detail.

a) Transcription rules

The type of transcription and the level of detail will depend on the type of interview; it and might range from a simple literal transcription where every word is transcribed, up to a complex transcription including a lot of details (Brinkmann & Kvale, 2015). It is also more useful to transcribe just as much and as precisely as needed. These saved resources can be better used in the research process (Strauss, 1987).

b) Simple transcription

Dresing, Pehl, and Schmieder (2015) elaborate that in simple transcripts, mostly paraverbal and non-verbal elements of the interview are cancelled. The focus is on a good readability and ease of learning, and not to extensive reaction time. In simple transcription priority is given to the contents of the interview.

Simple transcription rules are:

- It will be transcribed literally, and not phonetically or in summary.

- Dialects will not be transcribed.

- Word, sentence discontinuations, and stutters will be smoothed.

- Agreement signals like 'mmh' or 'aha' will not be in the transcript.

- Pauses or breaks will not be transcribed.

[	Overlapping speech: the precise point at which one person begins speaking while the other is still talking, or at which both begin speaking simultaneously, resulting in overlapping speech
(0.2)	Pauses: within and between speaker turns, in seconds
"AW:::":	Extended sounds: sound stretches shown by colons, in proportion to the length of the stretch.
Word:	Underlining shows stress or emphasis.
"fishi-":	A hyphen indicates that a word/sound is broken off.
".hhhh":	Audible intakes of breath are transcribed as ".hhhh" (the number of h´s is proportional to the lengths of the breath).
Word:	Increase in amplitude is shown by capital letters.
(words...):	Brackets bound uncertain transcription, including the transcriber´s "best guess".

Table: 32 Transcription conventions adapted from Drew (1995, pp.78)

c) Complex transcription

'A detailed transcript based on a complex set of transcription rules is necessary if the subsequent analysis does not merely focus on the semantic content of a conversation. In such

cases, prosodic elements (e.g. intonation, primary and secondary emphasis, volume, speed and pitch) are included. If necessary, a phonetic transcription is added, e.g. in dialect research) and non-verbal phenomena are documented in a more complex way' (Dresing, Pehl, & Schmieder, 2015, p. 23). A complex and detailed transcription is just for complicated and important issues, and the content of the interview will be described and reproduced almost verbatim. In complex transcriptions pauses and important details from the interview will be honoured by their importance (Silverman, 2008). In Table 32, 33, and 34 different transcription rules are illustrated. Different researchers like Flick (2009), Drew (1995), Kuckartz, Dresing, Rädiker, & Stefer (2008), Kvale (2007), or institutions have different rules for the complex transcription method.

There are distinct differences regarding the extent and the manner of the rules. This, however, is always the same in various complex rules—i.e., the pauses, important words, and emphases are displayed. Dresing, Pehl, & Schmieder (2015) illustrated the differences between simple and complex transcription in a short example.

Complex Transcription Rules	
Spelling	Conventional
Punctuation	Conventional
Breaks	Short break *; more than 1 sec in numbers
Incomprehensible	((incomp))
Uncertain transcription	(abc)
Loud	With Commentary
Low	With Commentary
Emphasis	With Commentary
Break off word	ABC-
Break off sentence	ABC-
Simultaneous talk	# abc #
Paralinguistic utterance	With Commentary (e.g. sights, …)
Commentary	With Commentary
Verbal quote	Conventional
Abbreviations	Conventional
Anonymization	Names with °

Table: 33 Rules for complex transcription (Flick, 2009)

Simple transcript	Complex transcript
S1: ...or whether they'll get divorced after all.	S1: =<<dim> or WHEther they'll get divorced ↑`after all.>
S2: Hm. (...)	S2: ˇhm,
	(- -)
S1: This is still. (...) . It is a transition.	S1: <<pp> this is still - > ((breathes out for 2.1 sec)) <<p> t'is a ↑`tran-sition.>
S2: Our former neighbors, they are a good example for this. (...) Married for thirty years (...) the last kid was finally out of the house, took off to study, (...) left, you know, to Berlin.	S2: our former neighbors ↑`they are a good example for this
	(- - -)
	err (- - -)
	↑ married for THIRty years °hh
	the last kid (.) `finally outta-the
	´HOUSE,
	took off to STUdy, (-)
	´LEFT, =´you know, °h
	to ber´LIN, °h

Table: 34 Comparison: Simple and complex transcription (Dresing, Pehl, & Schmieder, 2015)

It remains that the effort for complex transcription is much higher than for simple transcription. This is another reason why the researcher has chosen the approach of simple transcription.

3.8.2.6 Paraphrasing

As described in Section 3.8.2.6 paraphrasing is concerned with three different levels:

1. Confirms or clarifies expressed thoughts, feelings, emotion, and content.

2. Summarize and organise.

3. Shifting the conceptual focus of the thinking by surfacing assumptions, beliefs, core values, and mental models.

Meuser and Nagel (2009) argued that these phase and levels are important in the process of analysing interviews. Mayring (2011) and Ullrich (2006) hold the opinion that paraphrasing might be omitted in exploratory interviews with experts. Exploratory interviews are used where it is necessary that the interviewee should live out its individuality and urged not in a certain direction. Such interviews are conducted mostly among individuals or a small group of people, often among experts to determine a topic (Beutelmeyer, 2015). This was the case in this research.

3.8.2.7 Coding / Headlining

This step serves to create the basis for the thematic comparison. The transcripts are read, and interesting text passages are instantly highlighted in colour and provided with headings for the research topic. Meuser & Nagel (2009) argued that the researcher should be closely geared to the interview text, which means the terminology of the interviewees should be taken. This is important only for individual experts interviews. For this research study, the researcher conducted 14 expert interviews for the general topic customer segmentation, 5 expert interviews to evaluate the availble customer segmentation software, and 4 expert interviews to proof the validity of the research findings. Ullrich (2006) argued that headings should be generalized if the researcher conducts several interviews.

The number of expert interviews arose according to the old rule from one of the pioneering qualitative researchers, Harry Wolcott. This rule implies that one continues doing interviews and asking questionsas long as one are getting different answers. Wolcott confirmed this rule in a research paper in 2012 (Baker, Edwards, & Doidge, 2012).

The headings were coded and derived from the researcher's research questions, research objectives, and frequently used interview topics. Each heading was related with a specific colour, which is to be used in the analysis of the interviews.

The context or the intelligibility of individual citations can be lost through. Therefore, the introductory phrases or questions were performed with some quotes.

Owing to the number and length of the expert interviews, the researcher made the decision not to document the transcripts with the coding in the main part of the thesis. The transcripts are in the appendix.

3.8.2.8 Thematic comparison and numerical analysis of headings

In thematic comparison all colour-coded text passages from the transcripts are grouped according to their headings. The material is sifted from the interviews again according to the headings and not to the Interviewees. Similar quotes are grouped and so subheadings can be formed (Ullrich, 2006). Quotations from the interviews can also be assigned to two or more headings.

In the data analysis section the researcher did the analysis or commentary of the tables. The analysis tables are in the appendix and show the compared passages, as explained on page 174 as fourth step of the Meuser and Nagel interview analysis method. The thematic comparison is followed by a numerical analysis of the headings. These analyses are also based on MS Excel, analysis and commentaries of the interviews are given in the data analysis section.

3.8.2.9   Narrative analysis

Narrative analyses in this study deal with the analysis of texts, which are present as documented as written results from interviews. The method was additionally selected to gain further insights from the interviews. Narrative interview analyzes have also disadvantages, the main disadvantage is that the individual interviews are often difficult to compare. Some Interviewees have experience with conducting interviews and some do not have experience, this can complicate the evaluation of the interviews. Furthermore, it is problematic that human memory is a subjective construct. The interviewer cannot be sure that he will be told the complete story because the interviewee does not remember it. This may lead to a validity problem. But the advantages of the analysis form predominate, from the researcher perspective. Main advantage is that the information obtained is more likely to be more valid and meaningful than in standardized interviews. Furthermore, the information is more comprehensive because it is not limited by predetermined answers (Strübing, 2013).

The analysis of the interviews will be completed with the section conclusion and findings.

3.8.3 Using secondary quantitative data

'Secondary analysis is the re-analysis of data for the purpose of answering the original research question with better statistical techniques, or answering new questions with old data. Secondary analysis is an important feature of the research and evaluation enterprise' (Glass, 1976, pp. 3–8). Greener (2008, p. 73) described secondary data 'as data which the researcher did not collect for themselves directly from respondents or subjects'. This statement suggests that secondary data is not collected with the researcher's purpose and objectives in mind. This data could be collected by other researchers, in the process of normal operations, or by institutions (Greener, 2008). Secondary data analysis could take many forms and have many benefits as well (Morrow, Boddy, & Lamb, 2014). Adams, Khan, Reaside, and White (2007) described secondary data as data collected by someone else and this data is available in books, libraries and on the web. A researcher can use this data as the main source for the research to answer the research question or to supplement the collected data. In many cases, secondary data is used to validate the collected data (Adams, Khan, Raeside, & White, 2007). In this study, the researcher use old data (according to Glass and Greener) from a process of normal operations to answer new questions. In addition to qualitative data (primary data) from expert interviews, the researcher can also use confidential quantitative data from the Business Intelligence software of a company. The available secondary quantitative data material amounts to several thousands of B2B clients. This secondary data allows the researcher to verify the findings of the face-to-face interviews. The researcher defines secondary data as the data gathered by a given party—in this case, a company—for one purpose; the data is then utilized by another party—the researcher—for a different purpose. In general, secondary data can be comprised of published research, internet materials, media reports, and data that has been cleaned, analysed, and collected for a purpose other than needs assessment, such as academic research or an agency or sector-specific monitoring reports (Micheel, 2010). In the academic world, different researchers like Bryman (1989), Dale, Arber, and Proctor (1988), and Robson (2002) created some varient types of classifications of secondary data. Saunders, Lewis, and Thornwill (2009) generated three sub-groups with several subitems. This groups are shown in Figure 51.
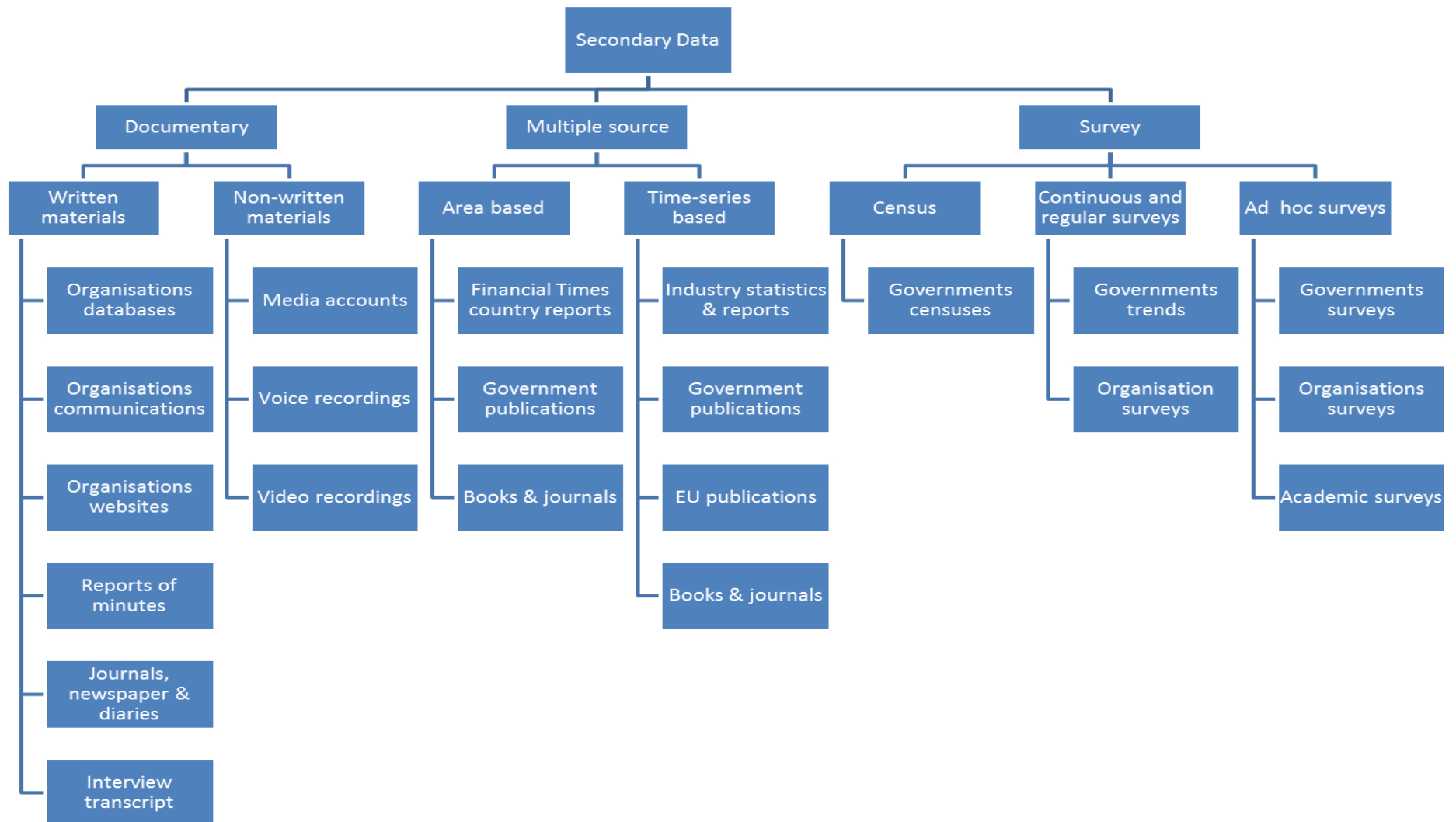
Figure: 51 Types of secondary data (Saunders, Lewis, & Thornwill, 2009)

Documentary secondary data, written or non-written, is often used where the researcher also use primary data e.g. the research follows a mixed method approach (Saunders, Lewis, & Thornwill, 2009).

Both written and non-written material can be used and analysed for qualitative, quantitative, or mixed method research approaches.

Survey

Survey-based secondary data could be available as raw data or as already analysed data. The first sub-type is census. This data is normally carried out by governments or state organisations because in most cases these data is about population of continents, countries, or regions (Hakim, 2000).

Continuous and regular surveys are repeated over a period of time at regular intervals e.g. every year. These surveys are usually done by governments or private organisations. This secondary data could be useful if the research focuses for example on social trends. But a researcher has to check in advance if the data answers the research question and meets the research objectives, because in some cases the data is very detailed. For a researcher, it is also important to check when was the data collected because the gap between collecting and publication could be in some cases more than two years (Hakim, 1982). This could be a problem because maybe relevant circumstances had changed.

Saunders, Lewis, and Thornwill (2009) described ad hoc surveys as very specific one-off surveys. These surveys in most cases deal with a very specific matter and are executed by independent researchers, the government, or organisations. Regarding these matter, it is difficult to find relevant data. In the case of non-public secondary data, the researcher has to check if he is allowed to use this data.

Multiple source

This type of secondary data is made by combining two different data sets. This could be two surveys, two documentaries or a combination of both. One method is the time series, in which a survey has been repeated a number of times to generate the data (Saunders, Lewis, & Thornwill, 2009). According to Hakim (2000), different sources of secondary data could be

combined as well, if they have the same geographical basis. Researchers call such data 'area–based'.

Adams, Khan, Reaside, and White (2007) outlined some advantages and disadvantages that have to be considered while using secondary data. The main questions for these researchers are:

- Is the data really relevant to the researcher's work?
- Is the data really representative?

Advantages and disadvantages of using secondary data

Advantage	Disadvantage
Large representative samples well beyond the resources of the individual researcher are available.	Data compatibility; does the information match what is required for your research?
Good for examining longitudinal data and looking for trends	Data coverage; does the information cover all subjects or groups in your research?
Supporting documentation and explanation of methodology, sampling strategy, data codes are given.	There can be depth limitation in that you may see a trend or an oddity in a time series but there may be no data available to allow investigation of the reasons or consequences.
The researcher can concentrate on data analysis and interpretation.	Does the information come from all time periods or are there gaps?
	Consistency of time series.
	Historical and therefore may not be relevant to current issues.
	Need to assess the quality of the data and the approach used in initial gathering of the data. One must consider the authenticity of the data and the source.

Table: 35 Advantage and disadvantage of using secondary data (Adams, Khan, Raeside, & White, 2007)

Greener (2008) pointed out some disadvantages of using secondary data. According to her, the researcher has to keep in mind seven points before using secondary data.

1. Difference of purpose

    Difference of purpose could be an issue if researchers use secondary data from other researchers or institutions, because the original researcher may have had a different

purpose and the data would not be compatible with the study. In this study, this is not the case because this researcher uses 'grey' data/material, i.e. existing data is original sales figures from a normal operation.

2. Cost or access constraint

This could happen if the researcher searches for corporate data from market research companies or agents, because this data is normally not free of charge. It is possible to avoid this issue if the researcher obtained the data from university libraries. In this case, there are no constraints because the data already exists.

3. Aggregation and presentation of data

Other researchers will aggregate the original data for their purpose. The original researcher perhaps needed different customer cluster or time frames. It is difficult to work with such clusters or time frames in the current study if researchers need different ones. It is the same issue regarding the presentation of data. In this study, it is not an issue because the researcher has access to the original data.

4. Data quality

The quality of the secondary data is a major point of doubt. If the researcher does not know the original researcher, the institution, or the original study very well, it is a leap of faith for him to use the secondary data. The researcher knows the exact quality of the secondary data because he knows the organisation where the data comes from.

5. Measurement validity

A researcher cannot expect secondary data to be completely true because the data reflects the purpose and preconceptions of the original researcher. In this study, the researcher knows the validity of measurement.

6. Data coverage

   In some cases, secondary data does not cover all the necessary information. To cover all discussed customer segmentation methods, some very specific customers are necessary. For the researcher, it was impossible to get all this sensitive customer data.

7. Data use

   In some cases it is not possible to use the secondary data because it is in a format that does not match the statistical analysis. This is not the case in this study.

The existing secondary data covers six out of seven critical points. Thus, no problems regarding the points above are to be expected during the use of existing data.

For every researcher, it must be clear, secondary data must be viewed with the same caution as any primary data that the researcher collected by himself (Saunders, Lewis, & Thornwill, 2009). It is absolutely necessary for the researcher to feel certain about the following points:

- The secondary data help to answer the research questions and meet the research objectives.
- The benefits are greater than the cost.
- The data is valid and reliable.
- The researcher is allowed to use the secondary data.

If the researcher answers these four points with yes, using secondary data has an advantage compared to using primary data (Stewart & Kamins, 1993). One advantage is, the researcher can evaluate the data before he use it. This is very important, especially if the researcher has more than one source of secondary data. To make sure, the secondary data is valid and reliable, the researcher could use a three-stage process.

Assess overall suitability of data to research question(s) and objectives. Pay particular attention to:
- Measurement validity
- Coverage including unmeasured variables

Evaluate precise suitability of data for analyses needed to answer research question(s) and meet objectives. Pay particular attention to:
- Validity
- Reliability
- Measurement bias

Judge whether to use data based on an assessment of costs and benefits in comparison to alternative sources

If you consider the data to be definitely un-suitable, do not proceed beyond this stage

Figure: 52 Evaluating potential secondary data sources (Saunders, Lewis, & Thornwill, 2009)

a) Measurement validity

Measurement validity is one of the most important criteria of any secondary data set. If the researcher does not get the needed information to answer the research questions, the research objectives will result in invalid answers (Kervin, 1999). Jacob (1994) argued that when a researcher uses secondary survey data, most of the measures used do not quite match those the researcher needs.

b) Coverage including unmeasured variables

Coverage is the second important criteria for suitability. The researcher must be absolutely sure that the secondary data includes main information that the researcher need, the correct period of time, and the right variables to answer the research questions and research objectives. Hakim (2000) pointed out two major issues. First, the researcher must be sure that

unwanted data can be eliminated. Second, sufficient data must remain for the analysis to take place once unwanted secondary data has been eliminated.

c) Reliability and validity

As mentioned before, the reliability and validity of secondary data, i.e. the sources of the secondary data and the method by which the data was collected, are important factors. In many cases, a view of the sources of the data is sufficient because Dochartaigh (2002) claimed that the authority or reputation of the sources is helpful. If the data comes from the government or from a large and well-known company or organisation, the source is, in all likelyhood, trustworthy and reliable.

d) Measurement error or bias

Kervin (1999) stated that measurement bias can occur due to two reasons. One reason is the deliberate distortion of data. Second reason is a change in the data since collection. But sometimes these errors or biases are not published if the source of the issue is not an error but a differences in the data. One solution for the researcher is to contact the company or organisation responsible for the data collection to remove ambiguity.

e) Cost and benefits

Last step in the process given by Saunders, Lewis, and Thornwill (2009) to evaluate potential secondary data sources is a comparison of the costs and benefit of the secondary data. According to Greener (2008), secondary data is often cost-free, but cost does not only include the money the researcher has to pay for the secondary data. It also includes the financial resources and time needed to evaluate the data (Kervin, 1999).

Dillon, Madden, and Firtle (1994) suggested that a search for secondary data should precede any primary research activity, because secondary data solves the research questions and objectives already or helps to solve theses topics. According to Adams, Khan, Raeside, and White (2007), before a researcher starts collecting secondary data, he should follow some important guidelines:

1. Plan the data collection
2. Develop a strategy
3. Identify the right type of data
4. Decide how to record and document the data

Apart from these guidelines, the researcher has to consider all advantages and disadvantages of using the secondary data. The researcher should also keep in mind that all analyses, whether primary or secondary, qualitative or quantitative, are a matter of interpretation 'because meanings cannot be grasped directly and all meanings are essentially indeterminate in any unshakeable way, interpretation becomes necessary, and this is the work of the hermeneutic enterprise' (Josselson, 2004, p. 3).

3.9 Statistical test supplied

In addition to this general information on various methods that are of importance for this work, the researcher will describe the methods used in data analysis in the following section. The following analytical models were performed on the basis of quantitative secondary data of a SME.

- Calculated and estimated customer value and potential
- MS Time series, SPSS Expert Modeller, Arima Model and Simple Seasonal
- Customer development per industry, customer allocation, existing customer cluster, and customer visits
- Descriptive statistics
- Regression analysis
- T-Test
- Regional analysis
- Two-step cluster analysis
- Discriminant analysis

The following sections describe why the individual analyses are relevant to the work and which parameters are used. The actual analysis and the conclusions drawn from it are explained in Chapter 4.

3.9.1 Calculated and estimated customer value and potential

In this section the researcher explains how the analysed SME classifies its customers. This is done by calculating and estimating its customer potential. In the end of this section, the researcher discusses the pros and cons of this method.

Customer segments in the given secondary data are built according to the calculated potential. In the SME and in the partner group, customer potential is determined as follows.

The potential refer to the maximum achievable tool and service revenues from a customer. Such potential is not limited to sales and can be achieved with the whole product range. But it can also include the revenue that can be generated with products and services provided by the existing suppliers and partners.

The SME sell on request special items as well but sales and revenues of special and non-tool products and items—such as bicycles, tires, or computer items—do not count as the potential. A distinction is made between the following two different potentials:

1. Estimated potential (estimated by the responsible area sales manager)

To determine the estimated potential of a customer, the following criteria can be used:

- Number of employees working in the production and nearby areas
- Number and types of machines—CNC, NC, or manually
- Number of machines—single layer/multi-layer
- Obtain the total sales in tools and other items
- Comparison with similar customers
- Subjective factors

2. Calculated potential (determined by total amount of employees of the client, the four-digit NACE code and the matrix)

Calculated potential (determined by the group headquarter in Munich, in 2002–2003) is amounted to EUR 292 million in the SME's sales area.

NACE-Code

Industry Code	Bezeichnung	NACE4	in SAP	keine Angab.	Number of employees		Customer Potential in Euro per employee and year							
					1 - 4	5 - 9	10 - 19	20 - 49	50 - 99	100 - 199	200 - 499	500 - 1.000	1.000 - 1.999	≥ 2.000
A	Tool and mould construction	2862	2862	0	700	700	500	500	500	350	350	200	200	100
B	Machine engineering	2900	29	0	3.000	3.000	2.000	2.000	2.000	1.500	1.500	500	500	200
C	Automobile Industry	3400	34	0	1.000	1.000	750	750	750	500	500	250	250	100
D	Vehicle construction	3500	35	0	1.000	1.000	750	750	750	500	500	250	250	100
E	Steel engineering	2810	281	0	700	700	500	500	500	350	350	200	200	100
F	Casting Industry	2750	275	0	500	500	350	350	350	250	250	150	150	50
G	Surface and thermal Treatmant	2800	28	0	700	700	500	500	500	350	350	200	200	100
H	Electrical Industy	3000	30	0	750	750	750	750	750	750	750	500	500	250
I	Chemical Industry	2300	23	0	200	200	200	200	200	200	200	100	100	50
J	Steel Mill Industry	2700	27	0	500	500	350	350	350	250	250	150	150	50
K	Furniture, Toys, Sports equitment Industry	3600	36	0	150	150	150	150	150	150	150	50	50	25
L	Building and construction Industry	4500	45	0	600	600	450	450	450	350	350	200	200	100
M	Energy Industry	3700	37	0	300	300	300	300	300	300	300	200	200	100
N	Transport Industry	6000	60	0	150	150	150	150	150	150	150	50	50	25
O	Minig Industry	1000	10	0	150	150	150	150	150	150	150	50	50	25
P	Paper and Textile Industry	1700	17	0	200	200	200	200	200	200	200	100	100	50
Q	Wood Industry	2000	20	0	200	200	200	200	200	200	200	100	100	50
R	Food and Argicultural Industry	1500	15	0	150	150	150	150	150	150	150	50	50	25
S	Automobile Trade ans Gas Station	5000	50	0	150	150	150	150	150	150	150	50	50	25
T	All other	5100	51	0	150	150	150	150	150	150	150	50	50	25
X	Retailer	5100	51	0	150	150	150	150	150	150	150	50	50	25

Table: 36 Customer potential based on employee and branch (Hoffmann, 2002)

The values used to calculate the potential of this Excel table correspond to the experience of recent years. These have been collected from within the company and with the partners of the group.

To calculate the potential, the following data/information about the customer is essential.

- Industry sector, where the customer is mainly active should be mapped via the NACE code

- Number of employees

A problem could be that data such as the number of employees is often unknown and must be estimated by the area sales manager. Besides, it may be a problem to define a specific industry sector where the customer operates because their activities overlap various sectors. An example could be the areas of automobile industry and the tools and mould construction. A calculation can show the effects of miscalculation:

For example, a company with 150 employees is active in manufacturing of tools and also in the automotive industry.

If the sales manager allocates the customer to the tool manufacture industry, the calculation shows the following result:

125 employees x EUR 350 per employee = EUR 43,750 customer potential

If the sales manager allocates this customer to the automobile industry, the calculation, however, looks totally different:

125 employees x EUR 500 per employee = EUR 62,500 customer potential

By choosing the wrong industry, the customer is included in the segment for B customers rather than A customers. This has consequence, the customer is managed differently and owing to the segmentation, also gets other sales conditions like prices, quantity discounts, delivery terms, and so on. Furthermore, this corresponds to a difference in the potential calculation of 30 per cent because a wrong industry was chosen!

Another point why this calculation is not meaningful for all customers is when the customer is not active in the industry or the manufacturing sector. For example, as an insurance company, the SME generate an annual turnover of about EUR 2,500 with the insurance, but the headquarter has 2,000 employees. The calculated potential of this customer is EUR 50,000. However, the estimated potential for the SME's product programme is in the range of EUR 2,500–5,000.

2,000 employees x EUR 25 per employee = EUR 50,000 customer potential

As well there is a threat the area sales manager intentionally suggest the potential of their region smaller as it is to expect a higher utilization of the area. This approach aims at a faster and easier reaching of their personal goals. These objectives are part of the bonus agreement at the end of the year and do not consider the part of the salary.

It should be noted that the industry sector selection in the T, A, and B segments must be done very carefully. Before the final release takes place in the CRM system, a review by the supervisor is advisable.

In the analysis section the two methods, calculated and estimated, are compared with each other and the results critically reviewed.

3.9.2   MS Time series, SPSS Expert Modeller, Arima Model, and Simple Seasonal

These days many data sets in economics occur as time series (Alt, 2013). The analysis of economic time series is a complex field of quantitative economic research. A time series is, as

its name suggests, a series or sequence of time-ordered data. The time series analysis examines the development of values over time and is a special type of regression analysis (Fahrmeier, Heumann, Künstler, Pigeot, & Tutz, 2016; Faires & Burden, 1993). In addition to the analysis of historical data, their influencing factors include the prediction of the future course of the series based on the previous values. In time series, typical historical pattern of time series values occur frequently, due to certain functionally identical factors (Mazzoni, 2012; Stocker & Steinke, 2017).

Mazzoni (2012) stated that time series involve the development of a certain quantity. Their values are recorded and displayed in a certain time or for certain time intervals.

Hoang Diem Ngo (2013) argued 'to model a time series event as a function of its past values, analysts identify the pattern with the assumption that the pattern will persist in the future' (Hoang Diem Ngo, 2013, p. 1).

The researcher presents, in this section, different time series models. First, the given data will be analysed with a simple and a commonly used analysis model for SMEs, which is, as mentioned before, one kind of regression analysis. It is commonly used in SMEs because it is based on MS Excel. One of its main advantages is that it is easy to handle and most SMEs use the software already.

And to provide another more analytic approach to time series forecasting in the second part of the section, the researcher will be present the SPSS Expert Modeler and the autoregressive integrated moving average (ARIMA) model. The researcher is going to use the IBM software SPSS, which provides different forecasting models. First, the so-called Expert Modeler, where the software automatically finds the best-fitting model for each dependent series. Second, the Exponential Smoothing method, which is mainly used if one wants to specify or create a custom Exponential Smoothing model. As mentioned above, the researcher chooses the ARIMA model because ARIMA models provide more sophisticated methods for modelling trend and seasonal components than do Exponential Smoothing models, this is the main reason why ARIMA methods will be preferred in the area of forecasting. But to clarify the differences between the models, the researcher will compare the ARIMA model in some points with the Expert Modeler (Zwerenz, 2006).

The whole MS Excel basic data and SPSS calculations, however, will not be illustrated in this section, but in the appendix.

The analysis of new customer and customer development starts with the MS Excel method.

a) MS Excel Time series

Why this method was chosen?

This method was chosen to demonstrate how the number of customers has changed in the period from 2012 to 2014. Furthermore, the researcher provides forecasts for the near future and draw conclusions for the development of the customer base. This is important because the number of customers is one critical variable in the choice of the segmentation method. If significant changes are detected—either positive or negative—they have direct or indirect influences on the stage of growth. This is part of Research Question 2.

Which variables were chosen?

The researcher chooses as variables new customers per month (y variable, illustrated as y axis) from January 2012 till December 2014 (x variable, illustrated as x axis), per team, and the total number. From this given data, the following formula are derived to calculate the trend line.

Total: $y_t = -0.0071x_t + 351.15$ $R^2 = 0.033$

Team 1: $y_t = -0.0044x_t + 202.35$ $R^2 = 0.0842$

Team 2: $y_t = 0.0037x_t - 137.15$ $R^2 = 0.0576$

Team 3: $y_t = -0.0064x_t + 285.95$ $R^2 = 0.1215$

b) SPSS Expert Modeller, Arima Model, and Simple Seasonal

The SPSS Expert Modeller finds automatically the best-fitting model because it model hundreds of different time series at once, rather than having to run the procedure for one variable at a time (IBM SPSS Forecasting 22, 2014), including the ARIMA and Simple Seasonal model. But this also means that the ARIMA model, although it is one of the most used models to describe a time series (Eurostat, 2016), is not always the best solution.

The ARIMA model is also called Box-Jenkins model because the procedure for applying the technique was first documented in a book by Box and Jenkins in 1976. This model is designed to forecast data and describe the differences between each given data point. In contrast to the trend model, it is assumed that random and/or sudden changes can have a long-lasting effect on subsequent time series values (Hartung, Elpelt, & Klösener, 2009; Zwerenz, 2006).

The SPSS Simple Seasonal model, a method of Exponential Smoothing, is especially suitable for the time series without an apparent trend but with seasonal effects, which will remain same over the entire time series. The smoothing parameter exhibits similarities to the ARIMA model, with zero orders of autoregression, one order of differencing, one order of moving average, and no constant(0,1,1) (IBM SPSS Forecasting 22, 2014, p. 12).

Why this method was chosen?

The Expert Modeller was chosen to provide a more analytic approach for forecasting. In Figure 57, the linear trend lines show a decreasing number of new customers. But to prove this, and to carry out a more intensive analysis of the given time period and the seasonal aspects, the researcher decided to do an analysis with the SPSS Expert Modeller.

Which variables were chosen?

ARIMA model is usually denoted by the notation ARIMA (p,d,q). These parameters are non-negative integers, p is the order of the autoregressive part (AR part), when a model only contains autoregressive terms, it is called the AR model. d is the order of the differencing (I part) and q is the order of the moving-average process (MA part) when it only contains average terms, it is called the MA model (Rottmann, 2016; Bowerman, O'Connell, & Koehler, 2005). If there is no differencing (d = 0) the model is donated as ARMA model (p, q). In addition to these non-seasonal orders, there are the seasonal orders P,D,Q. According to the SPSS Handbook (2014) the orders are 'seasonal autoregressive, moving average, and differencing components and play the same roles as their non-seasonal counterparts. For seasonal orders, however, current series values are affected by previous series values separated by one or more seasonal periods' (IBM SPSS Forecasting 22, 2014, p. 12).

In every model, the researcher chooses as dependent variables new customers from Team 1, Team 2, Team 3, and the Total Teams.

According to IBM SPSS Handbook Forecasting 22 (2014) these parameters (p,q,d and P,D,Q) could defined as:

- p / P

  'The number of autoregressive orders in the model. Autoregressive orders specify which previous values from the series are used to predict current values' (IBM SPSS Forecasting 22, 2014, p. 13).

- d / D

  'Specifies the order of differencing applied to the series before estimating models. Differencing is necessary when trends are present (series with trends are typically non-stationary and ARIMA modeling assumes stationarity) and is used to remove their effect. The order of differencing corresponds to the degree of series trend--first-order differencing accounts for linear trends, second-order differencing accounts for quadratic trends, and so on' (IBM SPSS Forecasting 22, 2014, p. 13).

- q / Q

  'The number of moving average orders in the model. Moving average orders specify how deviations from the series mean for previous values are used to predict current values. For example, moving-average orders of 1 and 2 specify that deviations from the mean value of the series from each of the last two time periods be considered when predicting current values of the series' (IBM SPSS Forecasting 22, 2014, p. 14).

- R

  The value R is the square root of the value R square.

- R square

  R square reveals how well the regression line represents the relationship between two variables. As opposed to the adjusted R square, the R square could not be negative and is in any case between 0 and 1, or 0 per cent and 100 per cent. The higher the value, the better the model.

- Adjusted R square

  The coefficient of the determination of R square has the characteristic that it be-comes greater if the number of independent variables increases. And regardless of the other independent variables, it really makes a contribution to perception. There-fore, the researcher is advised to take a look to the adjusted R square if more inde-pendent

variables are in use. The adjusted R square value can be negative with a range of negative infinity to 1. Positive values mean that the model under consideration is better than the basic model (Bowerman, O'Connell, & Koehler, 2005).

- ACF and PACF

ACF stands for the autocorrelation function, and PACF the for partial autocorrelation function. ACF is a function that indicates the autocorrelation coefficients of a variable X dependent on the number of lags. It begins with the correlation coefficient between x_t and x_{t-1}, followed by the correlation coefficient between x_t and x_{t-2}, and so on (Auer, 2016).

The PACF is an instrument to identify dependencies between the values of a time series at different times. The PACF measures the linear relationship between x_t and x_{t-1} with the exclusion of the influence of the intermediate variables.

The information will be illustrated in a table of summary statistics and percentiles of the residual across all estimated models. This information will be displayed by lags for each estimated model. The PACF information will be displayed in a table as well, but with partial information (Hoang Diem Ngo, 2013).

The calculations of the different methods under use of the indicated variables are explained in Chapter 4.

3.9.3 Descriptive statistics

Why this method was chosen?

The researcher chooses this first general statistical analysis to highlight significant differences between teams, periods, turnovers, contribution margins, and customers within each customer group. In the researcher's opinion, this first broad statistical overview is important to answer all the following research objectives and research questions.

Which variables were chosen?

The researcher chooses as variables for the years 2012, 2013, and 2014:

- Total turnover
- Turnover Team 1, Team 2, Team 3, Team VW, and the own company shop
- Contribution margin Team 1, Team 2, Team 3, Team VW, and the own company shop

One must be differentiate between descriptive and inferential statistics. Descriptive statistics are used to show the basic features of the secondary data in this study. This type of data provides a simple summary of the sample and the measures, and also helps to organise and display empirical data by tables or graphs (Streland, 2010; Fahrmeier, Heumann, Künstler, Pigeot, & Tutz, 2016).

This type of statistics is helpful to picture quantitative descriptions of secondary customer data in a controllable form. This is necessary because of the amount of secondary data, and it reduces such data to a manageable form. In this study the researcher decides to analyse five different results:

- N

   N means the number of customer in the section.

- Minimum

   The minimum of a sample is the smallest measurement, which, in this research, is the smallest turnover or contribution margin of a customer. Here, in some cases, it is even a negative number if the SME incurs a loss in this period with this particular customer.

- Maximum

   The maximum of a sample is the largest measurement, which, in this research, is the largest turnover or DB of a customer.

- Mean

   The mean is the average of the numbers. To calculate mean, the researcher adds together the turnover of every customer in a set and then divides the sum by the total count of customers.

- Standard Deviation

   The standard deviation is a measure of the spread of scores within a set of data.

The results of the descriptive statistics are shown in Table 72 and subsequently analysed.

3.9.4   Regression analysis

The regression analysis is a method for calculating a regression in the form of a regression line. The regression indicates if there is a directional linear relationship between two or more variables (Stocker & Steinke, 2017). In this study, the researcher chooses a model with two variables, customer turnover, and contribution margin.

For regression analysis, one has to distinguish between two types. First, there is, as already mentioned, the linear regression analysis, and second, the non-linear regression analysis (Matthäus & Matthäus, 2016). The researcher presents both models shortly but uses in this study only the linear regression analysis because with the non-linear regression analysis the cost/benefit ratio is not given in most SMEs.

In simple linear regression analysis, the relationship between two variables is examined. It is assumed that variable Y is depending on the other variable X. In the following analysis, variable Y is in the second column (segmentation method), for example in the first row for in 2012, it is the contribution margin denoted as 'DB'. For variable X, the customer segment (third column) was chosen for example in the first row for every customer denoted as 'all'.

In this model a and b are the regression coefficients (Bamberg, Baur, & Krapp, 2012). Basis for this model is that both variables are metric.

Often in advance, a non-linear regression model includes theoretical knowledge or the consideration of the scatter diagram shows that there is a non-linear relationship between the variables. Thus a non-linear regression function must be determined. As the name suggests, the line in this model is no longer linear; it can take many different forms (Schlittgen, 2012).

Why this method was chosen?

This method was chosen to determine the relationship status of different variables, for example in the first row between the customer contribution margin (DB) and the affiliation to a customer segment. The results are important to determine the current status of customer segmentation methods with the given secondary data and how the results change if one changes variables, segmentation method and/or customer segments. They are also important to gain insights into which of the compared segmentation methods are useful at present and in future. This can be stated about the height of the relationship value R square.

Which variables were chosen?

The researcher calculates the data for all customers and the different customer segments (A, B and C customer) based on turnover and contribution margin, independent variable X (Regressor), as well as, dependent variable Y (Regressand), the results from the segmentation methods 80/20 and 60/90.

- R

  The value R is the square root of the value R square.

- R square

  The so-called coefficient of determination (R square) reveals how well the regression line represents the relationship between independent and dependent variables. The researcher did the calculation in both scenarios. In one scenario the turnover is dependent, while DB is dependent in the other case. The R square is between 0 and 1, or 0 per cent and 100 per cent; the value of R square = 1 or 100 per cent would mean that each observed data point is right on the regression line. This is the best case that means the higher the R square, the better the model fits the data and relationships between turnovers and contribution margins. Also, the chance that estimated forecasts will truly increase. These estimated forecasts should be around the level of the variables; otherwise, the accuracy decreases.

- Adjusted R square

  The coefficient of the determination of R square has the characteristic that it becomes greater if the number of independent variables increases. And regardless of the other independent variables, it really makes a contribution to perception. Therefore, the researcher is advised to take a look to the adjusted R square if more independent variables are in use.

- Standard error of the estimate

  An important statistical criterion of the regression analysis is the standard error of estimation because it is important information about the spread of the analysed data. It indicates how much the variable scatters around the y-axis of the regression line. A smaller standard error of estimation indicates a higher reliability of the results and their interpretation.

As with the previous methods, the researcher shows the results in the data analysis section.

3.9.5   T-Test

The T-test assesses whether the means of two groups (test value and variable) are statistically different from each other. Below the researcher explain which test values and variable were chosen (Fahrmeier, Heumann, Künstler, Pigeot, & Tutz, 2016). It will be checked by using the T-test if each independent variable is individually significant. In this study the researcher uses the single or one sample T-test.

Why this method was chosen?

The researcher chooses the T-test to get a better insight into and further information about the teams of the secondary data. The researcher would also like to determine whether other segmentation approaches should prove useful or not. With regard to this the researcher proves other customer segmentation methods in Sections 4.3.7.3 and 4.3.7.4.

The most important value for performing a T-test is the difference between the sample means. This difference is the sampling characteristic of the T-test.

- $\bar{x}_1 - \bar{x}_2$

Moreover, the T-test is used to check issued hypotheses. A distinction must be made between the null hypothesis and the alternative hypothesis. The hypothesis for one sample t-test can be mounted as follows:

- H_0: $\mu = \bar{x}$ (This hypothesis assumes that there are no differences between the sample mean and population mean, they are equal)

- H_1: $\mu \neq \bar{x}$ (This hypothesis assumes that there are differences between the sample mean and population mean, they are unequal)

In this model μ is a constant proposed for the population mean and $\bar{x}$ is the sample mean.

The test statistic for a one sample T-test is denoted t, which is calculated using the following formula:

- $t = \dfrac{\bar{x} - \mu}{S\bar{x}}$ where $S\bar{x} = \dfrac{S}{\sqrt{n}}$

This formula consists of:

μ = Proposed constant for the population mean

$\bar{x}$ = Sample mean

n = Number of customer in the section

s = Sample standard deviation

S$\bar{\text{x}}$ = Estimated standard error of the mean

Which variables were chosen?

As test value, the researcher chooses the total turnover for Section 4.3.7.1 and Section 4.3.7.3, and the contribution margins for Section 4.3.7.2 and Section 4.3.7.4, for the period 2012, 2013, and 2014. As variable, the researcher always chooses in Section 4.3.7.1 and Section 4.3.7.2 the given teams from the secondary data, and in Section 4.3.7.3 and Section 4.3.7.4 new customer segments based on the ABC 80/20 and 60/90 segmentation methods are chosen.

The results are illustrated below to understand the tables. All relevant terms and definitions are briefly explained.

- N

   N means the number of customer in the section.

- Mean

   The mean is the average of the numbers. To calculate the mean, the researcher adds together the turnover of every customer in a set and then divided the sum by the total count of customers.

- Standard deviation

   The standard deviation is a measure of the spread of scores within a set of data.

- Standard error mean

   This is the estimated standard deviation of the sample mean. If one drew repeated samples of the size 9515, as in Table 72, one would expect the standard deviation of the sample means to be close to the standard error. The standard deviation of the distribution of sample mean is estimated as the standard deviation (67198.14498) of the sample divided by the square root of sample size: 67198.14498/(square root (9519)) = 688.75001.

- Test value

The number mean against which the test variable, in the tables below, is marked as a name, will be compared. In this case, it is always the mean of the team or customer. For example, the first test value in Table 75 is 6683.16, and this is the mean of the turnover of Team 1.

- T

  The result table of the one-sample T-test, denoted as t. In Table 77, the t for Team 1 is t = 1.450. Note that t is calculated by dividing the mean differences, here 998.37600, by the standard error mean 688.75001.

- df

  df means a degree of freedom for the test. df = n-1, so in the first example 9519-1= 9518.

- Sig. (2-tailed)

  This is the 2-tailed p-value corresponding to the T-test statistic

- Mean difference

  The difference between the sample mean from the upper sample statistics box (e.g., 7681.5360) and the mean of the test variable or the specified test value. The sign of the mean difference corresponds to the sign of the t value. The positive t value (1.450) in this example indicates that the mean height of the sample is greater than the test value (6683.16).

- The difference

  The confidence interval for the difference between the test value (6683.16) and the sample mean (7681.5360).

3.9.6 Regional analysis

Why this method was chosen?

The researcher chooses this method to analyse the basic totality of the customers and to identify homogeneous customer segments and areas. It is important to determine whether criteria such as postal or NACE code are useful as the segmentation criterion for SMEs. Also, by analysing the data it can be answered whether it is worthwhile for this SME or SMEs with similar customer structure to pursue this segmentation approach in a deeper context. Regional analysis in Section 4.3.8.1 and 4.3.8.2 were created with MS Excel.

In Section 4.3.8.3 a two-step cluster analysis with SPSS was executed. This method is used for automatic generation of customer clusters. As well it was applied to determine whether the automatic segmentation by software makes sense in this case or whether the researcher can neglect this method.

Basically, a cluster analysis makes sense for any business to identify customer cluster and to understand the customer structure in general.

Which variables were chosen?

In the first section the researcher chooses the number of customers, turnover, and postal code as variables. In Section 4.3.8.2 the NACE code has been mentioned in relation to the turnover, mean turnover, and mean contribution margin.

Section 4.3.8.3 behaves differently, with the researcher predetermining two variables and the software—in this case SPSS—and thereby automatically creating a desired number— in this case five—of clusters. As categorical variables, the researcher chooses NACE and postal code, and as continuous variables, the turnover.

In any case, the researcher analyses in Chapter 4 the period from 2012 to 2014.

3.9.7   Two-step cluster analysis

The researcher chooses the two-step cluster analysis by the IBM software SPSS. Because this method identifies automatically the segments or cluster by running pre-clustering first and then by hierarchical method and this method combines advantages of both approaches (Zwerenz, 2006). Another reason is this method is very quick, if one processed a large data set, like in this study, it will take a long time to calculate and evaluate only with the hierarchical method.

The researcher pretends that the software should split the data in five clusters. This is because an SME can handle five different clusters. If an SME chooses too many clusters, the segments or cluster could be too small and not meaningful enough. In worst case it could be a segment of one, and such a segment is not meaningful. If there are only for example two different segments or cluster, the differences inside the clusters could be too great. In this case it makes

no sense to treat the customer in the same way because they are too different. By considering these points, five clusters were chosen.

3.9.8   Discriminant analysis

Why this method was chosen?

The aim of this section, especially of this analysis method, is to analyse and compare the ABC segmentation method based on the turnover and contribution margin. The results should help to identify and compare useful segmentation criteria, and to draw conclusions on which segmentation approach should be used in SMEs. If the segmentation approaches from Sections 4.3.1 and 4.3.2 are sufficiently meaningful, this shows that the approaches can be pursued. At the end of Section 4.3.9.3, the researcher compares the results.

Which variables were chosen?

In the following three sections the researcher chooses as variables in every considered year three different customer segments. These various segments resulting from the ABC analysis, based on the 80/20 and 60/90 methods, in each case on turnover and contribution margin gives for each year four analyses.

Relevant terms and definitions to interpret discriminant analysis:

- Wilks Lambda

  Wilks Lambda forms the basis of various tests of significance in the discriminant. A low value of Wilks Lambda, therefore, indicates a small, undefined scattering and thus a good separation of the groups. Wilks Lambda is a standardized measure, which is always between 0 and 1. In terms of the discriminant analysis, is Wilks Lambda is a frequently observed value (Janssen & Laatz, 2012).

- Chi-square

  Chi-square is a statistical test commonly used to compare observed data with the data that someone would expect to gain according to a particular hypothesis. According to this study, the researcher has not set up such a hypothesis. The chi-square test has a wide range of applications because it only requires a nominal scale level. The chi-square is the sum of the squared difference between given or observed and the

expected data, divided by the expected data in all possible categories (Janssen & Laatz, 2012).

- Canonical Correlation

Canonical Correlation measures the relationship between two sets of variables. Like the Wilks Lambda, the values are between 0 and 1. The greater the value, the greater the spread between the groups in relation to the variation within the groups, so that a great Canonical Correlation coefficient shows a good separation between the groups, thereby indicating a high explanatory power of the model.

So, there is a connection between the Wilks Lambda and the Canonical Correlation. The specification of both values is, therefore, redundant. But the researcher would confirm by specifying the correctness of the results. This is illustrated in Table 88 and 89.

3.9.9 Customer development per industry, customer allocation, existing customer cluster, and customer visits

In addition to the quantitative methods described in the previous sections, the researcher is going to carry out analyses on customer development per industry, customer allocation, customer clientele, and customer visits in Chapter 4. These analyses are also based on the SMEs secondary data and not described here in detail since these analyses will carried out with MS Excel.

3.9.10 Other customer segmentation methods from the literature review

Regarding the missing quantitative data, because it is secondary, the researcher is not able to represent every segmentation methods of the literature review with reference to the original company data. This would only be possible if significant assumptions would be made. However, these assumptions might be justified only with the experience of the researcher. This would, however, distort the significance of the analysis extremely and hence would not be useful.

But the researcher will explain the advantages and disadvantages of predetermined segmentation methods according to the given secondary data.

Scoring models and the RFM method comprise different data together—monetary as well as non-monetary—and in terms of the calculated score, the individual customers are compared.

However, the score does not give any information about the value of customers for the company or how the customers should be treated in future. This method is very time-consuming and data-intensive. With a huge number of customers and a low explanatory power, this method is not recommended for this SME. The expanded form of this method, the RFM cube, is a bit more meaningful and concrete measure. It can be inserted in the individual cubes, but the very large expenditure remains the same.

Using the share-of–wallet method, one could specify different actions, depending on the size of the investment. However, this would not be individual enough for each customer because it is a one-dimensional method. If the share of wallet is the same for two different customers, there is still a high probability that the customers are to be treated very differently. The first customer is a B customer, where the share of wallet is 40 per cent, and the other customer for whom the value is also 40 per cent is a T customer. Completely different customers would be treated equally under this method. Additionally, as mentioned in Section 4.2.1, it is difficult to estimate or calculate the total potential of each customer.

Is it possible and advisable to forecast the future with the CLV method? Certainly an estimate can be derived using this method, but it cannot be exactly predicted. This method is useful if the customer only comes from an industry. In this SME, with the high number of industries and customers, it is not possible for any industry or for each customer to make a CLV calculation. Moreover, the data on the individual costs that occurred during the customer relationship and will occur in future cannot be determined in detail.

Furthermore, the power portfolio for the SME does not really make sense. Again, the required data as well as the share of wallet is difficult to estimate or calculate. This method is two-dimensional and so much better suited, but the second value, in addition to the share of wallet, tells little about customer value. Sales growth in percentage, together with the share of wallet in percentage, provides no meaningful segmentation for the SME. Besides, B customers might be treated in the same way as T customers, even though these customers are not equal.

The customer value portfolio has an advantage because customer attractiveness is taken into account as a factor, which coincides with a share of wallet that is estimated in a difficult manner. If one calculates customer attractiveness by using a simple scoring model and by taking monetary and non-monetary data into account, one would obtain a very good clue.

In the next table the researcher shows the different segmentation methods from the literature review and what kind of assumptions would have to be made to segment customers with these methods.

Segmentation Method	Needed Parameter	Assumption
ABC Analysis Turnover	• Turnover	• No assumptions needed
ABC Analysis Contribution Margin	• Contribution margin	• No assumptions needed
Scoring Models	• Company individual parameter	• Every chosen parameter is a assumption
RFM Method Classic	• Recency • Frequency • Monetary value of each order	• Recency • Frequency
RFM Method Common	• Recency • Frequency • Monetary value of each order	• Recency • Frequency
RFM Method Pointing	• Recency • Frequency • Monetary value of each order	• Recency • Frequency
RFM Method Quintiles	• Recency • Frequency • Monetary value of each order	• Recency • Frequency
RFM Method Cube	• Recency • Frequency • Monetary value of each order	• Recency • Frequency
Share of Wallet	• Share of Wallet	• Share of Wallet
CLV	• Expected turnover from a certain customer in period t • Expected losses from a certain customer in period t • Interest rate • Period (t = 0, 1, 2, ..., T) • Duration of the customer relationship	• Expected turnover from a certain customer in period t • Expected losses from a certain customer in period t • Interest rate • Period (t = 0, 1, 2, ..., T) • Duration of the customer relationship
Customer Power Portfolio	• Turnover growth • Relative share of deliveries	• Turnover growth • Relative share of deliveries
Customer Value Portfolio	• Customer attractiveness • Competitive position	• Customer attractiveness • Competitive position
Net Promoter Score	• Promoter • Passives • Detractors	• Promoter • Passives • Detractors

Table: 37 Needed parameter for segmentation methods

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The table makes clear why only the ABC analysis method makes sense: these are the only methods where no assumptions are needed.

3.10   Scoring model to evaluate available software

To evaluate the existing software models, the researcher will carry out additional expert interviews; to add weight to the evaluation of the software models, each relevant software, CRM, or the customer segmentation software provider will be evaluated by a scoring model.

A scoring model is a point-evaluation model that enables the decision-making or evaluation of several alternatives. This model has the advantage that it delivers clear, measurable, and comparable quantitative results. The model weights and evaluates various criteria, and the weighted calculation leads to a comprehensible result.

The procedure is usually carried out in the following six steps:

1.   Definition of the alternatives to be examined

2.   Selection of the relevant assessment criteria

    The selection is made in accordance with the criteria considered by the researcher as important for the segmentation software in the B2B area. Each criterion can be evaluated with a maximum of 10 points.

3.   Weighting of the assessment criteria

    The weighting in this thesis is based on numbers, 1 (minimum rating) to 10 (maximum rating)

4.   Assessment of the fulfilment of the criteria

    The evaluation results from the result by multiplying the points for the assessment criterion by the weighting

5.   Summary of the individual scores to a total score

6.   Formation of a ranking of the alternatives and selection of the 'optimal' alternative

The scoring model has further advantages and disadvantages. The advantages of the scoring model are that

- it is a decision-making aid for the selection of alternatives under several target requirements

- It greatly increases the transparency of the decision by defining the objectives in a more concrete and operational manner, thereby disclosing the preference structure. Together with the focus on key aspects important to the decision-maker, this leads to an increased acceptance and enforceability of the decision taken

The problem of the model is that criteria selection, weighting, and evaluation are characterized by a high degree of subjectivity.

Even if this model has the disadvantage of subjectivity, did the researcher decided to use it to ensure comparability regarding the available software.

3.11   Quality, validity, reliability, and objectivity

This section describes the basic principles of quality, reliability, validity, and objectivity in the context of the mixed method approach. This is important to confirm the credibility of the study and that the results are based on acknowledged and good research. The basis of this are quality, reliability, validity, and objectivity (Denscombe, 2010).

3.11.1 Quality

Kvale (2007) listed six points for evaluating the quality of interviews in general.

- The extent of spontaneous, rich, specific, and relevant answers from the interviewee
- The brevity of the interviewer's questions and the length of the interviewee's responses
- The degree to which the interviewer follows up and clarifies the meanings of the relevant aspects of the answers
- The extent of interpretation during the interview
- Verification of the interpretations of the subject's answers by the interviewer in the course of the interview
- Self-reliance of the story, that barely requires extra explanation

Another important point regarding the quality of expert interviews is the role of the expert and the interviewer himself. Both parts are critical for the success and the further usefulness of the collected answers (Martens & Brüggemann, 2006). Additionally, there are five points that determine the quality of expert interviews.

1. Conception of the interview guideline
2. Role of the researcher in the interview

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3. Character of the interviews

4. Environment

5. Evaluation method of the interview answers

All these points can be influenced by the researcher. To influence the character of the interviews is difficult, but Martens and Brüggemann (2006) provide for this list with ten different approaches for various characters (Appendix).

By the conducted interviews the researcher took the points of Kvale (2007) and Martens and Brüggemann (2006) into account.

3.11.2 Validity

Silverman (2010) argued that validity is another word for truth and Lancaster (2007) added that effective data is absolutely necessary to reach the research objectives. According to Saunders (2009), validity indicates the suitability of a measurement procedure or a question with regard to the objectives. A measurement or survey is valid if the collected values provide appropriate indicators for the examined research question and objective. Hammersley (1987, p. 73) explained that 'an account is valid or true if it represents accurately those descriptions of the phenomena that are proposed to be explained […]'. Shenton (2004) described internal and the external validity. Internal validity ensures that what is sought to be measured is really measured and external validity 'is concerned with the extent to which the findings of one study can be applied to other situations' (Merriam, 1995, p. 10).

3.11.3 Reliability

The reliability is the trustworthiness of a measurement. It specifies whether similar results would occur when another researcher repeats the interrogations under the same circumstances and/or conditions. Ritchie and Lewis (2003, p. 285) described reliability 'to concern the replicability or research findings and whether or not they would repeat if another study, using the same or similar methods'. For Silverman (2010, p. 210), reliability was in general the 'degree of consistency with which instances are assigned to the same category by different observers or by the same observer on different occasions'. Shenton (2004) argued that reliability exists if a researcher gets the same results as another researcher by using the same participants and methods and in the same context. Especially in qualitative research,

interviews, and observation, the researcher has to deal with some challenges regarding reliability. According to Robson (2002), the researcher has to handle four different threats:

- Observer bias
- Observer error
- Subject or participant bias
- Subject or participant error

Because of these threats, it is important for the researcher to be thorough, careful, and honest during the entire data collection process (Robson, 2002).

3.11.4 Objectivity

The research method is considered to be objective when the responses or measured values are independent of the researcher, interviewer, or auditor. However, it is difficult to ensure real objectivity because tests and questionnaires are designed by human beings and the intrusion of the researcher's biases is inevitable (Patton M. Q., 1990). To counter this issue, confirmability of gathered data, meaningful and proper analysis of the results, and integrity of the researcher are the best criteria.

3.12   Conclusion - Methodology and methods

This section started with a discussion of the research questions and the research objectives of this study. Afterwards, the researcher gave a general explanation of research methodology, the logic behind the research, and three approaches of research. This discussion allows the researcher to find out his own research design for this study.

This starts with the paradigm, the researcher strongly believes in the post-positivism worldview. Regarding the research approach, the best choice in the researcher's view is the deductive approach in general. However, to prove his theory the researcher is going to use inductive approach as well. The chosen mixed method approach uses existing quantitative data and expert interviews. As mixed method research design, the researcher chose the convergent parallel design to analyse the data.

Topic of the next section is data collection. The researcher is going to analyse, merge, and synchronizes both the quantitative secondary data as well as the primary data from qualitative interviews and software evaluations.

From this analysis, a framework for further action should arise. Moreover, the researcher hopes for a key message on which he can build solutions for a use- and meaningful customer segmentation.

During the process of understanding the literature review and the methodology section the researcher became a more in-depth look into the research topic. And this allows the researcher to refine and update the research objective respectively research question.

None of the reviewed methods used profound analytical statistics but because of the large secondary data the researcher came to the conclusion that another research objective should be:

- Why companies use profound analysis methods only in few cases?

Additionally the researcher is going to answer this question in the summary and findings section.

4   Data gathering and analysis

4.1   Introduction

This section generates an insight into data gathering, analysis, evaluation, current state of SMEs concerning customer value, customer potential, customer allocation and, visits. Since one aim of Chapter 4 is to present the output from the secondary data as well as from the expert interviews.

As mentioned in the previous section, along the research journey the researcher comes to the conclusion that though SMEs generally do not carry out any profound statistical analysis, determination of multivariable analysis provides more significant insights into customer segmentation than traditional modelling tools. Nevertheless, the researcher decides to take a deeper look into the given secondary data.

The raw secondary data is not included in this section because of the size of the excel files. The raw interview data is not included as well, but the interview transcription, including the colour code, and the narrative analysis is in the appendix. The raw excel files and raw interview data are available on request. The first part shows how a typical German SME calculates and estimates customer value and customer potential, and also analyses such visits along with the acquisition of new customers. Based on this example, the researcher points out the areas where improvements are necessary.

Section 4.3 is concerned at the beginning with different models of customer segmentation from the literature review. These are applied on the basis of secondary data.

Next, the researcher performs a statistical analysis with the help of software programmes such as IBM SPSS and MS Excel. This is important to evaluate the current segmentation method of the SME, to evaluate the segmentation methods from the literature review, and to understand the customer base of the company in a better way.

Another objective is to reveal the limitations of data gathering and analysis. The last third of Chapter 4 focuses on the analysis and assessment of expert interviews.

4.2   Current state in an exemplary German SME

The analysed data has been gathered from a German SME operating in the field of technical retailing in the B2B sector. It is also possible to buy products as a private person, but these accounts are less than 0.5 per cent of the turnover and therefore they will not be taken into consideration.

The company maintain a partnership, with a group by selling their products but is economically and legally independent.

Currently, the company performs a customer segmentation based on the ABC analysis method but with 5 segments (T,A,B,C,D) instead of 3 segments (A,B,C).

In Section 3.9.1 the researcher explained how the SME classifies its customers. Furthermore, the researcher discussed the pros and cons of this method. Another important point is the acquisition of new customers and the analysis of the current customer cluster at the end of Section 4.2.

4.2.1   Comparison between calculated and estimated potential

Section 3.9.1 illustrated the importance of a correct estimation and calculation of customer potential. In this section the researcher compares the calculated and estimated potential of the reviewed company, as illustrated in Figure 53.

The researcher compares the different regions and accordingly illustrates the significant differences, including those differences in the branches which are meaningful, as shown in Table 36. Figure 53 shows that in most of the sales areas, the estimated potential (by area sales manager) is higher than the calculated potential. This phenomenon depends on the different customer structures in the sales areas. Actually, the estimated potential of all customers in the company area amounts to EUR 399,047,491 (incl. VW). The calculated potential amounts to EUR 296,629,050 (incl. VW). Without Volkswagen, the estimated potential is EUR 373,234,989 and the calculated potential EUR 280,409,650. Inclusion of Volkswagen shows a gap more than EUR 100 million in sales potential. Volkswagen is involved especially in the analysis because it is by far the biggest customer. VW and its subsidiaries are the key accounts of the company and will be described below in more detail.
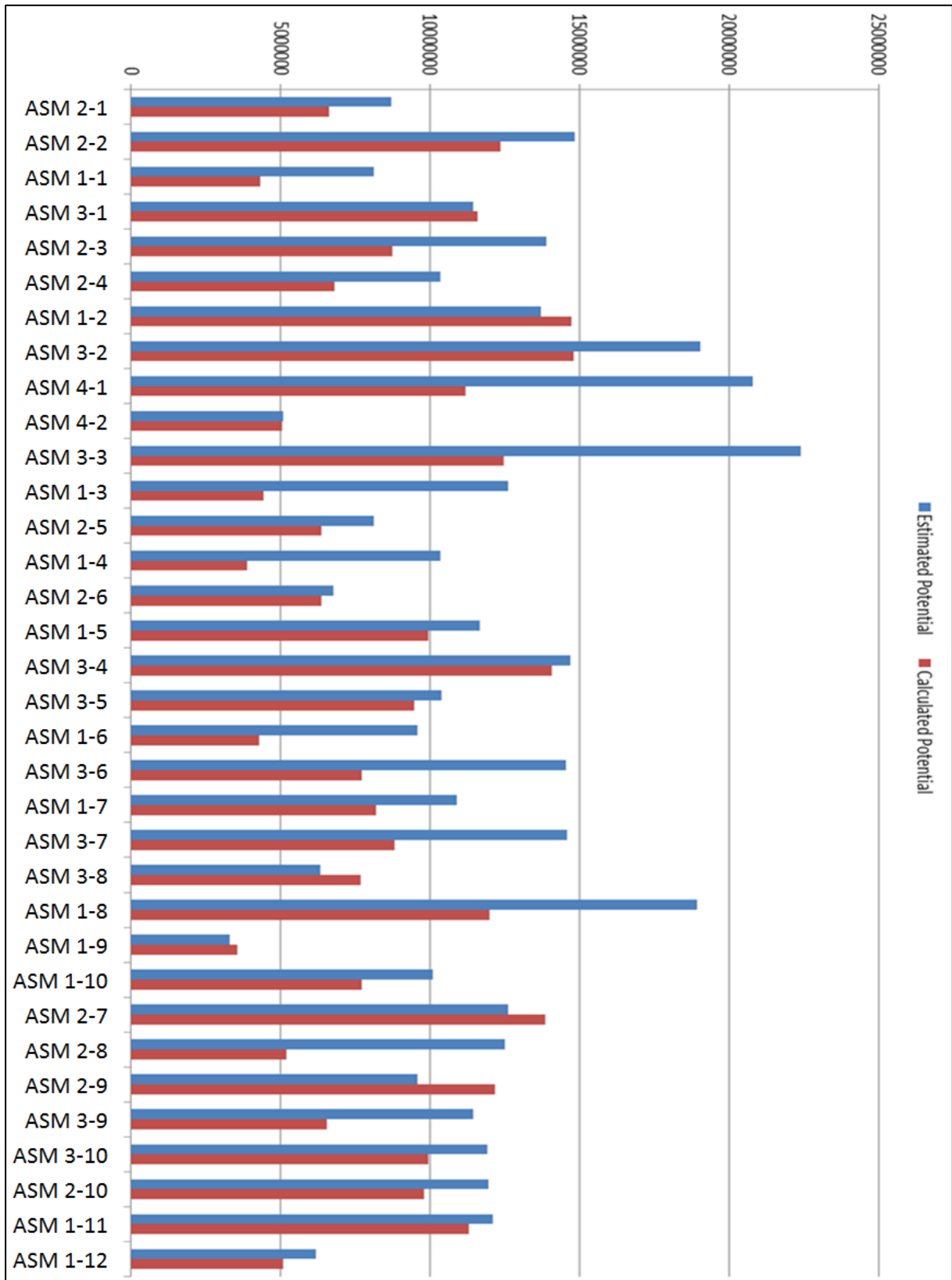
Figure: 53 Comparison between calculated and estimated potential

From the main issue for the extreme difference between the calculated and estimated potential regarding this figure, it can be assumed that many customers have been assigned wrongly and also will be wrongly treated.

Currently, the segments are clustered in following steps:

T Customer: EUR 250,000 potential and more

A Customer: EUR 50,000 to EUR 249,999 potential

B Customer: EUR 10,000 to EUR 49,999 potential

C Customer: EUR 2,500 to EUR 9,999 potential

D Customer: EUR 0 EUR to EUR 2,499 potential

Furthermore, there is the segment of key account management (KAM) customers. These customers have a special position in the SME because their sales and purchase volumes are very high. They are important for the company, if the company loses one of these customers, it would present significant risks to the company. The segmentation of KAM customers can also be made outside the normal criteria. A KAM customer could also be a customer from the C segment. Reason for this could be strategic importance or require special assistance regarding the customer group structure. In Section 2.4 the researcher explained key account management in detail.

Volkswagen and its subsidiaries are the key accounts of the case study SME, selected in this research, and are exclusively managed by the KAM team. However, this refers only to the companies, of the Volkswagen Group, in the sales area of the SME. The VW companies which are not in the sales area are engaged by other partners, this includes e.g. the companies Audi and Porsche. The importance of Volkswagen becomes clear from the sales figures. If one reviews the sales for 2012 to 2014, the SME generated 8.3 percent of sales from the VW group. Thus, the status of the VW key account is justified by the sales figures and the subsequent strategic relationships developed with the VW subsidiaries. Additionally, an ancillary benefit of strategic partnerships with the VW group is that it leads to relationships with their suppliers who subsequently contribute a large portion of sales turnover for the SME. This special KAM

status not only means that VW benefits from special sales and payment conditions, it also means that the two SAP systems of the companies are directly linked with each other. This facilitates faster order processing which has proven to be easier and more efficient for both parties. Finally, the SME dispatches three key account managers only for VW, who are on site every day in the VW plant in the sales area to ensure the best possible care and ensure the continued strategic and competitive relationship between both parties.

Another reason why a lower-potential customer might be associated with the segment of KAM customers or even T customers is that they belong to a customer hierarchy containing bigger customers. Some of the examples are companies with multiple locations where the individual location has the potential for C customers but the entire group for KAM customers. Furthermore, purchasing groups or purchasing associations can be listed by mergers as KAM or T customers, in spite of all individual members of the A segment customers. Some examples are Deutsche Bahn, Bundeswehr, and EON. But this can also be a merger of independent companies to negotiate better purchasing terms.

But why are the differences so extreme?

As can be seen from the following tables and figures, the potential is not only different between calculated and estimated potential, there is also a significant difference between the industries respective branches.

Regarding the total number of customers, the customers are active in four main branches or industries.
The biggest one is the metal industry with 2,303 customers. This branch includes all kinds of sheet metal and steel companies, excluding engineering, steel construction, tools, and mould construction industries. With 2,203 customers, the electronic branch has nearly the same amount of customers. If these two industries are compared, then a company has the main problem of the potential-based segmentation. The average calculated potential in the metal industry per customer is EUR 8,475.76, while the estimated potential is EUR 29,262.59. This amounts to a difference per customer of EUR 20,785.84! This clearly shows there must be a

mistake in the calculation formula from the group or a misjudgement on the part of the area sales manager (ASM). In this case, it must be assumed that there is a mistake in the formula because 35 ASMs have estimated the potential higher than the calculated potential.

The second biggest customer group is the electronic industry. Its calculated average potential per customer is EUR 19,252.16 and the estimated potential is 11,653.68 EUR. Therefore, there is a difference of EUR 7,598.48 in a completely different direction. But it must also be assumed that the formula is wrong.

Why are these two industries so different?

They are different because the products of the SME focus on drilling, cutting, milling, and lathing tools. These operations are very often in the metal branch but not very common in the electronic industry. But in the group formula, the multiplication factor for the electronic industry is higher than the one for the metal industry.

The engineering industry, with 2,079 customers, is by far the biggest potential market, but it presents the same picture as mentioned above. The multiplication factor is the highest in the calculation sheet because both, the company and the group focus on such customers. Because of this, the company has many engineering bureaus in the sales area, and these bureaus produce nothing. Hence, the SME's turnover with these customers is very low. However, in the group formula, every employee will be multiplied with EUR 3,000.

The automobile industry and vehicle manufacture is the other way around. In both industries the company has only 903 customers, but the estimated potential is EUR 63,115,114 in total. The estimated potential is EUR 69,894.92 per customer. The calculated potential per customer is EUR 22,489.05 lower!

The biggest difference in terms of potential per customer is in the tool and mould construction industry. There is a calculated potential of EUR 8,976.16, and the estimated potential is EUR 33,497.72—showing a difference of more than 373 per cent.

The customers in the biggest segment 'Other' are negligible. These are very small customers, often one-man operations. The estimated potential per customer is only EUR 1697.37.

Branch	Estimated Potential	Calculated Potential	Number of customers
Building and Construction industry	5558165	6150150	986
Mining industry	3606027	1028350	180
Chemical industry	14837225	7894000	972
Metal and Steel engineering	67391739	19521950	2303
Electronic	25673057	42412500	2203
Energy indutry	4005906	3103500	571
Food and Agriculture	3637261	2481700	383
Casting industry	4748309	1812100	124
Retail	7393536	891150	989
Wood industry	728005	676400	122
Automobile industry	46243081	32426500	595
Automobile trade and Gas stations	2600727	1010700	712
Customer ready for delete	93500	15750	12
Machine engineering	116568816	132231500	2079
Furniture	809109	444150	133
Paper and textile industry	1218515	1106000	152
Vehicel construction	16872033	10381000	308
Other	22750952	7364950	4357
Steel construction	23861123	17304150	2084
Transport industry	7817586	2013250	531
Steel Mill industry	8188803	2481600	65
Tool and mould construction	14471016	3877700	432
Total	399074491	296629050	20293

Table: 38 Estimated and calculated potential per branch

The customer group in the secondary data 'customer ready for delete' is to be ignored. These customers do not exist anymore. These are very small customers; they mostly gave up their businesses or have been bankrupt. They are still in the table because the company deletes such customers only once a year after consultation with the area sales manager.
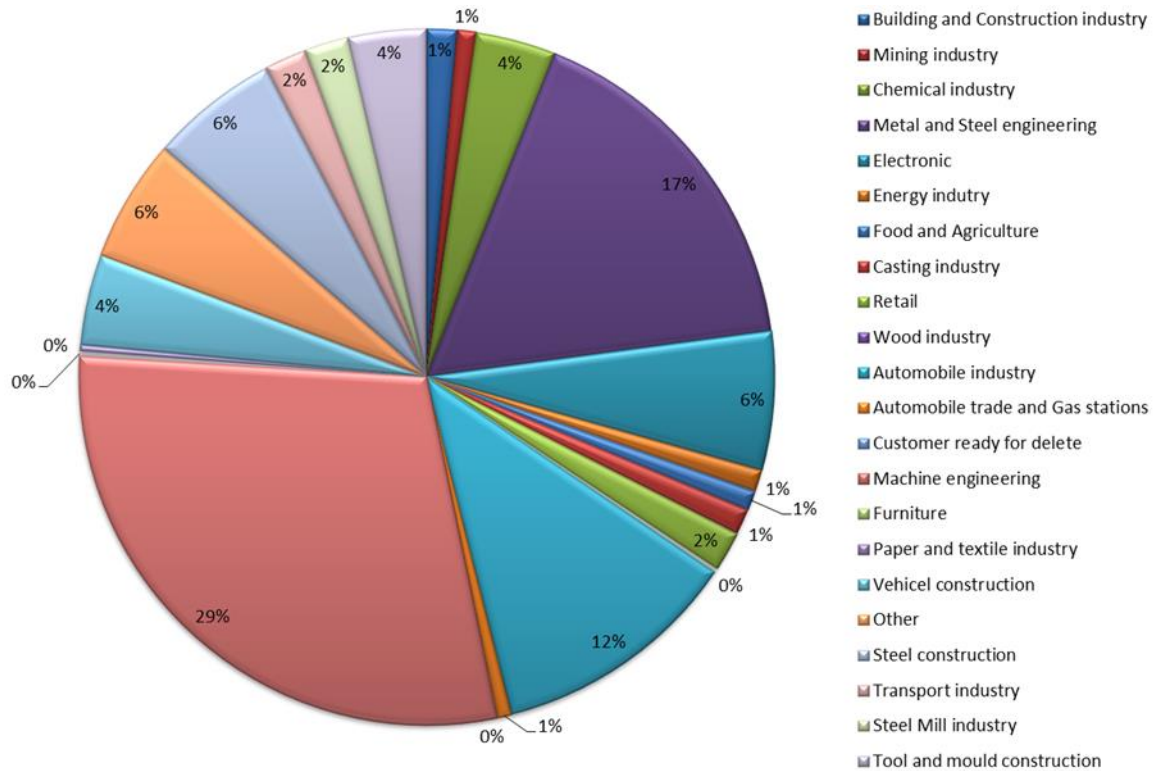
Figure: 54 Estimated potential per branch

In both diagrams (Figure 54 and Figure 55) the allocation of customers in industries is illustrated once more. If one compares the diagrams, it can be seen, as already described above, that there is a huge difference in the focus industries.

Owing to the relatively high number of customers in different industries, the dependence on individual customers, except for a few KAM customers, is low. There is, however, high dependence on individual industries. If there are industries such as engineering or automotive, and their suppliers are facing a crisis, one can feel this more clearly. From 2009 to 2014 the breakdown in sales shows how strongly the company is dependent on the general economic situation. Smaller boom industries, such as the renewable energies, cannot compensate these losses.

Another point, which must be mentioned in this context of potential, is the market share. With a turnover of approx. EUR 75 million in 2012, the market share or share-of-wallet on the basis of the calculated potential is 25.3 per cent. Based on the estimated potential, the market share is only 18.8 per cent. This decisive difference, of course, plays an important role in defining business goals or strategic decisions. The topic of segmentation will not be affected. In all

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methods where the share of delivery or market share plays a role, this difference can lead to fatal miscalculation.
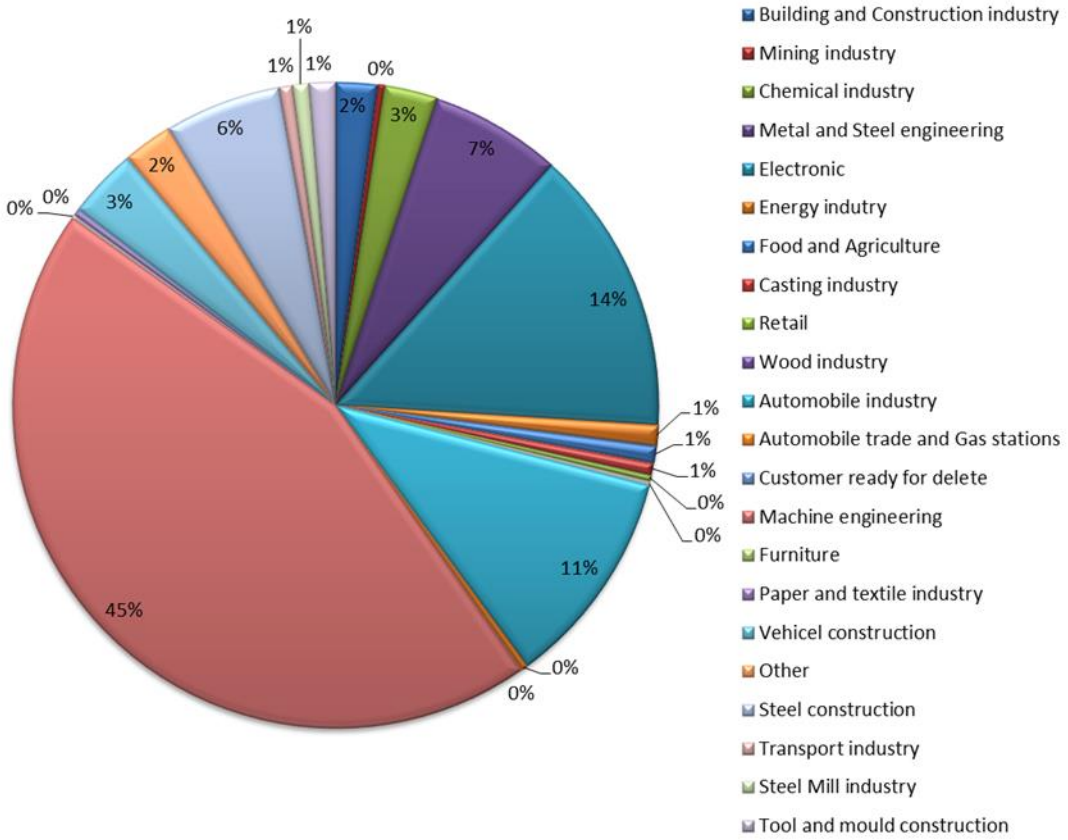
Figure: 55 Calculated potential per branch

Owing to this difference, the share-of-wallet method of customer segmentation does not make much sense, and in no way the results will reflect the reality.

4.2.2 New customer and customer development

In this section the researcher discusses the development of the customer base. In the beginning, the researcher focuses on general trends for this topic, including customer development per month and team, and the general trend. The second section deals with customer development in individual industries. This section in connection is important for every company because it shows how different sectors develop in terms of customers, and if this is in line with the estimated and calculated potential per industry.

4.2.2.1 Time series analysis

The MS Excel time series analysis presented in Figure 56 shows the ups and downs in the SME's customer acquisition. The figure also shows those time periods where fewer customers will be acquired. These periods are in summer and in December of every year.

The illustrated linear trend was chosen to eliminate the seasonal dependencies and trends in case of a seasonal adjustment of calendar effects. This is recommended if different time series are to be correlated with each other (von der Lippe, 1993). In this example, that would be the individual teams and the trend of teams together. As well this is done to estimate simple parameters that are reliable. The illustration of the cyclical and seasonal trends on the graph has been omitted for reasons of clarity and comprehensibility.
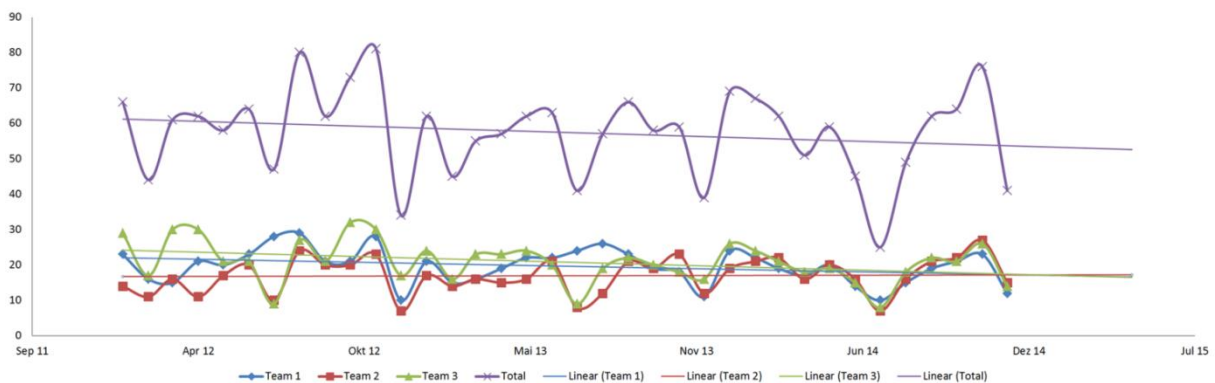
Figure: 56 Time series - New customer

The summer period is holiday season in Germany, when most sales managers have their holidays. They will be represented by other sales managers who would take care of two areas during this period. Regarding this additional effort, the task to acquire new customers will be neglected. The sales teams did not face this issue in 2012 and 2014 because of the team structure. Fewer sales managers were required in Team 1 to use school holidays during summer because of their mature age. Younger sales manager with kids have to have holidays during this period.

December present a different reason. For most SMEs and customers the fiscal year ends in December, which means that their yearly budget expires at the end of December. As most departments are keen to work within the old budget and are not interested in letting it expire, customer purchases increase sharply. It may be concluded that area sales managers most of

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the time visit the already existing customers to get orders and increase the turnover. In fact, they want to achieve their own sales objectives because they are paid by commission as well.

This might be all right in the short run, but Figure 56 and 57 shows the SME loses customers over the years. It means that the company loses more customers every year, as it generates. If they lose mainly B and C customers, then it does not play a big role regarding a good customer structure; however, if they lose A customers, it might pose a problem. The trend line in Figure 57 shows fewer new customers are being acquired every year.
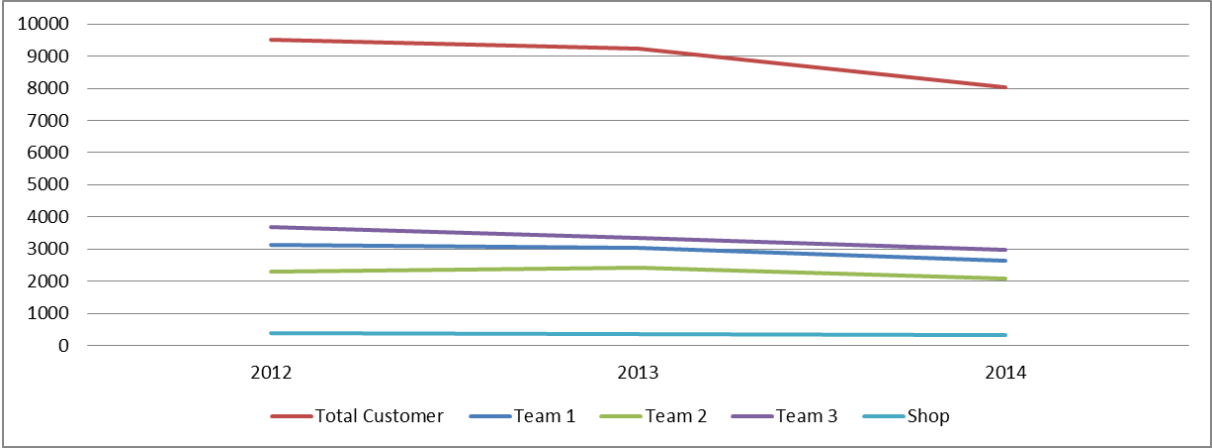
Figure: 57 Customer development

In total, the SME loses 15.46 per cent of their customers between 2012 and 2014. From 2012 to 2013 they lose 280 customers, but they lose 1,192 customers between 2013 and 2014—which means 12.9 per cent only in that year.

Should this trend continue over a longer period, it would have a major impact on the investigated SME because the business growth slows or even develops negatively. But the stage of growth will change in any case.

To provide another more analytic approach to time series forecasting, the researcher will be present the SPSS Expert Modeler and the autoregressive integrated moving average (ARIMA) model.

SPSS Expert Modeller, ARIMA model and Simple Seasonal

The SPSS Expert Modeler chose automatically for Total Teams and Team 1 the simple seasonal model instead of the ARIMA or other models. As one can see in the table below, at the first

and second model (Simple Seasonal) the values p,d,q and P,D,Q are not given. Team 2 was identified as a AR model with 4 AR terms (4,0,0) in the non-seasonal part, this means every value is influenced by the previous 4 lags, and 1 differencing order in the seasonal part (0,1,0). SPSS identified Team 3 as a so called 'white noise' model with no orders, in the non-seasonal part. This assumes that the values do not influence each other. In the seasonal part it was identified as AR model with 1 order.

Method	Expert Modeler
Total Teams	Simple Seasonal
Team 1	Simple Seasonal
Team 2	ARIMA (4,0,0)(0,1,0)
Team 3	ARIMA (0,0,0)(1,0,0)

Table: 39 SPSS Expert Modeller Description

As well different results came significantly to light in the evaluation of the model statistics. As an example, R-square may be mentioned here, the Simple Seasonal model (Total Teams and Team 1) has, as well as Team 2 (ARIMA model), much higher values than Team 3 (ARIMA model). It means that if one uses this method, the total variation would be better than the chosen basic model. But even if, as in the analysis for Teams 2 and 3, the Expert Modeler selected the ARIMA method, there could be different results, as shown in next table. This is because, as shown in Table 39, the non-seasonal values p,d,q (written in the first bracket) and seasonal values P,D,Q (written in the second bracket) are different. It is important that such differences will be considered mandatory in the evaluation of results.

Model Statistics Expert Modeler							
Model	Number of Predictors	Model Fit statistics		Ljung-Box Q(18)			Number of Outliers
		squared	R-squared	Statistics	DF	Sig.	
Total Teams-	0	.663	.647	43.125	16	.000	0
Team 1-	0	.622	.583	17.844	16	.333	0
Team 2-	0	.624	.740	13.977	17	.669	1
Team 3-	0	.194	.194	18.706	17	.346	1

Table: 40 Model Statistics Expert Modeler

Also one sees above that the number of outliers varies depending on the method. During the Expert Modeler the Total Team and Team 1 have no outliers and Team 2 and 3 each have only one outlier. As shown in the table below SPSS identifies outliers for Team 2 in August 2012 and for Team 3 in November 2013. The outlier of Team 2 can be seen as a positive outlier, while the outlier of Team 3 can be considered as a negative outlier.

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Outliers			Estimate	SE	t	Sig.
Team 2-Modell_3	Aug 2012	Additive	11.286	2.366	4.770	.000
Team 3-Modell_4	Nov 2013	Additive	-9.618	3.686	-2.609	.014

As mentioned above ACF and PACF can be used to identify the possible structure of time series data. The following residual ACF and PACF plots show differences between the two methods. But the seasonal characteristics, which could be seen already in Figure 56, are particularly easy to recognize in both, Simple Seasonal (Total Teams, Team 1) and ARIMA (Team 2, Team 3) methods, especially in the ACF plots. The values displayed on the plot illustrate the seasonal peaks and make it easier for companies to be prepared for it and counter it.

One can also see that only the Total Team and Team 1 cross the confidence limit. The confidence limit selected for this study is 95%. In the ACF and PACF plots of the Total Team, the first lag crosses the negative confidence limits. Team 1, however, crosses the positive confidence limit in lag 6. Also, it can be seen that the confidence limits rise significantly in all ACF plots.
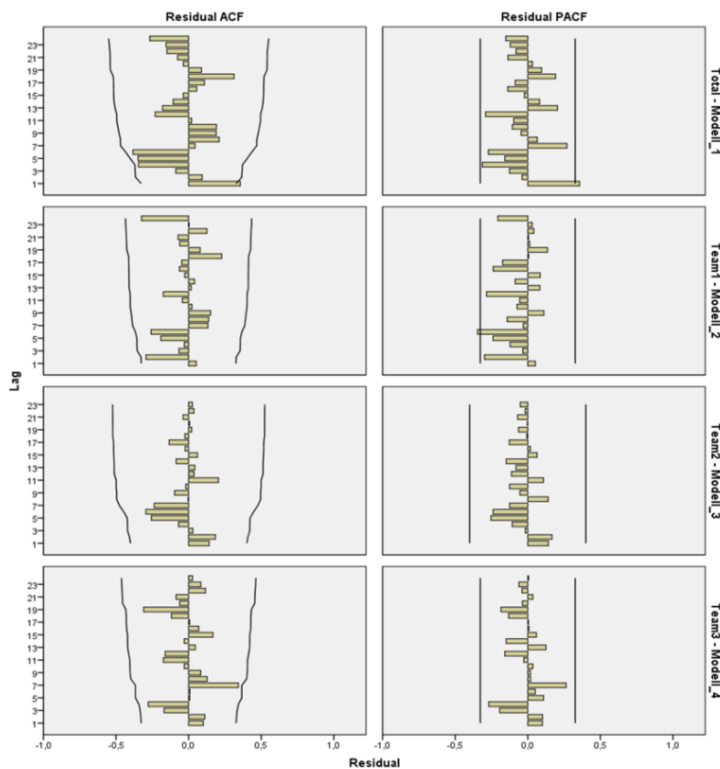
Figure: 58 Expert Modeler - Residual ACF and PACF
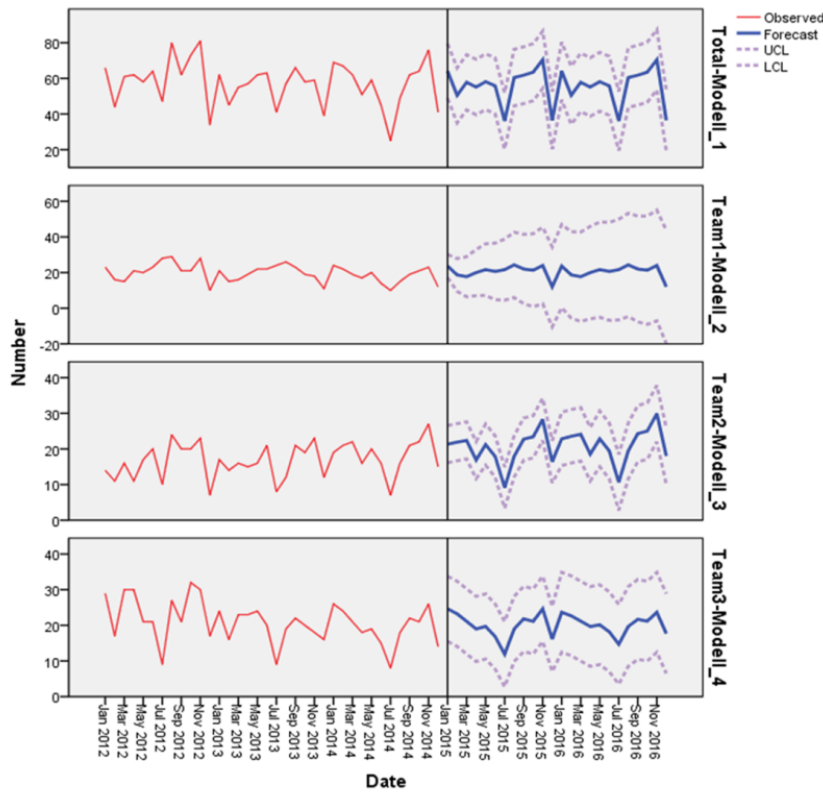
Figure: 59 Expert Modeler - New customer including forecast

Figure 59 show, for SMEs certainly more important values, the observed data from January 2012 to December 2014 and a two-year forecast period with the UCL (upper confidence level) and LCL (lower confidence level). Here the differences between methods and assumed parameters are particularly clear when one looks at the Team 1 gap between UCL and LCL for January 2015 and compares this value with December 2016, as shown in Table 42. The Total Team, Team 2 and 3 show gaps within normal limits during a 2 year forecast, while Team 1 shows a gap of 51 customers. This is an unacceptable value because the SME cannot plan or schedule sales activities. Of course, it is partly due to the different given basic data, on the other hand, the different methods and automatic adjusted SPSS parameters play a role as well.

Gap UCL and LCL		
	Jan 2015	Dec 2016
Total Team	30	34
Team 1	13	64
Team 2	11	16
Team 3	19	23

Table: 42 Gap UCL and LCL

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If one compares the last given data and the last forecast, it becomes clear that the forecast in Team 1 remains the same and even increases in Teams 2 and 3. When the three teams summarize 48 new customers in this month, it is an increase of seven new customers, 17.1 per cent. Only when the total team is considered separately does the forecast decrease by five new customers, 12.2 per cent. This is a very important finding, since (Figure 56) all teams have developed negatively in MS Excel evaluation and now it looks different.

Gap Dec 2014 and Dec 2016		
	Dec 2014	Dec 2016
Total Team	41	36
Team 1	12	12
Team 2	15	18
Team 3	14	18

Table: 43 Gap between December 2014 and December 2016

The researcher does not go deeper into the analysis because, although this part is important in the field of customer segmentation. But it is only an upstream tool to know how many new customers the SME have to acquire to achieve the desired level of customer before the company performs the customer segmentation.

Nevertheless, these evaluations show that the choice of an analysis method and as well as different p,d,q values is crucial for SMEs. The different results can tempt SMEs to take wrong management decisions, which, in turn, can have then serious consequences. For example, how intensive the company focused on the acquisition of new customers. If one focus on this, one cannot put it the limited resources otherwise.

4.2.2.2 Customer development per industry

If one compares the customer development per industry over the years, it shows that the SME also loses customers in the main industries like B/2900 (machine engineering), G/2800 (surface and thermal treatment), H/3000 (electrical industry), I/2300 (chemical industry), L/4500 (building and construction industry), and T/5100 (all other).
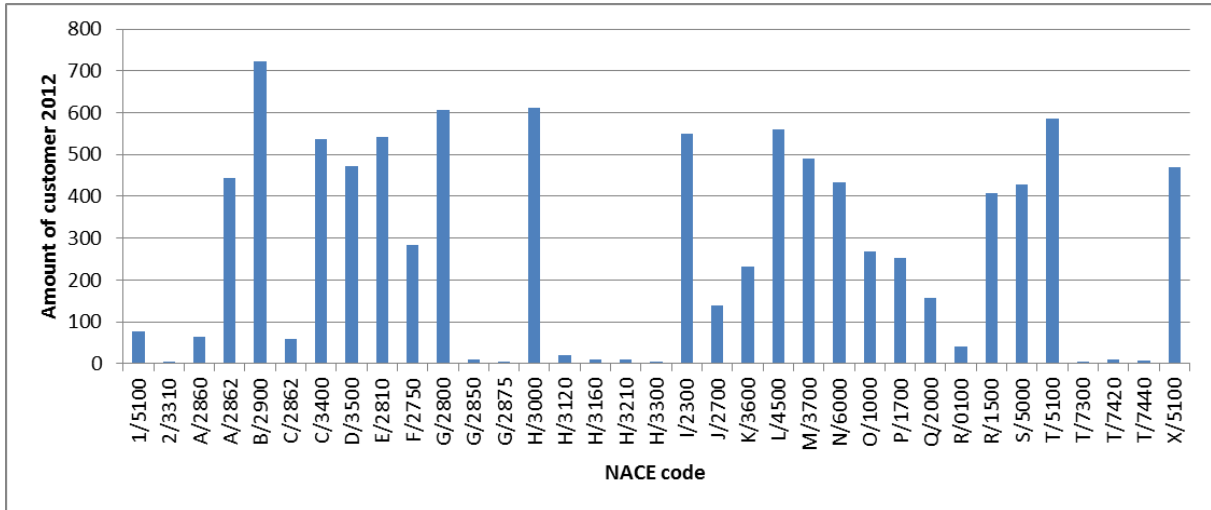
Figure: 60 Amount of customer per industry (2012)

In 2012 the company had 3,635 customers in these industries. In 2013 the number decreased by 3.25 per cent to 3,517 customers. It decreased further in 2014, by 8.5 per cent to 3,218 customers. Over the entire period it adds up to a loss of 11.47 per cent customers in these important industries. This could be dangerous over a longer period because the SME may lose its daily business.
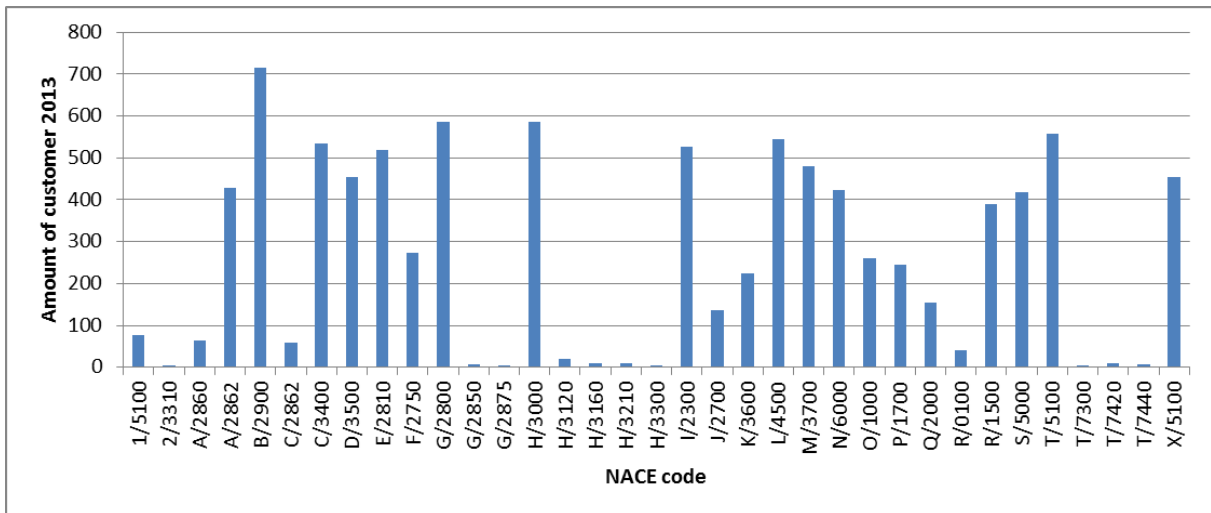
Figure: 61 Amount of customer per industry (2013)
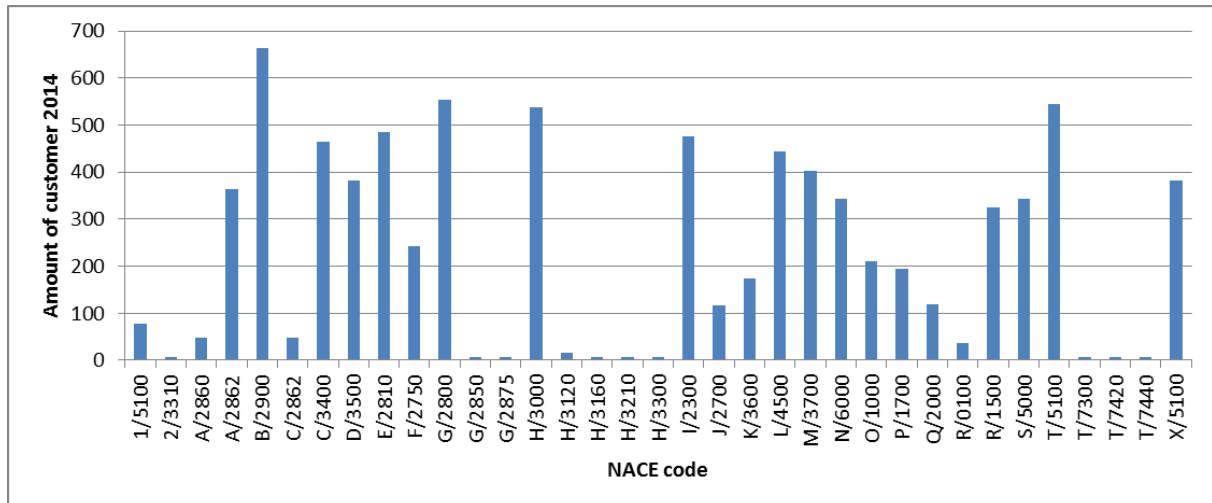
Figure: 62 Amount of customer per industry (2014)

Of course, one reason could be a reorganisation of the sales regions (described in Section 4.3.1), but this would only explain the huge loss of customers in 2014, instead of in 2013, and certainly not the loss in the key industries. Also, the reorganisation does not explain the differences between the estimated and calculated potential per industry, as explained in Section 4.2.1.

4.2.3   Customer allocation

As shown in the table below, the customer structure in regional teams (Team 1, Team 2, and Team 3), which results from the current segmentation, is homogeneous.

The VW team must be considered separately because it is concerned only with the customers of Volkswagen and its subsidiaries. This results from the Volkswagen Group, in sales and contribution margin, show it is by far the biggest customer and therefore they get a separate service. Furthermore, the purchasing process for this customer is complex and need special attention.

The table shows in its first column the teams and customer segments. The second column illustrates the number of customers in the segment, the next column the total amount of customer percentage in the SME, and the last column the total number of customer percentage per team.

■Team 1			
A	394	1,94%	6,04%
B	1188	5,85%	18,22%
C	2086	10,28%	31,99%
D	2772	13,66%	42,51%
unassigned	14	0,07%	0,21%
T	67	0,33%	1,03%
Total Team 1	**6521**	**32,13%**	**100,00%**
■Team 2			
A	345	1,70%	6,63%
B	1214	5,98%	23,35%
C	1484	7,31%	28,54%
D	2088	10,29%	40,15%
unassigned	9	0,04%	0,17%
T	60	0,30%	1,15%
Total Team 2	**5200**	**25,62%**	**100,00%**
■Team 3			
A	392	1,93%	4,63%
B	1190	5,86%	14,07%
C	2767	13,64%	32,71%
D	4030	19,86%	47,64%
unassigned	21	0,10%	0,25%
T	60	0,30%	0,71%
Total Team 3	**8460**	**41,69%**	**100,00%**
■Team VW			
A	22	0,11%	19,64%
B	18	0,09%	16,07%
C	20	0,10%	17,86%
D	36	0,18%	32,14%
T	16	0,08%	14,29%
Total Team VW	**112**	**0,55%**	**100,00%**
Total	**20293**	**100,00%**	

Table: 44 Customer segments per team

Team 1 is responsible for the region around Brunswick, which has Hanover in the west, Lüneburg in the north, and Magdeburg in the east. There are huge industrial sites, such as Hannover, Brunswick, and Wolfsburg in this area, with many automotive companies. Furthermore, this region offers a healthy SME structure.

Team 2 is responsible for the region that adjoins the north by Brunswick, which is south to Kassel and expands to the east where there is the border between Halle and Leipzig. This region is slightly smaller than the region of Team 1, which is shown by the fact that the total number of customers is in total, lower by more than 1,300. This is reflected especially in the segments of C and D customers. Another reason why Team 1 has more D customers than Team 2 is that the company's headquarters in Brunswick still has a shop for private customers. Any private customer must be registered and is automatically a D customer.

As strong industrial sites can be identified in regions around Salzgitter, Kassel and Halle otherwise the region is strongly influenced by SMEs.

Team 3 has the highest number of customers. This is because the team serves the largest region. However, about 80% of these customers are in the segments of C and D. This may be attributed to the fact that this team has many structurally weak areas in the region, such as the states of Brandenburg and Mecklenburg-Vorpommern. As a strong industrial site, the regions around Berlin and Rostock should be mentioned. It also indicates that more than 65 per cent of T customers are settled by Team 3 in these two regions.

4.2.4 Existing customer cluster

The potential exhaustion is the ratio of the estimated potential of a customer to the turnover that is attained with this customer.

The potential exhaustion segmentation in the company is a simple but feasible method. If the potential exhaustion of a customer is more than 30 per cent, this customer is marked with the letter A. If the exhaustion of a customer is between 10–30 per cent, then this customer is assigned to Class B, and less than 10 per cent is indicated with C. In the potential exhaustion Class D, customers with no turnover are kept. In classes C and D these are mainly private customers, or even small or micro companies, that need to be neglected. But in the customer segment T (Top customer) these are often normal customers with a subsidiary in the company's area, but they belong to a group and treated as a group because the headquarters is located in the area of a partner company.

Exhaustion percentage	Exhaustion class
over 30 %	A
10 to 30 %	B
0 to 10 %	C
No exhaustion	D

Table: 45 Company's exhaustion class

It is important to note that the following reports are based on contracting entities and not on the goods recipients. As many companies with several sites have centralized their purchasing departments, and large companies have no central goods receiving departments, every individual department has separate goods receiving departments. These receiving departments are conducted at the company as goods recipients and not as contracting entities.

4.2.4.1 Team One

To begin with, it is striking that 67 T customers—amounting to 1.03 per cent of the total number of customers of Team 1—correspond to only 13 customers, which marks exhaustion above 30 per cent. In 26 of these T customers, Team 1 exhausted the potential of 10 to 30 per cent, but 28 of the 67 T customers are processed without exploitation. These are more than 40 per cent. When these T customers are treated by a partner of the company, then the team or the area sales manager gets an allowance of 10 per cent of the contribution margin. This 10 per cent contribution margin bill will be re-credited to the area sales manager's account. This raises the question as to whether the 10 per cent incentive is enough to treat the customer in accordance with the customer class. The following calculation can illustrate this:

Customer potential: EUR 1,000,000

Turnover: EUR 300,000

Contribution margin: 25 % → EUR 75,000

Commission ASM account: 10 % → EUR 7,500

Gross commission ASM: 4 % → EUR 300

How much motivation is there to treat a T customer with potential of EUR 1,000,000 for EUR 300 gross commission per year? If this customer belongs direct to the company or the area sales manager (ASM), then the latter would receive a commission of gross EUR 3,000.

It is understandable that the area sales manager will visit his/her own companies or customers because the commission is 10 times higher.

There is, of course, the opposite case that the headquarters are located in the area of the company, but this is a rare case because the company is spread, unlike its partners in southern and western Germany, over significantly more structurally weak regions. In one case, it is especially evident with Volkswagen in the area around Wolfsburg. Here, many automotive suppliers are located. These suppliers have high potential, but their headquarters are in different regions.

The utilization rate is significantly better in the A customer segment. More than 46 per cent of these customers have a utilization rate of over 30 per cent. The B customer segment with the potential of up to EUR 50,000 will be used up at about 35 per cent with Class A. The C and

D customers, even though they form the largest segment of the number of customers, are negligible. This applies to both Team 2 and Team 3.

Team 1			
A			
A	182	0,90%	2,79%
B	122	0,60%	1,87%
D	90	0,44%	1,38%
Total A	**394**	**1,94%**	**6,04%**
B			
A	408	2,01%	6,26%
B	350	1,72%	5,37%
D	429	2,11%	6,58%
unassigned	1	0,00%	0,02%
Total B	**1188**	**5,85%**	**18,22%**
C			
A	427	2,10%	6,55%
B	446	2,20%	6,84%
D	1210	5,96%	18,56%
unassigned	3	0,01%	0,05%
Total C	**2086**	**10,28%**	**31,99%**
D			
A	432	2,13%	6,62%
B	354	1,74%	5,43%
D	1982	9,77%	30,39%
unassigned	4	0,02%	0,06%
Total D	**2772**	**13,66%**	**42,51%**
unassigned			
unassigned	14	0,07%	0,21%
Total unassigned	**14**	**0,07%**	**0,21%**
T			
A	13	0,06%	0,20%
B	26	0,13%	0,40%
D	28	0,14%	0,43%
Total T	**67**	**0,33%**	**1,03%**
Total Team 1	**6521**	**32,13%**	**100,00%**

Table: 46 Exhaustion per customer segment (Team 1)

4.2.4.2 Team Two

In Team 2 the utilization rate for the T customers in the area is more than 38 per cent, which is significantly better. An essential reason is, this area has not as huge industrial sites as Team 1 with Wolfsburg, Hanover, and Brunswick. The T customers in this area are mainly huge family businesses that have their headquarters in the region, such as Otto Bock, B. Braun, or the machine tool factory Zerbst. But the number of customers belonging to Class D, with over 31 per cent, is still high.

The utilization rate is over 46 per cent for Class A customers, which is very similar to Team 1. In the area of customer B, the exhaustion of Team 2 is slightly worse than that in Team 1.

Team 2			
A			
A	161	0,79%	3,10%
B	109	0,54%	2,10%
D	75	0,37%	1,44%
Total A	**345**	**1,70%**	**6,63%**
B			
A	405	2,00%	7,79%
B	302	1,49%	5,81%
D	507	2,50%	9,75%
Total B	**1214**	**5,98%**	**23,35%**
C			
A	355	1,75%	6,83%
B	324	1,60%	6,23%
D	805	3,97%	15,48%
Total C	**1484**	**7,31%**	**28,54%**
D			
A	331	1,63%	6,37%
B	180	0,89%	3,46%
D	1573	7,75%	30,25%
unassigned	4	0,02%	0,08%
Total D	**2088**	**10,29%**	**40,15%**
unassigned			
unassigned	9	0,04%	0,17%
Total unassigned	**9**	**0,04%**	**0,17%**
T			
A	23	0,11%	0,44%
B	18	0,09%	0,35%
D	19	0,09%	0,37%
Total T	**60**	**0,30%**	**1,15%**
Total Team 2	**5200**	**25,62%**	**100,00%**

Table: 47 Exhaustion per customer segment (Team 2)

4.2.4.3 Team Three

In Team 3 the utilization rate of T customers is by far the worst. It is assumed that this is because of the Berlin area. Similar to the Wolfsburg area, many companies have a subsidiary, although their headquarters are located somewhere else. About 50 per cent of the T customers are assigned to class D and only 8.33 per cent are exhausted over 30 per cent. The value of this 8.33 per cent, with nearly the same number of T customers like other areas, is too low. With the same number of T customers, Team 2 has 23 customers in this class, which corresponds to 38.33 per cent of the customers. The competitive situation in the area of Team 3 is similar to the situation for Team 1 and Team 2.

The utilization rate of B customers is the best in Team 3. This raises the question:

Does every area sales manager have the right customer in focus?

■ Team 3			
⊟A			
A	120	0,59%	1,42%
B	96	0,47%	1,13%
D	176	0,87%	2,08%
Total A	**392**	**1,93%**	**4,63%**
⊟B			
A	460	2,27%	5,44%
B	270	1,33%	3,19%
D	459	2,26%	5,43%
unassigned	1	0,00%	0,01%
Total B	**1190**	**5,86%**	**14,07%**
⊟C			
A	627	3,09%	7,41%
B	426	2,10%	5,04%
D	1714	8,45%	20,26%
Total C	**2767**	**13,64%**	**32,71%**
⊟D			
A	648	3,19%	7,66%
B	420	2,07%	4,96%
D	2955	14,56%	34,93%
unassigned	7	0,03%	0,08%
Total D	**4030**	**19,86%**	**47,64%**
⊟unassigned			
unassigned	21	0,10%	0,25%
Total unassigned	**21**	**0,10%**	**0,25%**
⊟T			
A	5	0,02%	0,06%
B	22	0,11%	0,26%
D	33	0,16%	0,39%
Total T	**60**	**0,30%**	**0,71%**
Total Team 3	**8460**	**41,69%**	**100,00%**

Table: 48 Exhaustion per customer segment (Team 3)

4.2.4.4 KAM team

As mentioned in Section 4.2.3, the KAM team consists only of Volkswagen and its subsidiaries. In this and other analyses, they are to be neglected for the sake of complete evaluation. The analysis is provided only for information and completion.

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Team VW			
A			
A	4	0,02%	3,57%
D	18	0,09%	16,07%
Total A	**22**	**0,11%**	**19,64%**
B			
A	3	0,01%	2,68%
B	1	0,00%	0,89%
D	14	0,07%	12,50%
Total B	**18**	**0,09%**	**16,07%**
C			
A	6	0,03%	5,36%
B	2	0,01%	1,79%
D	12	0,06%	10,71%
Total C	**20**	**0,10%**	**17,86%**
D			
A	4	0,02%	3,57%
B	4	0,02%	3,57%
D	28	0,14%	25,00%
Total D	**36**	**0,18%**	**32,14%**
T			
A	4	0,02%	3,57%
D	12	0,06%	10,71%
Total T	**16**	**0,08%**	**14,29%**
Total Team VW	**112**	**0,55%**	**100,00%**

Table: 49 Exhaustion per customer segment (KAM team)

4.2.4.5 Customer Visits

In the second half of 2013 there were 122 working days (working days depend on the federal states in Germany) in northern Germany. If one subtracts now 50 per cent of the vacation entitlement for the whole year, which corresponds to 15 days as well as five days of bank holidays and training, every area sales manager has 102 working days to visit customers.

The area sales manager (ASM) 1–4 cannot be evaluated because he was ill for a long time during the assessment period.

Visits	Potential Segment						
Team	Area Sales Manager	A Customer	B Customer	C Customer	D Customer	T Customer	unassigned	Total
Team 1	ASM 1-1	42	7	10	83	68		210
	ASM 1-2	111	158	65	37	25		396
	ASM 1-3	108	173	41	22	31		375
	ASM 1-4	18	10	9				37
	ASM 1-5	75	200	95	29	4	1	404
	ASM 1-6	185	184	49	29	50		497
	ASM 1-7	54	180	53	60	24	1	372
	ASM 1-8	118	111	41	28	27	1	326
	ASM 1-9		32	202	184		3	421
	ASM 1-10	116	114	94	45			369
	ASM 1-11	128	267	94	41	5	1	536
	ASM 1-12	126	81	57	31			295
Total Team 1		1,081	1,517	810	589	234	7	4,238
Team 2	ASM 2-1	57	190	49	23			319
	ASM 2-2	123	118	3	2	11		257
	ASM 2-3	202	129	89	50	39	3	512
	ASM 2-4	110	3	3		44		160
	ASM 2-5	63	74	41	24	14	1	217
	ASM 2-6	66	91	78	46			281
	ASM 2-7	49	162	72	72		1	356
	ASM 2-8	146	76	4	24	15		265
	ASM 2-9	157	143	37	7	55		399
	ASM 2-10	227	159	14	9	42		451
Total Team 2		1,200	1,145	390	257	220	5	3,217
Team 3	ASM 3-1	109	224	106	42		2	483
	ASM 3-2	265	246	92	52	19	3	677
	ASM 3-3	227	132	38	31	231	3	662
	ASM 3-4	109	69	22	30	10		240
	ASM 3-5	88	173	177	49		1	488
	ASM 3-6	151	88	87	43	169		538
	ASM 3-7	151	245	141	13	73		623
	ASM 3-8	179	76	33	36	8	16	348
	ASM 3-9	157	191	169	169	76	2	764
	ASM 3-10	183	248	107	16	54		608
Total Team 3		1,619	1,692	972	481	640	27	5,431
Team VW	ASM 4-1	52		6	23	449		530
	ASM 4-2	8	13	13		147		181
	ASM 4-3			11		54		65
	ASM 4-4	7				13		20
Total Team VW		67	13	30	23	663		796
Total		3,967	4,367	2,202	1,350	1,757	39	13,682

Table: 50 Customer visits (July – December 2013)

The first general view of the evaluation shows that the focus of such visits is on the A and B customers. Except Team 2, even more B customers are visited along with A customers. Certainly, the company and each team have significantly more B customers than A or T customers. As many as 17.8 per cent of the company's customers are B customers, 5.7 per cent are A customers, and only 1 per cent are T customers. For Team 2 and Team 3, the number of visits of A and B customers is still relatively balanced. By far, most B customers are visited by Team 3. However, the focus of such visits should not be on B customers. The focus must be on T customers and also on A customers. The visit frequency for the A customers is

good in proportion to the number of customers in this segment. Particularly noteworthy is Team 3, which has the similar number of A customers as the other two teams, but Team 3 has by far the most customer visits in this segment.
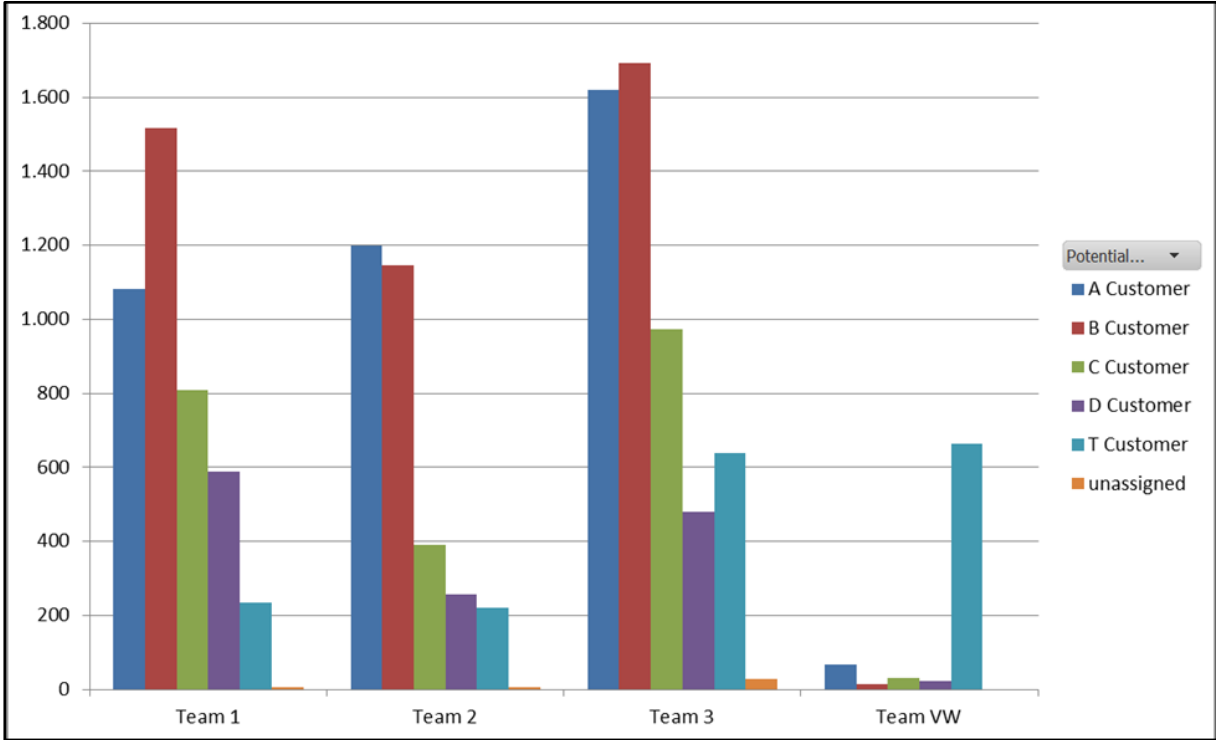

Figure: 63 Customer visits per team (July–December 2013)

The figure also illustrates that the number of customer visits for T customers by Team 1 and Team 2 is very small compared to the number of T customers.

Area Sales Manager	T Customer		A Customer		B Customer		C Customer		D Customer		unassigned		Total visits per ASM	Ø visits per day
ASM 1-1	68	0.7	42	0.4	7	0.1	10	0.1	83	0.8		0.00	210	2.1
ASM 1-2	25	0.2	111	1.1	158	1.5	65	0.6	37	0.4		0.00	396	3.9
ASM 1-3	31	0.3	108	1.1	173	1.7	41	0.4	22	0.2		0.00	375	3.7
ASM 1-4		0.0	18	0.2	10	0.1	9	0.1		0.0		0.00	37	0.4
ASM 1-5	4	0.0	75	0.7	200	2.0	95	0.9	29	0.3	1	0.01	404	4.0
ASM 1-6	50	0.5	185	1.8	184	1.8	49	0.5	29	0.3		0.00	497	4.9
ASM 1-7	24	0.2	54	0.5	180	1.8	53	0.5	60	0.6	1	0.01	372	3.6
ASM 1-8	27	0.3	118	1.2	111	1.1	41	0.4	28	0.3	1	0.01	326	3.2
ASM 1-9		0.0		0.0	32	0.3	202	2.0	184	1.8	3	0.03	421	4.1
ASM 1-10		0.0	116	1.1	114	1.1	94	0.9	45	0.4		0.00	369	3.6
ASM 1-11	5	0.0	128	1.3	267	2.6	94	0.9	41	0.4	1	0.01	536	5.3
ASM 1-12		0.0	126	1.2	81	0.8	57	0.6	31	0.3		0.00	295	2.9
Team 1	234	2.3	1081	10.6	1517	14.9	810	7.9	589	5.8	7	0.07	4238	41.5
ASM 2-1		0.0	57	0.6	190	1.9	49	0.5	23	0.2		0.00	319	3.1
ASM 2-2	11	0.1	123	1.2	118	1.2	3	0.0	2	0.0		0.00	257	2.5
ASM 2-3	39	0.4	202	2.0	129	1.3	89	0.9	50	0.5	3	0.03	512	5.0
ASM 2-4	44	0.4	110	1.1	3	0.0	3	0.0		0.0		0.00	160	1.6
ASM 2-5	14	0.1	63	0.6	74	0.7	41	0.4	24	0.2	1	0.01	217	2.1
ASM 2-6		0.0	66	0.6	91	0.9	78	0.8	46	0.5		0.00	281	2.8
ASM 2-7		0.0	49	0.5	162	1.6	72	0.7	72	0.7	1	0.01	356	3.5
ASM 2-8	15	0.1	146	1.4	76	0.7	4	0.0	24	0.2		0.00	265	2.6
ASM 2-9	55	0.5	157	1.5	143	1.4	37	0.4	7	0.1		0.00	399	3.9
ASM 2-10	42	0.4	227	2.2	159	1.6	14	0.1	9	0.1		0.00	451	4.4
Team 2	220	2.2	1200	11.8	1145	11.2	390	3.8	257	2.5	5	0.05	3217	31.5
ASM 3-1		0.0	109	1.1	224	2.2	106	1.0	42	0.4	2	0.02	483	4.7
ASM 3-2	19	0.2	265	2.6	246	2.4	92	0.9	52	0.5	3	0.03	677	6.6
ASM 3-3	231	2.3	227	2.2	132	1.3	38	0.4	31	0.3	3	0.03	662	6.5
ASM 3-4	10	0.1	109	1.1	69	0.7	22	0.2	30	0.3		0.00	240	2.4
ASM 3-5		0.0	88	0.9	173	1.7	177	1.7	49	0.5	1	0.01	488	4.8
ASM 3-6	169	1.7	151	1.5	88	0.9	87	0.9	43	0.4		0.00	538	5.3
ASM 3-7	73	0.7	151	1.5	245	2.4	141	1.4	13	0.1		0.00	623	6.1
ASM 3-8	8	0.1	179	1.8	76	0.7	33	0.3	36	0.4	16	0.16	348	3.4
ASM 3-9	76	0.7	157	1.5	191	1.9	169	1.7	169	1.7	2	0.02	764	7.5
ASM 3-10	54	0.5	183	1.8	248	2.4	107	1.0	16	0.2		0.00	608	6.0
Team 3	640	6.3	1619	15.9	1692	16.6	972	9.5	481	4.7	27	0.26	5431	53.2
ASM 4-1	449	4.4	52	0.5		0.0	6	0.1	23	0.2		0.00	530	5.2
ASM 4-2	147	1.4	8	0.1	13	0.1	13	0.1		0.0		0.00	181	1.8
ASM 4-3	54	0.5		0.0		0.0	11	0.1		0.0		0.00	65	0.6
ASM 4-4	13	0.1	7	0.1		0.0		0.0		0.0		0.00	20	0.2
Team VW	663	6.5	67	0.7	13	0.1	30	0.3	23	0.2		0.00	796	7.8
Total	1757	17.2	3967	38.9	4367	42.8	2202	21.6	1350	13.2	39	0.38	13682	134.1

Table: 51 Average customer visits per day

The differences in the number of customer visits per team are the most striking point in the table above. With the same number of area sales managers for each team, Team 3 visited over 21 customers, on average, per day. Additionally, Team 3 has the larger region and hence it could be deduced that the distances between the individual clients are longer and the area sales manager need more time for travelling.

As mentioned above, an important point is the number of visits to the most important customers, namely the T customers. With nearly the same number of T customers, Team 1 - 67, Team 2 - 60 and Team 3 - 60, the T customers were visited by Team 3 640 times during the six months. For Team 1 and Team 2, the total visits were 234 and 220, respectively.

ASM 3-3 is to be especially highlighted. This area sales manager visited more T customers then Team 1 and Team 2: he visited 2.3 T customers per day, while the highest value in the other

two teams is achieved by ASM 1-1 with 0.7 T customers per day. Besides, ASM 3-6, with an average of 1.7 T customers per day, is to be mentioned as positive.

It is to be checked where these large differences come from.

4.2.5 Conclusion - Exemplary German SME

Currently the SME works with two different models to assess the potential and there are significant differences in the evaluation of numbers. This leads to a problem once it gives the calculated potential according to industry. Once the estimated potential of the responsible area sales manager is achieved, these potentials differ considerably to the calculated potential. For this reason, the SME has different values of the exhaustion rate of the customers according to potential. The researcher finds that for further processing of segments and in the calculation of exhaustion rates, it is better to work only with the estimated potential because the area sales manager knows the customer best. The formula for calculating potential has important weaknesses. If the formula should be used in future, it has to be revised.

There must also be a clear rule regarding the criteria according to which a customer should be assigned to a branch. The NACE code would indeed be a good feature, but it cannot be implemented with the large number of customers. Many of the customers do not know their own NACE codes. KAM, T, and A customers are often added to different branches and hence it is difficult to allocate the customers in a proper order.

In some cases, the regions are very different. There are strong structural regions such as Berlin and Wolfsburg, but also very weak regions such as large parts of Mecklenburg-Vorpommern. Regarding this issue, the SME has to find a solution because it could be a problem to segment customers from such different regions in the same way. These regions do not only have different customers but the distance from one customer to another in structurally weak areas is often quite longer than in industrial centres like Berlin. The conclusion is that area sales manager in industrial centres could visit more customers per day. But the number of customer visits per employee differs not only because of this but also at the team level—this is fundamental problem. Why are the numbers so different, especially for the T customers? The number of visits in this sector must be urgently adapted and brought to the same level as in Team 3. It may not be almost identical number of T customers in Teams 1 and 2. Only one-third of the visits will be made.

The number of visits per day must increase significantly. Even in Team 3 with an average of 5.3 visits per day, compared to the competition with six to seven visits per day, it has still potential to the top. With Teams 1 and 2 having 3.5 and 3.2 visits per day, there is considerable room for improvement. A few area sales managers already fulfil the necessary requirements. But all others should also achieve this. A better route planning is certainly only a possibility to increase the frequency of visits. Anyway, the evaluation and findings of the existing data show that there is potential for improvement in sales. An improved potential calculation would achieve much. A better or more precisely customer segmentation could be created from these results. Also, the segmentation method itself could or should be overworked. An ABC, or in this case, a TABCD analysis on potential, is, in the researcher's opinion, not the best solution. It seems useful to reduce the effort to a two-dimensional ABC or TABCD based on turnover and contribution margin.

Further, the customer visits must be optimized. The SME has to create clear handling notes for each customer segment, including amounts of visits for every segment. The total number of visits per day is too low, and it is not effective if the ASMs visit so many C and D customers. However, the example verifies that there is a need to do some analytic work in the field.

4.3   Different customer segmentation methods analysed with secondary data

From the interviews with experts and the experience of the researcher in the field of SMEs, it might be reasonably inferred that only a few companies perform a profound statistical analysis. This is also confirmed by the literature review, as all the described methods do not deal with such analysis. This has several reasons: First, the cost/benefit ratio could be mentioned. Professional statistical software has its price, and especially in SMEs, many companies see these expenses as unjustified. Another reason is that many SMEs treat their customers on gut level—this has been confirmed by expert interviews in Section 5.4. Also, SMEs would react very fast and flexibly, which means that there is no time for a detailed statistical customer analysis in many cases. The number of customers also plays a role. If an SME has very few customers, such analysis often does not make sense. Nevertheless, the researcher considers it is necessary to perform a statistical analysis to check the work from a broad scientific view, thereby answering the research question in a more confident manner and building the work on a strong basis.

To evaluate the segmentation methods, some key figures have been defined in advance:

- Average working days per year

- Average customer visiting days per year

- Average cost per customer visit

- Number of customer visits per week for A, B, and C customers

The average working days per year refer to northern Germany because different countries in Europe and different regions in Germany have different number of working days per year. The number depends on, for example, vacation days or statutory/bank holidays.

52 weeks * 5 working days	260 working days
260 working days - 30 days vacation	230 working days
230 working days - 10 days statutory/ bank holidays	220 working days
220 working days - 9.5 average sick days (German Federal Statistical Office)	210.5 working days
Average working days per year in northern Germany	210.5 working days

Table: 52 Average working days

In addition to these days, official office days will be deducted in some branches and companies—in general, this is one day per week. These offices days as well as days for training and meetings will not be considered in the calculation because these days are included in the secondary data.

The researcher assumes from his experience that EUR 150 is the average cost per customer visit, but it strongly depends on the industry, the product, the customer, the fact if the company operates in the B2B or B2C business, and whether it operates internationally or not. Also, the researcher assumes that an area sales manager should visit an A customer once a week (52 visits/year), a B customer every two weeks (26 visits/year), and a C customer once a month (12 visits/year). But these figures, again, strongly depend on the industry, the product, the B2B or B2C business, the number of customers, and of course, whether the company operates globally, in Europe, in Germany, or even smaller regions. The assumption from the researcher for this research is that the company operates in a small region. Also, the number of customer visits depends on the industry in which the company operates. On average, more customers will be visited in the retail business than in the investment or capital goods

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business. This relates to how work-intensive it is to prepare the customer visits. It can be assumed that it takes more effort to prepare a customer visit to a project-related B2B business than in the retail business. The results found above are based on the given secondary data.

Suppose from the secondary data, that 35 area sales managers perform 134.1 customer visits in one day. It implies an average of 3.83 visits/day of one sales manager. Team 3 has, with 5.32 visits per day, the highest average.

This corresponds to 806 customer visits per year for each area sales manager, and in the best case (Team 3), it amounts to 1,120 visits.

Further, the number of customers changes over the years. New customers are gained and other customers get lost. As this only affects customers with a very minor turnover and no large customers are concerned, this point is neglected.

4.3.1 ABC analysis based on turnover

In Sections 4.3.1 und 4.3.2 the researcher describes, with help of the existing secondary data, the two methods of ABC analysis. The following table shows how the percentage is in the individual segments. First with the 80/20 method, often called the Pareto principle in the name of Vilfredo Pareto (1848–1923), and then with the 60/90 method, the percentages can be applied to different criteria. In this study the researcher uses turnover and contribution margins.

ABC analysis	A customer	B customer	C customer
80/20 method	80%	10%	10%
60/90 method	60%	30%	10%

Table: 53 Explanation ABC analysis

During the study it will be clear what kind of profound effects the choice of the method may have. This applies particularly to the number of customers and the resulting follow-up activities like customer visits.

In the table below the researcher describes that 80 per cent of the turnover was achieved with only 12.6 per cent of customers in 2012. These figures show the importance of key customers even more than the Pareto principle. This becomes particularly clear if one compares the average turnover per customer. A B customer obtain only 16.12 per cent of the turnover of an A customer, while a C customer obtain only 2.02 per cent of the same.

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These differences are even clearer when a company applies the 60/90 method, even though the turnover and the number of A customers decreased compared with the 80/20 method. But the average turnover per customer increases by 108.1 per cent, amounting to EUR 101,526.37, for A customers and by 64.38%, amounting to EUR 12,929.44, for B customers only by adjusting the segments. This example shows the importance of a proper customer allocation, which, in general, has been carried out on the basis of the 60/90 method. It does not matter whether it is based on turnover or contribution margin, which is akin to appreciating the A customers.

2012		A Customer	B Customer	C Customer
80/20 Method Turnover	Total Turnover	58,496,432.96 €	7,312,054.12 €	7,312,054.12 €
	Number of Customer	1199	930	7390
	Percentage	12.60 %	9.77 %	77.63 %
	Average Turnover per Customer	48,787.28 €	7,865.55 €	989.13 €
60/90 Method Turnover	Total Turnover	43,872,324.72 €	21,936,162.36 €	7,312,054.12 €
	Number of Customer	432	1697	7390
	Percentage	4.54 %	17.83 %	77.63 %
	Average Turnover per Customer	101,526.37 €	12,929.44 €	989.13 €

Table: 54 ABC analysis based on turnover (2012)

Some essential subjects will be cleared by comparing the data in terms of customer visits. As explained above, the researcher makes some assumptions.

According to the assumptions, there is one customer visit for A customers and 0.5 customer visit for B customers per week, and one customer visit per month for C customers. With the 80/20 method, 175,208 customer visits (A, B & C customer) would have to be made in 2012. If the SME used the 60/90 method, the customer visits would have reduced to 155,266 visits, amounting to 19,942 less visits, thereby corresponding, at a cost of EUR 150 per visit, to EUR 2,991.300.

Basically, this analysis shows that the number of planned customer visits is far too high. If a company assumes 3.5 visits per area sales manager/day, 211 area sales managers are necessary.

One possible solution for this problem is presented at the end of this section.

2012		A Customer	B Customer	C Customer
80/20 Method Turnover	Total Turnover	58,496,432.96 €	7,312,054.12 €	7,312,054.12 €
	Average Turnover per Customer	48,787.28 €	7,865.55 €	989.13 €
	Customer visits in total	62,348	24,180	88,680
	Customer visits per year/customer	52	26	12
	Average Turnover per Customer visit	938.22 €	302.52 €	82.43 €
60/90 Method Turnover	Total Turnover	43,872,324.72 €	21,936,162.36 €	7,312,054.12 €
	Average Turnover per Customer	101,526.37 €	12,929.44 €	989.13 €
	Customer visits in total	22,464	44,122	88,680
	Customer visits per year/customer	52	26	12
	Average Turnover per Customer visit	1,952.43 €	497.29 €	82.43 €

Table: 55 Average turnover per customer visit (2012)

If a company assumes, like the experience of the researcher, cost of EUR 150 per customer visit, the above table shows that according to the 80/20 method, it makes no sense to visit the C customers at all and most of the B customers because the turnover per customer visit is too low. The limited number of customer visits that an ASM can do should be used as efficiently as possible.

Compared to data from 2012, there was no significant change in 2013. The total turnover increases about 1.94 per cent—from EUR 73,120,541.20 to EUR 74,536,094.82. This has hardly any influence on the number of customers in the different segments. For A customers, the

average turnover for every customer visit (60/90 method) increases about EUR 145.21. Considering 21,320 customer visits, it adds up to EUR 3,095,877.20.

2013		A Customer	B Customer	C Customer
80/20 Method Turnover	Total Turnover	59,628,875.86 €	7,453,609.48 €	7,453,609.48 €
	Number of Customer	1141	899	7199
	Percentage	12.35 %	9.73 %	77.92 %
	Average Turnover per Customer	52,260.19 €	8,291.00 €	1,035.37 €
60/90 Method Turnover	Turnover	44,721,656.89 €	22,360,828.45 €	7,453,609.48 €
	Number of Customer	410	1630	7199
	Percentage	4.44 %	17.64 %	77.92 %
	Average Turnover per Customer	109,077.21 €	13,718.30 €	1,035.37 €

Table: 56 ABC analysis based on turnover (2013)

2013		A Customer	B Customer	C Customer
80/20 Method Turnover	Total Turnover	59,628,875.86 €	7,453,609.48 €	7,453,609.48 €
	Average Turnover per Customer	52,260.19 €	8,291.00 €	1,035.37 €
	Customer visits in total	59,332	23,374	86,388
	Customer visits per year/customer	52	26	12
	Average Turnover per Customer visit	1,005.00 €	318.88 €	86.28 €
60/90 Method Turnover	Total Turnover	44,721,656.89 €	22,360,828.45 €	7,453,609.48 €
	Average Turnover per Customer	109,077.21 €	13,718.30 €	1,035.37 €
	Customer visits in total	21,320	42,380	86,388
	Customer visits per year/customer	52	26	12
	Average Turnover per Customer visit	2,097.64 €	527.63 €	86.28 €

Table: 57 Average turnover per customer visit (2013)

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2014		A Customer	B Customer	C Customer
80/20 Method Turnover	Total Turnover	56,037,008.62 €	7,004,626.08 €	7,004,626.08 €
	Number of Customer	1071	815	6161
	Percentage	13.31 %	10.13 %	76.56 %
	Average Turnover per Customer	52,322.14 €	8,594.63 €	1,136.93 €
60/90 Method Turnover	Total Turnover	42,027,756.46 €	21,013,878.23 €	7,004,626.08 €
	Number of Customer	405	1481	6161
	Percentage	5.03 %	18.40 %	76.56 %
	Average Turnover per Customer	103,772.24 €	14,188.98 €	1,136.93 €

Table: 58 ABC analysis based on turnover (2014)

Tables 54, 56 and 58 also show that the percentage share of each customer segment has changed only marginally from year to year.

The turnover decreased from EUR 74,536,094.82 in 2013 to EUR 70,046,260.77 in 2014. This decline of 6.02 per cent is significant for different reasons. The main reason is that the company had assigned some sales regions to partner companies. Through this process the company lost 1,192 customers, but these were mainly small customers with an average turnover per customer being EUR 3,766.64.

But the researcher does not go deeper into the reasons because it had nothing to do with the topic of customer segmentation.

The change, however, had the result that the average values of turnover and turnover per customer visit decreased as well. The average turnover per customer visit (60/90 method) had nearly the value of 2012. However, this value was reached with 1,404 fewer customer visits per year.

2014		A Customer	B Customer	C Customer
80/20 Method Turnover	Total Turnover	56,037,008.62 €	7,004,626.08 €	7,004,626.08 €
	Average Turnover per Customer	52,322.14 €	8,594.63 €	1,136.93 €
	Customer visits in total	55,692	21,190	73,932
	Customer visits per year/customer	52	26	12
	Average Turnover per Customer visit	1,006.20 €	330.56 €	94.74 €
60/90 Method Turnover	Total Turnover	42,027,756.46 €	21,013,878.23 €	7,004,626.08 €
	Average Turnover per Customer	103,772.24 €	14,188.98 €	1,136.93 €
	Customer visits in total	21,060	38,506	73,932
	Customer visits per year/customer	52	26	12
	Average Turnover per Customer visit	1,995.62 €	545.73 €	94.74 €

Table: 59 Average turnover per customer visit (2014)

In general, the ABC customer segmentation based on the turnover is a simple method. But the different tables above show the different results between the 80/20 and 60/90 methods. These differences could be very significant in treating customers. One example is the different average amounts per customer visit. In 2012 and 2013 it was more than EUR 1000 per visit between both methods.

4.3.2 ABC analysis based on contribution margin (DB)

In this section the researcher compares the ABC analysis methods 80/20 and 60/90 based on the contribution margin. Furthermore, the researcher describes in this section how the number of customers changes in the individual segments if one changes the segmentation method. This is important because the number of customers in the segments has a huge impact on how intensively a company can treat the customer. These changes are particularly evident in Table 61, where the percentage is displayed for each segment. Figures 64, 65, and 66 illustrated the differences in a graph. The number of customers is also important for the

second part of section and the two following sections. Here the researcher addresses the customer visits per segment.

The average contribution margin percentage for all customers is relatively stable in the three years. In 2012 and 2013 a contribution margin of 44.5 per cent has been generated, and in 2014 the contribution margin increased slightly to 44.7 per cent.

But the data shows that customer with a huge turnover mainly generated less contribution margin (DB) percentage. The top customers are shown only at the 80/20 method because the two methods had the same top 25 customers with the same values.

Average DB per customer segment		A	B	C	Top 25
80/20 method	2012	40.5%	43.9%	45.5%	31.0%
	2013	40.8%	44.0%	45.3%	31.6%
	2014	41.4%	45.2%	45.5%	32.4%
60/90 method	2012	38.4%	43.0%	45.5%	--
	2013	38.3%	43.3%	45.3%	--
	2014	39.2%	44.1%	45.5%	--

Table: 60 Average DB per customer segment 2012-2014

Customers with the highest turnover in EUR have lower percentage contribution margins. This becomes even clearer if one only considers the top 25 customers. These customers achieved by far the highest turnover, but the company achieved only a contribution margin (DB) from 31 per cent to 32.4 per cent over the reviewed period. But the contribution margins of the A customers and of the top customers are increased continuously over the years. In the next section the researcher describes in more detail the top 25 customers.

Table 60 shows that the average contribution margin of the A customers segmented with the 80/20 method is about 2 per cent higher than that of the 60/90 method. This is because the A segment from the 80/20 method had much more customers than that from the 60/90 method, which means more customers with a higher contribution margin percentage, whereas the average contribution margin in EUR is much higher for these customers.

The three following figures verify that with the same methods—either 80/20 or 60/90—the number of A and B customers is lower if the method is based on the turnover. This finding is important to determine the database of the segmentation method.
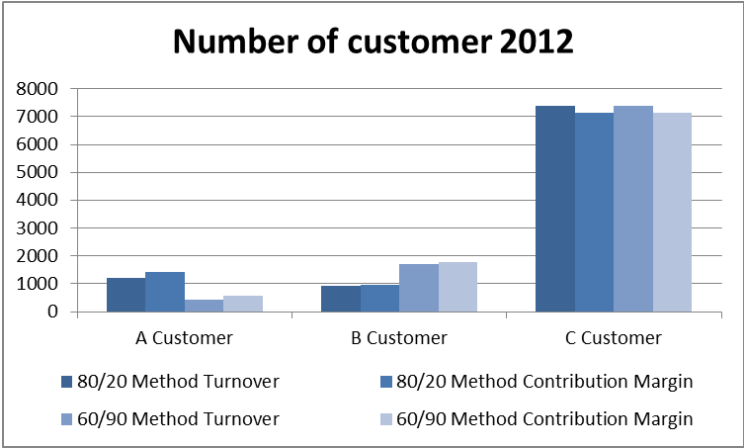

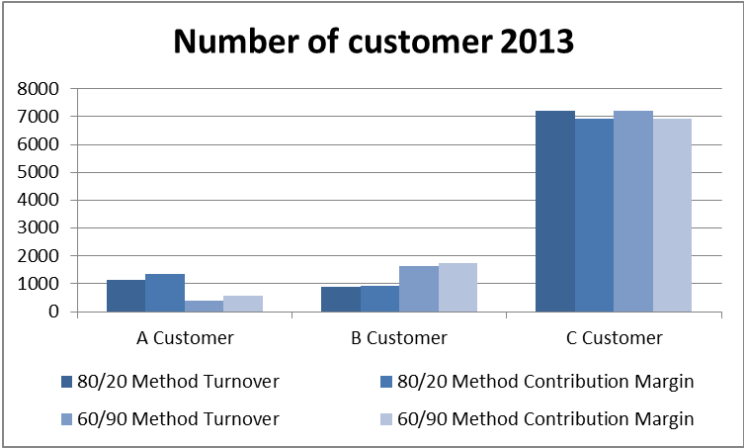**Figure: 64 Comparison number of customer per segment and method (2012)**

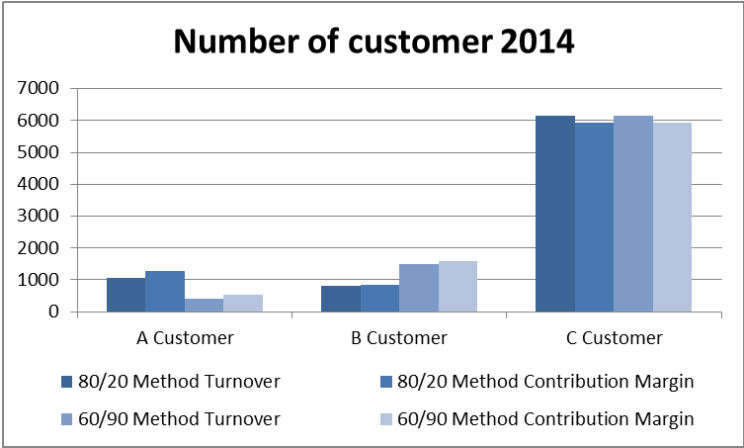**Figure: 65 Comparison number of customer per segment and method (2013)**

Figure: 66 Comparison number of customer per segment and method (2014)

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The figures above would highlight significant differences between customers within each customer group and segmentation method. The table below illustrates how the percentage of customers changes according to the segmentation method. Smaller values are shown in green, and if the value rises it turns to yellow and ends in the red area.

It is particularly striking that the number of B customers is less than that of A customers in the 80/20 method. This is rather unusual for a practice-applied model. Normally, the percentage of A customers is less because they are more important and are treated better.

Segmentation method	A customer	B customer	C customer	Total customer
80/20 turnover 2012	12.60%	9.77%	77.63%	9519
80/20 turnover 2013	12.35%	9.73%	77.92%	9239
80/20 turnover 2014	13.31%	10.13%	76.56%	8047
80/20 contribution margin 2012	14.94%	10.00%	75.06%	9519
80/20 contribution margin 2013	14.72%	10.15%	75.13%	9239
80/20 contribution margin 2014	15.82%	10.56%	73.62%	8047
60/90 turnover 2012	4.54%	17.83%	77.63%	9519
60/90 turnover 2013	4.44%	17.64%	77.92%	9239
60/90 turnover 2014	5.03%	18.40%	76.56%	8047
60/90 contribution margin 2012	6.11%	18.83%	75.06%	9519
60/90 contribution margin 2013	6.02%	18.85%	75.13%	9239
60/90 contribution margin 2014	6.60%	19.78%	73.62%	8047

Table: 61 Comparison customer percentage per segment

As with the turnover method, the percentage change is marginal in the reviewed period. The slight percentage increases for A customers in 2014 can be explained by the above-mentioned territorial reform (cf. p. 251). Furthermore, the researcher finds that the contribution margin with the calculated number of customer visits was too low for B and C customers in 2012, 2013, and 2014.

2012		A Customer	B Customer	C Customer
80/20 Method Contribution Margin	Total Contribution Margin	20,689,771.16 €	2,586,221.40 €	2,586,221.40 €
	Number of Customer	1422	952	7145
	Percentage	14.94 %	10.00 %	75.06 %
	Average Contribution Margin per Customer	14,549.60 €	2,720.69 €	361.45 €
60/90 Method Contribution Margin	Total Contribution Margin	15,517,328.37 €	7,758,664.19 €	2,586,221.40 €
	Number of Customer	582	1792	7145
	Percentage	6.11 %	18.83 %	75.06 %
	Average Contribution Margin per Customer	26,668.02 €	4,329.71 €	361.45 €

Table: 62 ABC analysis based on contribution margin (2012)

It is important that the total and the average contribution margin values in EUR should not be calculated backwards with the average percentage contribution margin value to the turnover in EUR. First of all, this depends on the different numbers of customer segments. For example, in 2012 there were 432 A customers (60/90 method) with an average turnover of EUR 101,526.37 per customer. With the 60/90 method based on the contribution margin, there were 582 A customers with an average contribution margin of EUR 26,668.02 in 2012. Another reason is that customers are classified on the basis of the segmentation method in different segments. This is a phenomenon not only close to the border of the segments. This is may be the case with the customers located in a higher place as well. This will be illustrated later with two examples.

2012		A Customer	B Customer	C Customer
80/20 Method Contribution Margin	Total Contribution Margin	20,689,771.16 €	2,586,221.40 €	2,586,221.40 €
	Average Contribution Margin per Customer	14,549.60 €	2,720.69 €	361.45 €
	Customer visits in total	73,944	24,752	85,740
	Customer visits per year/customer	52	26	12
	Average Contribution Margin per Customer visit	279.80 €	104.64 €	30.12 €
60/90 Method Contribution Margin	Total Contribution Margin	15,517,328.37 €	7,758,664.19 €	2,586,221.40 €
	Average Contribution Margin per Customer	26,668.02 €	4,329.71 €	361.45 €
	Customer visits in total	30,264	46,592	85,740
	Customer visits per year/customer	52	26	12
	Average Contribution Margin per Customer visit	512.85 €	166.53 €	30.12 €

Table: 63 Average contribution margin per customer visit (2012)

While the average turnover per A customer by the 60/90 method in 2014 decreased compared to 2013, the average contribution margin with the 60/90 method increased continuously over the three-year period.

2013		A Customer	B Customer	C Customer
80/20 Method Contribution Margin	Total Contribution Margin	21,208,509.14 €	2,651,063.64 €	2,651,063.64 €
	Number of Customer	1360	938	6941
	Percentage	14.72 %	10.15 %	75.13 %
	Average Contribution Margin per Customer	15,594.49 €	2,826.29 €	381.94 €
60/90 Method Contribution Margin	Total Contribution Margin	15,906,381.86 €	7,953,190.93 €	2,651,063.64 €
	Number of Customer	556	1742	6941
	Percentage	6.02 %	18.85 %	75.13 %
	Average Contribution Margin per Customer	28,608.60 €	4,565.55 €	381.94 €

Table: 64 ABC analysis based on contribution margin (2013)

2013		A Customer	B Customer	C Customer
80/20 Method Contribution Margin	Total Contribution Margin	21,208,509.14 €	2,651,063.64 €	2,651,063.64 €
	Average Contribution Margin per Customer	15,594.49 €	2,826.29 €	381.94 €
	Customer visits in total	70,720	24,388	83,292
	Customer visits per year/customer	52	26	12
	Average Contribution Margin per Customer visit	299.89 €	108.70 €	31.83 €
60/90 Method Contribution Margin	Total Contribution Margin	15,906,381.86 €	7,953,190.93 €	2,651,063.64 €
	Average Contribution Margin per Customer	28,608.60 €	4,565.55 €	381.94 €
	Customer visits in total	28,912	45,292	83,292
	Customer visits per year/customer	52	26	12
	Average Contribution Margin per Customer visit	550.17 €	175.60 €	31.83 €

Table: 65 Average contribution margin per customer visit (2013)

2014		A Customer	B Customer	C Customer
80/20 Method Contribution Margin	Total Contribution Margin	20,479,775.71 €	2,559,971.96 €	2,559,971.96 €
	Number of Customer	1273	850	5924
	Percentage	15.82 %	10.56 %	73.62 %
	Average Contribution Margin per Customer	16,087.80 €	3,011.73 €	432.14 €
60/90 Method Contribution Margin	Total Contribution Margin	15,359,831.78 €	7,679,915.89 €	2,559,971.96 €
	Number of Customer	531	1592	5924
	Percentage	6.60 %	19.78 %	73.62 %
	Average Contribution Margin per Customer	28,926.24 €	4,824.07 €	432.14 €

Table: 66 ABC analysis based on contribution margin (2014)

2014		A Customer	B Customer	C Customer
80/20 Method Contribution Margin	Total Contribution Margin	20,479,775.71 €	2,559,971.96 €	2,559,971.96 €
	Average Contribution Margin per Customer	16,087.80 €	3,011.73 €	432.14 €
	Customer visits in total	66,196	22,100	71,088
	Customer visits per year/customer	52	26	12
	Average Contribution Margin per Customer visit	309.38 €	115.84 €	36.01 €
60/90 Method Contribution Margin	Total Contribution Margin	15,359,831.78 €	7,679,915.89 €	2,559,971.96 €
	Average Contribution Margin per Customer	28,926.24 €	4,824.07 €	432.14 €
	Customer visits in total	27,612	41,392	71,088
	Customer visits per year/customer	52	26	12
	Average Contribution Margin per Customer visit	556.27 €	185.54 €	36.01 €

Table: 67 Average contribution margin per customer visit (2014)

4.3.3 Analysis of top 25 customers

This customer group is particularly described by the researcher because with a large number of customers, as shown in the previous section, it makes sense for SMEs to analyse the top customers (key accounts) in detail. The comparison between the average turnover of A customers (60/90 method) in 2012, 2013, and 2014, and the average turnover of the top 25 customers in these years, show that the turnover of these top customers is six to seven times higher. Also, the average turnover per visit is more than three times higher, in every analysed year. The comparison between this method and the 80/20 method is even more drastic.

This suggests that the top customers of a company must be analysed separately and treated in a different way than A customers, because these customers are more important for SMEs. The number of such customers depends on the branch, customer structure, and the number of total customers in the SME.

Top 25		2012	2013	2014
Turnover	Total Turnover	17,105,258.05 €	18,042,418.22 €	15,821,517.80 €
	Average Turnover per Customer	684,210.32 €	721,696.73 €	632,860.71 €
	Average Turnover per Customer visit	6,578.95 €	6,939.39 €	6,085.20 €
Contribution Margin	Total Contribution Margin	4,456,931.48 €	4,836,354.78 €	4,376,397.59 €
	Average Contribution Margin per Customer	178,277.26 €	193,454.19 €	175,055.90 €
	Average Contribution Margin per Customer visit	1,714.20 €	1,860.14 €	1,683.23 €

Table: 68 Analysis of top 25 customers

As shown in Table 68, the total turnover and the total contribution margin remain at a constant high level. According to this, the researcher comes to the conclusion that under certain circumstances, as in this case, a special treatment for top customers is useful. But this special status should be checked regularly—e.g., every year.

4.3.4 Amount of customer visits

Treating these top customers in a different way means more intensive customer visits. But, as mentioned before, the total number of customer visits should be reduced (cf. pp. 240-244). It

means that an SME must reorganise its customer relationship strategy in terms of customer visits. To reduce the number of customer visits to an applicable amount, there is a simple and very feasible method for SMEs. This method may be a bit radical for some SMEs and for some area sales managers as well. But if one looks at the number of calculated customer visits, it is absolutely necessary.

B and C customers should be visited only on customer request, or in special cases, and to lose these customers not entirely, they should be convinced of the benefits of telephone-, electronic order and web services. This is particularly evident when one look at Table 51 for customer visits. The secondary data in this table indicates that, on average 58.16 per cent of customer visits, the area sales manager does not visit A customers. As described before, most visits to B and C customers are not profitable—in fact, this 58.16 per cent is a frightening amount.

Amount of customer visits			2012	2013	2014
Turnover	80/20 method	All customer	175,208	169,094	150,814
		A customer	62,348	59,332	55,692
	60/90 method	All customer	155,266	150,088	133,498
		A customer	22,464	21,320	21,060
Contribution Margin	80/20 method	All customer	184,436	178,400	159,384
		A customer	73,944	70,720	66,196
	60/90 method	All customer	162,596	157,496	140,092
		A customer	30,264	28,912	27,612

Table: 69 Reduced amount of customer visits

But even this reduction of customer visits would still mean that in some cases, a disproportionate number of area sales managers would have to be hired.

The following table show the average number of A customer visits per area sales manager and day. The difference of 1.5 visits per day is distinguished with the given data and assumptions,

in the best case the company need nine additional employees, while in the worst case, 30 additional area sales managers are needed.

Amount of GVLs			2012	2013	2014
Turnover	80/20 method	A customer	62,348	59,332	55,692
		5 visits per day	59	56	53
		3.5 visits per day	85	81	76
	60/90 method	A customer	22,464	21,320	21,060
		5 visits per day	21	20	20
		3.5 visits per day	30	29	29
Contribution Margin	80/20 method	A customer	73,944	70,720	66,196
		5 visits per day	70	67	63
		3.5 visits per day	100	96	90
	60/90 method	A customer	30,264	28,912	27,612
		5 visits per day	29	27	26
		3.5 visits per day	41	39	37

Table: 70 Amount of area sales manager

It is important for the ABC analysis, that the company take note that evaluating the data is only the first step. If a SME segment customers only in a one-dimensional manner, this could lead to erroneous and possibly even fatal miscalculations in terms of the turnover or contribution margin. This is owing to the fact that an SME should not only aligned to sales resp. turnover, it should focus on high-value customers with a good or very good contribution margin. Often customers with huge turnover but insufficient contribution margin are then referred to as strategic customers. But seen from the expert interviews, they are not always strategically useful for the company. In many cases, the unsatisfactory contribution margin of these clients has other reasons.

The researcher would like to illustrate this with an example from the secondary data. The company with the number #37612 is located in the turnover ranking 2012 on position 16, with a turnover of EUR 305,968.46. But the contribution margin for this company is only 5.2 per cent or EUR 16,055.11. In the contribution margin ranking the company is only on position 303. After the ABC analysis according to contribution margin (80/20 and 60/90 methods as well), the company would still be an A customer and will be treated like an A customer on position 303. However, this should be a different treatment than a company that is in position 16.

In 2013 the same company had annual sales of EUR 309,431.59 and was on position 21, with a contribution margin of 16,682.80 EUR that was only on position 301.

The year 2014 demonstrates that this is not one or two successive unfavourable years. Since 2014, the company is with a turnover of EUR 284,792.63 in position 19. But with a contribution margin of 3.2 per cent and EUR 9,142.11, the company is in position 632 and after the 60/90 contribution margin method would be now treated as the B customer. This would have far-reaching consequences for the customer and the company.

This is not an isolated case, customer #66189 is in 2012 with a turnover of EUR 614,604.00 ranked on position 9 is the turnover ranking, but with EUR 8,430.76 only on position 680 after the contribution ranking. This would mean that the company would treat customers after the 60/90 contribution margin method as B customers.

The amount of A customers after the ABC analysis based on turnover would be classified by their contribution margins as B or C customers, as shown in the following table.

		2012		2013		2014	
80/20 Method Turnover	Number of A Customer	1199		1141		1071	
Number of B or C Customer in a contribution margin ranking		28	2.34%	29	2.54%	26	2.42%
60/90 Method Turnover	Number of A Customer	432		410		405	
Number of B or C Customer in a contribution margin ranking		13	3%	2	0.73%	14	3.46%

Table: 71 Comparison customer ranking turnover and DB method

The small number of customers, which would be considered in the contribution margin ranking as B or C customers, could induce companies not to take this into account. But,

particularly in the SME sector, the reasons for low profit margins should be thoroughly investigated. The research period over constant values also shows that this is not a one-off incident.

4.3.5   Descriptive statistics

Table 72 illustrates a good first overview over descriptive statistics. First, the table shows the great difference of the number of customers between the individual teams. The shop plays a less important role because if one takes a look at the maximum column, it shows that the shop generates only a fraction of the other teams in turnover and contribution margin. Of course, this is also reflected in the mean column again. As explained in Section 4.2.3, the shop is only for private customers in Brunswick, and every shop customer is automatically a D customer. For this reason, the researcher will mostly neglect the shop customer in the further course of the thesis.

As shown in Section 4.2.2, the total number of customers decreases over the analysed period. This is highlighted in the following table, and it can be seen that it is happening across all teams, including the VW team. The huge loss of customers between 2013 and 2014 can be, as already mentioned, attributed to the sales area reorganisation. But this should not obscure the fact that the SME loses customers in general. For this purpose, the reasons for this must be found. This may be due to the customer segmentation and the resulting lack of customer treatment. The topic of customer treatment and customer visit is already explained in Section 4.2.4.

	N	Minimum	Maximum	Mean	Std. Deviation
Total Turnover 2012	9519	0.00	5766893.11	7681.536	67198.14498
Total Turnover 2013	9239	-5728.64	6658116.28	8067.55	75909.59492
Total Turnover 2014	8047	-5198.95	5646574.72	8704.6428	69873.90833
Team 1 Turnover 2012	3124	0.00	650949.12	6683.1583	21730.16595
Team 1 Turnover 2013	3039	-5728.64	793116.84	7120.691	25286.04806
Team 1 Turnover 2014	2639	-5198.95	650677.53	7839.3069	24866.16411
Team 1 DB 2012	3124	-6326.26	180537.92	2536.1487	7135.04851
Team 1 DB 2013	3039	-8084.45	241239.71	2695.6908	8209.16672
Team 1 DB 2014	2639	-5198.95	650677.53	7839.3069	24866.16411
Team 2 Turnover 2012	2285	0.00	1309385.09	9273.9309	38832.75169
Team 2 Turnover 2013	2436	-257.56	1070437.86	8776.8619	35019.8058
Team 2 Turnover 2014	2078	-2033.09	1145961.03	9939.1956	38542.28173
Team 2 DB 2012	2285	-2191.36	221764.85	3308.7012	10113.6072
Team 2 DB 2013	2436	-2037.23	203028.79	3152.0687	9800.36863
Team 2 DB 2014	2078	-2033.093	1145961.027	9939.1956	38542.28173
Team 3 Turnover 2012	3674	0.00	1354393.33	6356.2815	34029.47173
Team 3 Turnover 2013	3358	-1861.51	729785.76	6689.6297	27890.02762
Team 2 Turnover 2014	2965	-1315.92	645864.81	7073.6105	26905.71339
Team 3 DB 2012	3674	-2265.76	324107.08	2319.2739	9284.09672
Team 3 DB 2013	3358	-1706.62	221201.5	2556.8455	9145.31948
Team 3 DB 2014	2965	-1315.92	645864.81	7073.6105	26905.71339
Team VW Turnover 2012	60	0.00	5766893.11	123063.86	747310.2463
Team VW Turnover 2013	49	0.00	6658116.28	179702.37	959649.5129
Team VW Turnover 2014	44	0.00	5646574.72	170188.3	852156.1065
Team VW DB 2012	60	-11231.9	1439803.27	30325.478	186745.4793
Team VW DB 2013	49	-16800.03	1535812.81	40987.825	222004.0532
Team VW DB 2014	44	-12714.89	1345001.8	40651.085	202986.8222
Shop Turnover 2012	376	0.00	127805.74	836.7355	8243.23221
Shop Turnover 2013	355	-16.68	89137.6	692.0917	6319.84532
Shop Turnover 2014	317	-459.57	97094.33	767.4758	6947.64838
Shop DB 2012	376	-29194.27	50933.93	102.0272	3044.04194
Shop DB 2013	355	-6544.36	42275.42	127.1634	2272.2887
Shop DB 2014	317	-459.57	97094.33	767.4758	6947.64838

Table: 72 Descriptive statistics

One can also see that there are significant differences from one team to another. However, this has to do with the different customer structures. By far the highest turnover from a single customer is generated by the VW team because this team has by far the biggest customer with Volkswagen. This also explains the huge single turnover in Team 1 in 2013 with EUR 793,116.84 because this customer is a sub-supplier of Volkswagen.
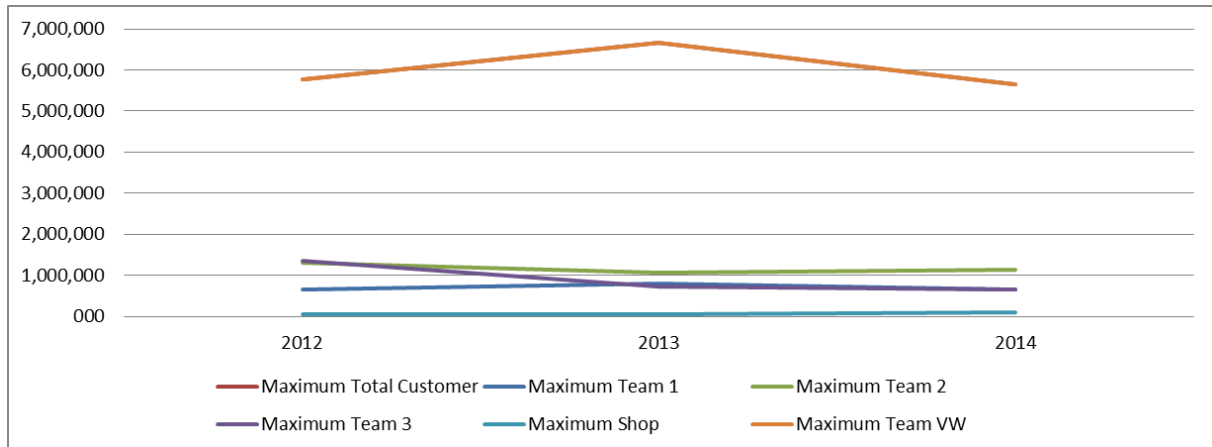
Figure: 67 Maximum turnover per total customer and team

But descriptive statistics do not, however, allow the researcher to make conclusions beyond the analysed data. Because of this, the researcher decides to carry out the following analysing methods.

- Regression analysis
- F-test or T-test
- Cluster analysis
- Discriminant analysis

The researcher conducts a time series analysis in Section 4.2.2 already. To conduct the same analysis regarding turnover or contribution margin is impossible owing to a lack of customer data.

Conclusion

The first statistical impression gives a good general overview of the given secondary data. This helps the researcher to analyse and to form conclusions in the following sections.

4.3.6 Regression analysis

In the used linear regression model between an endogenous variable Y (Regressand) in Table 73, denoted as segmentation method (first row: contribution margin of the customer), and exogenous variables X (Regressor) denoted as customer segment (first row: all customer), a functional relationship:

$y_v = a + bx_v$

Year	Segmentation method (Y)	Customer segment (X)	R	R Square	Adjusted R Square	Std. Error of the Estimate
2012	DB	All	.983	0.966	0.966	3169.5407
2012	Turnover	All	.983	0.966	0.966	12373.73217
2013	DB	All	.986	0.971	0.971	3134.7327
2013	Turnover	All	.986	0.971	0.971	12863.08811
2014	DB	All	.982	0.965	0.965	3304.10462
2014	Turnover	All	.982	0.965	0.965	13021.82619
2012	DB 60/90	A customer	.991	0.983	0.983	8533.62871
2012	DB 80/20	A customer	.986	0.972	0.972	7093.00628
2012	Turnover 60/90	A customer	.985	0.97	0.97	51935.00606
2012	Turnover 80/20	A customer	.985	0.97	0.97	32110.79938
2012	DB 60/90	B customer	.391	0.153	0.153	1919.17773
2012	DB 80/20	B customer	.598	0.357	0.357	495.39881
2012	Turnover 60/90	B customer	.920	0.846	0.846	2697.50231
2012	Turnover 80/20	B customer	.750	0.563	0.563	1264.23974
2012	DB 60/90	C customer	.174	0.03	0.03	613.41811
2012	DB 80/20	C customer	.174	0.03	0.03	613.41811
2012	Turnover 60/90	C customer	.918	0.842	0.842	481.48078
2012	Turnover 80/20	C customer	.918	0.842	0.842	481.48078

Table: 73 Regression analysis – segments of all customer and year 2012

Year	Segmentation method (Y)	Customer Segment (X)	R	R Square	Adjusted R Square	Std. Error of the Estimate
2013	Contribution margin 60/90	A customer	.991	.982	.982	9502.67565
2013	Contribution margin 80/20	A customer	.989	.979	.979	6687.19670
2013	Turnover 60/90	A customer	.990	.980	.979	49332.87267
2013	Turnover 80/20	A customer	.989	.977	.977	31642.93969
2013	Contribution margin 60/90	B customer	.865	.748	.748	1140.26544
2013	Contribution margin 80/20	B customer	.648	.419	.419	478.83126
2013	Turnover 60/90	B customer	.918	.843	.843	2907.92982
2013	Turnover 80/20	B customer	.738	.545	.544	1380.27914
2013	Contribution margin 60/90	C customer	.047	.002	.002	577.37176
2013	Contribution margin 80/20	C customer	.047	.002	.002	577.37176
2013	Turnover 60/90	C customer	.901	.811	.811	559.39896
2013	Turnover 80/20	C customer	.901	.811	.811	559.39896
2014	Contribution margin 60/90	A customer	.989	.977	.977	9521.07959
2014	Contribution margin 80/20	A customer	.986	.972	.972	7039.08039
2014	Turnover 60/90	A customer	.987	.974	.974	47495.40938
2014	Turnover 80/20	A customer	.986	.972	.972	31173.77204
2014	Contribution margin 60/90	B customer	.643	.413	.412	1787.94824
2014	Contribution margin 80/20	B customer	.540	.291	.290	564.50048
2014	Turnover 60/90	B customer	.901	.812	.812	3303.37180
2014	Turnover 80/20	B customer	.708	.501	.500	1491.48950
2014	Contribution margin 60/90	C customer	.575	.330	.330	471.35374
2014	Contribution margin 80/20	C customer	.575	.330	.330	471.35374
2014	Turnover 60/90	C customer	.910	.827	.827	570.02330
2014	Turnover 80/20	C customer	.910	.827	.827	570.02330

Table: 74 Regression analysis – segments of year 2013 and 2014

If one compares customer segment 'All' from 2012, 2013, and 2014 based on the variable turnover and DB from Table 73, it will be clear that the value R is over 0.98 every year, which means, as mentioned before, there is a great relationship between turnover and contribution margin, and all values are relatively close to the regression line.

But if one takes a look at the standard error of the estimate, it shows that the value is higher than if the variable Y is turnover instead of contribution margin.

Table 73 and 74 shows the researcher that a 60/90 segmentation based on turnovers has the best-calculated results in 2012. It has also been found that—though it does not matter whether it is the 60/90 or 80/20 method—calculations based on variable contribution margins have far worse results according to R than the ones based on variable turnover. These findings are also confirmed in the years 2013 and 2014. Also, it should be noted that the R values for

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C customers based on the contribution margin in any case are much lower than the R values based on turnovers.

Conclusion

This analysis can be concluded by saying that according to the given secondary data, a 60/90 segmentation method based on turnover has the best results. It also makes sense for SMEs if it is based on the regression analysis. However, these findings must be confirmed by further analysis.

F-test

The F-test fulfils essentially two tasks. First, it can be checked if a calculated regression is statistically significant—whether the ascertained relationship between two variables is considered not only for the sample but also for the population. Second, it can be tested by the F-test if two samples of different populations differ significantly in terms of a feature in their variance. The researcher does not conduct this test in this study because the correlation between two variables was investigated in the regression analysis. In this case, one test, either a F-test or a T-test, is sufficient. In the next section the researcher is going to carry out a T-test.

4.3.7 T-Test

In the researcher's opinion, one of the most important figures in the T-test analysis is the mean difference. This is because, as mentioned above, it shows in this research the difference between the mean of the sample—in this case, the total turnover or contribution margin of the whole year—and the mean total turnover or contribution margin of the sales teams.

4.3.7.1 T-Test based on one sample turnover per team

In the next 12 tables the researcher illustrates the one sample T-test values.

Because the basic data of the variable depending on the year, segmentation and calculation method, contribution margin or turnover. If it changes (e.g. N or mean) it changes in each table.

And relating to the allocation and comprehensibility, the basic data were specified at the top of each of the subsequent tables. This was followed by the values of the one-sample T-test.

Name:	N	Mean	Std. Deviation	Std. Error Mean			
Total Turnover 2012	9519	7681.5360	67198.14498	688.75001			
						the Difference	
Team	Test Value	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
1	6683.16	1.450	9518	.147	998.37600	-351.7209	2348.4729
2	9273.93	-2.312	9518	.021	-1592.39400	-2942.4909	-242.2971
3	6356.28	1.924	9518	.054	1325.25600	-24.8409	2675.3529
VW	123063.86	-167.524	9518	0.000	-115382.32400	-116732.4209	-114032.2271
Shop	836.74	9.938	9518	.000	6844.79600	5494.6991	8194.8929

Table: 75 One sample Team T-Test based on turnover (2012)

For a better understanding and for interpreting the results in the right way, it has to be noted that the VW team and shop are totally different regarding customer structure. The VW team is a key account management team that operates only with the customer Volkswagen (VW), the most important and valuable customer for this SME.

As mentioned before, the shop team treats only that customer who buys something directly from the company-owned shop. It means that the data cloud and should not be compared to the other team data without an explanation.

First, the T-test exhibits that the mean difference from Team 2 shows over the whole time a negative value according to the sample. The values of Team 1 and 2, however, remain positive in the same period. It shows the average customer turnover and contribution margin is higher than the sample mean.

This suggests a different customer structure or a better customer support. The higher average contribution margin indicates a different structure with less T or A customer, because in these customer segments the contribution margin is usually lower. But this would mean that Team 2 has more customer than the other teams because the average turnover is higher. However, as shown in Table 75, it is not the case. This allows the conclusion that Team 2 has a different customer structure with less T and A customers but also with less C and D customers, which means the average customer of Team 2 is more valuable for the SME than the average customer from Teams 1 and 3. Table 70 (cf. p. 262) has proved the researcher's theory regarding the customer structure.

Name:	N	Mean	Std. Deviation	Std. Error Mean			
Total Turnover 2013	9239	8067.5500	75909.59492	789.74010			

						the Difference	
Team	Test Value	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
1	7120.69	1.199	9238	.231	946.86004	-601.2049	2494.9250
2	8776.86	-.898	9238	.369	-709.30996	-2257.3749	838.7550
3	6689.63	1.745	9238	.081	1377.92004	-170.1449	2925.9850
VW	179702.37	-217.331	9238	0.000	-171634.81996	-173182.8849	-170086.7550
Shop	692.09	9.339	9238	.000	7375.46004	5827.3951	8923.5250

Table: 76 One sample Team T-Test based on turnover (2013)

If one compares the mean difference of Team 1 over the three years, the T-test illustrates that the test value moves in small steps but more and more to the sample mean. As the sample mean increases from year to year, it shows that the test value or the average value of a customer in Team 1 increases more than the entire SME. This could be explained because the number of customers from 2012 to 2014 decreased by 485 and mainly less valuable customers were gone, which implies a changed customer structure. Another reason could be that the team treated the still existing customer in a better way and generates more turnover with these customers.

Name:	N	Mean	Std. Deviation	Std. Error Mean			
Total Turnover 2014	8047	8704.6428	69873.90833	778.92929			

						the Difference	
Team	Test Value	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
1	7839.31	1.111	8046	.267	865.33282	-661.5702	2392.2359
2	9939.2	-1.585	8046	.113	-1234.55718	-2761.4602	292.3459
3	7071.63	2.096	8046	.036	1633.01282	106.1098	3159.9159
VW	170188.3	-207.315	8046	0.000	-161483.65718	-163010.5602	-159956.7541
Shop	767.48	10.190	8046	.000	7937.16282	6410.2598	9464.0659

Table: 77 One sample Team T-Test based on turnover (2014)

This phenomenon is not observed by Team 3: here, the mean difference decreases from 2012 to 2014 by more than 23 per cent from 1325.25600 to 1633.01282. One reason for this is the customer loss by 19.3 per cent (709 customers) from 2012 to 2014, and although the turnover has grown steadily in total by 11.29 per cent, this huge amount of missing customer could not be compensated.

As mentioned above, the VW team cannot be compared to the other teams. But the huge increase of turnover in 2013 catches one's eyes and also the huge decrease one year after. From the researcher's experience, the reason for this is that Volkswagen had started an

investment programme in 2013, which continued in 2014, albeit not with this huge amount of money.

The team shop plays no role because of the small number of customers.

4.3.7.2 T-Test based on contribution margin (DB) per team

Regarding the contribution margin, one will see a similar picture. In total, the mean contribution margin per customer increases by 17.09 per cent; but if one compares the increases from 2012 to 2013, it is only 5.6 per cent; and it was 10.87 per cent from 2013 to 2014. What stands out in this regard is that Team 2 had a decrease of the mean contribution margin in 2013 by 156.63 EUR, whereas Team 1 and Team 3 had an increasing contribution margin. Despite this decrease in 2013, Team 2 has still the highest contribution margin in the analysed period, excluding VW.

Name:	N	Mean	Std. Deviation	Std. Error Mean		
Total DB 2012	9519	2716.9045	17212.87242	176.42401		
					the Difference	
Team	Test Value	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
1	2536.15	1.025	9518	.306	180.75450	-165.0742	526.5832
2	3308.7	-3.354	9518	.001	-591.79550	-937.6242	-245.9668
3	2319.27	2.254	9518	.024	397.63450	51.8058	743.4632
VW	30325.48	-156.490	9518	0.000	-27608.57550	-27954.4042	-27262.7468
Shop	102.03	14.822	9518	.000	2614.87450	2269.0458	2960.7032

Table: 78 One sample Team T-Test based on DB (2012)

Name:	N	Mean	Std. Deviation	Std. Error Mean		
Total DB 2013	9239	2869.4270	18499.15721	192.45955		
					the Difference	
Team	Test Value	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
1	2595.69	1.422	9238	.155	273.73704	-103.5262	651.0003
2	3152.07	-1.469	9238	.142	-282.64296	-659.9062	94.6203
3	2556.85	1.624	9238	.104	312.57704	-64.6862	689.8403
VW	40987.83	-198.059	9238	0.000	-38118.40296	-38495.6662	-37741.1397
Shop	127.16	14.249	9238	.000	2742.26704	2365.0038	3119.5303

Table: 79 One sample Team T-Test based on DB (2013)

Name:	N	Mean	Std. Deviation	Std. Error Mean			
Total DB 2014	8047	3181.2750	17729.49923	197.64210			
						the Difference	
Team	Test Value	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
1	3036.6	.732	8046	.464	144.67496	-242.7547	532.1047
2	3633.18	-2.286	8046	.022	-451.90504	-839.3347	-64.4753
3	2765.96	2.101	8046	.036	415.31496	27.8853	802.7447
VW	40651.08	-189.584	8046	0.000	-37469.80504	-37857.2347	-37082.3753
Shop	151.49	15.330	8046	.000	3029.78496	2642.3553	3417.2147

Table: 80 One sample Team T-Test based on DB (2014)

Regarding the team VW, it was the same as mentioned in the turnover analysis. Between 2012 and 2013 was a big step, while in 2014 there was a small decrease regarding the investment programme.

4.3.7.3 T-Test based on turnover per new customer segments

This T-test related to, if the SME had applied the ABC analysis based on turnover or contribution margin.

What stands out here is clearly the focus on the A customer, and it does not matter what kind of method will be used—60/90 or 80/20. It has by far the highest test value, which means the highest average turnover per customer. If one compares only the A customer from the 60/90 and 80/20 methods, a huge difference will be clear.

This is because the 60/90 method strongly focuses on A customers. It means less customers but with a much higher turnover. The test value of the B customer in the 60/90 method is still higher because many B customers in the 60/90 method would be A customer in the 80/20 method. In both methods C customer have the same figures because they present the last 10 per cent of the customer, and it does not matter whether it is the turnover or the contribution margin.

Name:	N	Mean	Std. Deviation	Std. Error Mean			
Total Turnover 2012	9519	7681.5360	67198.14498	688.75001			
						the Difference	
Customer Segment	Test Value	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
A-Turnover 60/90	101526.37	-136.254	9518	.000	-93844.83400	-95194.9309	-92494.7371
B-Turnover 60/90	12929.44	-7.619	9518	.000	-5247.90400	-6598.0009	-3897.8071
C-Turnover 60/90	989.13	9.717	9518	.000	6692.40600	5342.3091	8042.5029
A-Turnover 80/20	48787.28	-59.682	9518	0.000	-41105.74400	-42455.8409	-39755.6471
B-Turnover 80/20	7865.55	-0.267	9518	.789	-184.01400	-1534.1109	1166.0829
C-Turnover 80/20	989.13	9.717	9518	.000	6692.40600	5342.3091	8042.5029

Table: 81 One sample customer segment T-Test based on turnover (2012)

Name:	N	Mean	Std. Deviation	Std. Error Mean			
Total Turnover 2013	9239	8067.5500	75909.59492	789.74010			
						the Difference	
Customer Segment	Test Value	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
A-Turnover 60/90	109077.21	-127.902	9238	.000	-101009.65996	-102557.7249	-99461.5950
B-Turnover 60/90	13718.3	-7.155	9238	.000	-5650.74996	-7198.8149	-4102.6850
C-Turnover 60/90	1035.37	8.904	9238	.000	7032.18004	5484.1151	8580.2450
A-Turnover 80/20	52260.19	-55.958	9238	0.000	-44192.63996	-45740.7049	-42644.5750
B-Turnover 80/20	8291	-0.283	9238	.777	-223.44996	-1771.5149	1324.6150
C-Turnover 80/20	1035.37	8.904	9238	.000	7032.18004	5484.1151	8580.2450

Table: 82 One sample customer segment T-Test based on turnover (2013)

Name:	N	Mean	Std. Deviation	Std. Error Mean			
Total Turnover 2014	8047	8704.6428	69873.90833	778.92929			
						the Difference	
Customer Segment	Test Value	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
A-Turnover 60/90	103772.24	-122.049	8046	.000	-95067.59718	-96594.5002	-93540.6941
B-Turnover 60/90	14188.98	-7.041	8046	.000	-5484.33718	-7011.2402	-3957.4341
C-Turnover 60/90	1136.93	9.716	8046	.000	7567.71282	6040.8098	9094.6159
A-Turnover 80/20	52322.14	-55.997	8046	0.000	-43617.49718	-45144.4002	-42090.5941
B-Turnover 80/20	8594.63	0.141	8046	.888	110.01282	-1416.8902	1636.9159
C-Turnover 80/20	1136.93	9.716	8046	.000	7567.71282	6040.8098	9094.6159

Table: 83 One sample customer segment T-Test based on turnover (2014)

The focus on A customers is especially evident if one compares the test value of both customer segments. In 2012 and 2013 the A customer test value of the 60/90 method is more than double the test value of the A customers from the 80/20 method. In 2014 it is not exactly the doubled value, but close to it with 98.33 per cent.

4.3.7.4 T-Test based on contribution margin per new customer segments

The next three tables illustrate the T-test analysis regarding the contribution margin. Of course, the strong focus on the A customers in the 60/90 method is shown as well.

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The test value is not doubled as in the turnover analysis above, but it was 83.29 per cent higher in 2012, 83.45 per cent higher in 2013, and 79.80 per cent higher in 2014.

It is not the double value because A customers with a huge turnover generate less in terms of the contribution margin. This can have different reasons, for example, bargaining power or they obtain a quantity discount.

Name:	N	Mean	Std. Deviation	Std. Error Mean			
Total DB 2012	9519	2716.9045	17212.87242	176.42401			
						the Difference	
Customer Segment	Test Value	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
A-DB 60/90	26668.02	-135.759	9518	.000	-23951.11550	-24296.9442	-23605.2868
B-DB 60/90	4329.71	-9.142	9518	.000	-1612.80550	-1958.6342	-1266.9768
C-DB 60/90	361.45	13.351	9518	.000	2355.45450	2009.6258	2701.2832
A-DB 80/20	14549.6	-67.070	9518	0.000	-11832.69550	-12178.5242	-11486.8668
B-DB 80/20	2720.69	-0.021	9518	.983	-3.78550	-349.6142	342.0432
C-DB 80/20	361.45	13.351	9518	.000	2355.45450	2009.6258	2701.2832

Table: 84 One sample customer segment T-Test based on DB (2012)

Name:	N	Mean	Std. Deviation	Std. Error Mean			
Total DB 2013	9239	2869.4270	18499.15721	192.45955			
						the Difference	
Customer Segment	Test Value	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
A-DB 60/90	28608.6	-133.738	9238	.000	-25739.17296	-26116.4362	-25361.9097
B-DB 60/90	4565.55	-8.813	9238	.000	-1696.12296	-2073.3862	-1318.8597
C-DB 60/90	381.94	12.925	9238	.000	2487.48704	2110.2238	2864.7503
A-DB 80/20	15594.49	-66.118	9238	0.000	-12725.06296	-13102.3262	-12347.7997
B-DB 80/20	2826.29	0.224	9238	.823	43.13704	-334.1262	420.4003
C-DB 80/20	381.94	12.925	9238	.000	2487.48704	2110.2238	2864.7503

Table: 85 One sample customer segment T-Test based on DB (2013)

Name:	N	Mean	Std. Deviation	Std. Error Mean			
Total DB 2014	8047	3181.2750	17729.49923	197.64210			
						the Difference	
Customer Segment	Test Value	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
A-DB 60/90	28926.24	-130.261	8046	.000	-25744.96504	-26132.3947	-25357.5353
B-DB 60/90	4824.07	-8.312	8046	.000	-1642.79504	-2030.2247	-1255.3653
C-DB 60/90	432.14	13.910	8046	.000	2749.13496	2361.7053	3136.5647
A-DB 80/20	16087.8	-65.303	8046	0.000	-12906.52504	-13293.9547	-12519.0953
B-DB 80/20	3011.73	0.858	8046	.391	169.54496	-217.8847	556.9747
C-DB 80/20	432.14	13.910	8046	.000	2749.13496	2361.7053	3136.5647

Table: 86 One sample customer segment T-Test based on DB (2014)

Conclusion

When comparing the existing teams by the T-test, it comes to light that the customer structure in Team 2 is different to the other two teams. This was, among other things, confirmed by a higher contribution margin per customer.

The analysis has also shown that Team 1 and Team 3 lost, on average, more customers than Team 2 over the entire period.

If one takes a look to the T-test analysis with the new customer segments from the ABC analysis, it will be clear that the 60/90 method in both versions gave the best results regarding the turnover and contribution margin.

4.3.8 Regional analysis

4.3.8.1 Cluster by postal code

Because of the size of the sales area with more than 1,250 different five-digit postal codes, the researcher decides to sum customer into three-digit postal codes. This ensures a better understanding of the following figures. And it does not matter regarding the formation of a cluster because very often there is only one customer for every five-digit postal code.

This SME did, like many SMEs, cluster the entire sales region into smaller areas based on the German postal code system, and as already mentioned in before, some areas have much more economic power than others. To analyse these areas, and to point out the areas with the most customer and the highest turnover, the researcher start with a postal code cluster analysis.
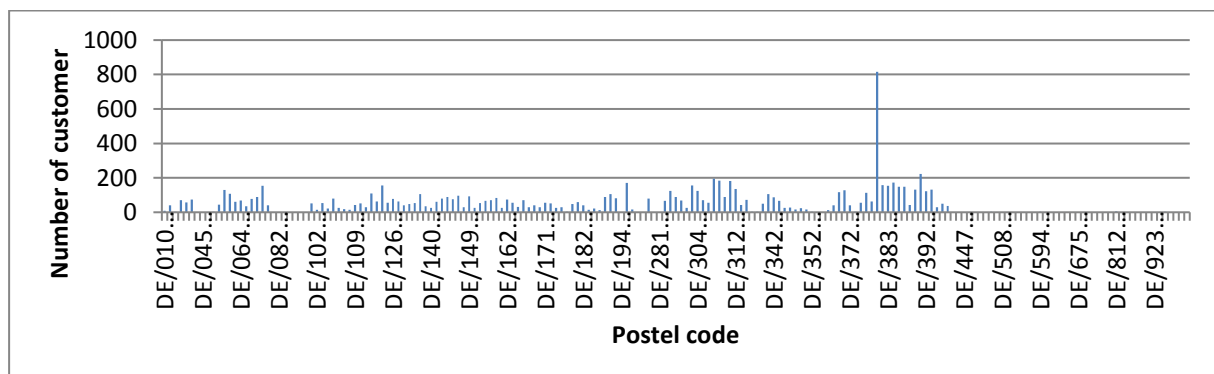
Figure: 68 Customer cluster by postal code (2012)

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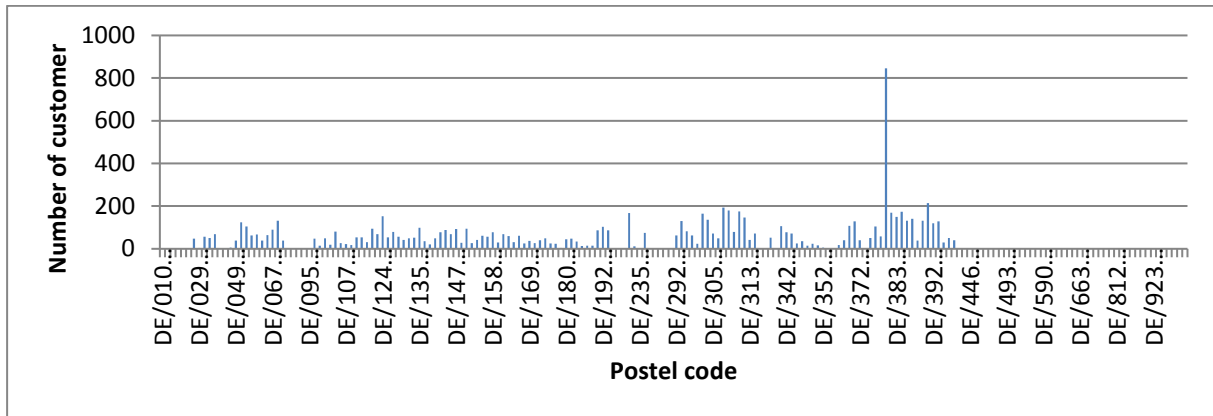
Figure: 69 Customer cluster by postal code (2013)
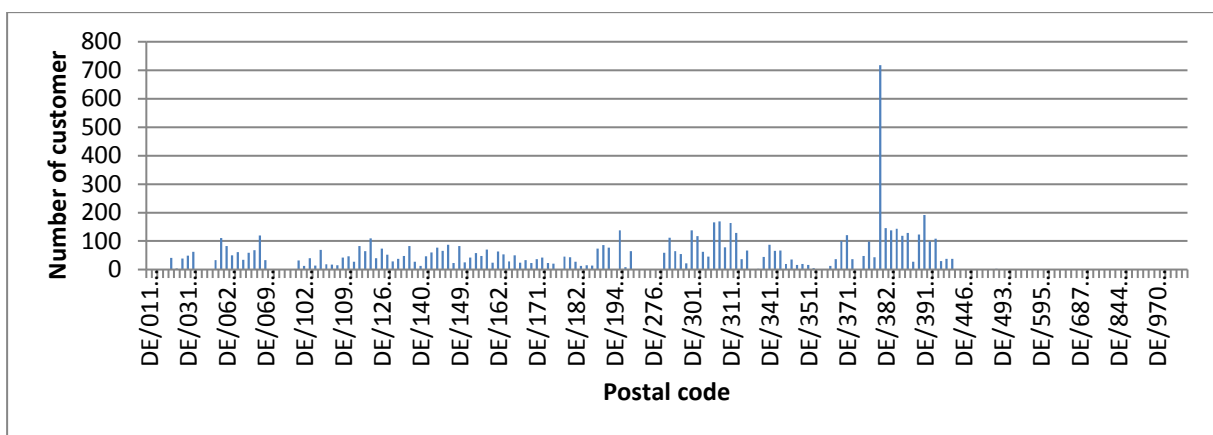
Figure: 70 Customer cluster by postal code (2014)

Regarding the number of customers, the postal area 381 is by far the biggest one. This area in 2012 and 2013 had over 800 customers, while it was 718 in 2014. This is the area around the Brunswick headquarter. With 600 customers less comes second the area 391—this cluster is approximately 75 kilometres east of Brunswick around Magdeburg. The next 20 clusters comprise between 200 and 100 customers. It is curious that no postal code area of the economically strong Berlin area is represented until now. One reason for this could be that the postal code areas in Berlin are very small and that Berlin is not known as manufacturing location for SMEs. This could be a reason because this SME sell technical products for such companies.

Basically, it can be said that the postal code area 38 is the strongest. In the top 20 areas this region is represented seven times with 1,516 customers of 3,301 total customers in 2014.
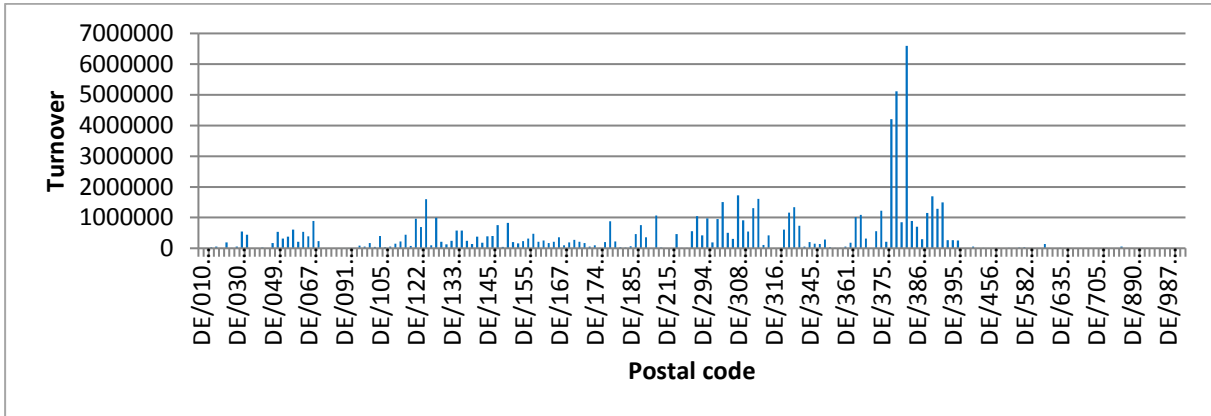
Figure: 71 Turnover by postal code (2012)

As shown in Figure 69, 70, and 71, the picture slightly change if one compares the turnover per postal code area.

The area 381 moves from first place to third, and the Wolfsburg area (384) is on top with a turnover of more than EUR 6.5 million in 2014. It is 18.4 per cent more than the top 20 areas in terms of the turnover and shows again the importance of this area with the main customer Volkswagen.
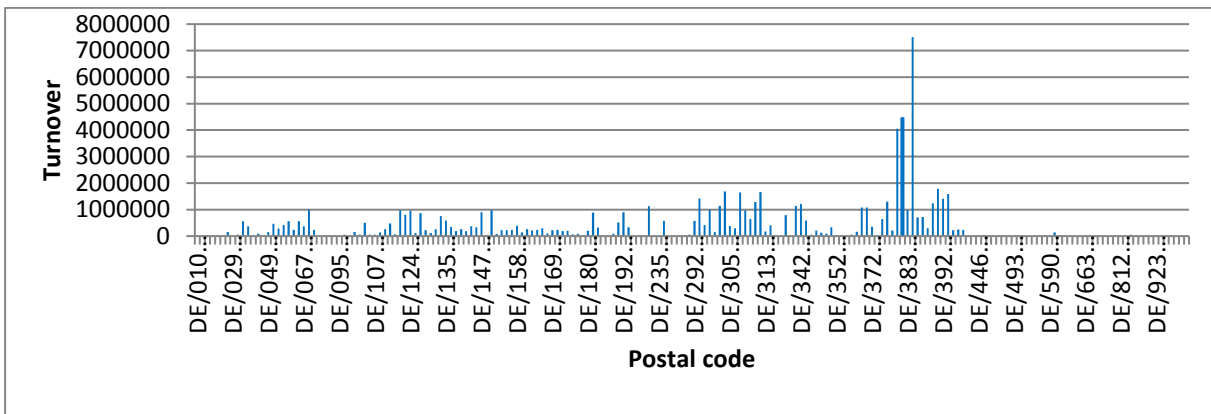
Figure: 72 Turnover by postal code (2013)
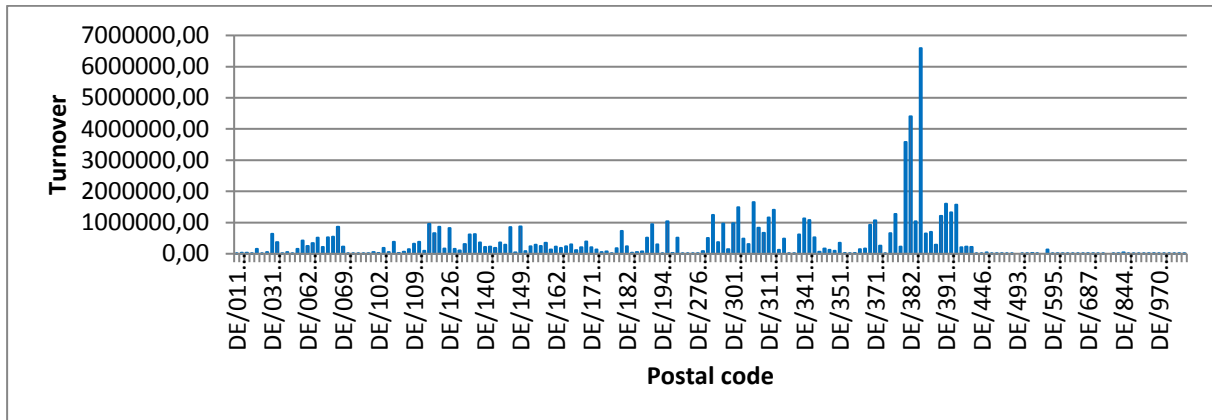
Figure: 73 Turnover by postal code (2014)

The area 391 moved from position two to five, which confirms the assumption that the mean turnover per customer is lower because of the economically weaker position. The strongest cluster is still the postal code area 38, including VW with the EUR 16,832,342.55 turnover in 2014. This amount is 47 per cent of the top 20 areas and 24.16 per cent of the whole turnover in 2014.

4.3.8.2 Cluster by NACE code

In Section 4.2.2 the researcher has already shown—with the help of Figures 60, 61, and 62—the clusters regarding the amount of customers in different industries. The top five rankings in the reviewed period show a clear picture of the main cluster.

2012	2013	2014
B/2900	B/2900	B/2900
H/3000	H/3000	G/2800
G/2800	G/2800	T/5100
T/5100	T/5100	H/3000
L/4500	L/4500	D/3500

Table: 87 Top 5 ranking NACE code

In 2014 there were slight shifts and otherwise the focus industries were very consistent. Another noticeable feature is each of eight different industries represented more than 500 customers that in 2012 and 2013. In 2014 only four industries reached that mark. One reason for this could be, as mentioned before, the sales region reorganisation. Another reason could be that the company adjusted itself to a wider customer base to be more flexible and not so

dependent. The last and a more dangerous reason, the SME lost customers and accordingly influence in their main industries.

If one takes a look at the turnover figures per industry, and that is for most SMEs, in addition to the contribution margin, the most important KPI.
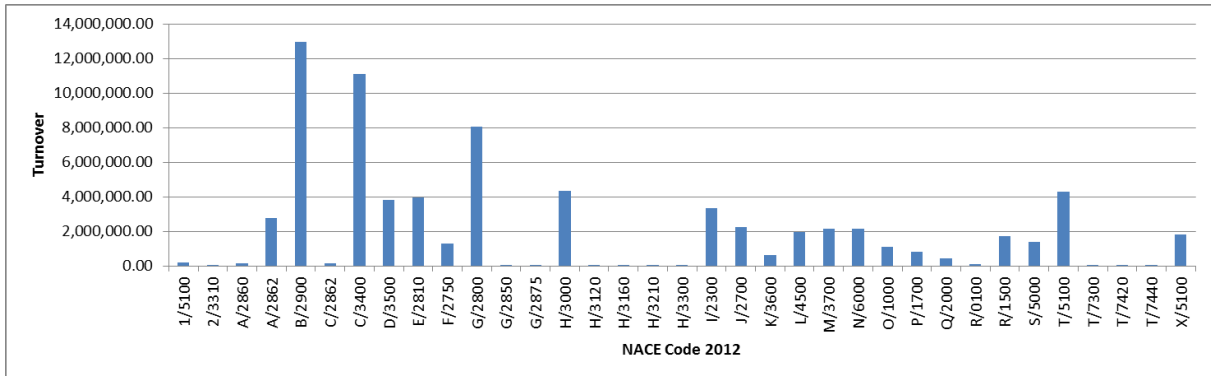
Figure: 74 Turnover 2012 per industry

During the reviewed period the two main industries enjoyed an outstanding position. Together, B/2900 (machine engineering) and C/3400 (automobile industry) generated 32.88 per cent of the entire turnover in 2012, 35.30 per cent in 2013, and 34.91 per cent in 2014. This shows a strong dependence on these two clusters. If ones takes the third one, G/2800 (surface and thermal treatment), into account, then the dependence is even stronger. Then, these three industries generated 43.93 per cent in 2012, 45.55 per cent in 2013, and 45.38 per cent in 2014 of the entire turnover.
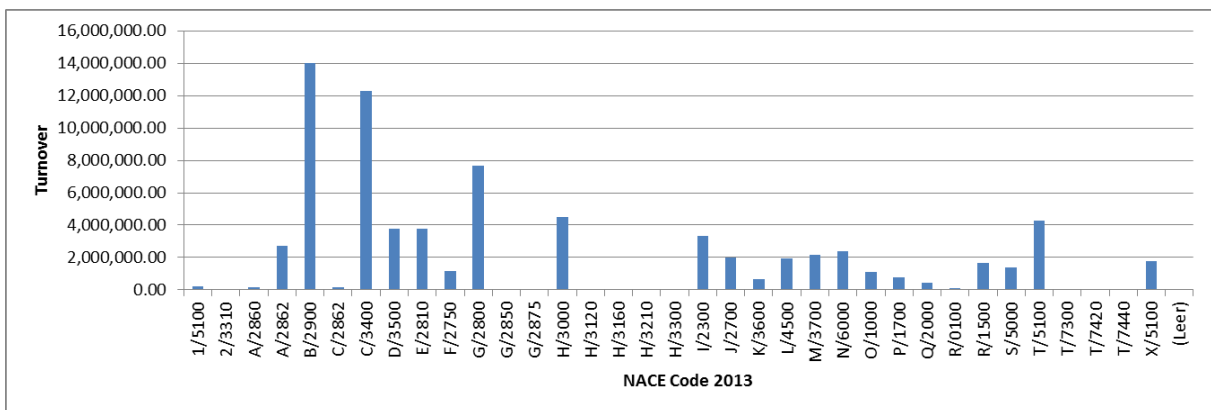
Figure: 75 Turnover 2013 per industry
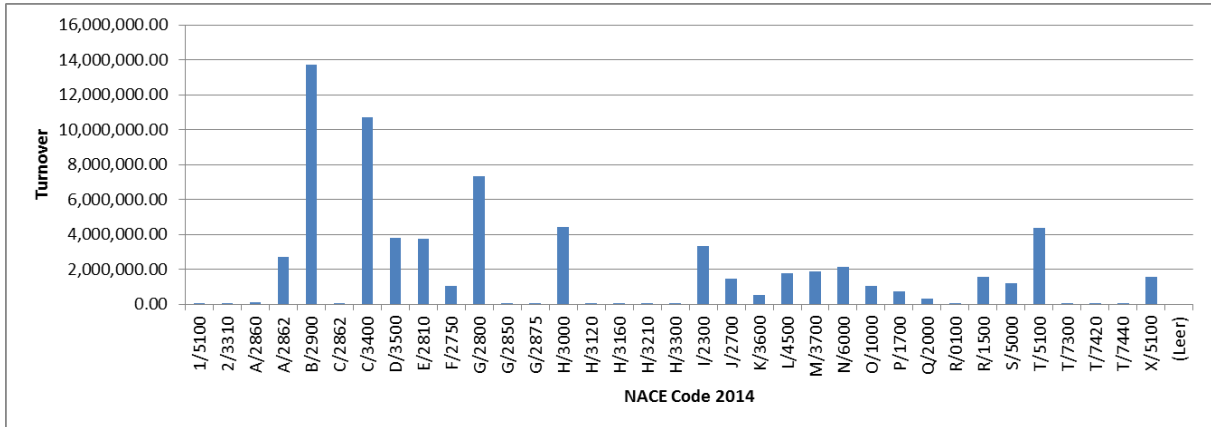
Figure: 76 Turnover 2014 per industry

Other industry clusters will be formed if one focuses on the mean turnover per customer. Two new industries are represented in the top five. The steel mill industry (J/2700), with a mean turnover from more than EUR 15,000 in 2012 and 2013, in this analysis it is a important cluster. The vehicle construction industry (D/3500) also plays a major role.
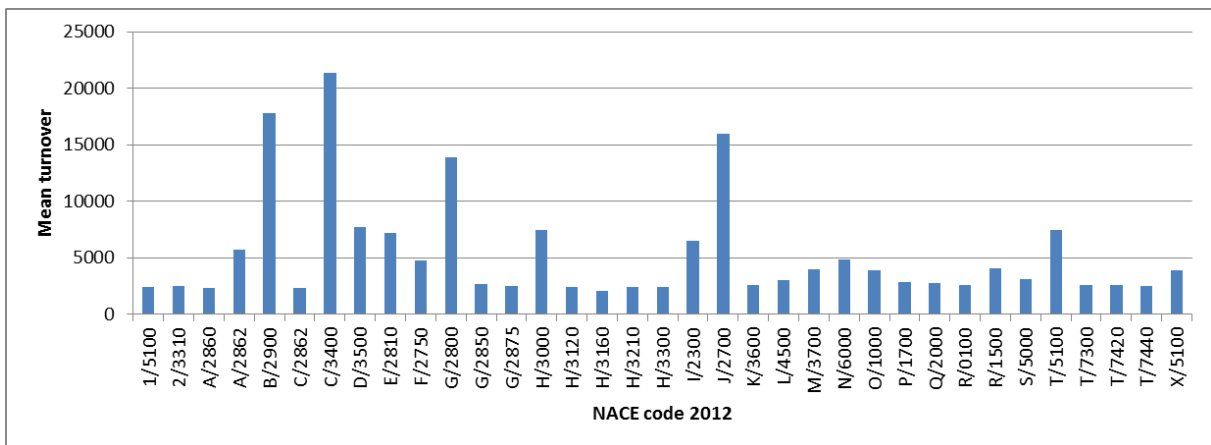
Figure: 77 Mean turnover 2012 per customer and industry
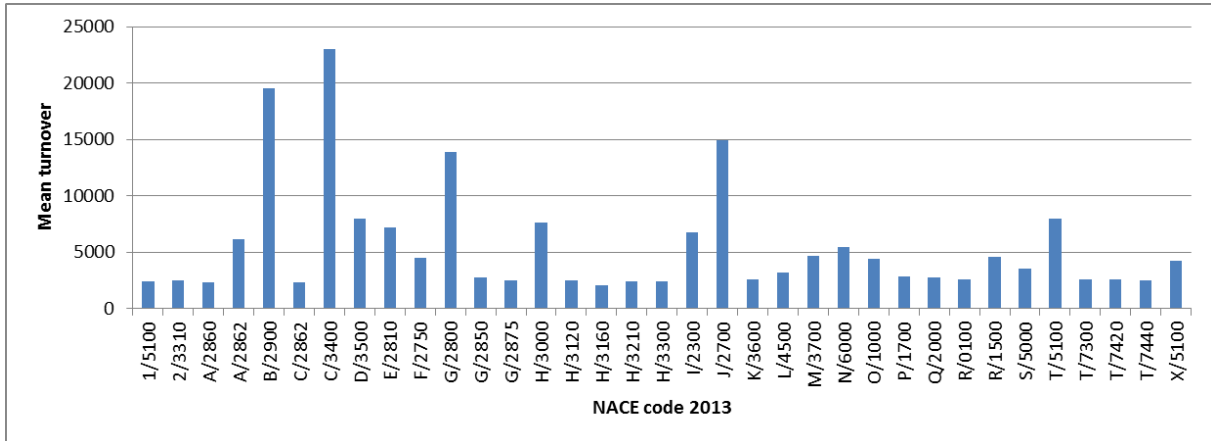
Figure: 78 Mean turnover 2013 per customer and industry
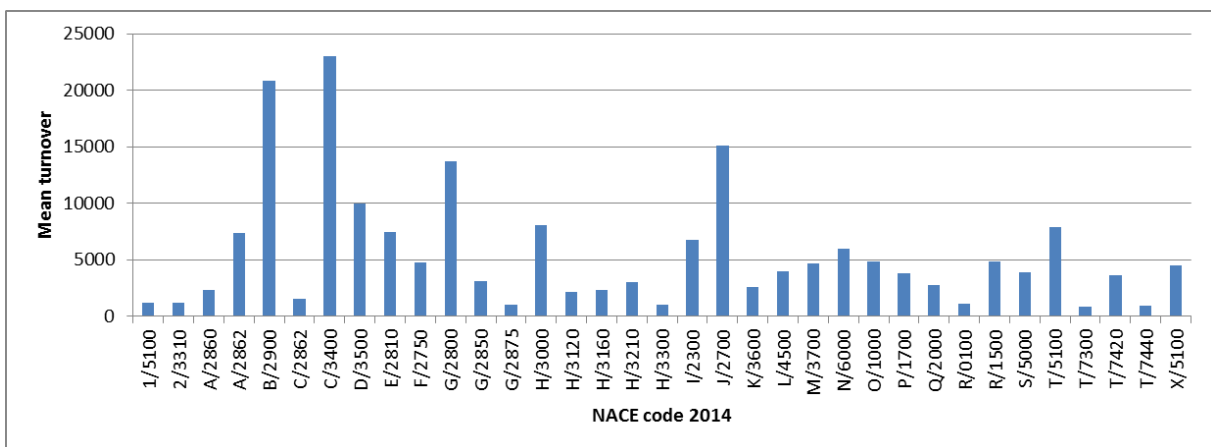
Figure: 79 Mean turnover 2014 per customer and industry

Some industries, if they are clustered only by turnover do not matter and play no role. Now, if the researcher clusters by mean turnover per customer, these industries play a huge role. This is due to the structure of the individual industry. Industries with huge market entry barriers and only a few big players, such as the automobile industry or the steel mill industry, generate much more turnover per customer than industries with low entry barriers because in such industries there are many customers with less turnover.

The same can be observed if one compares the contribution margin per customer and industry. Figures 80, 81 and 82 shows that these industries usually also generate the highest contribution margin per customer.
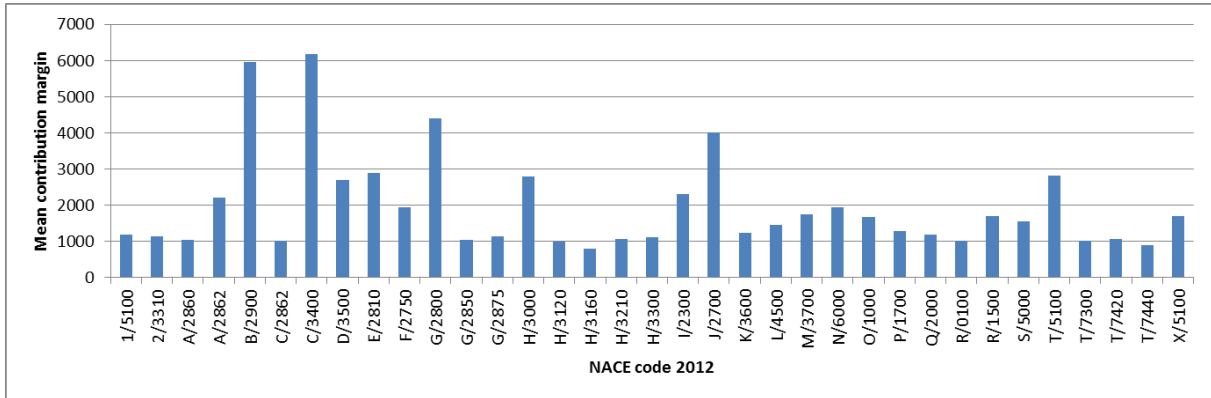
Figure: 80 Mean contribution margin 2012 per customer and industry
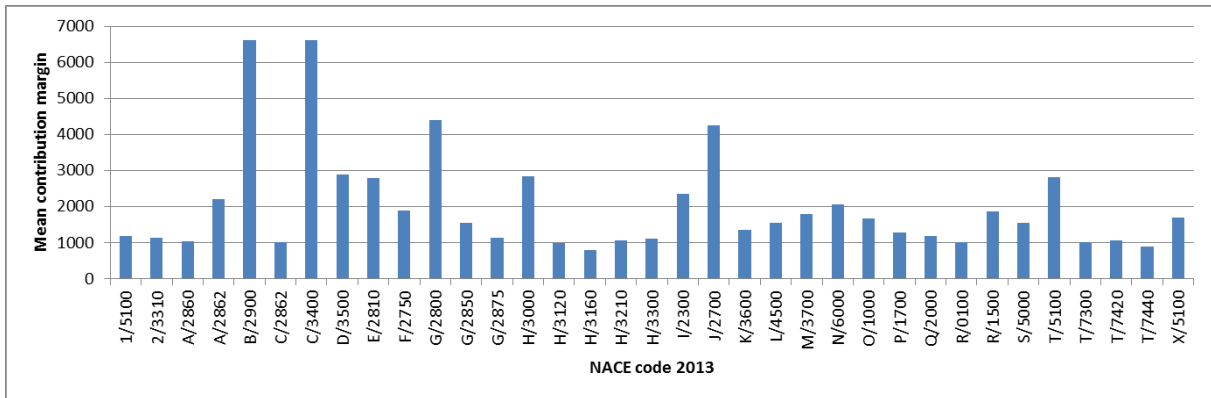
Figure: 81 Mean contribution margin 2013 per customer and industry
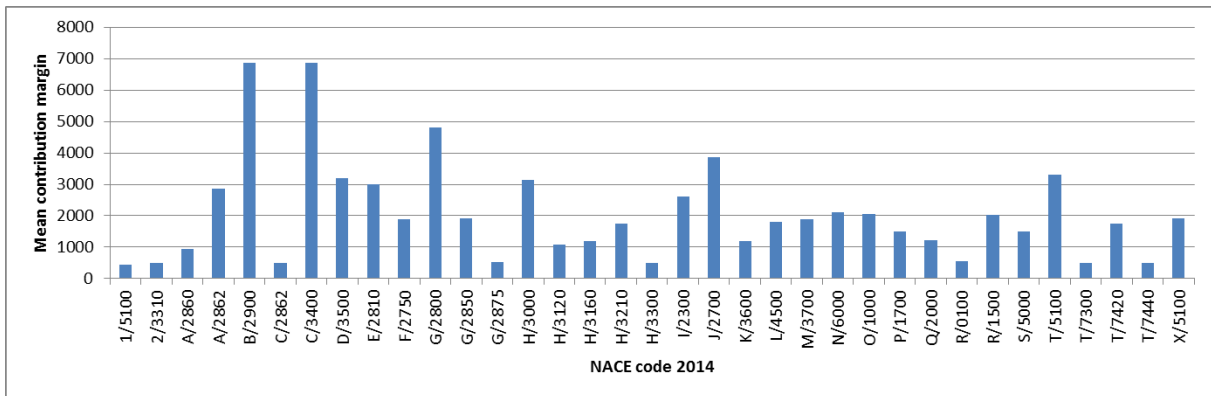
Figure: 82 Mean contribution margin 2014 per customer and industry

Conclusion

The postal code cluster analysis illustrates the importance of Brunswick with the highest number of customers, and also of the Wolfsburg area with the top customer VW and its sub-suppliers. Both areas (postal code 38) generate 47 per cent of the turnover of the top 20 areas! As the conclusion of cluster analysis by NACE code, the researcher can say that machine engineering, automobile and surface and thermal treatment industry are the most important

clusters for this SME. The SME should focus on these customers because they generate approximately 45 per cent of the turnover. But the SME should not only focus on these customers because they are, as seen in Section 3.9.6.1, mostly located in the postal code area 381, and the whole sales area is too big to focus only these areas and industries. The SME will be too dependent and susceptible to crises in these industries. And this is the case since October 2015 because the main customer, Volkswagen, now faces a huge crisis because of the emissions scandal in the United States and Europe.

4.3.8.3 Two-Step cluster analysis by SPSS

For the following analyses was chosen because, as mentioned in Chapter 3, this method identifies automatically the segments or cluster by running pre-clustering first and then by hierarchical method and this method combines advantages of both approaches.

The related tables and SPSS model summaries are in the appendix.

4.3.8.3.1 Cluster by NACE code and turnover

From the tables in the appendix it is noticeable that the clusters of 2012 and 2013 are similar according to the mean and number of customers. In 2014 the number of customers in Cluster 1 was more than doubled. As well, the mean of Cluster 1 and 2 changes extremely between 2012, 2013 and 2014.

In all the above-mentioned models, as shown in the figure in the appendix, the cluster quality is not good and the quality in the lower range of 'Fair'. But an SME segmentation method must ensure a degree of stability, this is important not only for the B2B customer but also for the employees in the sales department. Despite similar sales figures and NACE codes, as shown in Section 3.9.6.2 the cluster respectively segment in 2014 was totally different. Therefore, the researcher comes to the conclusion that this two-step cluster analysis based on the given data is not a useful segmentation method for SMEs.

The following analysis has the same categorical variable as the analysis above, but it has, instead of one year, all three years as continuous variables.

Categorical variables = NACE code

Continuous variables = Turnover in 2012, 2013, and 2014

The results are totally different than in the analyses above. There are only nine customers with a huge mean in Cluster 1. The main cluster based on customers is Cluster 2.

The results are better to process for an SME because they are stable over the entire period, and, as mentioned before, stability is important in SMEs in the B2B business.

With four inputs, the cluster quality increases strongly into the upper range of good in the SPSS model summary. But again, this segmentation approach is from the researcher's view useless because, as one can see in the appendix, Cluster 1, 5, and 4 are too small. Cluster 1 and 5, with 35 customers, are widely spread over the whole sales area, which makes no sense. This would mean significant travel time and often waste of time as well.

4.3.8.3.2 Cluster by postal code and turnover

This resembles the analysis in the previous section, with the only difference being the postal code of the customer as the categorical variable.

The model summary shows that SPSS describes the cluster quality as poor. But regarding the number of customers and the mean, the allocation could make sense. Cluster 1 with only 6.4 per cent of customers in 2012 and 7.6 per cent in 2014 is small but has by far the highest mean. This could be a strong region like the postal code DE/381. Cluster 1 is followed by four similar strong clusters according to the number of customers and the mean.

The second analysis includes as continuous variables again the entire period from 2012 to 2014. Here the model summary shows that the software SPSS assumed the cluster quality as good. But here again, the segmentation with the given data based on the SPSS outcomes makes no sense. Of course, the results are stable, but the five clusters are too inconvenient to work with because they are based on regions. One very strong cluster in relation to the mean—in this case Cluster 1—makes sense. Clusters 2 to 4 could make sense, but Cluster 5 with 6,758 customers makes no sense. This cluster will be allocated over the entire sales area, and it is quite difficult to manage.

Conclusion

In the researcher's assumption the fact remains that customer segmentation based on the SPSS cluster analysis for SMEs with the given customer structure make no sense and is not useful. If one chooses as continuous variables the three years 2012, 2013, and 2014 turnover, the results are better but still not useful for SMEs. The SPSS cluster analysis with categorical variable of postal code is, in the researcher's opinion, regarding the number of customers, as shown in the appendix, per cluster useful, whereas the cluster for SPSS is poor.

In the end it should be noted that an automatic cluster analysis by the SPSS is not useful for SMEs with such a customer structure. Especially in SMEs the customer should have priority and hence an automatic cluster analysis could be counterproductive because the wrong customers are prioritized.

4.3.9 Discriminant analysis

In contrast to the cluster analysis, the discriminant analysis is based on a given group membership. The groups are given from the beginning, but they may have been determined using the cluster analysis.

The discriminant analysis aims to uncover differences between groups. In this research this could be different areas (e.g. Brunswick and Berlin area), industries (e.g. automotive and metal industry), years or teams.

The researcher tries to figure out the best discrimination between the groups through a series of available characteristics.

All related tables are in the appendix.

4.3.9.1 Discriminant analysis year 2012

As can be seen from the various tables and analyses for 2012, there are significant differences between the groups. The researcher's focus in this analysis, as well as in the next two years, is on differences between segmentation methods such as the 80/20 and 60/90 methods based on turnover and contribution margins. To compare the results, the crucial values for the researcher are the Wilks' Lambda and the Canonical Correlation. In 2012, both best values were obtained using the 60/90 method based on the contribution margin. The Wilks' lambda has, at 0.866, the lowest and, therefore, best value. The value of the Canonical Correlation is the highest at 0.366, and this is the best value as well.

4.3.9.2 Discriminant analysis year 2013

In 2013, a similar picture emerges. Once again the 60/90 method based on contribution margin achieves the best values. What is noticeable is that the values are almost identical. The Wilks' Lambda has, at 0.868 (in 2012, this was 0.866), the lowest and, therefore, best value. The value of the Canonical Correlation is the highest at 0.363 (in 2012 this was 0.366), which is the best value as well.

4.3.9.3 Discriminant analysis year 2014

In addition, in the last analysed year, the 60/90 method based on the contribution margin achieved the best values. The Wilks' Lambda has a value of 0.841 and the Canonical Correlation a value of 0.398. The tables in the appendix also show that the values differ more clearly in 2014 than in the previous years. But this is due to the repeatedly territorial reform in 2014.

Due to the clarity the researcher summarized the important outcomes in the following two tables.

	Turnover 80/20	Turnover 60/90	DB 80/20	DB 60/90
2012	.945	.903	.915	.866
2013	.951	.914	.917	.868
2014	.939	.897	.898	.841

Table: 88 Comparison Wilks Lambda

	Turnover 80/20	Turnover 60/90	DB 80/20	DB 60/90
2012	.234	.312	.291	.366
2013	.220	.294	.288	.363
2014	.247	.321	.319	.398

Table: 89 Comparison Canonical Correlation

Conclusion

Some of these results have already been used by the researcher in the previous sections. For this reason, the researcher focuses mainly on the Wilks Lambda and the Canonical Correlation results.

If one compares the different years, no clear pattern could be recognized. This is because the value depends on turnover or contribution margin, and these figures change in this period both positively and negatively.

But it can be seen in which segmentation method there is the least scattering. Both results, namely for Wilks Lambda and Canonical Correlation, shows that the 60/ 90 segmentation method based on the contribution margin has the least scattering. It means that this segmentation method is most suitable according to the discriminant analysis.

It is further to note that the sequence of the best methods is the same in every year.

1. Contribution margin 60/90
2. Turnover 60/90
3. Contribution margin 80/20
4. Turnover 80/20

Because of the large volume of evaluated data, only the relevant calculations and results are presented in this thesis. The whole SPSS calculations are available on request.

4.3.10 Conclusion - Analysing secondary data

The analysis of secondary data pointed out differences between the ABC analysis 80/20 and 60/90 methods based on the turnover. Since the average turnover per customer is totally different, if, for example, the SME decides to use the 60/90 method, the average turnover per customer for A customers is over 108 per cent higher and for B customers over 64 per cent. Compared with the methods based on the contribution margin, the difference is not so high, but it is still over 83 per cent for A customers. Consequently, the number of A customers is— independent of if it is based on the turnover or contribution margin—significantly lower, and it is higher for B customers. The regression analysis and the T-test show that for an SME with this kind of company and customer structure, a 60/90 ABC analysis based on turnover is the best solution.

The discriminant analysis pointed out that the 60/90 method based on the contribution margin has less scattering than the other methods. This is another point that speaks for this method of segmentation. The researcher comes to the conclusion that segmentation with the SPSS cluster analysis based on the given data is not useful for SMEs. The cluster analysis is

indeed a good overview of which regions are the most important for this SME. These are based on the number of customers of the Brunswick region and the turnover of Wolfsburg. Both regions belong to the postal code area 38, which means that this region is by far the most important one for this company. But customer segmentation according to these results would be the wrong approach in the researcher's opinion.

What kind of method the SME will use depends on the company and its customer strategy, as this decision is very important regarding customer visits. For example, according to the assumptions made in Section 4.3, and if the SME chooses the 60/90 method, customer visits will be reduced and the SME will save EUR 2,991,300 on visiting costs. If the company assumes EUR 150 per visit again, it makes no sense to visit B and C customers because the turnover per visit would be too low.

The differences between the 80/20 and 60/90 methods based on the turnover are significant, for example, in treating customers. The turnover per customer visit in 2012 and 2013 were more than EUR 1000 per visit between both methods.

In the field of contribution margin, the data clearly show that the customer with a huge turnover mainly generated less contribution margin. This is demonstrated in Table 60 where the researcher compared A, B, C and the top 25 customers. The top 25 customers generate nearly 10 per cent less contribution margin than that of the A customer. This table shows how important key customers are and that an SME should think about a separate support for these customers. This could be, for example, more customer visits, better delivery terms, and so on.

Figures 66, 67, and 68 illustrate that with the same method, 80/20 or 60/90, the number of A and B customers is lower if the method is based on the turnover. This finding is important to determine the database of the segmentation method. Again, the company has to decide which method should be implemented. Are less customers in the A segment and also in the A and B segments relevant or useful? Does the company focus more only on A customers or on A and B customers?

As well the researcher comes to the conclusion, according to the assumed customer visits, that the average contribution margin per customer visit in the B and C customer segments is by far too low.

The number of customer visits per day/area sales manager (ASM) is a very important figure. According to Table 69, the difference of 1.5 visits per day/ASM is distinguished with the given

data. It is assumed, in the best case, that the company needs nine additional employees, and in the worst case, 30 additional ASMs. These 1.5 visits per day/ASM create an additional cost of EUR 225 and EUR 47,362.50 per year. But the difference of 1.5 visits per day also makes it clear that in the best case, the company needs nine additional employees, and 30 additional ASMs are needed in the worst case.

As shown in Table 70 and also explained with two example, it is very helpful if an SME does customer segmentation not only one dimensionally with the turnover or contribution margin. The SME should do a two-dimensional segmentation with both criteria.

As mentioned in Section 4.3.8 regarding the missing quantitative data with the other segmentation methods, the researcher cannot achieve meaningful results.

Because of the large amount of evaluated data, only the relevant calculations and results are presented in this thesis. All MS Excel and SPSS calculations are available on request.

5   Analysing Expert Interviews

In Section 3.8 the analysis of expert interviews, according to Meuser & Nagel, was described in detail. According to this the researcher starts with step three, Coding / Headlining.

The whole procedure of the researcher is listed below.

1. Transcription
2. Paraphrasing
3. Coding / Headlining
4. Numerical analysis of the headings
5. Narrative Analysis
6. Conclusion Expert Interviews

Owing to the number and length of the expert interviews, the researcher made the decision not to document the paraphrased interviews, transcripts with the coding, and the tables as well as the narrative analysis in the main part of the thesis. They are documented in the appendix.

5.1   Coding / Headlining

The headings were derived from the researcher's research questions, research objectives, and frequently used interview topics. Each heading was related with a specific colour, which is to be used in the analysis of the interviews. The context or the intelligibility of individual citations can be lost through. Therefore, the introductory phrases or questions were performed with some quotes.

Resulting from the three different interview topics the researcher prepared the colour codes.

Colour coding – customer segmentation interviews

No.	Heading	Colour Code
1	General remarks on segmentation methods in SMEs	Red
2	Are depending their stage of growth different methods necessary?	Yellow
3	Do SMEs know the value of their customer?	Green
4	Do SMEs know and use customer lifetime value?	Black
5	What are meaningful criteria to segment customers?	Blue
6	Should a company treat each customer equally?	Violet
7	Who should be responsible for customer segmentation? The sales or marketing department?	Grey
8	Know and calculate SMEs customer potential?	Light blue
9	Plays customer loyalty a role in nowadays business life?	Dark green

Table: 90 Relating coding's / headings and colour codes customer segmentation interviews

Colour coding – available software interviews

No.	Heading	Colour Code
1	Awareness of the companies from the Google Search	Red
2	Cloud one imagine a collaboration with the companies in SMEs?	Yellow
3	Advantages and disadvantages compare to Salesforce, Oracle, SAP and Microsoft	Green
4	Advantages and disadvantages of a 2 dimensional Excel based segmentation model	Black

Table: 91 Relating coding's / headings and colour codes available software interviews

Colour coding – validity of the conclusions interviews

No.	Heading	Colour Code
1	Why changes take place and where do the experts expect challenges in implementing this model in SMEs?	Red
2	Description: Why customer segmentation, based on simple software, would still make sense?	Yellow
3	How can the presented model be improved?	Green
4	How many dimensions should a customer segmentation method have and why?	Black
5	What are the most adapted segmentation models in SMEs?	Blue
6	What effort, in euros, would be appropriate for the implementation of customer segmentation in SMEs?	Violet
7	Available data for customer segmentation in SMEs and is this data sufficient?	Brown
8	Guidelines for customer segmentation	Dark Green

Table: 92 Relating coding's / headings and colour codes validity of the conclusions interviews

The different number of headings results from the length of the interviews and how specific the questions could be asked.

5.2 Thematic comparison

As mentioned above the tables with the summary of the thematic comparison and notes for every subheading are in the appendix.

Analysis and evaluation will follow in the next sections.

5.3 Numerical analysis of the headings

In this section a numerical analysis of the expert interviews is conducted. From the researcher's point of view of, the quantitative evaluation of the qualitative interviews makes sense to identify the main focuses of the interviews in the headings and sub-headings, in order to determine whether noticeable differences exist in the answers between the professional

positions of interviewees and to identify key responses. This analysis is done for all three interview topics customer segmentation, available software, and validity of the conclusion.

5.3.1 Numerical analysis – customer segmentation interviews

To evaluate the expert interviews, the researcher split the interviewees into three different groups. Every interviewee is a real expert in the field of customer segmentation, but they come from different industries, different regions, and have different positions. Some of them work at universities and carry out research activities in sales and marketing topics.

In total, the researcher conducted 14 interviews. Five interviewees work as CEO in SMEs, five others teach and research at universities, and six work as executives in sales or marketing. The count is sixteen because two interviewees work as CEO and teach at universities.

CEO	University Professor	Sales and Marketing
• Interviewee 1 • Interviewee 2 • Interviewee 6 • Interviewee 8 • Interviewee 14	• Interviewee 1 • Interviewee 2 • Interviewee 3 • Interviewee 4 • Interviewee 5	• Interviewee 7 • Interviewee 9 • Interviewee 10 • Interviewee 11 • Interviewee 12 • Interviewee 13

Table: 93 Positions Interviewees

As is apparent from Table 94, the researcher analysed 411 relevant comments from the expert interviews. This table shows how many quotes every interviewee has made. However, it is too early to say how relevant the comments are to answer the research objectives and research questions.

Also, this table shows how many comments on the various headings and subheadings were made. Therefore, the importance of the individual headings and subheadings can be determined later. This is useful, as described in Section 3.8.1, to identify the weight and priority of the interviewees and comments regarding customer segmentation as well as to find the right answers to answer the research questions.

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Heading	Sub-Headings	Interviewee 1	Interviewee 2	Interviewee 3	Interviewee 4	Interviewee 5	Interviewee 6	Interviewee 7	Interviewee 8	Interviewee 9	Interviewee 10	Interviewee 11	Interviewee 12	Interviewee 13	Interviewee 14	Total
General remarks on segmentation methods in SMEs	General remarks and comments regarding data		2	3	2	5	3	3	2		3	6	2	1	1	33
	Comments to effort, complexity and cost/benefit ratio	4	4		2		1	1		3	1	1	2	1	1	21
	General remarks on segmentation method	2	1	2	3	3	1					2	3	2		19
	How should a SME treat the customer	1	2		1		2		2			2	1	1	1	13
	Unconscious segmentation is pervasive	4	1		1		1	1				1		3	1	13
	Depends on B2B / B2C									2	1	1		1	1	6
	The method depends on corporate strategy and structure			1				1	1	1		1				5
Are depending their stage of growth different methods necessary?	New methods necessary if a SME enter a new stage		1	1	1				1	1	1	1		1	1	9
	Depends on company size	1		1	1	3						1		1		8
	Depends on the strategic perspective		1	1						2						4
	A SME has to find solutions	1		2												3
	General remarks to the heading			2	1											3
Do SMEs know the value of their customer?	Do not know customer value		1					1	1	1	2			2	2	10
	General remarks to the heading				2	1					1	1	4			9
	The calculation is too complex			2	1				2				1	1	1	8
	Do not know the monetary value	2		1	1		1		1					1		7
	SMEs know the customer value	1				1					1	1				4
Do SMEs know and use customer lifetime value?	CLV is too complex			1		1		2	2	1	1		1		1	10
	General remarks to the heading	1	1				1	2			4					9
	CLV has no advantage	1		1	1	1	1		1							6
	CLV is not used	1				1								1	1	4
	CLV is too imprecise	1														1
What are meaningful criteria to segment customers?	Quantitative criteria and sales figures are meaningful	4	2	2	1	4	1	7	2	4	2	1	4	1	1	36
	Other criteria not only quants and quals	3		4	2	1	2		2	3	5	5	3	1	2	33
	General remarks to the heading		1		3	1		2	2		1	6	1	3	1	21
	Qualitative criteria are meaningful	5	2		1	1	1	1	1	2						14
	Depends on branches, industries, products, etc.				2			3	1		3				2	11
Treat SMEs each customer equally?	Treat every customer equally	2	1		1	1	2	1	1	1	1	1	2	2	1	17
	Depends on B2B / B2C				1											1
	SMEs treat customer with gut feeling									1						1
Who should be responsible for customer segmentation? The sales or marketing department?	Sales should be in charge	2	1	3		1	1			2	1		1	1		13
	General remarks to the heading	1		1	1	1			2	1	1					8
	Both should be in charge			4					1			1			1	7
	Marketing should be in charge		3	1			1				1					6
Know and calculate SMEs customer potential?	SMEs do not know the potential					1			1	1						3
	Calculate customer potential								1			1		1		3
	General remarks to the heading					2				1						3
	SMEs know the potential									1						1
	Potential criteria	1														1
Plays customer loyalty a role in nowadays business life?	Customer loyalty play a role		1			1	3			1	1		1		1	9
	Customer loyalty play no role	1	1					3						2		7
	General remarks to the heading	1	1	2		1	1							1		7
	Depends on industry, branch or sector	1	1										1			3
	Depends on B2B / B2C		1													1
	Total	41	29	35	29	31	23	30	27	28	31	36	26	27	18	

Table: 94 Numerical analysis of the headings customer segmentation interviews

Table 95 shows the percentage distribution of comments per interviewee and per interviewee group. The yellow-marked interviewees are university professors, the blue ones CEOs, and the green ones executives from the field of sales and marketing.

Interviewee 1	Interviewee 2	Interviewee 3	Interviewee 4	Interviewee 5	Interviewee 6	Interviewee 7	Interviewee 8	Interviewee 9	Interviewee 10	Interviewee 11	Interviewee 12	Interviewee 13	Interviewee 14
9.98%	7.06%	8.52%	7.06%	7.54%	5.60%	7.30%	6.57%	6.81%	7.54%	8.76%	6.33%	6.57%	4.38%

Table: 95 Percentage of Interviewees customer segmentation interviews

In general, the comments are evenly distributed. Only Interviewee 1 with 9.98% and Interviewee 14 with 4.38% per cent are extraordinary. The green-marked sales and marketing executives made 43.31 per cent of the comments, the yellow-marked professors 31.63 per cent, and blue- marked CEOs 25.06 per cent. But the researcher also compares the average comments for the three groups, and the result shows that each professor made, on average, 7.73 per cent of the comments, while each executive and CEO made 7.25 per cent and 6.39 per cent of the total comments.

General remarks on segmentation methods in SMEs	110	26.76%
Are depending their stage of growth different methods necessary?	27	6.57%
Do SMEs know the value of their customer?	38	9.25%
Do SMEs know and use customer lifetime value?	30	7.30%
What are meaningful criteria to segment customers?	115	27.98%
Should a company treat each customer equally?	19	4.62%
Who should be responsible for customer segmentation? The sales or marketing department?	34	8.27%
Know and calculate SMEs customer potential?	11	2.68%
Plays customer loyalty a role in nowadays business life?	27	6.57%

Table: 96 Amount of comments per heading customer segmentation interviews

Table 96 shows where the interviewees put the focus on. The heading 'What are meaningful criteria to segment customer?' with 115 comments and the heading 'General remarks on segmentation methods in SMEs' with 110 comments stand out clearly, both with over 25 per cent of the comments.

This domination of these headings will be particularly evident in the detailed analysis of the expert interviews. This detailed analysis of all comments can be found in the appendix.

In the researcher's opinion, it is important to keep the different weighting of headings and subheadings in mind. If researchers focus only on the comments or statements, the analysis of the interviews can go wrong.

In the next section the researcher will do the numerical analysis of the expert interviews regarding the available software.

5.3.2 Numerical analysis – available software interviews

For interviews regarding the available software, the interviewer conducted five interviews with experts. As described in Section 3.8.2.3, many interviews were repeated as long as the answers to the questions asked did not recur. Five of the expert interviews were held on available software. The experts were CEOs or sales and marketing executives. Interviewee 1 teaches at a university in addition to his role as CEO.

Before the interviews were conducted, the interviewees got a list with Internet links from the Google search and an Excel version of the researcher's segmentation model. This was necessary to carry out a comparison and evaluation.

From these five interviews, four headings, with a total of 13 sub-headings, could be found. As the following table shows, Interviewee 1 has by far the most comments on the topic.

Heading	Sub-Headings	Interviewee 1	Interviewee 6	Interviewee 7	Interviewee 8	Interviewee 11	Total
Awareness of the companies from the Google Search	Which companies are known?	1	1	1	1	2	6
	Bain Consultancy	1	1			1	3
	Awareness of the available software	1		1	1	1	4
Could one imagine a collaboration with the companies in SMEs?	Which company comes into question?	6	3	2	2		13
	Blue Sheep, Optimove, and other	2			1	1	4
	Reasons why the software would not be used		5			1	6
Advantages and disadvantages compare to Salesforce, Oracle, SAP and Microsoft	Advantages	1		2	1		4
	Disadvantages	2		2	2		6
	Advantages Salesforce, Oracle, SAP and Microsoft	4	1		1	2	8
	Disadvantages Salesforce, Oracle, SAP and Microsoft	2	3			2	7
Advantages and disadvantages of an 2 dimensional Excel based segmentation model	Advantages	4	2	1	3	2	12
	Disadvantages		1	1	2	2	6
	General comments			1			1
	Total	24	17	11	14	14	

Table: 97 Numerical analysis of the headings available software interviews

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Interviewees 6, 7, 8, and 11 have given approximately the same number of comments.

Interviewee 1	Interviewee 6	Interviewee 7	Interviewee 8	Interviewee 11
30.00%	21.25%	13.75%	17.50%	17.50%

<div align="center">

Table: 98 Percentage of Interviewees available software interviews

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The selection of experts was based on their knowledge of the subject, and there should be a balance between the positions within the company.

The following table and figure show on which headings most comments were made.

Awareness of the companies from the Google Search	13	16.25%
Could one imagine a collaboration with the companies in SMEs?	23	28.75%
Advantages and disadvantages compare to Salesforce, Oracle, SAP and Microsoft	25	31.25%
Advantages and disadvantages of an 2 dimensional Excel based segmentation model	19	23.75%

<div align="center">

Table: 99 Amount of comments per heading available software interviews

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The detailed analysis of all comments can be found in the appendix.

In the next section the researcher will do the numerical analysis of the expert interviews regarding the validity of the researchers' conclusions of this DBA thesis.

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5.3.3 Numerical analysis – validity of the conclusions interviews

These expert interviews are used to explore the emerging validity of the conclusions. The researcher interviewed four experts on this subject, two of them were CEOs and the other two sales and marketing executives.

Heading	Sub-Headings	Interviewee 1	Interviewee 2	Interviewee 7	Interviewee 11	Total
Why changes take place and where do the experts expect challenges in implementing this model in SMEs?	Customer Relationship Management	1				1
	Quantity of segments	1				1
	Change Management and Process Management issues	2	1	2	1	6
	Meaningfulness is important		2			2
	Acceptance issues		3	2	1	6
	Key Account Management	1				1
	Software issues	1		1		2
	Current software	1				1
	Potential as additional criterion	2				2
	Expectation	1				1
	Guidelines issues		1			1
Description: Why customer segmentation, based on simple software, would still make sense?	Cheap internet solution	1		1		2
	It must be simple			1	1	2
	What kind of software?	5		1	4	10
	General comments				1	1
How can the presented model be improved?	MS Excel solution	1		1	1	3
	Three dimensions		2			2
How many dimensions should a customer segmentation method have and why?	Two dimensions	1	1	1	2	5
	More dimensions means more effort	1			1	2
	General comments	1				1
What are the most adapted segmentation models in SMEs?	ABC analysis	1	1	1	1	4
	Other		1			1
	General comments		1			1
What effort, in euros, would be appropriate for the implementation of customer segmentation in SMEs?	MS Excel		2	2		4
	General comments	1	3		1	5
Available data for customer segmentation in SMEs and is this data sufficient?	Sales and contribution margin	1		1	2	4
	General comments	1	1		1	3
Guidelines for customer segmentation	Guidelines are necessary	2	2			4
	General comments	1		2	1	4

Table: 100 Numerical analysis of the headings validity of the conclusions interviews

The interviews yielded eight headings with 29 sub-headings and 81 notes.

Interviewees 7 and 11 are sales and marketing executives, while Interviewees 1 and 2 are CEOs and professors at universities. This composition has the advantage that it can illuminate both the practical and the theoretical sides of the conclusion.

Interviewee 1	Interviewee 2	Interviewee 7	Interviewee 11
32.10%	25.93%	19.75%	22.22%

Table: 101 Percentage of Interviewees validity of the conclusions interviews

The detailed analysis of all comments can be found in the appendix.

5.4 Narrative analysis

In the narrative analysis the researcher is going to analyse any subheading and every heading. This analysis includes a conclusion of the comments and the expressive comments from every expert group.

The thesis shows only the results of the narrative analysis. The entire narrative analysis can be found in the appendix.

5.4.1 Conclusion and Findings - Expert Interviews customer segmentation

The insights, findings, and the conclusion gained from the analysis of the first of three different interviews will now be presented. As described above, the researcher generated 10 headings with 49 subheads from the interviews. All the interviewees had useful and meaningful comments regarding the research questions and the research objectives. The headings and the subheads reflect these comments. However, just like customers, some of whom are more valuable than others, the interviewees also had their favourite topics. Figure 83 depicts these. In the figure, two headings particularly stand out, both with more than 25 per cent responses. The others have less than 10 per cent and three even have less than 5 per cent responses. The researcher considered this weighting.
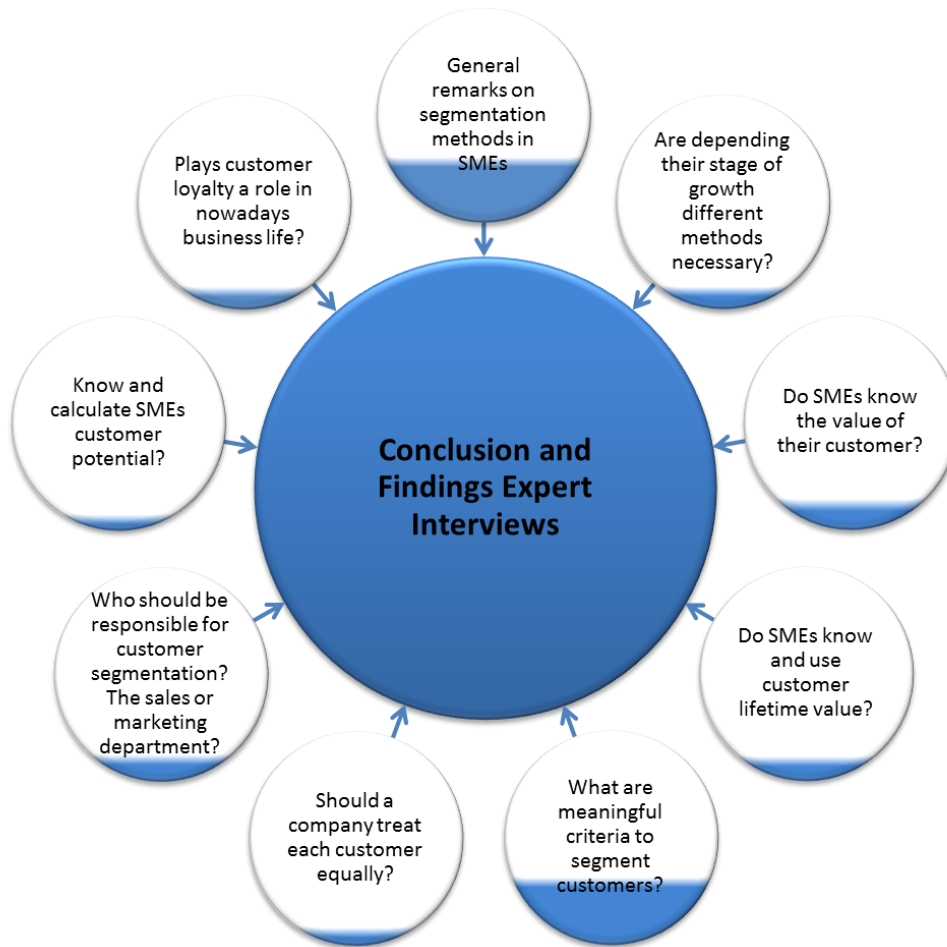
Figure: 83 Conclusion and Findings - Expert Interviews

The researcher, thus, combined the conclusions drawn from the ten headings to draw one conclusion from the expert interview. The findings are also a part of the conclusion.

The experts agreed that SMEs need to carry out a feasible, working, and acceptable segmentation of customers. Another point on which the experts agreed was that if an SME wants to succeed in its business and if it is looking for a fruitful customer relationship, it cannot treat all its customers in the same way. This means that some unprofitable business relations must be disrupted or severed, or a customer must be treated in a different way, e.g. with fewer visits and more online support and service.

An unconscious segmentation, which area sales managers traditionally do with a 'gut feeling', is no longer enough or contemporary. A micro company, with only a handful of customers, can work and survive with personal experience and gut feeling. However, if the company grows, it has to take a more analytic approach to do the segmentation. The kind of segmentation method the SME will use depends on several factors. The first is the stage of

growth, which means in this case not only the turnover, the number of employees, or the production sites but also the number of customers. For instance, a normal ABC analysis based on turnover may not be enough for an SME with several thousand customers and a turnover of more than EUR 70 million. However, it could be sufficient for a company with the same turnover but only 50 customers. Another factor is whether the SME works with B2B or B2C or both customer groups, this influence the decision which segmentation method should be used significant. These groups have different needs and behaviours, and hence, must be treated in different ways. In fact, if the company caters to both groups, this should be the first segmentation criterion. Later, each group could be segmented differently. Additional criteria could be the turnover, the contribution margin, the branch or industry, whether it is national or international, buying habits, or whether the company prefers quantitative or qualitative criteria. The list can go on, but, in the end, each SME has to make its own decision on the basis of the company strategy and objectives.

However, it must be ensured that all the necessary data are available or can be generated for the selected segmentation method. This is important because if the SME has to start gathering new data or buy secondary data from market research institutions, a good cost/benefit ratio no longer exists. This could also happen if one has the data but the chosen method is too complex. That is because the resources in the sales department saved by customer segmentation are lost in the process. This may happen if the SME delegate one employee only for the segmentation, or that the required data is too complex to generate. Suppose that one needs all direct costs of a customer. The calculation of these costs is very complex for most SMEs. Some costs cannot be allocated exactly and the SMEs work with indirect costs, which may distort the significance of methods like the CLV. The results will be imprecise or incorrect, and in the worst case, the area sales manager will not trust the method and go back to the gut feeling and experience. This could also happen if the SMEs decide to use the share-of-wallet or customer potential methods.

The interviews revealed that many SMEs do not know the customer potential because they lack the knowhow as well as the data to calculate it. Only one expert explained that his company calculates the potential for each customer, but the calculation method that was explained was rough and superficial.

Hence, the customer value is not calculated in most cases, and CLV does not matter at all in SMEs. Often, SMEs know whether a customer is valuable or not, but this knowledge does not have a monetary basis; it is rather a gut feeling. Regarding CLV, the experts saw no advantage for SMEs in calculating this key figure. That is because if an SME cannot calculate the normal customer value, or if it is too complex for them to do so, it makes no sense for them to waste precious resources on the CLV. It is more important to take a look at the cost/benefit ratio of choosing a segmentation method. And, for SMEs, this ratio is very low in the case of the CLV because the company will need a lot of data and the calculation will be imprecise. Besides, too many factors will play a role that the SMEs cannot influence.

However, the CLV plays a minor role in B2B businesses and under some circumstances customer loyalty as well. In B2B the SME has to build trust, this is the main emotion. Some hard facts, including price and delivery time, punctuality, order completion, and so on, are very important in B2B. If these hard facts remain satisfactory over a certain period, the customer trusts the SME and remains loyal. But additionally the price is often the key in project business, especially if the SME delivers to international companies with a globalized purchasing department.

The experts showed no consensus about who should be responsible for customer segmentation. In most SMEs, the sales department leads the position because it dominates the company. The marketing departments are usually smaller in comparison and have less decision-making power. Some experts, however, felt that the marketing department should get the responsibility, and yet others believed that both departments must be jointly responsible, maybe in the form of a panel. The most important issue is that there should be no turf wars. This would again cost unnecessary resources in both departments, which had better be invested in customer visits and support.

They felt that end responsibility is not important, but one point must be ensured. Handling notes must be created for each segment and every employee must follow these. However, it will be difficult to establish these notes and rules because over the years, the area sales manager has treated the customer by gut feeling and experience. Some exceptions may be needed, and the segmentation method or the responsible person must be flexible enough to accept these exceptions. In any case, the area sales manager has to inform the manager in advance.

As a final note, it can be said that there is no blueprint to segment customers in SMEs. Too many criteria are important and these can influence the decision regarding the kind of segmentation method needed. However, a simple method like the ABC analysis or a 90 per cent solution is much better than equal treatment of every customer.

5.4.2 Conclusion and Findings - available software interviews

The second interview series was conducted to confront the experts with the results of the Google search and to ask for their opinions in this regard. From the five interviews, four headings with 13 subheadings and 80 comments were collated. Most of the comments pertained to the subheadings, 'Which company comes into question?' and the 'Advantages of a two-dimensional Excel-based segmentation model'. The interviews made it clear that the experts will not use any of the software solutions found online except Salesforce, SAP, Oracle, and Microsoft. The main reasons behind this include the high risk in the field of data security and the unprofessional impression of the other companies. When using the solutions thrown up by the Internet, the SMEs, therefore, have a high risk, which is difficult for them to calculate. The experts see the advantages of a two-dimensional Excel-based segmentation model mainly in the fields of simplicity and user-friendliness. These results clearly show that a simple and favourable segmentation model is necessary, especially for the SMEs, but this is not necessarily found on the Internet.

5.4.3 Conclusion and Findings - validity of the conclusions interviews

The third series of expert interviews was carried out to confirm the results of the thesis and the resulting model. For this purpose, experts from the field of entrepreneurship had been selected, since the researcher believes that they could best assess the model and its practical suitability. The researcher conducted four interviews on this subject, resulting in eight headings with 29 subheadings and 81 comments. Almost 30% of the comments addressed the heading 'Why changes take place and where do the experts expect challenges in implementing this model in SMEs?', which was the main theme of the interviews. The narrative analysis shows that the new model definitely needs guidelines. Also, the implementation must be careful so that the existing customer relationships are not damaged. The acceptance of the employees is enormously important for a successful implementation. In order to increase the acceptance, the model should be user-friendly and easy to understand. This is given with the

two-dimensional model based on Excel proposed by the researcher. Also, the experts believe that it is beneficial that Excel is already used by most companies, thereby, significantly reducing the cost of implementation. But the experts mentioned as well that a larger company will not fall back on an Excel if they already use a different software like SAP or Salesforce. The various criteria, the number of segments, and whether a KAM should be implemented depends on various factors and must be decided individually by each company. According to the experts, most companies expect higher sales and contribution margins from customer segmentation.

This section explained how the researcher gathered and analysed the qualitative interview data. The results of the three interviews and the quantitative data will be compared in the next section.

6   Comparing and relating the findings of expert interviews and quantitative data

As described on page 160, the researcher used the convergent parallel mixed-method design because the analysis of the existing quantitative data and of the expert interviews has the same weight in this study. In this chapter, the researcher has compared and related the different findings of the analysis. In Section 6.1 the researcher explains the limitations of this study. The interpretation or conclusion of the findings will be explained in Section 6.2, which deals with conclusion of data analysis.
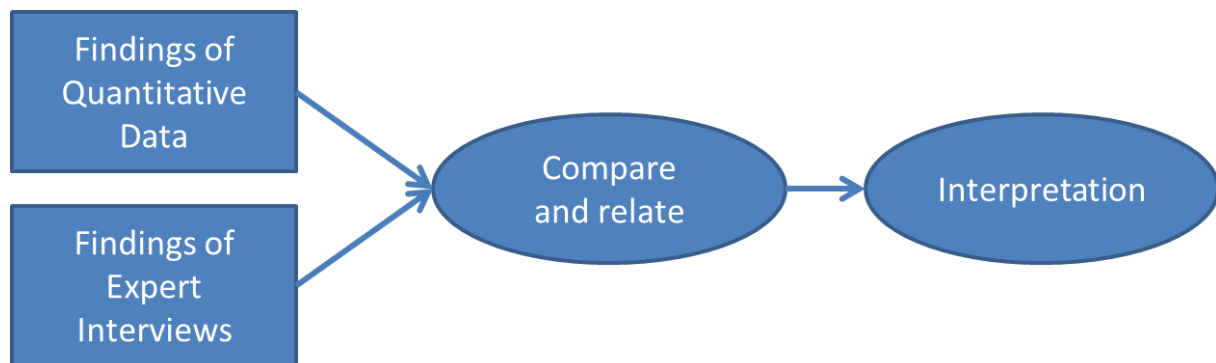
Figure: 84 Comparison and relating of findings

From the conclusions gleaned from the study of a German SME (cf. p. 244), the secondary data (cf. p. 288), and the expert interviews from the first interview series, the researcher has selected the important headings, as shown in Figure 85. The dark-blue inner circle shows the headings of the findings and conclusions of the secondary data analysis, while the light-blue outer circle shows the findings of the expert interviews.

As explained above, the findings of the secondary data and the expert interviews have the same weight, but the different headings have different weights for the conclusion.

The findings of the interviews and also the secondary data analysis could not be related to each other. That is because the statements are unique. For example, the statement 'No blueprint' came from the expert interviews. The secondary quantitative data could neither confirm nor refute this statement because it was provided by one SME and hence, could not be compared with data from others. These topics are nevertheless important for the final conclusion, and to answer the research questions and research objectives, they will be considered in Chapter 7.

A clear finding of the interviews, the secondary data, and the literature review was that SMEs can choose from totally different segmentation methods. On the one hand, there are different

methods like RFM and other scoring methods, share-of-wallet, and methods based on customer potential. These methods need different types of customer information and data. The experts argued that it is often difficult for an SME to generate this information. In the analysis of secondary data, the given dataset has a lot of customer information, but, particularly with a huge number of customers, it is difficult and/or time-consuming to generate this data. The SME has to consider the cost/benefit ratio, too.

Figure 85 depicts all 24 findings of the interviews and the quantitative analysis.

Figure: 85 Findings of interviews and secondary data

On the other hand the CLV is also quite complex to calculate, and the experts saw no advantage for an SME to do it because the effort is too high. One reason for this is the

inaccuracy over a certain period. The SME does not know how the customer will develop in, say, two or three years. The researcher found this out by analysing a German SME. The experts confirmed that this is also the reason why methods to judge customer potential generally make no sense for an SME. The data shows exactly how different the results of the estimated and calculated potential are (cf. p. 219). Of course, both results could be false. The values can, at best, be approximate.

Nonetheless, the data and the interviews point out that there is a need for proper customer segmentation because an SME cannot treat all customers equally, and there must be clear handling notes for each segment. Otherwise, as Table 50 shows, the area sales manager may visit many unprofitable customers and target segments with limited resources, which will be a waste of time and money. It is especially important for an SME with a huge number of customers—as in the secondary data—to economize the resources. In this context, the sales and/or marketing department of an SME has to decide how many segments they need and whether some key accounts enjoy extra support and conditions, e.g., more visits. In line with this, the experts stated that in addition to price, delivery terms, and delivery time, customer visits are still one of the best methods to get loyal customers.

There are points where a differentiation between B2B and B2C is necessary, e.g. customer relationship management. Other points are, for example, the kind of segmentation method and criteria the SMEs will use. The data analysis and interviews make it clear that as mentioned above, the segmentation method depends on the available data and branch—e.g., whether the SME works nationally or internationally and so on. The chosen segmentation criteria are certainly connected to these topics. This reflects the data analysis in Section 4.3. The researcher compared the methods ABC 80/20 and ABC 60/90 based on the turnover, and afterwards, on the contribution margin. In general, it cannot be said which is the better method because this depends on too many factors, e.g. the company and the sales strategy. But, in this study, the 60/90 method, based on the contribution margin, showed significant advantages (cf. pp. 252–259). Whichever method is used, the results will have huge differences in terms of customers per segment, average turnovers, and contribution margin, which, of course, have an effect on the number of customer visits.

Another point on which the experts agreed is that before an SME further relies on gut feeling, a 90 per cent solution is much better. This 90 per cent solution also applies to the complexity

of the method and the available data. Another point on which there is an agreement is a two-dimensional method, which is more expressive than a one-dimensional method. This and the segmentation model developed by the researcher were confirmed by the second expert interview series.

6.1 Limitations

This section shows the methodological limitations in the analysis of the literature review, the expert interviews, the quantitative data, and the mixed-methods approach in this thesis.

6.1.1 Limitations literature review

There are limitations in both the literature review in general as well as this work. The limitations begin with the definition of the search strategy; this includes search terms as well as the places in which the search has to be performed (Ritschl, 2016). This may include online databases (for example: Google Scholar or Business Source Complete) as well as physical libraries. In addition to this selection, the selection of relevant search terms must also be made. An unstructured and unreflected search should be avoided. Literary research does not suggest that one can enter the title of the work on Google Scholar or Business Source Complete, and that this course of action will enable one to record the first search results. Firstly, the keywords used are often not meaningful and relevant articles possessing names that have not been searched for might exist. Secondly, such search engines focus on scientific relevance only to a limited extent. The number of citations is often used as an indicator; thus, newer but more relevant works (with fewer citations) will appear among later search results. Thirdly, such a search does not provide any real knowledge of its subject (Ritschl & Weigl, 2016). Instead, it is necessary to systematically vary the search terms and to specifically search for relevant conferences / journals / workshops of the previous years. A so-called 'snowballs' system is also appealing. In addition, the use of different databases is useful (Häder, 2015). In this DBA thesis, the researcher has defined his approach in the chapter's search strategy and selection criteria.

A further point includes the inadequate consideration of basic literature: in literature research exclusively via Internet search engines, relevant standard works (such as books) are usually not taken into account (Baur & Blasius, 2014). The researcher tried to prevent this issue by conducting intensive research in physical libraries. While searching in these libraries, however,

it should be considered that these resources are not always up to date, and in some cases, new editions exist that are not currently available.

The valuation of the literature can be seen as a further limitation, which can be performed by the number of citations as noted above—but this should not be the only criterion. Possible further criteria include the author's awareness, the relevance of the topic, or the relevance of the journal where the article was published.

In this work, the researcher also conducted a Google search to find relevant and existing software models. Again, there were limits to the search terms. This resulted in many segmentation models that were not relevant for this work. A filter to consider only the relevant models was also included in the literature review.

6.1.2 Limitations expert interviews

Qualitative research with expert interviews has certain limitations as well. It was not easy to find certain real experts in the field of customer segmentation among the SMEs. Firstly, in the literature was a disagreement about who was an expert and who was not (Bogner, Littig, & Menz, 2009; Kassner & Wassermann, 2005; Deeke, 1995) for this reason the researcher determine this in Section 3.8.2; secondly, this research was self-financed. Thus, this means visiting experts from foreign countries (excluding Switzerland) was no opportunity. With regard to these points, the researcher decided to conduct interviews with experts from the professional (top management among SMEs) and the academic field (researchers from other universities) as well. One result of this decision proved to be another constraint as all the interviewees were real experts, but all of them possessed different expertise and knowledge.

The interview language was German as, although most of the SME top managers understand the English language well, they were not ready or willing to do an interview in a foreign language. A known disadvantage of expert interviews also existed in the study: it cannot be ruled out that other researchers came to different conclusions when they analysed the interview records and transcripts, because subjectivity and biases play a major role as well. Rajendran (2001) mentioned according subjectivity and bias of qualitative research of '… the data must go through the researchers mind before it is put on paper, the worry about subjectivity arises' (Rajendran, 2001, p.1).

Expert interviews with mainly open questions were used to gather data. The interviews were audio-taped and transcribed, but audio-tapping or the employment of an audio recorder can influence the atmosphere of the room as well as the relationship between the researcher and the interviewee (Easterby-Smith, Thorpe, & Lowe, 2002; Saunders, Lewis, & Thornwill, 2009). To avoid this issue, the researcher used a smartphone because a smartphone is commonplace item today (Gläser & Laudel, 2010).

However, the analysis of interviews is always subjective, and Kromrey (2009) argued that the aspect of 'reliability' has to be rather critically regarded. This is because an interview is a suspensive procedure that directly takes place between two or more humans and is based on verbal language. Hence, it cannot be assumed 'that the same interview conducted with the same person at a different time, or that the same interview conducted by another interviewer with the same person, would bring the same result' (Kromrey, 2009, p. 301).

The researcher tried to create equal interview conditions for every interviewee, but, in addition to the basic function of the interviewees' willingness to respond, it is important to understand the interview as a reactive measurement method. Therefore, possible distortion effects and influences by the interviewer can transpire during an interview. These factors could include, for example, nationality, gender, language, environment, or atmosphere (Stier, 1999).

Creswell (2009) pointed out another four limitations by using qualitative interviews as a type of data collection.

- Filtered view of the participants

This means that not only does the researcher act subjectively but the interviewee also draws on his subjective perception of the research topic.

- Natural field setting

This means that the statements change when the interviewee is in another familiar environment.

- Researchers presence

The presence of the researcher influences the interview. This means that in another interview method (for example: over the telephone or in writing), the statements would change.

- Different articulation

People do not articulate their words in the same way. They use different words and statements or articulate at different levels. Thus, statements can be misinterpreted.

Another limitation that Creswell mentions is the fact that performing interviews requires many resources (time and money). These expenses are incurred throughout the complete interview process, including the preparation, the conduction, the transcription, and the analysis. Additional disadvantages of qualitative research are mentioned on page 155.

6.1.3 Limitations quantitative data

Another methodological limitation of this study lies in the existing quantitative data. This existing data, in fact, contains information from approximately 10,000 different customers in three consecutive years, but only from one German SME. From his personal experience the researcher believes that this SME is exemplary—though it is only one company. It is impossible to get other quantitative customer data which possesses the same quality because this kind of data is absolutely confidential. This issue has an influence on the choice of the research method because the researcher has finally decided to use a mixed-methods approach to reduce this risk of false interpretation. In addition to the existing quantitative data, the researcher performed qualitative research through expert interviews.

As mentioned in Section 4.3, the analyses and the findings of quantitative customer data strongly depend on their source, the customer type (B2B or B2C), the type of goods (FMCG or investment), the type of industry, the region, and so on. Thus, related secondary data is occasionally not available or accessing available data is difficult / impossible. Further limitations include the difficulty in understanding the context of a phenomenon and the fact that the data may not be robust enough to explain complex issues. The last two points can be excluded for this work. Additional disadvantages of quantitative research are mentioned on page 153.

As a result, if another researcher conducts a study of customer segmentation, he / she could come to a different conclusion because of different quantitative data.

6.1.4 Limitations mixed method approach

The mixed-methods approach chosen by the researcher also has limitations, as the first can be mentioned here. People are attracted by the fact that they have more data and a variety of sources; yet, compiling data is the ultimate ambition of this method.

This leads the researcher to another limitation of using the mixed-methods approach; in this DBA thesis, it became clear that a researcher who decides to use this method must master several different research methods. Only in this case, can the researcher decide on the kinds of methods he/she wants to mix. Only when this selection is complete can the researcher choose between the six major mixed-methods research designs (Section 3.6.4.3).

While deciding which design one chooses, a researcher has to consider two important points. As these decisions can influence the outcome of the research, they should be chosen carefully.

- Sequence
    - Simultaneously
    - Qualitative - Quantitative
    - Quantitative - Qualitative
- Evaluation
    - Same evaluation
    - Higher qualitative evaluation
    - Higher quantitative evaluation

In terms of sequence, the researcher consciously selected a simultaneous analysis in order to be able to work in parallel and not to be biased. In terms of weighting, the researcher decided on an equal weight of qualitative (expert interviews) analysis and quantitative (company data) analysis. The mixed-methods research design is very complex; this means that the approach is very time-intensive and can lead to higher costs than other research methods (Kuckartz, 2014).

6.2 Conclusion - Comparison expert interviews and quantitative data

The main conclusions drawn from the analysis of a German SME, secondary data, and expert interviews are that, except for SMEs with only a few customers, e.g. less than 20, customer segmentation is a must because every customer cannot be treated in the same way. The next most important point is that there is no blueprint. It makes no sense to copy the segmentation

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method and the corresponding criteria from another SME. Even if the SME copies the method from a direct competitor, there are likely to be differences in the strategic focus and company objectives. If one SME focuses on the turnover and another on the contribution margin, it will not be helpful to copy the method.

However, before an SME comes to that point, they have to accept that gut feeling and personal experience are no longer sufficient. These are good and important feelings in some cases, but a company should not take strategic decisions on that basis.

SMEs should only focus on the methods for which the data is available or easy to get. That means the SME has to keep an eye on the cost-, and respectively, effort/benefit ratio. This may mean that in some cases, the 90 per cent solution is enough. In most cases, it is better than nothing, or a method in which the effort does not burn the benefit.

A simple solution could be an ABC analysis based on the turnover or contribution margin if the company chooses one of these criteria, or even better, both. By choosing both, they could create a two-dimensional method, which has a great advantage. It ensures that the SME is not only segmented on the basis of the turnover because customers with a high turnover do not automatically create a high contribution margin. This becomes clear from the data (cf. pp. 260-264) and the interviews. The RFM method, share-of-wallet, scoring methods, or the CLV play no role in SMEs for various reasons. First, as mentioned above, either the data is unavailable or it is difficult to get. Second, the method itself is too complex or the result, too imprecise. Third, the SME does not calculate or does not know how to calculate the value of the customer. Fourth, there is no advantage because the SME uses such a method instead of using a simple and feasible one. The expert interviews have confirmed this.

If a company grows—it does not matter whether in terms of the turnover or the number of customers—it should change the method. The experts confirmed this, but the secondary data could not because the research period was too short to find significant growth in the turnover or the number of customers, which could justify a change.

The data analysis also made it clear that the total number of customers and those per segment correspond to the number of customer visits per area sales manager and per day. The data analysis, done by the ABC method, concluded that most visits to B customers and all visits to C customers are unprofitable. Taking into account the number of visits a German SME invests to such customers, this is not only a waste of time and resources, but also a waste of money.

Some visits to such customers could not be prevented, but the extent to which it is presented in Table 50 is too much.

In some cases, these visits are feasible because of the sales area. If a C customer stays very close to an A customer, the area sales manager could and should visit him. In many cases, they call and visit such unprofitable customers though the latter do not have any strategic value for the company. The area sales manager has to focus on profitable and useful customers. An SME should think about creating a segment with top or key accounts, as mentioned in Section 4.3.2 and the KAM Section 2.4. These customers will enjoy special support and conditions because they generate the highest turnover and, in most cases, the highest contribution margin in euro though the percentage is around 10 per cent lower. To ensure that the area sales manager visits the right customer, the researcher strongly recommends that the SME write down customer handlings notes. This handling note will regulate the intervals at which particular customer segments have to be visited and the conditions that will apply to this segment.

The different points from the conclusion will be integrated in Chapter 7 to answer the research questions and to achieve the research objectives; they will also demonstrate the contribution to knowledge and practice.

7 Summary, findings, further work, and personal reflection

This chapter analyses the findings and conclusions from the previous sections. Consequently, it concludes the research thesis regarding customer segmentation in SMEs. Section 7.2 is concerned with the findings, along with the individual research objectives and research questions. The researcher has discussed the contribution to knowledge in the context of the Research Objectives, and Section 7.4 will present the added values for practice. At the end of this section and the thesis, the researcher will underline the limitations of the research and finally, make a personal reflection.

7.1 Validation of hypothesis

The hypothesis of this study was: 'Customer segmentation methods/models are often too complex for SMEs' (cf. p. 139). This hypothesis could be confirmed on the basis of the statements of the experts and the findings of the literature review (cf. p. 126; pp. 300-305; pp. 306-309). Based on that, the researcher suggests the use of a two-dimensional ABC segmentation method. This method will be explained in more detail in Section 7.2.2.3 and it was confirmed by experts in Section 5.4.1.

7.2 Findings

To answer the Research Questions, and to find a solution to the research objectives defined in Section 3.2, the researcher has provided theoretical information on customer segmentation in the literature review. The main findings are provided in the next section.

7.2.1 Literature review

7.2.1.1 Useful requirements

In Section 2.9 (cf. p. 121), the researcher pointed out, from personal experience, seven useful requirements that a meaningful segmentation method for SMEs should fulfil. However, as shown in Figure 29, none of these methods fulfils all seven points. The RFM cube fulfils five out of seven, but at first glance, this is not enough. Regarding the RFM cube, some other factors play a role as well, but these issues have been discussed in Section 2.7.4. These disadvantages are not only true for the RFM cube; other methods have the same weaknesses.

7.2.1.2 Number of segments

In the literature review, the researcher found out that only Homburg, Schäfer, and Schneider (2012) mentioned the optimum number of segments and created a theoretical solution, which Figure 25 has shown. It is clear that one or two segments are not enough because customer segmentation needs more distinctions. An issue for SMEs is to find out the right number of segments. If there are too many segments, an SME can be preoccupied with too many details. The literature has shown that it is difficult for an SME to create the optimal number of segments.

7.2.1.3 Complexity

As mentioned above, finding the right number of segments is difficult because it depends on many factors. Dealing with all of them is very complex for an SME. The complexity also plays a role in finding the right method. On the one hand, methods like CLV, RFM cube, or share-of-wallet are complex to calculate. On the other, the customer information needed is difficult to obtain. In the worst case, both are true. Especially in SMEs, the cost/benefit ratio is quite important and probably more important than in big companies or multinational corporations (MNCs). This leads the researcher to the next important point.

7.2.1.4 Focus on SMEs

There is no method to focus on SMEs or the stage of growth of a company. Not all the different methods described by the researcher deal with this issue, and the reason for this is still uncertain. At this moment, one can draw only the following conclusion: if a method is suitable for an SME, it is due to the complexity and data requirements of each method.

7.2.2 Research objective

To systematically approach the research purpose from the four research questions, five research objectives have been derived. The Methods and Methodology section explained why the researcher updated the research objectives (cf. p. 216).

Through the entire study, the researcher sought the conclusions to reach these research objectives.

7.2.2.1 RO1: To assess the current state of customer segmentation analysis in SMEs

In Section 4.2, the researcher analysed a German SME with respect to customer value, potential, allocation, and segmentation. This analysis revealed some valuable findings that are important for further research.

The analysed SME works with two different models to assess customer potential. This has strong disadvantages because the results, as shown on page 219 (Figure 53), are very different. This misjudgement has a considerable influence on the processing of customers. Thus, from the researcher's perspective, it is better to work with only one method. In this case, it was the estimated potential method.

The analysis of a German SME showed the same result (cf. Section 4.2), but the conclusions must not to be applied to all SMEs because it depends on the size of the firm and the region. The sales teams of the analysed SME work in heterogeneous regions—economically strong as well as weak. The researcher found out that if this is the case, SMEs should not segment customers in the same way. If the economic circumstances and the geographical conditions are different, both the customer and the area sales manager have some disadvantages in the weaker regions, e.g. a lower level of infrastructure and less economic power (cf. p. 244).

The next point, customer visits, is derived from this perception. This SME has a fundamental issue regarding the average visits per day and the kind of customers the area sales manager visits. Within the company, there are already major differences among teams or among sales managers, but there is another huge difference—with the industry average (cf. pp. 236–244). The quantitative data and the expert interviews confirmed that most SMEs do only a one-dimensional segmentation, but the researcher strongly recommends at least a two-dimensional method. The consequences of a one-dimensional method have been explained in Section 4.3.4 (p. 260). As an example of the current state, the researcher has given a detailed description of the findings regarding a German SME in Section 4.2.5.

7.2.2.2 RO2: To identify meaningful criteria to segment customers in SMEs

A finding of the expert interviews was that the segmentation criterion depends on many circumstances. However, before deciding on the criteria that will be useful to segment customers, the SME should know which data is already available. This is important because it

is a huge effort to generate new KPIs or get new customer information, which, in turn, means additional costs.

Another result derived from the interviews in Section 5.4.1 and also from secondary data analysis in Section 4.3.10 is that estimations, gut feeling, and experience are not the best advisers. In contentious decisions, they can tip the balance, but they should not act as the basis for the decision.

An initial choice an SME has is to decide between quantitative and qualitative segmentation criteria. Each choice has its advantages and disadvantages, but this decision, too, depends on many factors:

- What kind of data is already available? Is it more quantitative or qualitative?

- What kind of business is the SME into? B2B or B2C?

- Does the SME mainly deal in project business, investment goods, or FMCG?

- Who are the customers? Other SMEs or international groups?

- Does loyalty play a role in the SME's business?

This is only a small abstract of the questions SMEs have to ask themselves. These will help an SME come to a solution, e.g. that only quantitative data are not meaningful enough, that they should use a mix of both quantitative and qualitative criteria. In some cases, e.g. if the SME has a large number of B2B customers, it could be the best solution, but the different criteria should be in a reasonable relationship to each other and in line with strategic objectives.

In general, and confirmed by the experts, a two-dimensional segmentation method is very helpful for comprehensive customer segmentation. So, the SME should not only use only one criterion, like turnover, but also a second one, for example, the contribution margin. As mentioned before, if an SME chooses more than two criteria, the calculation could be too complex, e.g. an RFM cube (cf. p. 98). In addition to these general decisions, many other criteria could be used. Any of the following criteria makes sense, depending on the circumstances.

Criteria	Situation
Demographic criteria	Retail business: To know which group of customers buys the products so that specific marketing activities can be targeted towards this group
Branch or industry	Engineering business: To identify customers from sunrise sectors, e.g. renewable energy
Region or area	FMCG retail business: To identify strong-selling shops
Customer size	Machine industry: To identify key-account customers by size
Amount of customer	Retail business: To analyse how many customers buy a specific product
Turnover or contribution margin	Machine industry: To identify key-account customers by monetary KPIs
Customer potential	Project business: To find out the customer with the greatest potential
Number of deliveries, ordered positions and returns	E-commerce: To analyse which customer caused the highest logistic costs
Effort (e.g. time, sales, or resources)	Project business: To identify customers with an above-average effort for the SME
Relationship with the customer	Engineering: How is the SME's relationship with the customer? Can it use the customer for a showcase project?
Customer touch point	Retail business: Which touch points are the customers using?
Sales channel	Retail business: Which sales channels are the customers using?
Customer loyalty	Project business: To analyse which customer is loyal and who is a switcher.
Share-of-wallet	B2B retail business: What is my status vis-à-vis the customer? Is the customer dependent on the SME and can the SME archive higher sales prices?
NPS	E-commerce: To find out whether customers are satisfied with the SME and whether they would recommend it.
Customer Lifetime Value	B2B retail business: To identify the net profit attributed to the entire future relationship with a customer

Table: 102 Additional segmentation criteria

Sometimes SMEs struggle to find the right criteria because departments or managers differ in their opinion about the most important criterion or simply because they lack the knowhow to find the right one.

Finally, the researcher came to the conclusion that one cannot specify meaningful criteria in general. Every SME has to find the best and most meaningful criteria for itself because too many different parameters play a role in an SME. For example, if the SME does B2C retailing business, demographic criteria like age could be meaningful in some cases. On the other hand, lifestyle criteria could be meaningful too. In the table below, the researcher exemplarily shows the different criteria.

B2C retailing business / demographic criteria	B2C retailing business / lifestyle criteria
Post-war generation (year of birth 1925–1945)	LOHAS (Lifestyles of Health and Sustainability)
Baby Boomer (year of birth 1946–1964)	LOVOS (Lifestyles of Voluntary Simplicity)
Generation X (year of birth 1965–1979)	DINK (Double Income no Kid)
Generation Y (year of birth 1980–1994)	Yuppies (Young Urban Professional)
Generation Z (year of birth 1995–today)	Yollies (Young Old Leisure People)

Table: 103 Comparison B2C retailing business segmentation criteria

If the SME decides to segment the customers in ambiences or milieus, it could look like the next table.

	Social and ecological	Adaptive and pragmatic
Age	30–40	25–35
Gender	Male / Female	Male / Female
Income	€2500–3000	€2000–2800
Relationship status	Divorced, no kids	Single, no kids
Job	Public official, teacher, and so on	Clerk
Place of residence	Suburban town, rural	City or small town
Leisure activities	Outdoor, travelling	Sports, going out, travelling
Media use	Conservative media use	Social media, mobile internet
Financial attitude	Conservative	Pragmatic, safety orientated

Table: 104 B2C retailing business segmentation criteria by milieu

The researcher has listed some other meaningful criteria above, but these could be only small indications and suggestions. An SME should keep an eye on the cost/benefit ratio, excluding which the best criteria make no sense.

7.2.2.3 RO3: To adapt current segmentation techniques to develop a useful and pragmatic segmentation framework for SMEs

As it is apparent from the literature review, data analysis, and the expert interviews, there is no blueprint to create a segmentation method for an SME. The type of technique, method, and criteria an SME uses depends on many factors because the companies are often totally

different, work in different industries, and have different strategic objectives. However, as mentioned above, and also in Section 4.3.2, the researcher recommends a two-dimensional segmentation method, sometimes called the ABC-XYZ analysis, which is often used in the supply chain management. However, a company can use it in sales and marketing as well. The following four figures and tables clarify the advantages of this segmentation method.

Figure 86 shows how important a two-dimensional analysis is. The first letter shows the segment based on turnovers and the second letter shows the segment based on the contribution margin. This means, according to the 60/90 method, the SME had 432 A customers, 1,694 B customers, and 7,373 C customers in 2013. When the researcher added the second dimension into the segmentation, 13 customers lost the A status. Even if 13 out of 432 mean only 3.01 per cent, some action has to be taken; otherwise, these 13 customers will not be treated according to their significance.
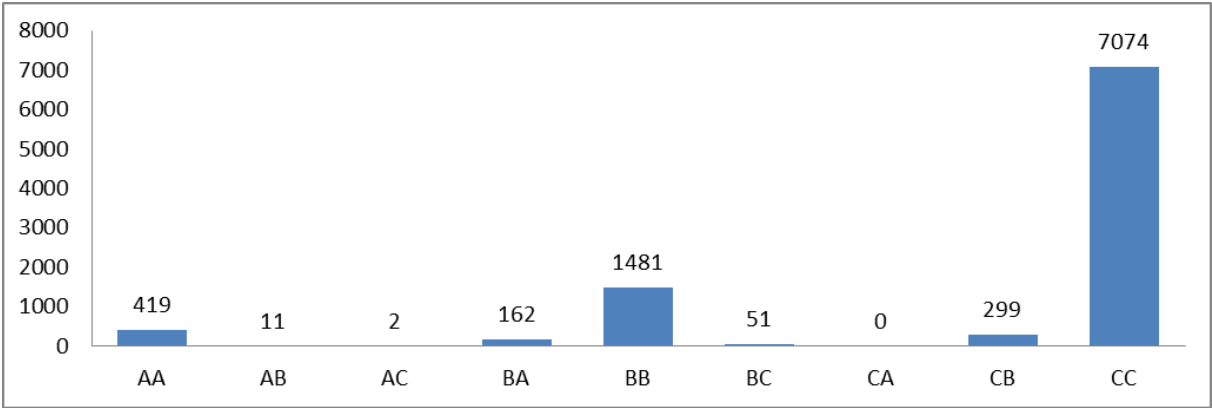
Figure: 86 2D ABC analysis based on turnover and DB (Customer of 2013)

From three segments, the SME now has nine segments, and the results in Table 105 highlights these nine segments in a different view. As mentioned above, a company should create clear and strict handling notes for each segment. A company may decide that nine different handling notes make no sense because the effort is too high. In this case, they have the opportunity to group three segments into one, and thus, have only three different handlings notes. The next table shows an example: the researcher grouped the segment AA, AB, and BA into one. These are the most important customers. AC, BB, and CA are another group with less valuable customers, and the last group are BC, CB, and CC customers.

	A	B	C
A	419	162	0
B	11	1481	299
C	2	51	7074

Table: 105 Customer allocation based on 2D ABC analysis (Customer of 2013)

To illustrate the relevance of this method, the researcher conducted it with the top 100 customers. Figure 87 illustrates the results.

Based on the turnover, the 60/90 analysis revealed 25 A customers, 47 B customers, and 28 C customers. If the second dimension is added, a totally different result can be seen. From 25 A customers, 7 customers (28 per cent) move to the AB segment, which is quite significant. In Figure 86, the CC segment is the largest; in this calculation, it has only 18 per cent customers. As explained in Section 4.3.1, the customer structure in the 60/90 method is made up as follows: A customers achieve as much as 60 per cent of the turnover and/or the contribution margin, and B customers achieve the next 30 per cent. The last 10 per cent comprise C customers.
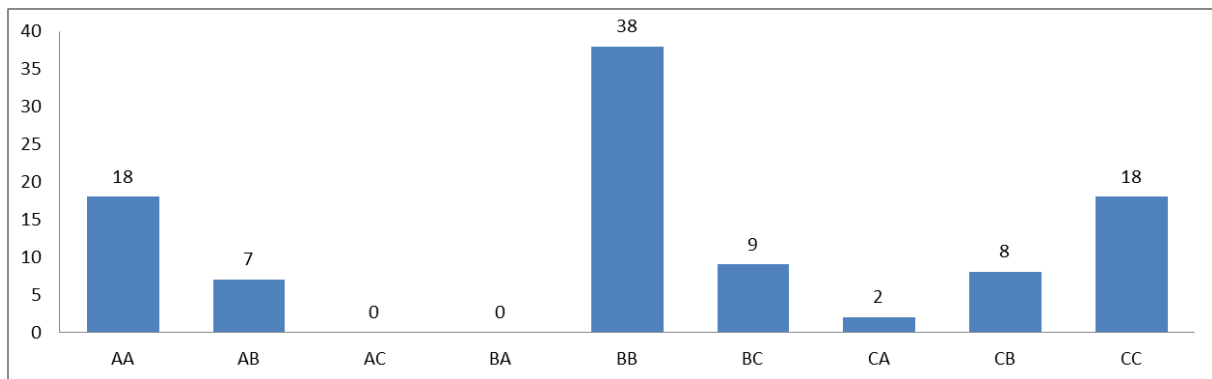
Figure: 87 2D ABC analysis based on turnover and DB (Top 100 customers of 2013)

This clearly shows that the customer structure plays a key role. It is more homogeneous than the previous one in which a lot of customers generate low turnovers and contribution margin, and only a few generate huge turnovers and contribution margin. In comparison with Figure 86, Figure 87 shows the customer allocation of the top 100 customers. The homogeneity is again confirmed in Table 106, where 25 per cent are in the green segment, 40 per cent in the yellow one, and 35 per cent in the red segment. This contradicts the principle of Pareto, and to refit the principle, one would have to move the segments.

	A	B	C
A	18	0	2
B	7	38	8
C	0	9	18

Table: 106 Customer allocation based on 2D ABC analysis (Top 100 customers of 2013)

This two-dimensional method is based on an MS Excel calculation. It has the advantage that nearly every company, including micro ones, can afford it. Assuming that every company uses MS Office, additional expensive software, like SPSS from IBM, is not necessary.

The researcher proposes a third dimension to customer segmentation, which found resonance in the qualitative findings. But, the RFM cube is too complex for most of the SMEs, and the cost/benefit ratio is no longer given. Even if one makes a three-dimensional ABC analysis, the benefit of the third dimension must be proved. Of course, in some cases—which depends, for example, on the branch or the customer structure—it makes sense for a company to segment on the basis of turnover, contribution margin, and maybe industry. However, in such a case, it is more useful to first categorize according to the industry, and second, make a two-dimensional ABC analysis for each industry. This approach is less complex but is sufficiently meaningful. However, it must be ensured that the customers are assigned to the correct branches. As mentioned in Section 4.2.1, an incorrect assignment could have serious consequences.

This solution was presented to the experts before the second interview series began, and the experts confirmed the meaningfulness and ease of application of the two-dimensional segmentation method.

7.2.2.4 RO4: Determine whether SMEs know and calculate the value of their customers

As mentioned in Section 2.2.2, there are three different perspectives of customer value, but this research focuses on the supplier's perspective. Customer value is more than the achieved turnover or the contribution margin. Günter and Helm (2003) argued that a customer creates value not only in sales, but in other departments like R&D, logistics, and production, too. The importance of customer value can be shown by the following statement: '…Products come and go, but customers remain. The secret to success is maintaining a profitable relationship with the customer, regardless of what products are involved…' (Rust, Zeithaml, & Lemon, 2000, p. 6).

In Section 2.2.5, the researcher explained that SMEs have to differentiate between monetary and non-monetary customer value, and that the value can be measured in terms of quantitative and/or qualitative value (Cornelsen, 2000). An SME should know these different approaches but a finding of the expert interviews was that they do not.

The results of the expert interviews on this topic are explained in Section 5.4.1. The interviewees agreed that most SMEs do not calculate the value of the customer. That means they do not know the monetary value because the correct monetary customer value is complex to calculate. But, they know which customer is important and which customer is less important. The researcher has explained this issue in Sections 2.2.2 and 2.2.5. Homburg and Wieseke (2011), Cornelsen (2000), and Günter and Helm (2003) argued that customer value is more than the turnover and the contribution margin. This perception normally comes from experience and gut feeling. Here, one question emerges: does a monetary customer calculation make sense for SMEs? Of course, it is important to know the figure, but customer value is more than its pure monetary value and the calculation is often too complex and a serious challenge for SMEs. Hence, an SME should ask itself the question: is the cost/benefit ratio still worth the trouble? In most cases, the answer will be 'no'.

7.2.2.5 RO5: Identify whether and how SMEs evaluate customer lifetime value and what segmentation techniques are used

The next step after the customer value calculation could be the CLV, and this calculation is even more complicated. The result, according to the expert interviews, is that many SMEs do not know how to calculate the CLV, and thus, it plays absolutely no role in SMEs. Section 2.7.6 shows the advantages and disadvantages of this method, but the researcher would like to mention some important points regarding this method. First, the CLV is an individual, one-dimensional model based on prospective monetary data. Then again, the researcher has explained in Sections 4.3.2 and 7.2.2.3 how important a two-dimensional method is. Second, it is based on prospective monetary data. As mentioned above, the customer value is more than the mere monetary value, and calculating prospective data is like taking a deep look into the crystal ball, and quite imprecise. Tables 3 and 4 (cf. p. 45 and 46) show how differently the customer value can develop—in a positive as well as negative manner. A lot of customer information is necessary to generate a reasonably accurate value, and it is not easy for an SME

to obtain and analyse all this information. If the SME has only a few customers, it may make sense. But if an SME has more than 50 customers from different branches, the effort/benefit ratio is no longer given. So, the researcher comes to the conclusion—which the interviewees confirmed—that the CLV plays no role in SMEs.

So, which segmentation techniques and methods should be used? In Section 4.2, the researcher described that SMEs use an ABC or, as in this example, a TABCD analysis based on customer potential. However, the explained method has some weaknesses. The first and perhaps the main weakness is that it uses calculated and estimated potential. Calculated potential comes from an easy-to-handle formula with extensive errors. These errors will not occur in every case, but the probability of their occurring is quite high. The researcher revealed the errors with an example in Section 4.2.1. On the other hand, they used estimated potential from the area sales manager, and in Figure 53, the researcher showed the huge difference between both results.

The interviewees agreed that the sales manager does an unconscious segmentation from gut feeling and personal experience, and some experts called this a personal ABC analysis. And, of course, this type of segmentation or the frequently used ABC analysis based on turnover or contribution margin is much better than no segmentation. Micro firms often do not use any segmentation method for various reasons—e.g., they have only a few customers. But if they use a segmentation method, it is in most cases the classical ABC method based on turnover. But why do they do this? Because the literature review, the secondary data, and the expert interviews make it clear that the ABC analysis is the easiest segmentation method. The SME does not need copious information or data, the method is quite easy to understand for everyone, and it is not very complex to calculate.

Only one expert said they do a share-of-wallet segmentation, but with a high degree of impression. In this case, the SMEs should ask themselves whether, with such a degree of impression, the method is right for them.

The interviews revealed that it is difficult to choose the right kind of segmentation method for SMEs because there are too many things to consider. First, the methods depend, as mentioned above, on the company size and their stage of growth. There could be differences among micro, small, and medium-sized companies. Second, it depends on the kind of branch or the business the SME is working in: B2B or B2C markets, or mass or niche markets.

In the end, to fulfil the research objective, the statement from the researcher is based on literature review, secondary data, expert interviews, and personal experience:

SMEs do not use the CLV, and if they use a segmentation method and do not rely on gut feeling, very often they use the one-dimensional ABC method based on turnover. But there is no blueprint because the kind of method an SME will use depends on too many factors.

7.2.2.6 RO6: Determine why companies use profound analysis methods only in few cases

The main reason is that the methods are often complicated and not sufficiently informative for SMEs to treat customers better or adequately. This has already been mentioned as the conclusion of Section 4.3.

In many cases, especially in the B2B sector, customers are too small either in terms of their number of orders, or the turnover. Another reason could be that SMEs have only a few customers; so, a profound statistical analysis does not make sense. An analysis is not worthwhile due to the cost/benefit ratio.

From the researcher's point of view, a complex statistical analysis with programmes such as SPSS is not necessary in most cases. Also, the online search revealed that existing software models exist but these are often embedded in a comprehensive CRM program, which may lead to high costs. In the case of pure segmentation models from the Internet, data security is probably not always present, which means there is a high risk for SMEs. These statements were confirmed by the experts in the second interview series. The effort of such analyses exceeds the benefit, and in the normal case, all necessary information can be generated through MS Excel. Although these analyses—whether done through SPSS or MS Excel—give new insights into the customer, these insights assist only a little in the whole sales process. As mentioned before, in terms of the cost/benefits ratio, a two-dimensional ABC analysis is a very good segmentation method for the SME and gives good results in most cases. As mentioned frequently, these findings depend on the industry—B2B or B2C. The findings of the researcher relate to the examined area and need to be confirmed by studies of other industries.

7.2.3 Research questions

In the following section, the researcher will answer the four research questions. As mentioned in Chapter 1, to answer the questions, it is important to first identify key customer segments and help SMEs develop more profitable customer relationships. The research questions will

be answered from the results of the literature review, expert interviews, and quantitative analysis of the secondary data.

7.2.3.1 RQ1: What approach should be adopted to analyse, evaluate, and develop customer segmentation tools in SMEs?

It is impossible to determine only one approach. This is because all methods from the literature review have their justification, but they have advantages and disadvantages as well (cf. p. 125). What kind of method the SME should choose depends on many factors. First, the kind of business of the SME—B2B, B2C, FMCG, or investment goods—is crucial.

Second, the researcher recommends using already existing customer information, KPIs, or criteria for the segmentation. That is because in most cases, to get new information or create new KPIs or criteria, additional effort is required, and hence, the cost/benefit ratio is no longer given. The focus should be on a two-dimensional analysis because a one-dimensional analysis can distort the reality (cf. pp. 321–324). These statements were confirmed by the second expert interview series.

So, in short, it can be said that the smaller the company, the simpler the method should be. Nevertheless, the number of customers plays a key role as well. Another important point is that the approach should be easy to understand and comprehensible to the employees.

But doing nothing and choosing no method is the worst solution for SMEs.

7.2.3.2 RQ2: What segmentation methods are appropriate for SMEs in relation to their stage of growth?

Again, determining only one method is not possible. But, as mentioned above, it can be said that the smaller the company, the simpler the method should be. More complex methods or methods with high information demand, like RFM, share-of-wallet, or NPS, have too many disadvantages for SMEs (cf. pp. 92–100; p. 101; pp. 109–111). The expert interviews showed that the CLV plays no role in SMEs.

The ABC analysis is usually sufficient for an SME, as defined in the way used in this study. However, as mentioned in Section 7.2.2.3, except for companies with less than 20 customers, the method should be two-dimensional. The table below shows some examples of the kind of segmentation method that could be useful under the given circumstances. The assumed

annual work unit correlates to the definition of the European Union (cf. p. 36), and the number of customers corresponds to the experience of the researcher.

Stage of growth (Annual Work Unit)	B2B or B2C customer	Number of customers	Branch	Segmentation methods
Micro (<10)	B2B	< 20	IT service	ABC Analysis
Small (<50)	B2C	> 500	Retail	ABC Analysis NPS
Medium (<250)	B2C	> 100	Garden centre	ABC Analysis
National Corporation (>250)	B2C and B2B	> 10000	Insurance	ABC Analysis CLV NPS Scoring models
Multinational Corporation (>1000)	B2B	> 1000	Automotive industry	ABC Analysis CLV RFM Cube Share-of-Wallet Scoring models

Table: 107 Segmentation methods depending on the stage of growth

As mentioned before, in addition to the stage of growth and the factors shown in Table 102, other influencing factors like branch, FMCG, or investment goods play an important role (cf. pp. 318–321). It will be a mistake if an SME chooses the segmentation methods only on the basis of the stage of growth.

7.2.3.3 RQ3: How do SMEs recognise/identify the value of their customers?

The expert interviews showed that most SMEs do not know or even calculate the monetary value of their customer. As elucidated in Section 2.2.2 and 2.2.5, customer value does not only stem from the profit that the customer has provided (Günter & Helm, 2003). This is especially true, for example, if it is a reference customer, a strategic entry customer, and/or a driver of innovation. Homburg and Wieseke (2011) argued that each of the enumerated benefits could not only count in sales, but also for different customers. Of course, they know which customer is more valuable than the other. Or, to put it better, they know which customer is more important than the other. But, in many cases, this has nothing to do with monetary value.

This is because, as mentioned above, the customer value is more than pure turnover or the contribution margin (cf. p. 43). Besides, too much additional information is needed to calculate the correct customer value on a monetary basis (Section 2.2.5). To generate this

information, additional effort is necessary, which the added importance of knowing the monetary customer value does not justify. The used definition of effort and benefit were explained on page 46.

The knowledge of the customer value usually comes from experience, gut feeling, and common sense.

7.2.3.4 RQ4: How, if at all, can SMEs employ customer lifetime value analysis for segmentation purposes?

In Section 2.7.6, the researcher described the CLV. That section and the expert interviews revealed that the calculation of the CLV is too complex for SMEs. CLV has added value for SMEs, but it is too imprecise. So, if an SME invests a lot of resources in the calculation of the CLV of every customer, they get a forecast. The further this calculation goes into the future, the less precise the calculation becomes. Of course, SMEs normally do a business forecast, but in a more practical way, and not in such detail, i.e. broken down to each customer. To answer the research question, the CLV plays absolutely no role in SMEs.

7.3   Contribution to knowledge

The section gives an overview of the research issues addressed in this thesis, which have an impact on the existing literature in the field of customer segmentation. The following distinctions help clarify the contribution to current knowledge. But to classify the contribution to knowledge of this research, the topic has to divide into two sub-points, contribution to theoretical knowledge and contribution to practical knowledge.

People are thinkers as well as doers. That means when people think or reflect, they are influenced by knowledge of the truth of the world and how the world, in their opinion, works. When one does something, one is guided by knowledge of how he or she performs certain things. So, if one is dealing with cognitive abilities, then one know how to do something not about the fact itself (Rauner, 2004).

- Theoretical knowledge

    Theoretical knowledge is about the "why", it gives one knowledge why something works and why another procedure fails. Theoretical knowledge can often lead to a

deeper understanding of a process or concept in which one sees it in the context of a larger whole and understands the reason behind it.

- Practical knowledge

  Practical knowledge helps us to learn and implement special techniques. There are things that can be learned better by applying and by the experiences that result from it. Practical knowledge can lead to a deeper understanding of the process of doing and personal experience (Rauner, 2004).

The following is a description of the contribution to knowledge in relation to the research objectives. Then, the general contributions of knowledge are listed.

Research Objective	Contribution to Knowledge
To assess the current state of customer segmentation analysis in SMEs	According to Hassmann (2005) and the experts most SMEs in B2B use one-dimensional segmentation methods based on turnover or contribution margin (cf. p. 84; Section 5.4.1). These criteria are given in SMEs, and generating new criteria is complex and time-consuming. Another advantage of these methods is that these are easy to understand for everyone in the company.
	In SMEs, the cost/benefit ratio plays a huge role, which makes a 90 per cent solution sufficient for most of them. Gut feeling and experience are still widespread in terms of customer segmentation.
	With correct usage, CLV, RFM, or share-of-wallet are the most meaningful methods, but the needed customer information is difficult to obtain. Often, the customer will not disclose this information because it would weaken their bargaining position (cf. p. 100).
	CLV is the only method that forecasts the customer value. This is not useful for most SMEs because they focus more on daily business instead for one to three years. Another reason why SMEs do not use the CLV is that they have to then plan the sales and all costs for a customer in advance. This is a huge effort and most SMEs cannot plan their turnover and cost so far in advance. And, if they plan it, they still face the uncertainty of the forecast. The CLV is and will remain an assumption (cf. pp. 101-104).
	The net promoter score (NPS) plays no role in SMEs because it is a huge effort to generate the needed information. The sales team has to ask every customer if he/she would recommend the company to a friend or colleague. In many cases, the SME cannot ask or will get no answer—e.g., e-business or fax orders. It also makes no sense if a company has only a few customers. In Section 2.3.7, the researcher showed some other reasons why this method is useless for SMEs. Regarding the optimal quantity of segments, the researcher described in Section 2.4 that no SME is going to do a calculation because too much information is needed and the cost/benefit ratio is not given.

To identify meaningful criteria to segment customers in SMEs	The expert interviews and the findings from the literature review clearly demonstrate that there are no criteria that need to be necessarily used. Of course, some criteria are more meaningful than others, but in the end, what kind of criteria are used and meaningful to their business depends on the SME itself. It may depend on what kind of customer the company has (B2B or B2C), in what kind of industry they are, the stage of growth, and many more. But the SME has to keep in mind that the segmentation criteria are strongly correlated to the selected method, and, in many cases, the criteria cannot be used for other methods. That means it is not useful to change the segmentation criteria too often and too quickly, because it creates unnecessary effort and uncertain employees and customers.
To adapt current segmentation techniques to develop a useful and pragmatic segmentation framework for SMEs	Literature review (cf. pp. 88–90) and Section 4.3.3 showed unambiguously that the common one-dimensional ABC analysis has some weaknesses and disadvantages. Hence, the researcher suggested the two-dimensional customer segmentation method based on turnover and contribution margin. This method is useful and pragmatic because the used criteria are available for every customer in an SME and the calculation is based on MS Excel (cf. pp. 318–327). This is especially advantageous for micro-companies as these do not use expensive analytic software. They need and are looking for a solution with a good cost/benefit ratio.
Determine whether SMEs know and calculate the value of their customers	As mentioned in Section 2.1.2, the customer value is more than the achieved turnover or the contribution margin. According to Helm and Günter (2006), it could be understood as the perceived, weighted contribution of a customer to achieve the monetary and non-monetary goals of the supplier. SMEs must differentiate between monetary, non-monetary, quantitative, and qualitative customer value; in other words, it is the whole economic importance of a customer but not only the benefit. In Section 5.4.3, the researcher clearly showed that most SMEs do not know the monetary value of their customers. This is because they need too much customer information, and the calculation is too complex
Identify whether and how SMEs evaluate customer lifetime value and what segmentation techniques are used	The expert interviews and the following evaluation in Section 5.4.4 clearly prove that the CLV is not used because this method is too complex, has no advantage, and is also too imprecise. The most frequently used method is—as the expert interviews show—the ABC analysis based on turnover. But the researcher ascertained that there is no special segmentation method for SMEs because too many criteria play a role and these criteria are often totally different for SMEs.
Determine why companies use profound analysis methods only in few cases	As a conclusion of Section 4.3, and the expert interviews, the methods are often complicated and not sufficiently informative for SMEs to treat customers adequately. In many cases, especially in the B2B sector, customers are too small either in terms of the number of orders, or turnover. This means that an analysis is not worthwhile with respect to the cost/benefit ratio.

Table: 108 Contribution to knowledge

Now the general contributions of knowledge of the thesis are presented.

Gap:

Which are the most frequently used customer segmentation models?

Solution:

The expert interviews in Section 5.4.1 confirm the described ranking of segmentation methods.

1. ABC analysis based on turnover (application level 98 per cent)
2. ABC analysis based on contribution margin (65 per cent)
3. Customer net present value analysis (only in financial services)
4. Customer portfolio (23 per cent)
5. Scoring methods, including RFM (14 per cent)
6. Customer Lifetime Value (5 per cent)

Also, the data analysis in Section 4.3 confirms the results of the study presented by Hassmann (2005) and the Institute of Marketing and Retailing at the University of St. Gallen.

Next, the researcher closes some theoretical gaps that have become clear in this DBA thesis.

Gap:

Is there a difference between marketing in SMEs and larger companies?

Solution:

There is a clear difference between marketing in SMEs and marketing in larger organizations. This is particularly evident in a study from 2015 on marketing practice in SMEs. This study shows that 25% of SMEs and 50% of companies only have short-term or sporadic marketing targets. Another reason is also lack of financial resources and marketing know-how. Also, many SMEs consider marketing unnecessary and a measure that only costs time and money. But when SMEs have professional marketing, there are also benefits. These are e.g. occupation of market niches, ability to innovate, non-bureaucratic structure, short-decision-making processes within the company, long-term goals in the company, high employee identification, and special service orientation.

So it remains that SMEs should follow the same marketing rules as corporations, and the same tools are available. But these tools should be adapted to the specific needs of SMEs and then

used professionally. SMEs, on the other hand, constrain themselves to just a few instruments and rules because of their smaller budgets.

Gap:

Why do many SMEs forgo CRM?

Solution:

While nearly 60% of large enterprises in the EU used CRM systems in 2007, only 20% of SMEs used CRM. According to a Eurostat study, these values have only marginally changed until 2015.

For large companies, the benefits of CRM are largely undisputed and have been sufficiently investigated, however, this is not the case for SMEs.

A study by Duscha (2007) reveals that the main reasons for not using CRM are: insufficient knowledge, launch costs too high, no concrete benefits, training effort too high, and transfer of existing data too elaborate. Furthermore, CRM introductions often fails due to lack of acceptance and as a result of poor data management in the sales department.

Gap:

What do SMEs understand under KAM and do they use Key Account Management?

Solution:

What has been the 'standard procedure' for large companies for long is increasingly becoming unavoidable for small and medium businesses.

Key account management is a company-wide approach that involves not only the distribution and marketing of products but also an individual and intensive customer service (Gounaris & Tzempelikos, 2013).

Wengler, Ehret, & Saab (2006) found that 80 per cent companies have not implemented a KAM. They deal with their important customers without changing the organizational form or sales activities. They look after their top customers intensively but they do it in a traditional way, through sales.

In order to reduce this percentage and to ensure successful implementation in SMEs, it should be done in as uncomplicated, employee-friendly, and customer-friendly a manner as possible. KAM's implementation in SMEs makes any sense only if this can be ensured.

Gap:

What are the differences between customer segmentation, KAM, and CRM?

Solution:

The terms CRM, KAM, and customer segmentation are often not clearly distinguished in SMEs, thus leading to ambiguities and misunderstandings among employees.

The goals of customer segmentation and KAM agree in many points but KAM is a marketing approach based on relationship management and represents an organizational method. Furthermore KAM is a holistic, methodological approach in the field of strategic customer retention development. Whereas customer segmentation is a tool for customer processing.

CRM is a strategic approach used for the complete process of careful handling of detailed information on individual customers and all customer touch-points including customer segmentation. That means customer segmentation is only a part of CRM. The distinction between CRM, and customer segmentation is clear as well. CRM can be viewed as a holistic approach or even strategy, while customer segmentation is a part resp. the result of CRM and should be seen as a tool for better and more effective customer processing.

Gap:

Is the one-dimensional ABC analysis meaningful enough?

Solution:

Although this method is still widely used, the research revealed that a one-dimensional ABC analysis is not meaningful enough. It does not matter whether the criterion is turnover, contribution margin, or something else.

Gap:

Is a segmentation method which forecast the customer value necessary?

Solution:

The forecast of the future and the prognosis of customer developments make no sense for SMEs, as these are too complex and the risk of misjudgement is very high because of the rapidly changing business environment.

Gap:

Is the RFM method or other three dimensional methods useful for SMEs?

Solution:

RFM methods are not useful for SMEs in the B2B area since the calculation basis and the resulting score are not meaningful. This also applies to the RFM cube. Besides, other three-dimensional models are too complex and do not justify the cost/benefit ratio.

Gap:

How relevant is the NPS technique?

Solution:

The described NPS in the literature review does not occur in this study because only a few companies use this method. In SMEs, it is nearly unknown and meaningless. Furthermore, this method is not suitable for the B2B area, because here other criteria than the recommendation rate by a NPS play a role.

Gap:

How many segments should a customer segmentation method have?

Solution:

Only Homburg, Schäfer, and Schneider (2012) offer a theoretical solution because it depends on many factors. From the perspective of the researcher, however, for SMEs there should be no less than three segments. At the maximum of segments, it depends on whether the cost/benefit ratio is still given.

Gap:

Are suitable customer segmentation software packages for SMEs in the B2B area available?

Solution:

The software for customer segmentation available at the time of the online search may be embedded in a CRM software package, aimed at a specific target group, or the data security can be questioned. The examined software packages are only conditionally suitable. The expert interviews also confirmed the statements above.

7.4   Contribution to practice

Apart from the contribution to knowledge, as mentioned in the previous section, this research can contribute to practice in the SME business as well. This contribution is related to the outcomes of the qualitative and quantitative analyses.

The first part of the chapter presents the contribution to practice in relation to the research objectives. In the second part, the general gaps in the area of customer segmentation in SMEs are described and then it is explained how this gap can be closed. This results in the guidelines on customer segmentation for companies.

Research Objective	Contribution to Practice
To assess the current state of customer segmentation analysis in SMEs	Most SMEs use one-dimensional segmentation methods based on turnover or contribution margin. But, as mentioned in Section 4.3.3, a one-dimensional method has weaknesses. SMEs should use a two-dimensional method with meaningful criteria because using only one criterion could display the importance of the customer in a wrong way. If a company calculates the potential of its customers, it should definitely use one method and not two different methods like in the analysed company, which leads to different results and confusion among employees. The plausibility of the calculation method should be checked from time to time. The analysis of the German SME shows that wrong assumptions may have serious consequences. In most cases, analyses and calculations based on MS Excel are sufficient. This is especially true for SMEs in B2B business. As is clear in the time series (cf. pp. 195-200), calculations with different programs using the same database may produce different results. These different results may lead to strategically erroneous decisions. Therefore, results should be questioned regularly. Another result of the analyses is that customer with huge turnover should be categorized in a special segment for key accounts because they need special treatment. For these key accounts and for the other customer segments as well, handbooks or manuals should be drawn up with clear instructions and conditions for each individual customer segment. When the SME creates the segments and the process of the customer, attention should be paid to differences in the regions or branches because not every customer can be compared with other customers even those with similar turnover. Basically, customers should only be visited if the cost of the visit does not exceed the benefit.
To identify meaningful criteria to segment customers in SMEs	There is no blueprint for meaningful segmentation criteria in SMEs because it depends strongly on industry, region, the number of customers, B2B or B2C, capital or consumer goods, and so on. Further, the researcher gives some guidelines to find the best criteria and segmentation method (cf. pp. 339-340). If an SME in the B2B business is satisfied with a 90 per cent solution with a good cost/benefit ratio, turnover and/or contribution margin are good segmentation criteria.
To adapt current segmentation techniques to develop a useful and pragmatic segmentation framework for SMEs	As mentioned before, the research revealed that a one-dimensional method based on turnover or contribution margin has some disadvantages. From pages 321 to 324, the researcher demonstrated a practical, two-dimensional method for SMEs to solve the main disadvantages of a one-dimensional method. This method is based on turnover and contribution margin, and identifies three main customer segments. If, due to the customer structure, a fourth segment is necessary, this method is extendable. This method is based on MS Excel, which is another advantage, especially for SMEs. Relating to the customer structure in most SMEs, expensive analytic software like SPSS is not necessary. SMEs should use already existing software and criteria to minimize the effort.
Determine whether SMEs know and calculate the value of their customers	Most SMEs do not calculate and know the customer value on a monetary base. Of course, this can be helpful, but, as mentioned in Section 2.1.2, customer value is more than turnover and contribution margin, which often means that the calculation is complex and the added value for SMEs does not justify the effort.

	Because gut feeling still plays a role in SMEs, the strategic customer value should also be included in the calculation. If a calculation on a monetary basis not possible, segmentation based on all criteria (gut feeling, strategic value, innovative value, etc) should be done. Segments could be: A customer (very valuable), B customer (valuable), C customer (less valuable). This evaluation can then be integrated in the customer segmentation.
Identify whether and how SMEs evaluate customer lifetime value and what segmentation techniques are used	CLV currently plays no role in SMEs, and this segmentation method is unnecessary because its significance for SMEs is not given. This is confirmed by Hassmann (2005) in the ranking of segmentation methods (cf. p. 84). One reason for this is that the company needs far-reaching information about customers, the market, industry, economic development, and so on. The effort to get all this information, to interpret, to forecast, and to calculate the CLV for every customer is far too high. Another reason that the CLV is too imprecise is because there are too many circumstances (economic and tax policy, embargoes, commodity prices, etc.) that the SME cannot influence but that influence the CLV. As mentioned before, SMEs currently use the ABC analysis based on turnover or contribution margin with a big dose of gut feeling and experience to segment customers. In the researcher's opinion, a proper two-dimensional method, as described on pages 321 to 324, is adequate for most SMEs.
Determine why companies use profound analysis methods only in few cases	From the researcher's point of view, a complex statistical analysis with programmes such as SPSS is unnecessary in most cases. The effort of such analyses exceeds the benefit. Although these analyses give new insights into the customer, these are of little help in the whole sales process and in the daily business. Furthermore, employees are required who are familiar with these complex programs. As mentioned before, in terms of the cost/benefits ratio, a two-dimensional ABC analysis is generally a very good segmentation method and gives good results. As mentioned frequently, these findings depend on the industry—B2B or B2C. The findings of the researcher relate to the examined area and need to be confirmed by studies of other industries.

Table: 109 Contribution to practice

Gap:

The literature review (Freter, 2008; Hassmann, 2005) and the expert interviews revealed that many SMEs use one-dimensional models for customer segmentation as these appear simpler and more cost-effective. Regardless of which segmentation criterion is chosen, these segmentations are not sufficiently strong.

Solution:

This research shows that a two-dimensional excel solution with turnover and contribution margin results as a criterion relevant results in the area of customer segmentation (Section 7.2.2.3).

Gap:

Forecasts and calculations directed towards the future are complex and not always meaningful. There are two main reasons for this: Not all relevant data are available and the environmental conditions that serve as a calculation basis change very quickly.

Solution:

Such calculations should be avoided by SMEs in the B2B area.

Gap:

The customers with the highest turnover are appointed as key accounts.

Solution:

As the literature review revealed, this is the wrong approach. Rather than the customers with the highest sales, the strategically most valuable customers should be appointed as key accounts. They should also receive separate treatment; otherwise, it would not be key account management.

Gap:

The sales managers visit the wrong customers, resulting in high costs and sales losses that could have been achieved with other customers.

Solution:

The SME must establish clear rules about which customers must be visited and in which intervals. The rules must be clearly communicated and a regular check by the department leader is essential.

Gap:

SMEs think they need expensive, complex, and highly analytical methods and software packages to perform good customer segmentation. Since these become too complicated and too expensive, in many cases gut decisions are made in the context of customer segmentation.

Solution:

No complex methods and software packages are required. The Excel method resulting from research is sufficient.

Customer Segmentation Guidelines

The customer segmentation guidelines below are understood to be general for SMEs. These are intended to assist the responsible managers in deciding on the segmentation method that is best for the company.

- Use the criteria for which the data already exist
- Use a two-dimensional method
- The method should be easy to calculate
- Use criteria and methods that employees understand and accept
- The criteria and the method should be plausible
- Keep the customer in focus
- Sometimes special customer orders require special measures
- The cost/benefit ratio must be given
- The method should be flexible
- Find the right number of segments
- Every segment must have clear customer treatment rules/handling notes
- The segmentation must be checked regularly
- Should be oriented on company objectives

Depending on the company, there will be other internal and external guidelines and/or policies. Normally, an SME cannot comply with all these guidelines. But it should be stressed again that before an SME creates and install a new customer segmentation method, the company has to think deeply because the process will have consequences for employees as well as customers.

7.5 Limitations - Customer segmentation research

In addition to the limitations of methodology and methods and of the comparison expert interviews and quantitative data customer segmentations have limitations too. A key point of this research was the definition of the term 'SME'. As mentioned on pages 35 and 36, the researcher decided that the definition by the European Commission for Enterprise and Industry was a suitable one for this research because it is internationally accepted. But this decision also means that a lot of companies, which call themselves SMEs, will not be considered.

Since market and customer segmentation is one of the most important tools and processes in the company, it is important to know what kind of mistakes can happen and whether the company is in the right direction.

The different segmentation approaches are often creative, but either the economic benefits are missing or the cost/benefit ratio is not given.

Customer segmentation should be applied to the buying behaviour of customers. The data collection and data processing processes have some limitations. Despite all the advances in computer technology and data analysis methods, not only does one encounter legal and ethical boundaries, the buying behaviour cannot be predicted until the last step either (Freter, 2008).

Process Validity: Segmentations are normally carried out on the basis of datasets that contain historical data about customers and their buying behaviour. Often, these datasets are supplemented by primary data collection about needs, purchase motivation, or other psychographic characteristics. The resulting dataset is then evaluated. However, it is historical, i.e., the needs and buying motives expressed are interpreted as the basis of the previously recorded buying behaviour, which is not the original purchase process. Since the temporal context of consumer behaviour can be mapped so inadequately or, strictly speaking, in opposite directions, conclusions about cause and effect on this basis are not possible.

Classification Stability: Along with their ignoring of the actual segment process sequence, the classical segmentation approaches are also static. This is because the classification variables typically assign a particular customer to a particular segment based on stable and historical data, thereby influencing future treatment. An assignment change, for example, due to changing circumstances or needs, is, in fact, tied to repeated data collection or reclassification,

which seldom takes place in reality. Or, they may take place in large intervals once a year. The changes that the customer goes through—i.e., for the segment allocation—remain insignificant or are registered only with a considerable delay.

Translation Stability: Not only is the classification of customers belonging to a segment static and based on historical data, the translation of the segment membership, which is to be derived in concrete measures, is also made on the same basis. Thus, the systematic changes in product preferences, especially in very complex or rapidly changing markets, are not taken into account. The customer, once assigned to a particular segment, will recommend the product in future because he/she had previously liked it.

Classical segmentations are, therefore, usually not learning systems. They relate to the past and have little flexibility with regard to the segmentation and the translation of the segment membership into concrete marketing or sales actions.

7.6   Further work

The literature review shows a wide range of customer segmentation methods and the advantages, disadvantages, and the gap in theory for them. In this study, the researcher has focused only on SMEs, with Section 2.1.1 illustrating the first theory discrepancy: which are the companies that belong to the group of SMEs and which ones do not?

Also, the researcher has focused the study on the B2B sector, and, as mentioned before, the B2C sector segmentation methods could be totally different. Industries, branches, customer size, etc. also play a huge role in customer segmentation.

The below points illustrate that further research under different circumstances is necessary to confirm the results of the research.

- Statistical analysis: The results of statistical analysis must be confirmed by analysing other datasets from this business field.
- Region: In the globalized world, it is necessary to prove and confirm the results and advices of the researcher in different regions.
- Industries and branches: It has to be verified whether the results apply in other industries, too.
- Company size: It has to be verified whether the results depend on the size of the company.

- Number of customers: Does the number of customers play a significant role in the segmentation method?

- B2B or B2C: Should companies with different customers use different segmentation methods?

- Type of company: Is the type of company—e.g., family owned or not—relevant for the choice of the segmentation method?

- The Internet should be regularly checked for new software models in the field of customer segmentation.

Finally this shows, continued efforts are still needed in the research field of customer segmentation in SMEs.

7.7   Personal reflection

In summary, the researcher can say that the DBA journey has so far been challenging, but also exciting. The researcher had a great plan, but as Mike Tyson said, 'Everybody has a plan until they get punched in the face'. The researcher, too, had to take a few punches.

But one should start at the beginning. From the researcher's point of view, the term 'reflection' first describes a process of thinking. After three or four years, the researcher began to see the illumined knowledge from different points of view. Now, he reflects this not only on the DBA studies but also on his personal life. He did not always reflect these occurrences in the written form because it was not always possible, especially in the professional context. But, he always took the time to reflect in his mind, especially after management meetings, staff meetings, or in the second half after the lectures he gave at the University of Applied Sciences in Hanover and Bielefeld. This especially helped the researcher in the area of leadership, and inspired him to become a better manager and person.

Another point is that the researcher has learned a lot about time schedule, estimation of the amount of work, and the realistic setting of milestones. At the beginning of the doctoral studies, he believed that he was well positioned in this area because he had considerable experience from previous part-time studies and his professional career. The experience gained from the job as a project manager of international projects was very helpful. So, he rightly addressed the DBA studies as a project. For various reasons, the researcher had to align the schedule several times.

The researcher had many fruitful discussions with experts on the topic of customer segmentation methods in SMEs. They did not always share the same opinion, but these discussions helped him find his personal opinion and the results of the study.

After the research part of the doctoral study, the researcher still believes that customer segmentation is crucial even for SMEs, but it is not the silver bullet for success. Common sense, intuition (gut feeling), and personal experience also play an important role in daily SME business life.

In addition to these points, the researcher has benefited from the constructive advice offered from the Viva examiners (Professors Steve Carter and Neil Towers) whose recommendations have been updated in this DBA thesis.

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Appendix

Google Search Results

Figure: 88 Google Search Result Customer Segmentation

Figure: 89 Google Search Result Customer Segmentation Software

Figure: 90 Google Search Result Customer Segmentation Model

Figure: 91 Google Search Result Customer Segmentation SME

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Figure: 92 google Search Result Customer segmentation SME software

Figure: 93 Google Search result segmentation Software
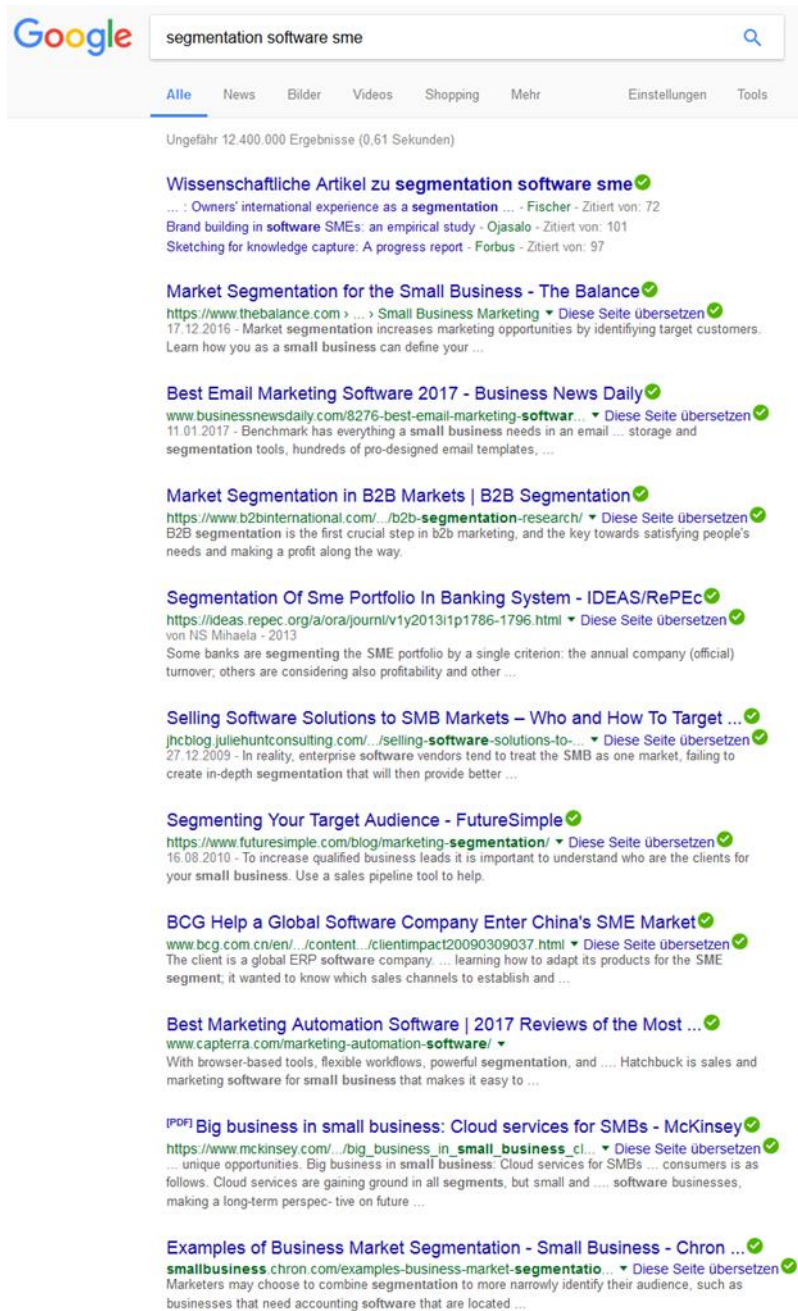
Figure: 94 Google Search Result segmentation software sme

Search item: customer segmentation

- www.sas.com

SAS designates itself as a global market leader in data analytics. The software for customer segmentation is called SAS Visual Analytics and it is designed to help companies analyse their customers better and predict their behaviour. The program is designed to process very large amounts of data and then make decisions based on them.

According to their website, the SAS Visual Analytics also provides:

- A modern and ergonomic user interface, intuitive operation

- Visualization, reporting, and information distribution via browser, PDF, or Mobile BI

- Fast pattern and correlation analysis even in complex and large data spaces

- More accurate opportunity and risk identification, management, and forecasting

- Easier Geo data analysis, performance control, and statistics

SAS decides on the cost, as well as IT and administration cost as opposed to the comparable minimal solutions. However, this cannot be verified.

SAS refers to many corporate references from all sectors and industries, but very few SMEs.

- www.bain.com

This website belongs to the consulting firm, Bain & Company. No special software is offered here but there is information about customer segmentation. This, like other topics, is described in a so-called executive guide. The subject of customer segmentation is rather superficial here but there are references to further literature.

As a customer, you can use a consulting service for customer segmentation at Bain and Company. This is may be cost-intensive and the NPS method invented by a Bain consultant may be in focus.

- www.optimove.com

Optimove is an Israel-based software company founded in 2009 by Pini Yakuel and specialized on customer relationship management (CRM). As part of the CRM, they have a product or software for customer segmentation, which is called predictive customer modelling. The software applies mathematical and statistical models to transactional, behavioural, and demographic data. Based on the collected and consolidated customer data, they segment customers with similar traits into micro-segments.

The company, by its very nature, is focused on customers in the software and/or internet sector, both SMEs and large companies. This is noticeable when one looks at the reference list, which consists of customers only from the e-commerce, gaming, fintech, apps, and other sectors.

One of the partners of Optimove is Salesforce. Salesforce is described in more detail in Section 2.8.2. Although a partner, Salesforce can also be considered as a competitor to Optimove.

Search item: customer segmentation software

- www.capterra.com

Capterra does not sell its own software. It is a search portal for business software. According to their own statements, Capterra offers more than 400 different software packages. However, no software could be found in the area of customer segmentation or segmentation. Yet, it can be assumed Capterra deals with the topic of customer segmentation in the field of CRM software packages and offers several solutions in this field.

Nevertheless, if one enters the term 'customer segmentation' in the search box of the software, it gives 62 results. However, the results only refer to other search terms or software, which in some way deal with customers. These include LiveChat, MyLiveChat, Customer Brand Loyalty Software, and Customer.guru. The packages seem rather unprofessional in many cases but are cost-effective with packages of only $10 per month.

- www.sas.com

See search item: customer segmentation

- www.optimove.com

See search item: customer segmentation

- www.experian.com

Experian is a company dealing with the processing of customer data. The company is one of the largest in the industry with approximately 17,000 employees and sales of US$ 4.6 billion. Experian customers are divided into three categories: Consumer, Small Business, and Business. The focus is clearly on the financial sector in all three areas, which also reflects the performance portfolio of Experian, their consumer and business credit reporting, and marketing services. About the product range, Experian says, 'We help individuals take financial control and access financial services, businesses make a smarter decision and thrive, lenders lend more responsibly, and the organisations prevent identity fraud and crime (Experian Information Solutions, 2017).' This is also seen in the sub-

sections of the area of small business. Here, Experian divides itself again into the following business areas, including Business Credit, Consumer Credit, Market Your Business, Manage Your Business, Collect Debt, and Resources and Advice.

- www.umbel.com

Umbel is a software program from Texas. It deals with data processing from the fields of sports, media, and entertainment. Umbel focuses on analysing data for customers to understand fans, sell more tickets, and drive sponsorships (Umbel Corporation, 2017). This shows that Umbel has focused on customers from the B2C area. This is also shown by the references, which comprise sports clubs, event agencies, and organizers.

Umbel also uses external tools for analyses, for example, from Salesforce, Google Analytics, and Facebook.

- www.roselladb.com

The Australian company Rosella provides solutions for data mining and predictive analytics to its customers. These relate to the areas of risk management, customer churning, and database marketing. The customer segmentation tool is also located in the area of database marketing. The usage variants follow the general information on the subject of customer segmentation. Rosella deals with the areas of trend analysis and forecasting and uses neutral clustering. In this case, customers with the same characteristics are clustered together in a cell or nearby cells.

Rosella also offers RFM marketing and RFM modelling. The RFM method is described in the Literature Review. The advantages and disadvantages of the RFM method have also been discussed.

As can be seen in the pictures, the software is based on an older version of MS Excel programming. The method used for segmentation is not recognizable except in the RFM area.

For further information, always refer to the contact address. However, there is only a mail address in this case. When registering as a non-profit and academic organization, the software is free of charge.

- www.bluesheep.com

Blue Sheep was founded in 1986 and is described as the UK's leading marketing services provider by Data Monitor. The company is located in Cheltanham and offers the customer various services and solutions in the field of marketing. These are:

- o Single Customer View for B2B
- o Single Customer View for B2C
- o Big Data Insights
- o Verticals for Hotels and Hospitality, and Online Gaming

In addition to these solutions, Blue Sheep also offers other products such as:

- o Automated, cleansed, de-duplicated and augmented Single Customer View
- o Descriptive and predictive analytics
- o Marketing campaigns and campaign management
- o Email, mail, telephone, and SMS channel execution
- o Closed-loop analysis
- o Dashboards and reporting
- o Data provision
- o Strategic and operational account management (Blue Sheep LLP, 2017)

The solutions and products reveal that Blue Sheep, as mentioned, covers the whole area of customer marketing and, thus, is more likely to be placed in the field of customer relationship management.

Search item: customer segmentation model

- www.mindtools.com

The page mindtools.com does not provide any software in the area of customer segmentation. It is a portal where tools are explained in the fields of management, leadership, and personal excellence.

For this reason, this search result is not addressed further.

- www.spektrix.com

Spektrix is a software company founded in 2007 that also offers marketing solutions. Spectrix also offers customer segmentation in this area, but that is a part of an overall package. However, these solutions refer to customers in the fields of art. This includes theatre, concerts, and the like.

What makes Spektrix interesting in comparison to other providers is the pricing model. The model is made up of three basic rates that result from turnover of the customer. Also, there is a calculator for the resulting cost on the website. This clearly communicates what cost is incurred by the customer each year, but the customer receives unlimited support, which comprises the following:

- o Unlimited support and training
- o Unlimited users
- o Unlimited, regular upgrades
- o Unlimited custom reports
- o Data migration
- o Dedicated project manager
- o All system maintenance and backups
- o All payment-processing charges

- www.sas.com

See search item: customer segmentation

Search item: customer segmentation SME

- www.smetoolkit.com

SME Toolkit was founded in 2002. It is an online platform that supports entrepreneurs and SMEs in building a successful and sustainable business. The site supports entrepreneurs with free online business management information, interactive tools, and training resources. The page is divided into the following areas:

- o Accounting and Finance
- o Business Planning
- o Human Resources
- o Legal and Insurance
- o Marketing and Sales
- o Operations
- o Technology
- o Exporting
- o e-Learning

- Others

Several free software packages are available for marketing and sales. However, no software is concerned with customer segmentation. On this topic, there is an article that describes the customer segmentation and explains how to perform such segmentation. 'Find Your Highest Potential Customers' is the second article on this topic. Here, the 80/20 method is described. This method is described in the Literature Review of this work as well. The articles are excerpted from the American Express Open Small Business Network.

- www.thebalance.com

The Balance is a subsidiary of the well-known US website about.com. It guides consumers through their lifelong relationship with money, making personal finance accessible to everyone. The website is subdivided into the following areas:

- Find a job
- Buy a home
- Save for college
- Start a business
- Plan for retirement

The 'Start a business' area is designed to help people start a business. In the sub-item Marketing and Sales are many articles from other websites. If one enters customer segmentation in the search box, one will be directed to articles from other websites on the topic.

- www.sas.com

See search item: customer segmentation

Search item: customer segmentation SME software

- www.capterra.com

See search item: customer segmentation

- www.b2bmarketingzone.com

This website provides information on many different topics in the field of marketing. These include branding, content marketing, demand marketing, social media, and more.

On the subject of customer segmentation, one finds more or less relevant articles. These articles have no scientific background and are written by private individuals. Some are derived from blogs.

- www.crmsoftware360.com

The website is no longer available.

Date: 10 March 2017

- www.dexmedia.com

Dex Media is dedicated to working with local businesses. The software offers the following solutions:

- o Customer Management
- o Text and Email Marketing
- o Appointment Scheduling
- o Social Media Promotions
- o Plus More

It is a CRM software tool that covers the whole area. However, the focus is on social media. Customer segmentation is offered only in the full package.

The rates for the basic software package was divided in three categories such as Starter ($59 per month), Basic ($99 per month), and Plus ($199 per month), along with a $149 set-up fee. In addition, there is also an Advance package, which consists of categories such as Pro ($299 per month) plus a $149 set-up fee and Premium ($399 per month) with a $249 set-up fee.

- www.experian.com

See search item: customer segmentation software

- www.sas.com

See search item: customer segmentation

Search item: segmentation software

- www.optimove.com

See search item: customer segmentation

- www.turtleseg.org

TurtleSeg is a 3D image segmentation software program for medical applications such as CT scan and/or MRI.

For this reason, this search result is not addressed further.

- www.kdnuggets.com

The site calls itself a leading site for Analytics, Big Data, Data Science, and Data Mining. KDnuggets is more of a blog and information page for data and analysis. No direct software is offered. Under the heading 'Software' and the sub-category 'clustering and segmentation software', links to different software providers can be found. These pages, however, provide for clustering and segmentation across the whole range and not customer segmentation specifically. The software is divided into three parts: commercial, free, and open-source software. Some of the links have expired. The software packages from the area of free and open-source give an unprofessional impression.

- www.wise.io

Wise.io deals with the subject of machine learning technology and tries to help customers with it. This applies to the field of customer support and service. In this field, wise.io offers a software tool called 'wise support'. This means customer segmentation software is not offered for sales or marketing.

Since no customer segmentation software is offered in the B2B area, the researcher does not focus on this company any more.

- www.sci.utha.edu

This is the website of the Scientific Computing and Imaging Institute of the University of Utah. Although a different software program is described in the area of segmentation, no software on the website deals with the topic of customer segmentation.

For this reason, this search result is not addressed further.

- www.experian.com

See search item: customer segmentation software

- www.itk.org

Insight Segmentation and Registration Toolkit (ITK) is a project of the US National Library of Medicine. It is concerned with identifying and classifying data found in a digitally sampled representation. It is similar to the TurtleSeg software, only for the medical field.

For this reason, this search result is not addressed further.

Search item: segmentation software SME

- www.thebalance.com

See search item: customer segmentation SME

- www.b2binternational.com

Founded in 1998 in Manchester, B2B International proclaims that they are one of the best companies for B2B market research. However, they do not sell software. It is more of a consulting firm. They offer consulting services for the B2B customer segment, but this is only one service among many. The focus of this company is clearly on market research.

- www.futuresimple.com

Future Simple belongs to the company Base. It distributes a CRM software program for three business areas. On the one hand, Future Simple and the Base CRM offer aid to Enterprises, Mid-Market, and Small Businesses. Base describes itself as a great alternative to Salesforce and refers particularly to the cost and complexity of Salesforce.

Besides the CRM applications, Base also offers complete software packages for small businesses that include:

- Inbound Marketing
- Sales Tracking and Management
- Time Tracking
- Invoicing
- Email Marketing
- Mobile Marketing
- Accounting
- Human Resources Management

Base does not offer an application that only deals with the subject of customer segmentation. There are always different packages with several applications.

- www.capterra.com

See search item: customer segmentation software

- www.smallbusiness.chron.com/

Chron is the website of the *Houston Chronicle* and http://smallbusiness.chron.com/ is the section dedicated to small businesses in their newspaper. Here, the Chronicle published

various kinds of information for small businesses. But, the focus is not on customer segmentation.

For this reason, this search result is not addressed further.

Communication style of experts		Expert intention		Interview strategy
		Information	Persuasion	
	Attention to detail	Bureaucrat	Know-it-all	Time management
	Anecdotal	Storyteller	Missionaries	
	Abstracting	Analyser	Seller	Concretisation
	Evasive	Sceptic	Cynics	
	Without relation to facts	Pedagogues	Demagogues	Confrontation

Table: 110 List of expert interview approaches (Martens & Brüggemann, 2006)

Author	Discipline	Mixed method designs
Greene, Caracelli and Graham (1989)	Evaluation	Initiation Expansion Development Complementarity Triangulation
Patton (1990)	Evaluation	Experimental design, qualitative data, and content analysis Experimental design, qualitative data, and statistical analysis Naturalistic inquiry, qualitative data, and statistical analysis Naturalistic inquiry, quantitative data, and statistical analysis
Morse (1991)	Nursing	Simultaneous triangulation Sequential triangulation
Steckler, McLeroy, Goodman, Bird and McCormick (1992)	Public health education	Model 1: Qualitative methods to develop quantitative measures Model 2: Qualitative methods to explain quantitative findings

		Model 3: Quantitative methods to embellish qualitative findings Model 4: Qualitative and quantitative methods used equally and parallel to each other
Greene and Caracelli (1997)	Evaluation	Component designs • Triangulation • Complementarity • Expansion Integrated designs • Iterative • Embedded or nested • Holistic • Transformative
Morgan (1998)	Health research	Complementary designs • Qualitative preliminary • Quantitative preliminary • Qualitative follow-up • Quantitative follow-up
Tashakkori and Teddlie (1998)	Educational research	Mixed method designs • Equivalent status (sequential or parallel) • Dominant–less dominant (sequential or parallel) • Multilevel use Mixed model designs I. Confirmatory, qualitative data, statistical analysis and inference II. Confirmatory, qualitative data, qualitative analysis and inference III. Exploratory, quantitative data, statistical analysis and inference IV. Exploratory, qualitative data, statistical analysis and inference V. Confirmatory, quantitative data, qualitative analysis and inference VI. Exploratory, quantitative data, qualitative analysis and inference VII. Parallel mixed model VIII. Sequential mixed model
Creswell (1999)	Educational policy	Convergence model Sequential model Instrument-building model
Sandelowski (2000)	Nursing	Sequential Concurrent

		Iterative Sandwich
Creswell, Plano Clark, Gutmann and Hanson (2003)	Educational research	Sequential explanatory Sequential exploratory Sequential transformative Concurrent triangulation Concurrent nested Concurrent transformative
Creswell, Fetters and Ivankova (2004)	Primary medical care	Instrument design model Triangulation design model Data transformation design model
Tashakkori and Teddlie (2003b)	Social and behavioural research	Multistrand designs Concurrent mixed designs • Concurrent mixed method design • Concurrent mixed model design Sequential mixed designs • Sequential mixed method design • Sequential mixed model design Multistrand conversion mixed designs • Multistrand conversion mixed method design • Multistrand conversion mixed model design Fully integrated mixed model design
Greene (2007)	Evaluation	Component designs • Convergence • Extension Integrated designs • Iteration • Blending • Nesting or embedding • Mixing for reasons of substance or values
Teddlie & Tashakkori (2009)	Educational research	Mixed methods multistrand designs • Parallel mixed designs • Sequential mixed designs • Conversion mixed designs • Multilevel mixed designs • Fully integrated mixed designs
Morse and Neihaus (2009)	Nursing	Mixed method simultaneous designs Mixed method sequential designs Complex mixed method designs • Qualitatively driven complex mixed method design

				• Quantitatively driven complex mixed method design • Multiple method research program

Table: 111 Mixed methods design classification (Creswell & Plano Clark, 2011)

Prototypical Characteristics	Convergent Design	Explanatory Design	Exploratory Design	Embedded Design	Transformative Design	Multiphase Design
Definition	Concurrent quantitative and qualitative data collection, separate quantitative and qualitative analyses, and the merging of the two data sets	Methods implemented sequentially, starting with quantitative data collection and analysis in Phase 1 followed by qualitative data collection and analysis in Phase 2, which builds on Phase 1	Methods implemented sequentially, starting with qualitative data collection and analysis in Phase 1 followed by quantitative data collection and analysis in Phase 2, which builds on Phase 1	Either the concurrent or sequential collection of supporting data with separate data analysis and the use of the supporting data before, during, or after the major data collection procedures	Framing the concurrent or sequential collection and analysis of quantitative and qualitative data sets within a transformative, theoretical framework that guides the methods decisions	Combining the concurrent and/or sequential collection of quantitative and qualitative data sets over multiple phases of a program of study
Design purpose	Need a more complete under-standing of a topic Need to validate or corroborate quantitative scales	Need to explain quantitative results	Need to test or measure qualitative exploratory findings	Need preliminary exploration before an experimental trial (sequential /before) Need a more complete under-standing of an experimental trial, such as the process and outcomes (concurrent/during)	Need to conduct research that identifies and challenges social injustices	Need to implement multiple phases to address a program objective, such as for program development and evaluation

	Convergent Design	Explanatory Design	Exploratory Design	Embedded Design	Transformative Design	Multiphase Design
Typical paradigm foundation	Pragmatism as an Umbrella philosophy	Postpositivist in Phase 1 Constructivist in Phase 2	Constructivist in Phase 1 Postpositivist in Phase 2	Worldview may reflect the primary approach (e.g., postpositivist or constructivist) or pragmatism if concurrent Constructivist for the qualitative component and postpositivist for the quantitative component if sequential	Transformative worldview as an umbrella philosophy	Pragmatism if concurrent Constructivist for the qualitative component and postpositivist for the quantitative component if sequential
Level of interaction	Independent	Interactive	Interactive	Interactive	Interactive	Interactive
Priority of the strands	Equal emphasis	Quantitative emphasis	Qualitative emphasis	Either quantitative or qualitative emphasis	Equal, quantitative or qualitative emphasis	Equal emphasis
Timing of the strands	Concurrent	Sequential: quantitative first	Sequential: qualitative first	Either concurrent or sequential	Either concurrent or sequential	Multiphase combination
Primary point of interface for mixing	Interpretation if independent Analysis if interactive	Data collection	Data collection	Design level	Design level	Design level

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Primary mixing strategies	Merging the two strands: After separate data analysis With further analyses (e.g., comparisons or transformations) of separate results	Connecting the two strands: From quantitative data analysis to qualitative data collection Use quantitative results to make decisions about qualitative research questions, sampling and data collection in Phase 2	Connecting the two strands: From qualitative data analysis to quantitative data collection Use qualitative results to make decisions about quantitative research questions, sampling and data collection in Phase 2	Embedding one strand within a design based on the other type: Before, during, or after major component Use secondary results to enhance planning, understanding or explaining of primary strand	Mixing within a theoretical framework: Merging, connecting or embedding the strands within a transformative theoretical lens	Mixing within a program objective framework: Connecting and possibly merging and/or embedding within a programmatic objective
Common variants	Parallel databases Data transformation Data validation	Follow-up explanations Participant selection	Theory development Instrument development	Embedded experiment Embedded correlational design Mixed methods case study Mixed methods narrative research Mixed methods ethnography	Feminist lens Disability lens Socioeconomic class lens	Large-scale program development and evaluation projects Multilevel statewide studies Single mixed methods studies that combine both concurrent and sequential phases

Table: 112 Prototypical characteristics of the major mixed methods types of designs (Creswell & Plano Clark, 2007)

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Analysis expert interviews – customer segmentation

This section will highlight the nine headings of the customer segmentation interviews in figure 95 and most popular response comments in the following figures.

It must be noted that this and the following figures will not distinguish between positive and negative comments.
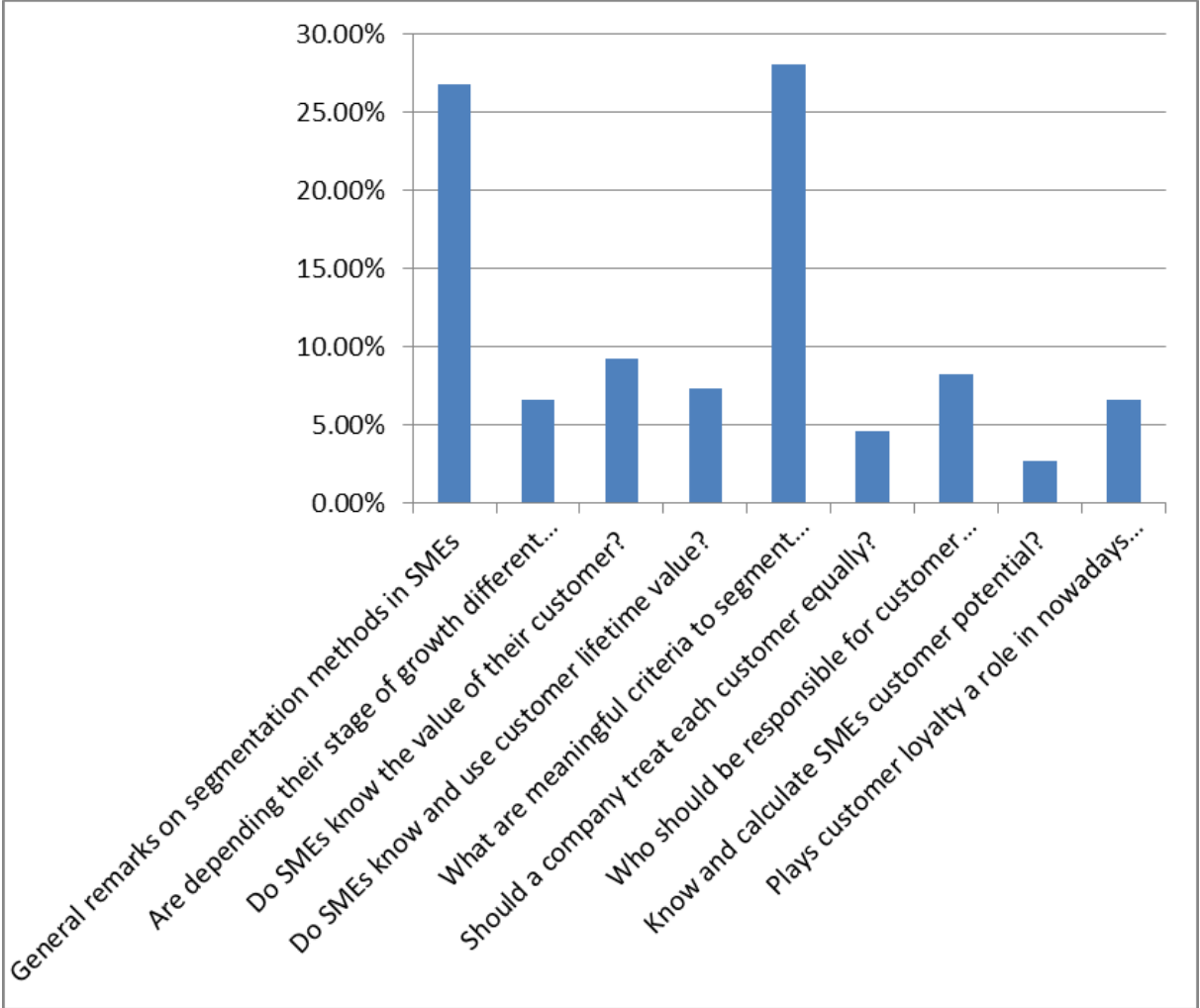
Figure: 95 Amount of comments per heading in percent
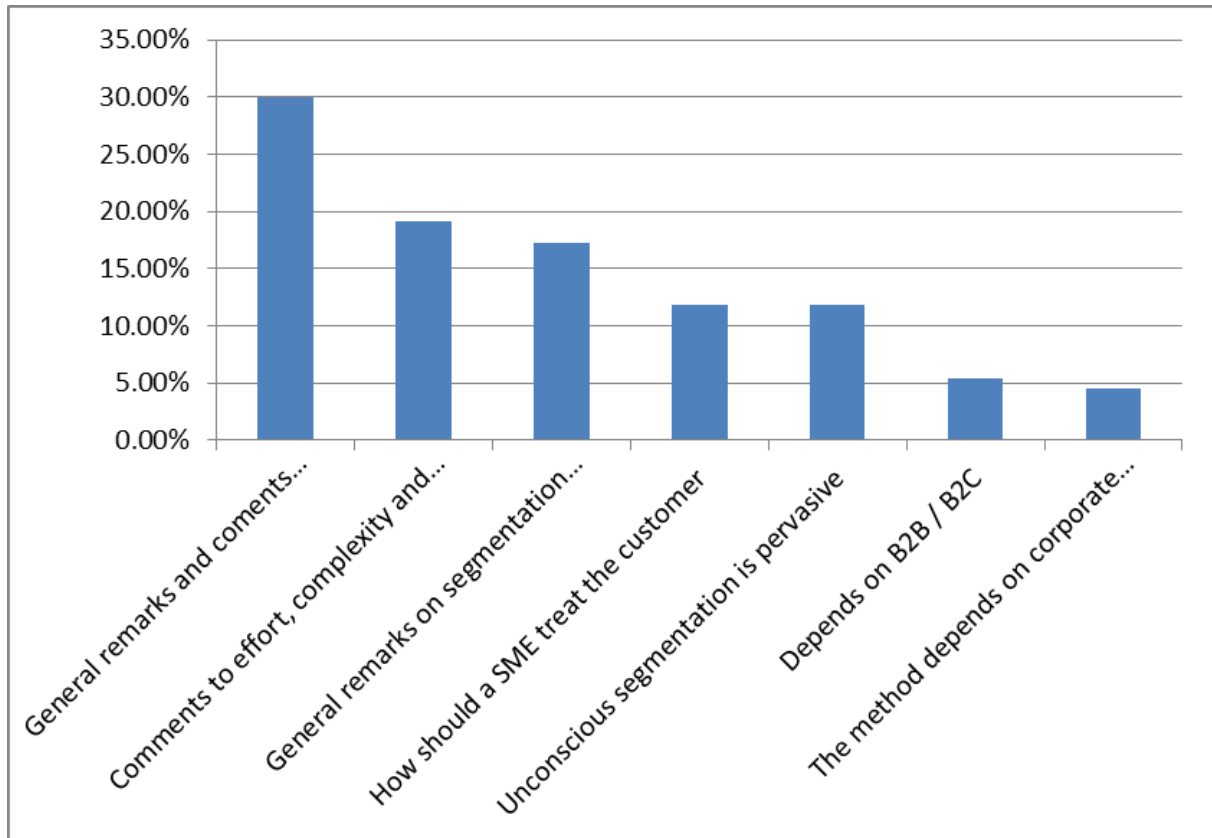
Figure: 96 Sub-headings of heading -Analyse, evaluate and develop customer segmentation-

Figure 96 presents an evaluation of the subheadings, which makes clear that, in addition to the general remarks (30% of comments), especially the topics of effort, complexity, and cost/benefit ratio play a major role along with the discussion regarding the different segmentation methods. At the first time here, the experts discuss the difference between the topic B2B and B2C customers in the field of customer segmentation. This topic will appear during the interviews again and again because the interviewees concur that it makes a huge difference whether a company segment is B2B or B2C customer.
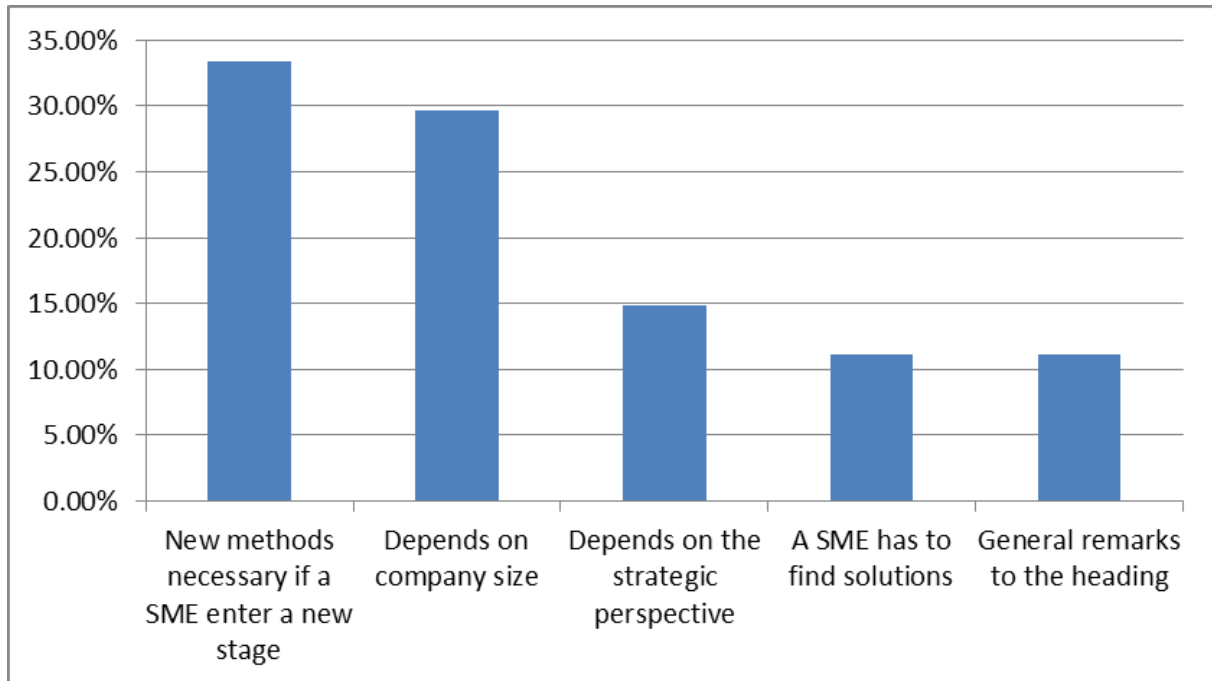
Figure: 97 Sub-headings of heading -Method in relation to their stage of growth-

With 27 comments, the second heading—Method in relation to their stage of growth—has fewer comments, but it is important and has a clear message with two main subheadings. First, if a company growth a new method is necessary and secondly it strongly depends on the company size at all.

Figure 98 clarifies that most of the expert comments have to do with the subject that the SMEs do not know the value of their customer and/or it is too complex for SMEs to calculate it. Some experts also commented that SMEs know the value but not the monetary value. It means that they know these customers are valuable, or at least, they have more or less value than some others.
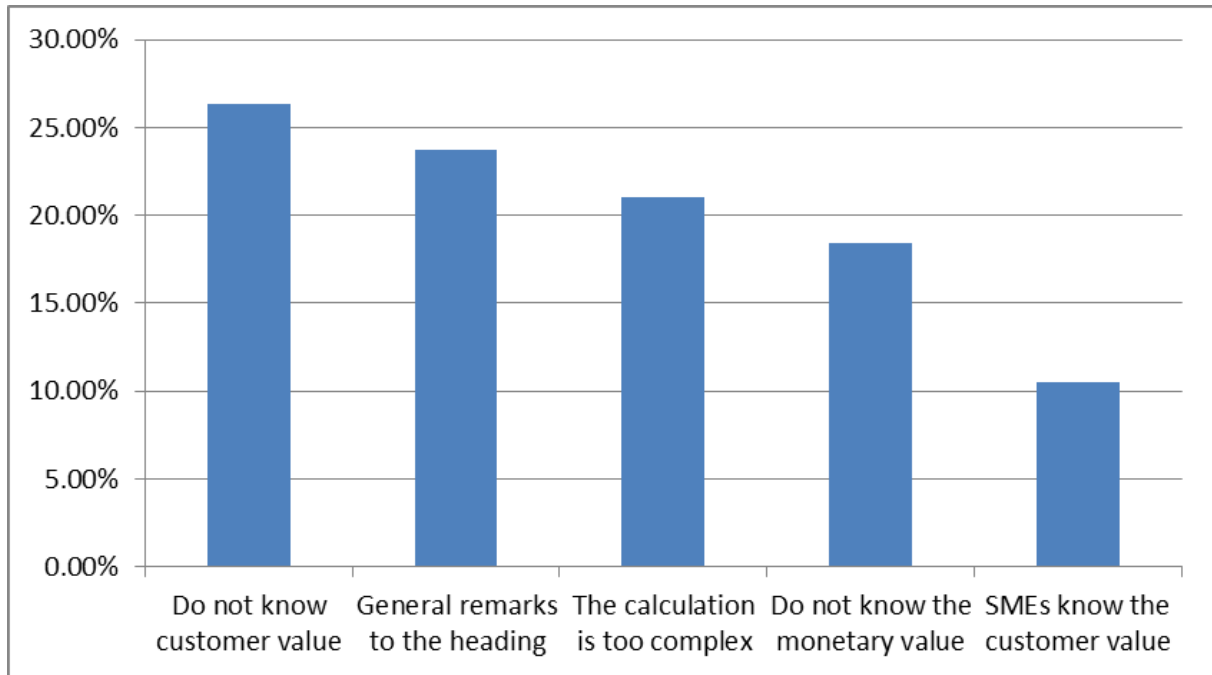
Figure: 98 Sub-headings of heading -Customer value-
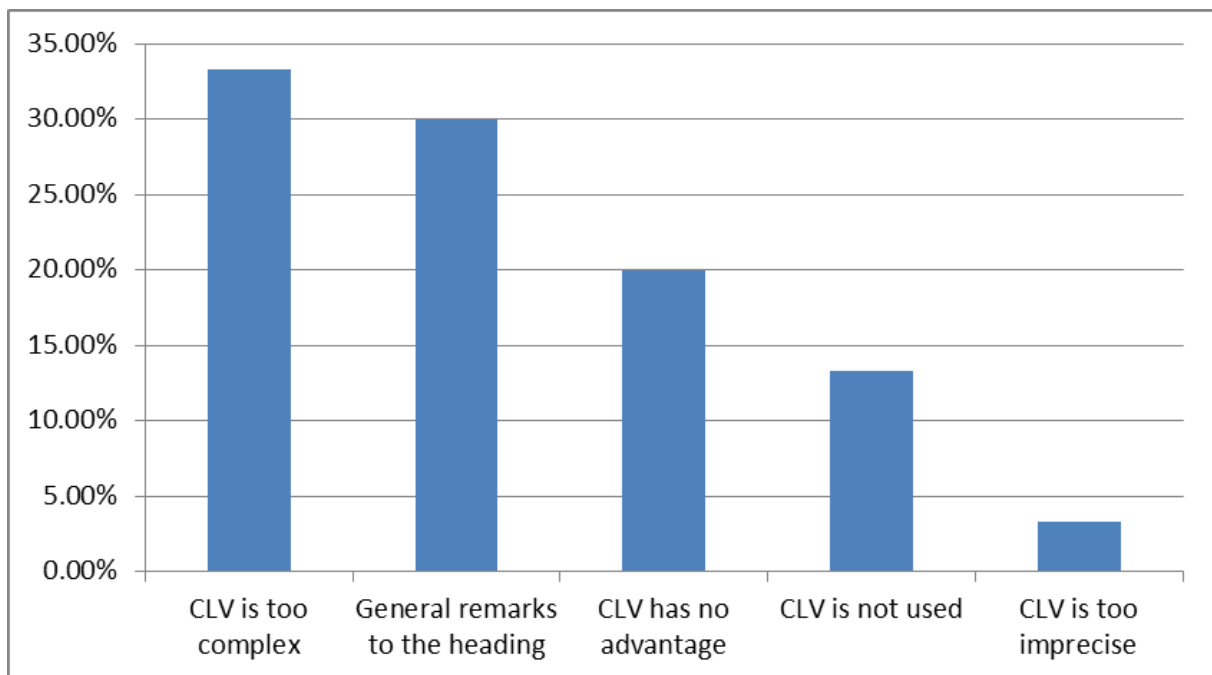
Figure: 99 Sub-headings of heading -Customer lifetime value-

Very similar to the subheading customer value is the subheading regarding the CLV. Figure 99 shows that 33.33 per cent deal with the comment that the CLV is too complex for SMEs and 20 per cent do not see an advantage for SMEs. Often because of the cost/benefit ratio, it is too imprecise or the SMEs do not have all relevant data to calculate it.
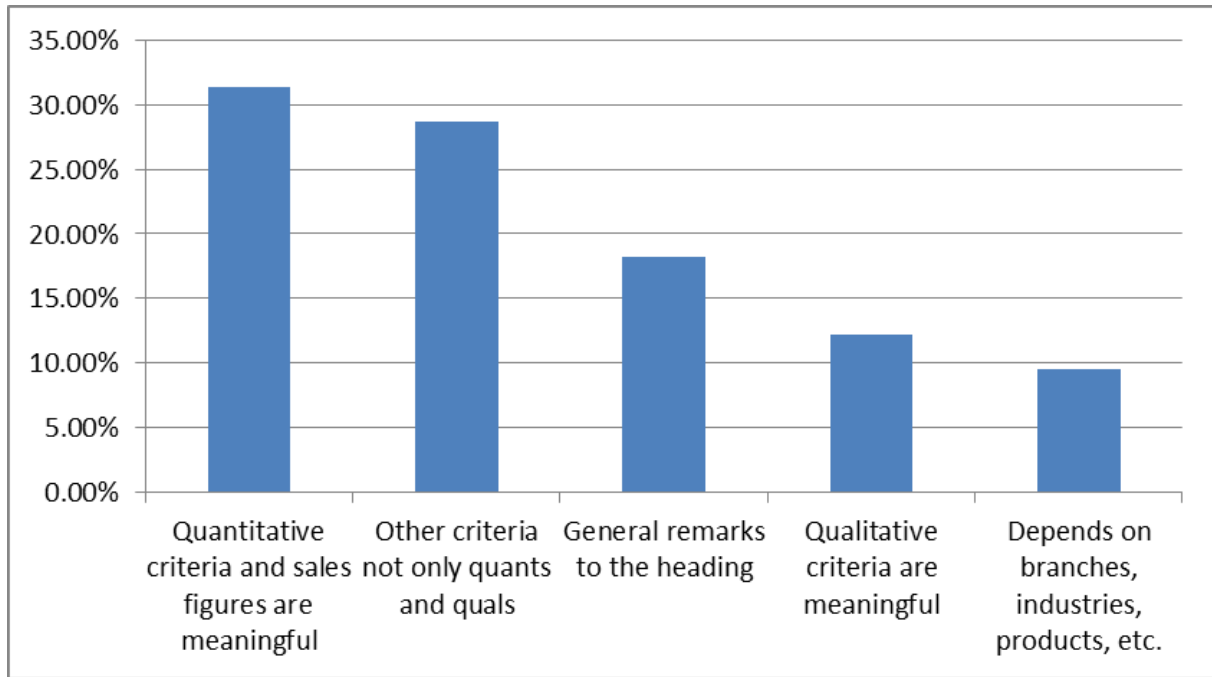
Figure: 100 Sub-headings of heading -Meaningful criteria to segment customers-

Figure 100 shows that with over 30 per cent—quantitative or sales figures—play a major role in the heading 'Meaningful criteria to segment customers' as well as in 'other criteria'. The topic 'qualitative criteria', with only 12.17 per cent, plays a minor role. One reason for this could be that some qualitative criteria have already been named in the topic 'other criteria'.
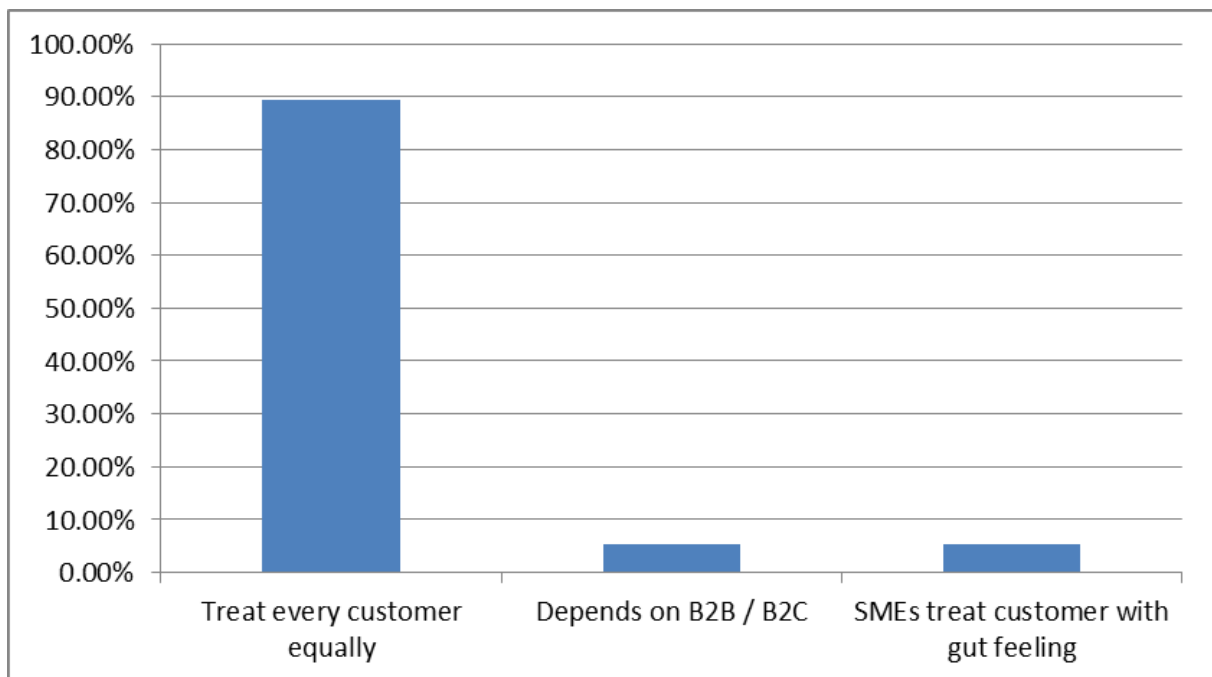
Figure: 101 Sub-headings of heading -Treat each customer equally-

Figure 101 shows the clearest statement in the interviews: 89.17 per cent of the comments were made regarding 'Treat every customer equally', with 100 per cent of the comments saying no, as SMEs are in a very unfavourable position to do this.

A point regarding which SMEs have conflicts again and again is the responsibility regarding customer segmentation. Most of the comments were made on sales, marketing on the third position behind the comments that both departments should be responsible. In the researcher's opinion, this has to do with the size of the company. Most of the time SMEs are totally sales and turnover-oriented; it is also mentioned in the comments that marketing hardly plays a role.
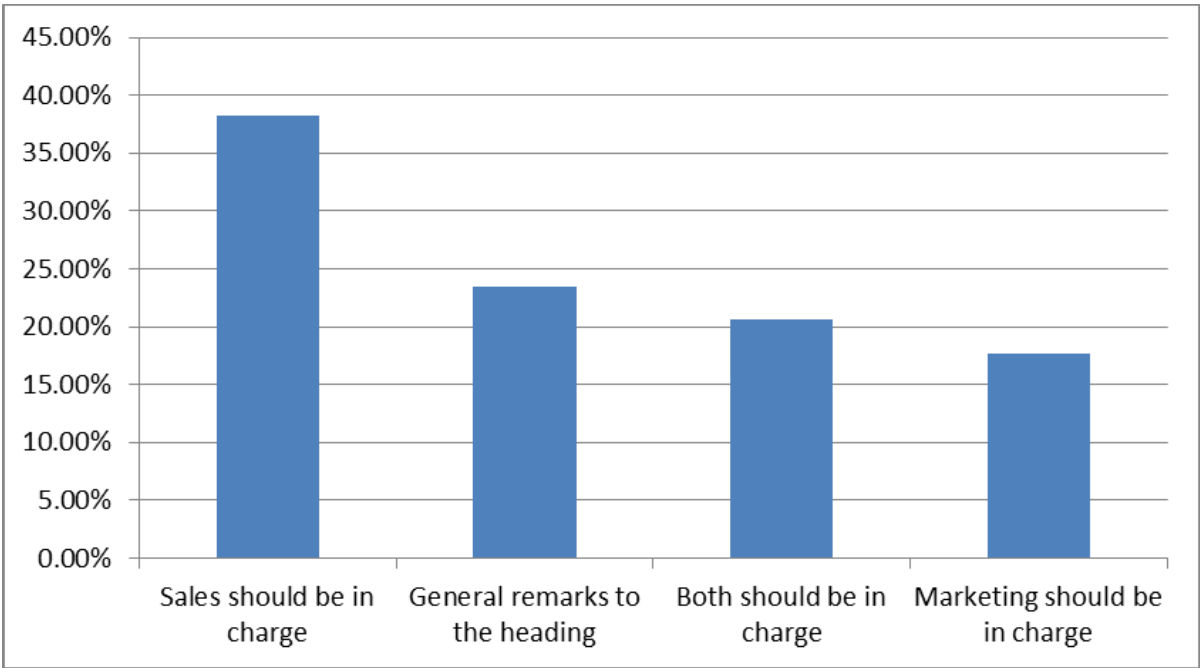
Figure: 102 Sub-headings of heading -Who should be responsible: Sales or Marketing-

The heading 'Customer potential', Figure 103, show that the interviewees mention that most SMEs do not know the potential of the customer, or there are some issues with the calculation of customer potential. This is because how and with what kind of formula the SME calculates the potential is quite different. But it should be noted that this heading has the lowest interviewee response.
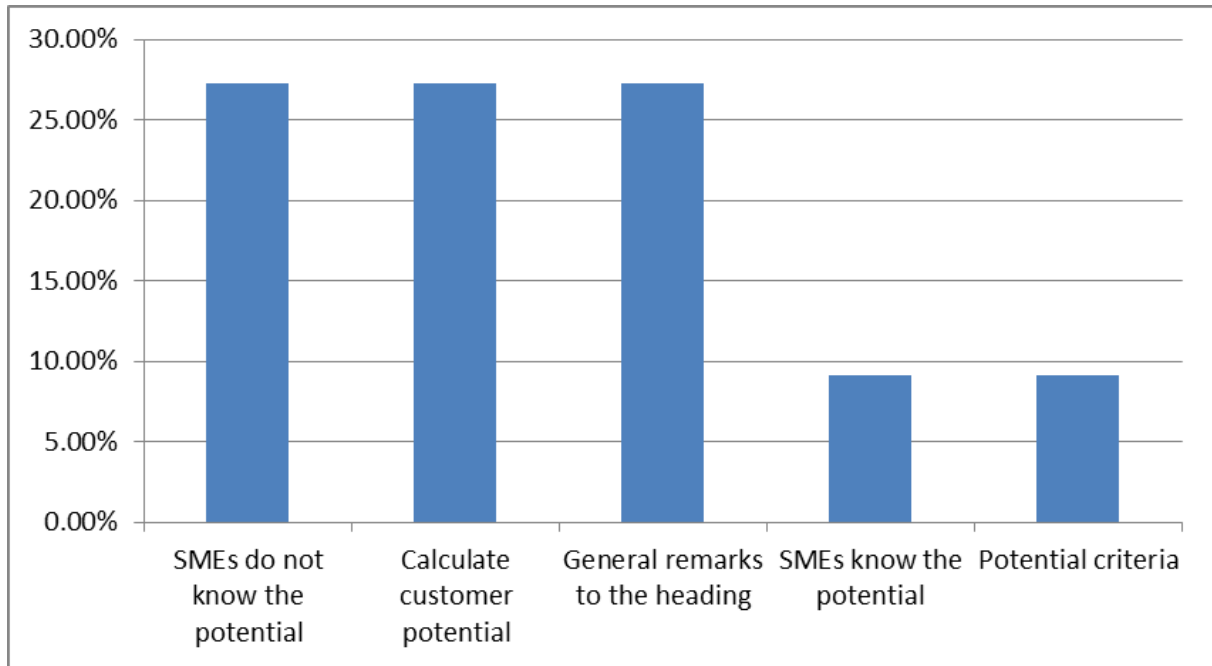
Figure: 103 Sub-headings of heading -Customer potential-
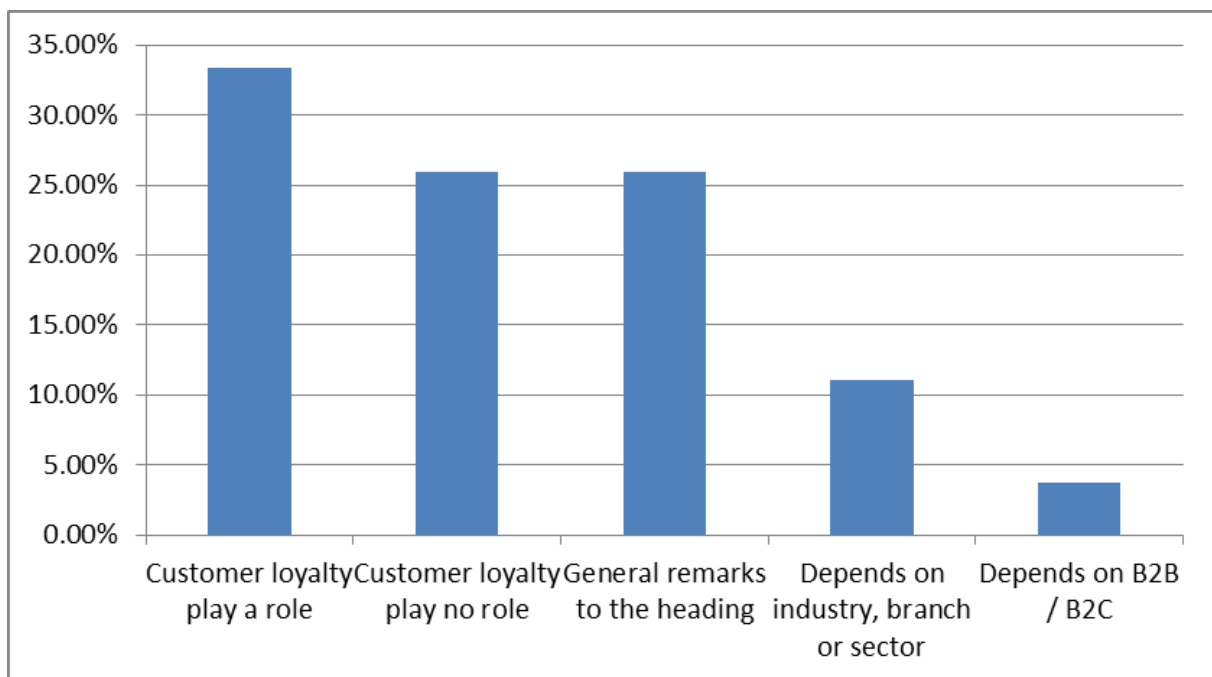
Figure: 104 Sub-headings of heading -Customer loyalty

Customer loyalty is the last heading, and here the meanings are different between the interviewees. As many as 33.33 per cent comments say that customer loyalty play a role and 25.93 per cent say it plays no role. It can be assumed that industry, branch, or business sector play a role if the SME work in B2B or B2C business.

Analysis expert interviews – available software

This section will highlight the four headings of the available software interviews in figure 105 and most popular response comments.

It must be noted that this and the following figures will not distinguish between positive and negative comments.
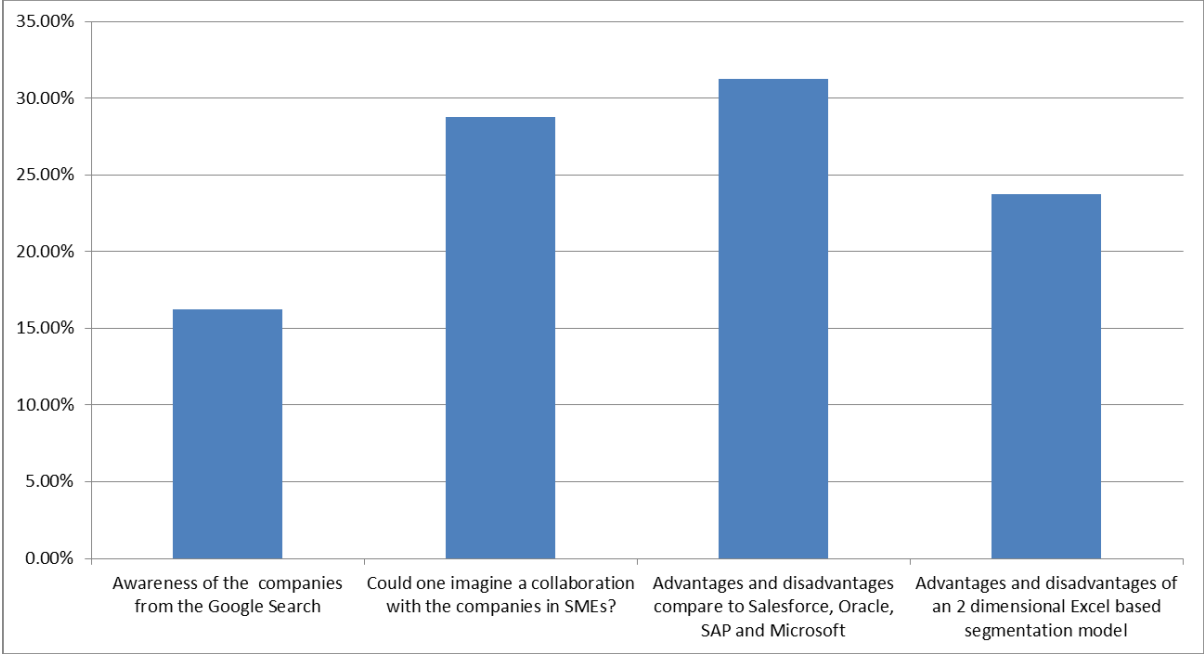
Figure: 105 Amount of comments per heading in percent

At 31.25 per cent, the focus is on the comparison between the available software and the four strongest software providers in this sector. Next, 28.75 per cent comments were on whether the respondents could present collaboration with the software providers.

If one now look at the four headings in detail, the companies from the Internet search, excluding Bain and the big four sales force, SAP, Oracle and Microsoft are largely unknown. But Bain is perceived only as a consulting firm, but not as a service provider in customer segmentation.
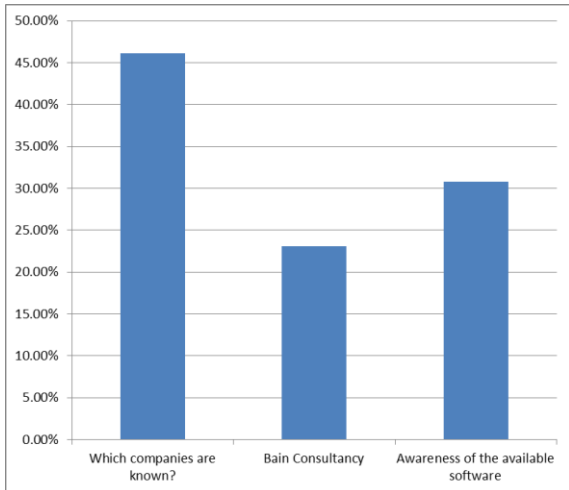
Figure: 107 Sub-headings of heading – Awareness
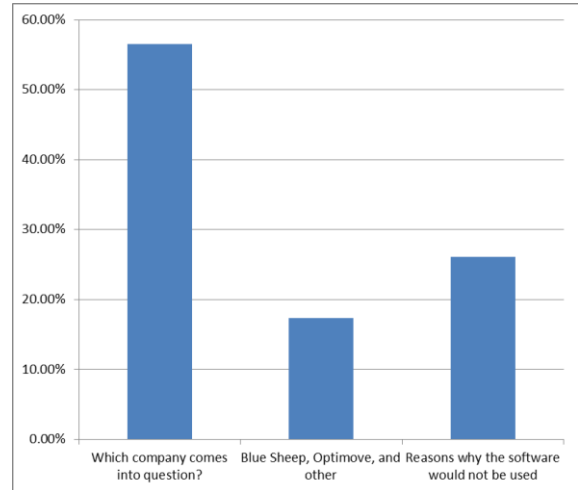
Figure: 106 Sub-headings of heading – Collaboration

A clear result shows with which companies the experts can imagine a collaboration. Once again, the choice of experts on Salesforce, SAP, Oracle, and Microsoft is a matter of fact. All the others are out of question, apart from the company Blue Sheep. An expert could still imagine, next to Blue Sheep, also to collaborate with Optimove.
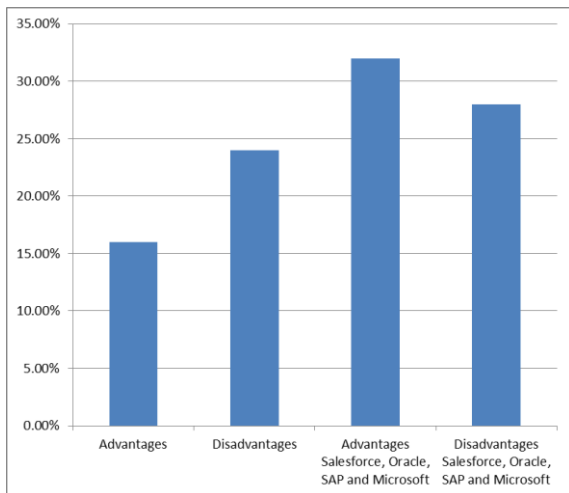
Figure: 109 Sub-headings of heading – Advantages and disadvantages
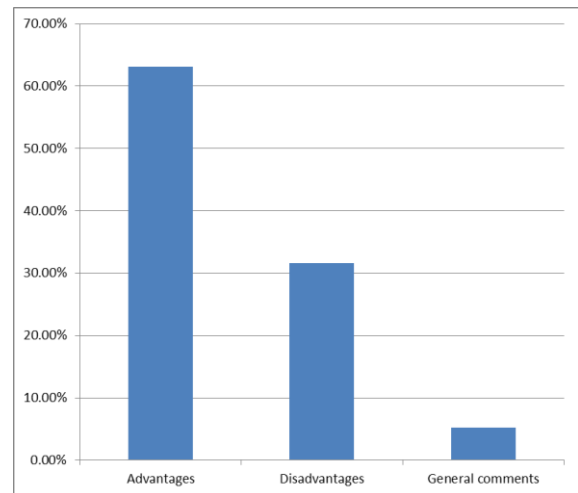
Figure: 108 Sub-headings of heading – Advantages and disadvantages of an 2 dimensional segmentation model

The reasons for the poor performance of the companies among the experts are also mentioned. The main reason for this is high risk in the area of data security and because the segmentation models do not fit into the industry or are designed for the B2C area.

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Regarding the advantages of smaller software vendors, the experts were in agreement that these vendors might meet customer needs in a better manner and assume that the company is more favourable than the four major vendors.

In case of their disadvantages, data security is again in the foreground. In addition, there are the points of interface compatibility and the maturity or flawlessness of the product.

The advantages of large vendors are clear among the experts. The focus was on salesforce, SAP, Oracle, and Microsoft, as well as on confidence in data security, interoperability, and customer service.

The main disadvantage of these companies is the presumably higher price and the standardized software packages—if one deviates from the standard, then the price goes up once again.

The last heading in these interviews were the advantages and disadvantages of the researcher's two-dimensional Excel-based segmentation model. The experts agree that its main advantage is that it is an Excel-based model. This has, among other things, the following advantages: low costs since the companies already use Excel, no interface problems, low costs, and ease of use.

As one of its disadvantages, the experts see that larger and medium sized companies no longer use an Excel model because they already have other software packages, such as SAP, or they use other segmentation criteria. It is also difficult to change the segmentation approach in the researcher's model.

This gives the experts the opinion that this model is particularly useful for start-ups, micro-, and small enterprises.

Analysis expert interviews – validity of the conclusions interviews

This section will highlight the eight headings of the customer segmentation interviews in figure 110 and most popular response comments.

It must be noted that this and the following figures will not distinguish between positive and negative comments.

Most of the notes were given by the experts on why changes should take place and where challenges might emerge when a new segmentation model is implemented.

In the second place with 18.52 per cent is the heading: Why customer segmentation, based on simple software, would still make sense? The other comments are around 10 per cent or even below.
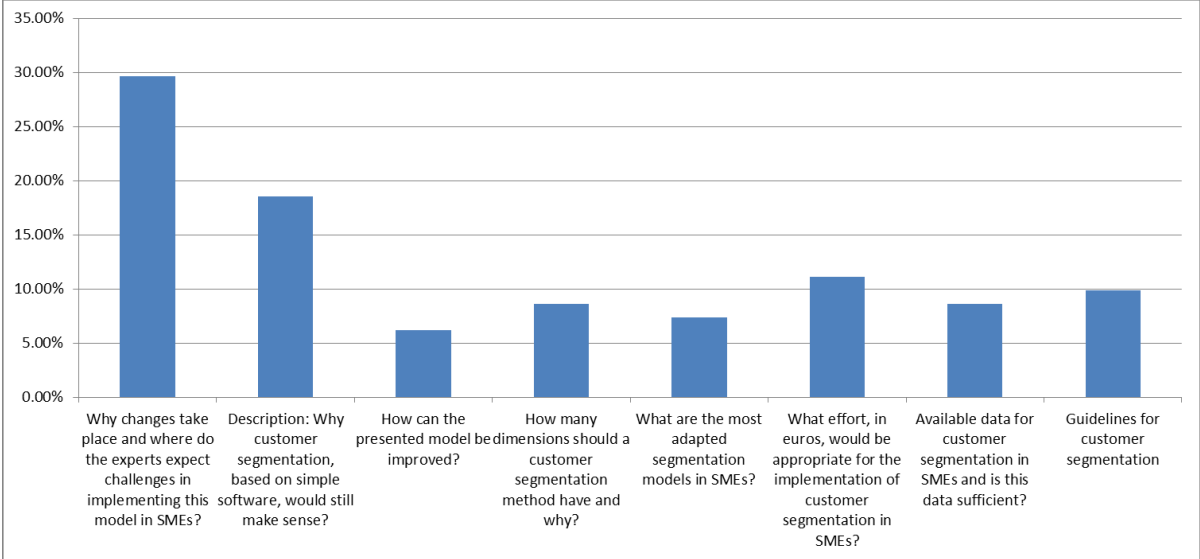
Figure: 110 Amount of comments per heading in percent

For the first heading, two sub-headings are particularly prominent. That is to a - change management and process management issues - and to other - acceptance issues.

On the first point, the experts see difficulties in the implementation of a new segmentation model, especially in sales. This is because in sales close customer relationships are often established and these will be limited by regulations. The experts are also of the opinion that if the employees of the model are convinced, the acceptance increases.

Expectations for new customer segmentation are a higher sales and contribution margin as well as better marketing activity. An expert also considers the potential of customers as a segmentation criterion.
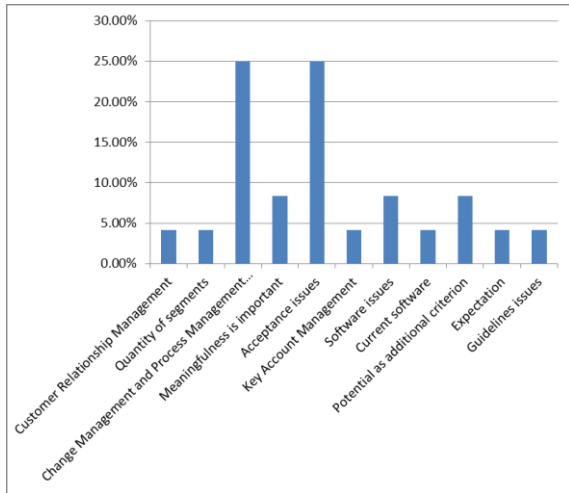
Figure: 111 Sub-headings of heading – Changes and challenges
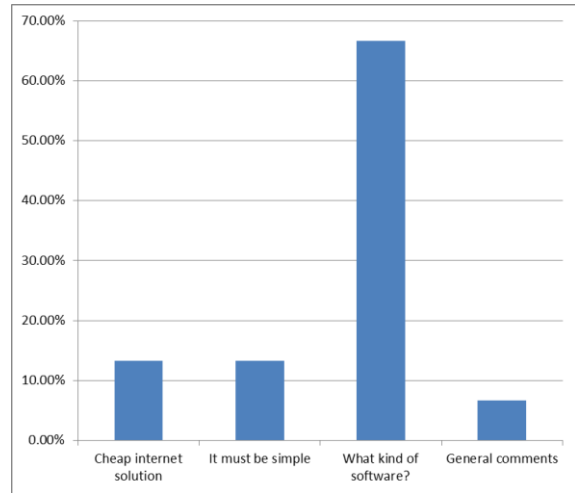
Figure: 112 Sub-headings of heading – Simple software

In the second header, the experts agree that a customer segmentation makes sense in principle. But it should be simple and easy to use in any case. However, they strongly advise against deriving a favourable solution from the Internet. If an ERP or CRM software is not already available, the experts consider an Excel solution to be very good. This is because additional problems can be prevented with known and functioning software.
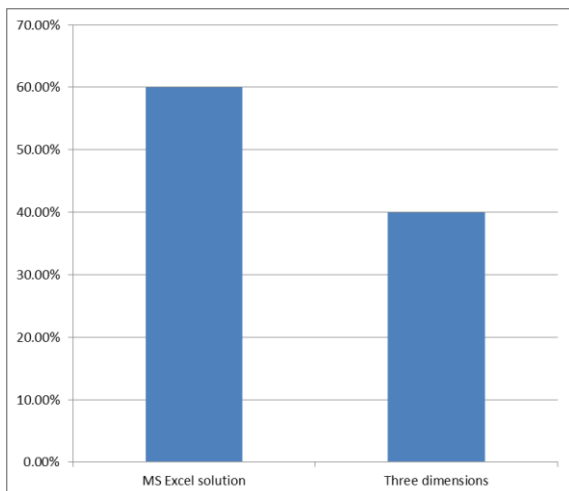
Figure: 113 Sub-headings of heading – Improvements
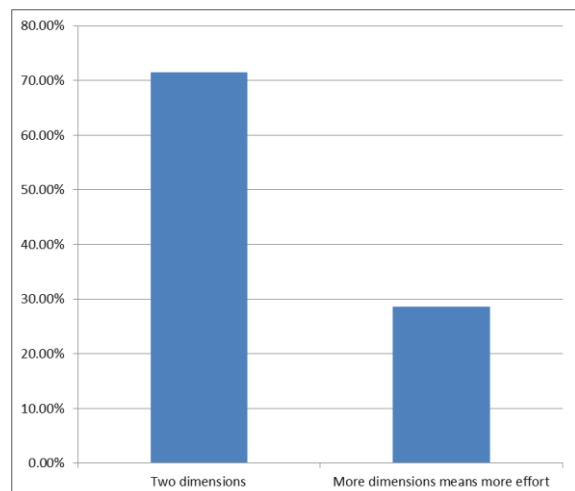
Figure: 114 Sub-headings of heading – How many dimensions?

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With the heading as the segmentation model of the researcher can be improved, the experts see little need for improvement. The Excel-based solution is seen as the biggest advantage of the model, since it makes little extra effort for SMEs. The experts discourage the introduction of the third dimension because it would only complicate the model. This additional effort would have to be justified and the experts just do not see it.

This meaning is confirmed by the experts in the heading: How many dimensions should a customer segmentation have and why?

Two dimensions are considered as the best option and according to one of the experts, further dimensions would irritate the sales people

However, the experts had also the opinion that it is a good and workable solution for start-ups, micro-, and small businesses but larger companies would probably not rely on an Excel based solution.
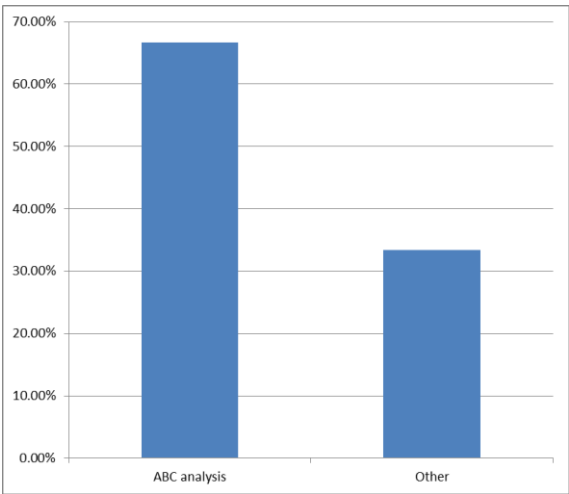
Figure: 115 Sub-headings of heading – Most adapted models
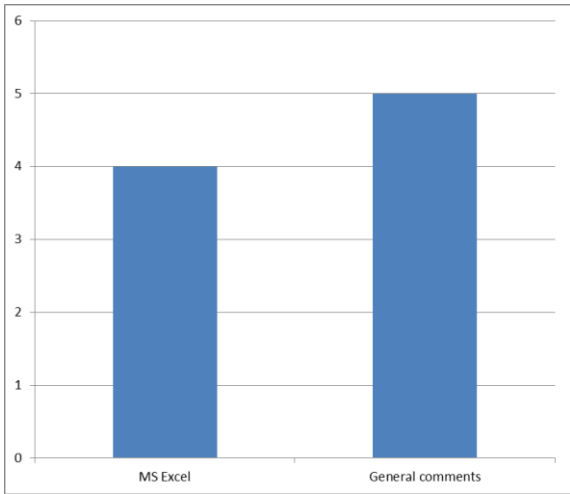
Figure: 116 Sub-headings of heading – Effort

It is unambiguous for the experts which segmentation methods should dominate SMEs. It is the classic one-dimensional ABC analysis. An expert points out that the NPS is used in the B2C area, but models like CLV make no sense since these are too complicated and costly.

When asked what costs are justified, the experts ponder on the issue as the costs depend on different factors. Again, the Excel solution is found to be good because the method hardly

results in additional costs. An expert who has just completed a restructuring in sales estimated the cost to be € 250,000, excluding the current monthly costs.

The penultimate heading deals with the question of which data is available in SMEs for customer segmentation and whether it happens to be sufficient. The experts confirm that the turnover and contribution margin should be present in SMEs as they are the most important factors in customer segmentation. In principle, further existing data could be used, but the experts have doubts as to whether this is necessary in the context of customer segmentation.
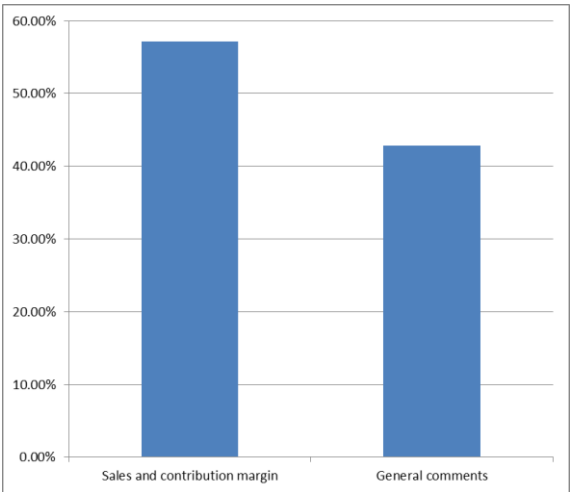
Figure: 118 Sub-headings of heading – Available data
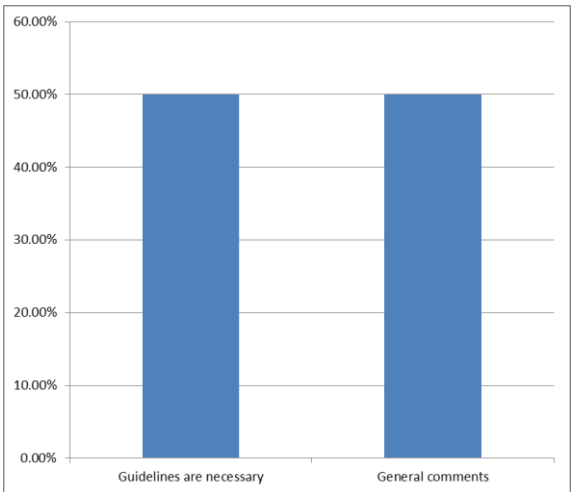
Figure: 117 Sub-headings of heading – Guidelines

The last heading from these expert interviews deals with the subject of guidelines. Here the experts agree that guidelines are necessary in sales departments. But salespeople should be given the freedom to move freely within the guidelines. If only these guidelines must be exceeded, the superiors should be involved in that decision. It was also confirmed by the experts that each company should elaborate these guidelines individually.

Time Series

Basic data 'New customer' from January 2012 to December 2014

Name:	Jan 12	Feb 12	Mrz 12	Apr 12	Mai 12	Jun 12	Jul 12	Aug 12	Sep 12	Okt 12	Nov 12	Dez 12
Team 1	23	16	15	21	20	23	28	29	21	21	28	10
Team 2	14	11	16	11	17	20	10	24	20	20	23	7
Team 3	29	17	30	30	21	21	9	27	21	32	30	17
Total	66	44	61	62	58	64	47	80	62	73	81	34
Name:	Jan 13	Feb 13	Mrz 13	Apr 13	Mai 13	Jun 13	Jul 13	Aug 13	Sep 13	Okt 13	Nov 13	Dez 13
Team 1	21	15	16	19	22	22	24	26	23	19	18	11
Team 2	17	14	16	15	16	21	8	12	21	19	23	12
Team 3	24	16	23	23	24	20	9	19	22	20	18	16
Total	62	45	55	57	62	63	41	57	66	58	59	39
Name:	Jan 14	Feb 14	Mrz 14	Apr 14	Mai 14	Jun 14	Jul 14	Aug 14	Sep 14	Okt 14	Nov 14	Dez 14
Team 1	24	22	19	17	20	14	10	15	19	21	23	12
Team 2	19	21	22	16	20	16	7	16	21	22	27	15
Team 3	26	24	21	18	19	15	8	18	22	21	26	14
Total	69	67	62	51	59	45	25	49	62	64	76	41

Table: 113 Time Series – Basic data 'New customer'

Time Series Modeler

Notes

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	Split File	<none>
	N of Rows in Working Data File	36
	Date	YEAR, not periodic, MONTH, period 12
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Only cases with valid data for the dependent varia-ble are used in computing any statistics.

Syntax		

		TSMODEL
		  /MODELSUMMARY PRINT=[MODELFIT RESIDACF RESIDPACF] PLOT=[SRSQUARE RSQUARE RMSE MAPE MAE MAXAPE MAXAE NORMBIC RESIDACF RESIDPACF]
		  /MODELSTATISTICS DISPLAY=YES MODEL-FIT=[SRSQUARE RSQUARE]
		  /MODELDETAILS PRINT=[PARAMETERS RESIDACF RESIDPACF FORECASTS] PLOT=[RESIDACF RESIDPACF]
		  /SERIESPLOT OBSERVED FORECAST FORE-CASTCI
		  /OUTPUTFILTER DISPLAY=ALLMODELS
		  /AUXILIARY CILEVEL=95 MAXACFLAGS=24
		  /MISSING USERMISSING=EXCLUDE
		  /MODEL DEPENDENT=Total Team1 Team2 Team3
		    PREFIX='Modell'
		  /EXPERTMODELER TYPE=[ARIMA EXSMOOTH] TRYSEASONAL=YES
		  /AUTOOUTLIER DETECT=ON TYPE=[ADDI-TIVE LEVELSHIFT].

Resources	Processor Time	00:00:01,23
	Elapsed Time	00:00:01,33
Use	From	First observation
	To	Last observation
Predict	From	First observation
	To	YEAR_ 2016, MONTH_ 12

Table: 114 Time Series Modeler

Model Description			
			Model Type
Model ID	Total Teams	Modell_1	Simple Seasonal
	Team 1	Modell_2	Simple Seasonal
	Team 2	Modell_3	ARIMA(4,0,0)(0,1,0)
	Team 3	Modell_4	ARIMA(0,0,0)(1,0,0)

Table: 115 Time Series Modeler – Model Description

Model Summary Chart

Mean = 0,53
Std. Dev. = 0,222
N = 4
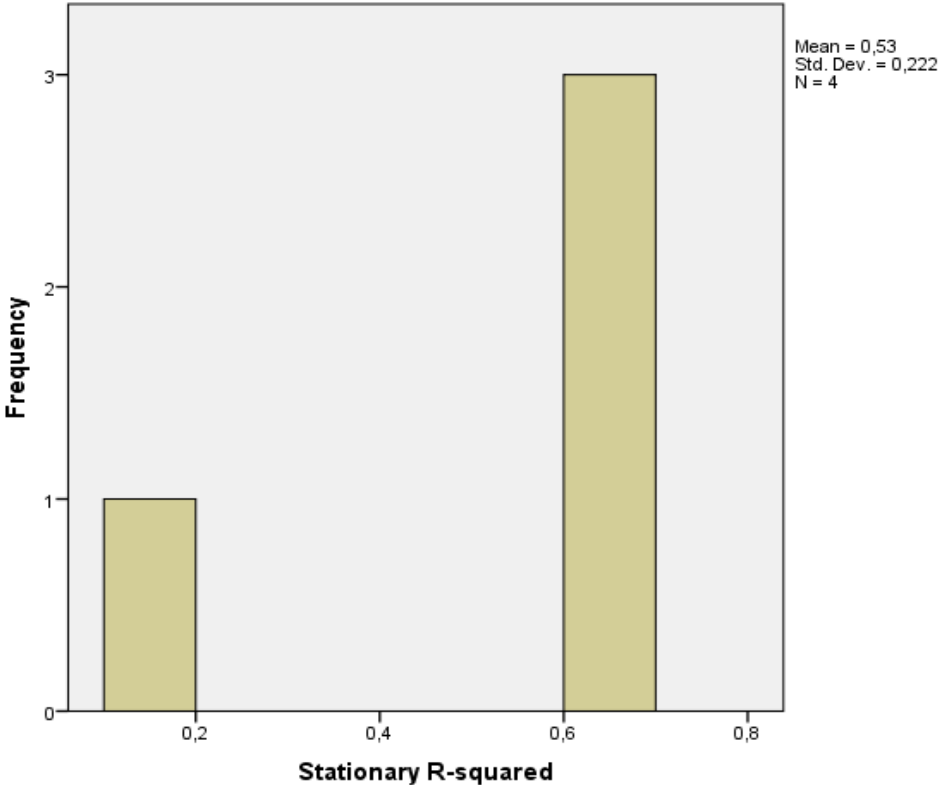
Figure: 119 Model summary – Stationary R-squared

Mean = 0,54
Std. Dev. = 0,240
N = 4
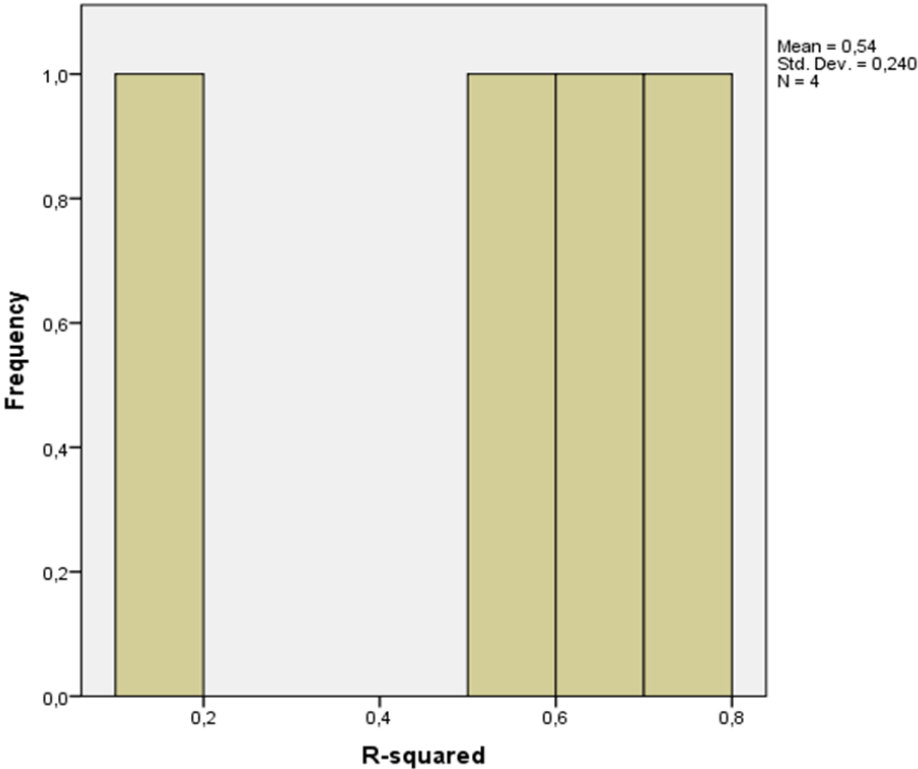
Figure: 120 Model summary – R-squared

Mean = 4,68
Std. Dev. = 2,280
N = 4
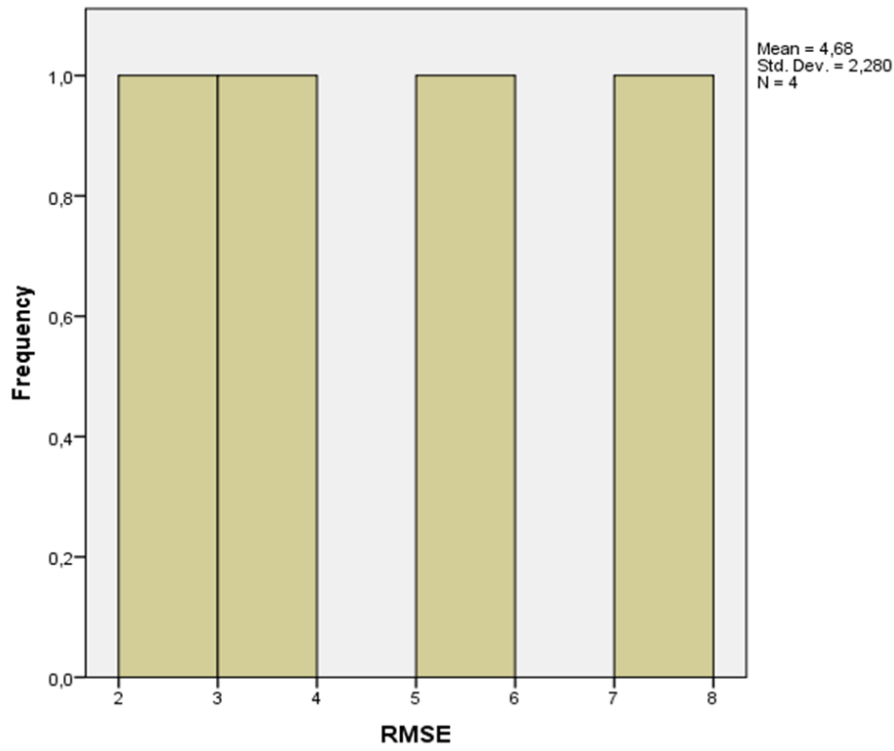
Figure: 121 Model summary – RMSE

Mean = 15,44
Std. Dev. = 4,810
N = 4
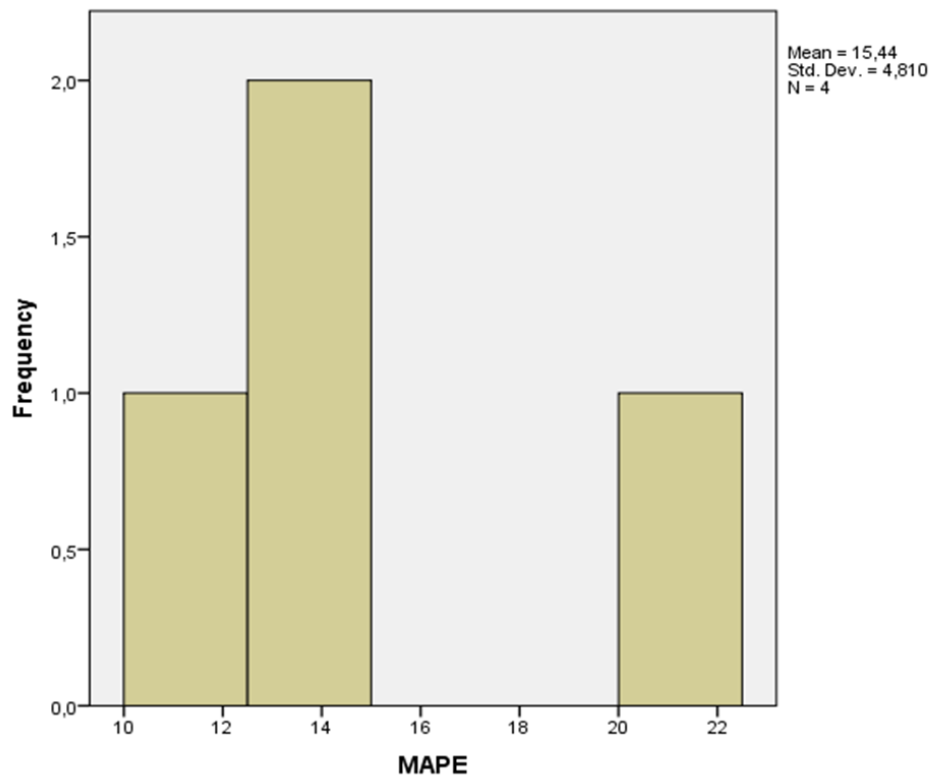
Figure: 122 Model summary – MAPE

Mean = 3,66
Std. Dev. = 1,789
N = 4
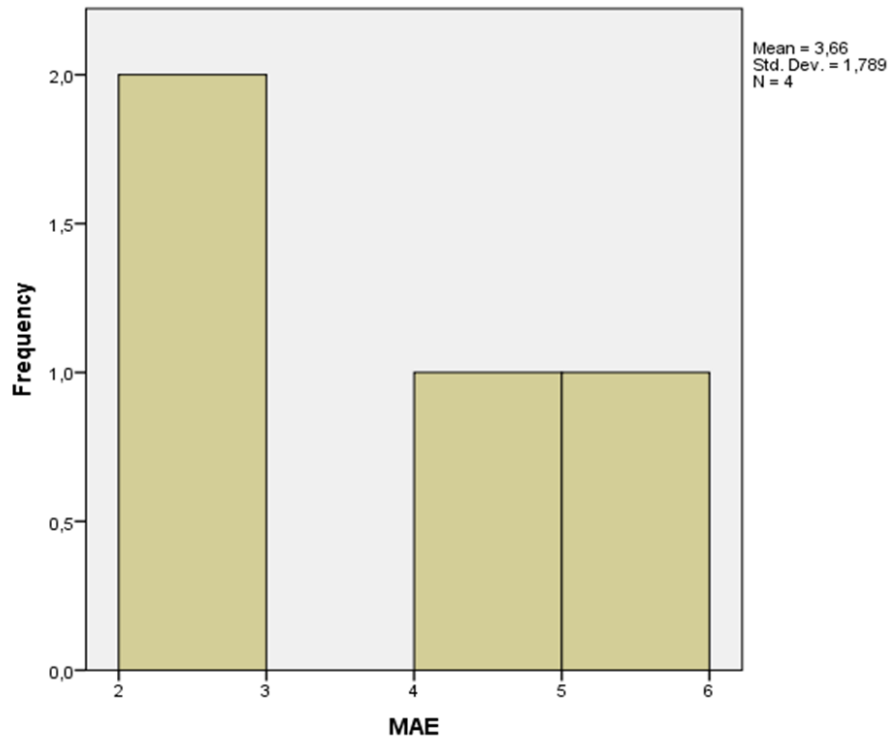
Figure: 123 Model summary – MAE

Mean = 74,75
Std. Dev. = 41,911
N = 4
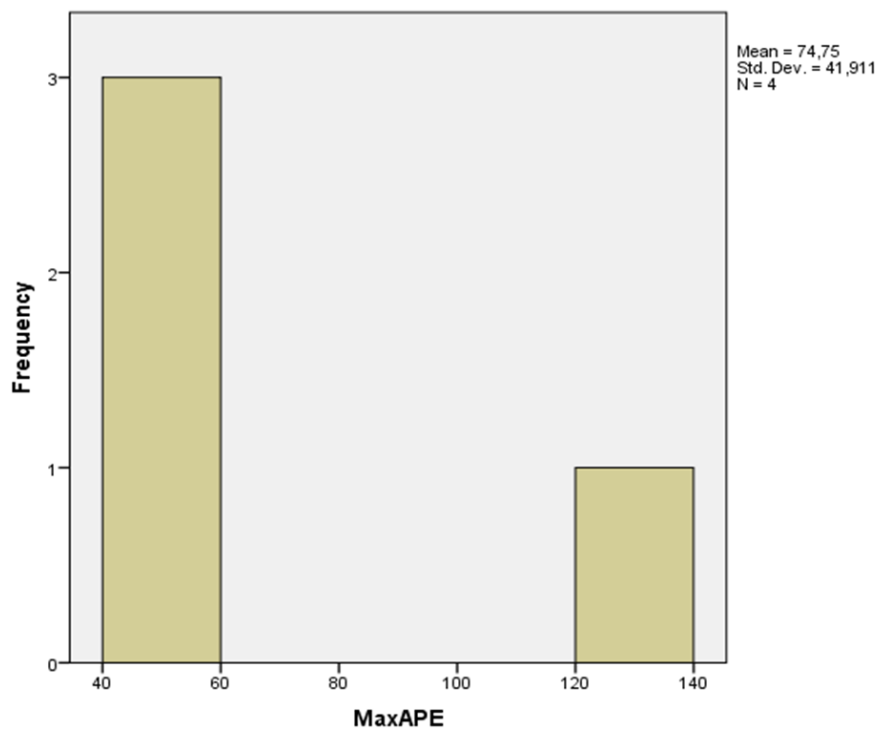
Figure: 124 Model summary – MaxAPE

412

Mean = 9,76
Std. Dev. = 5,388
N = 4
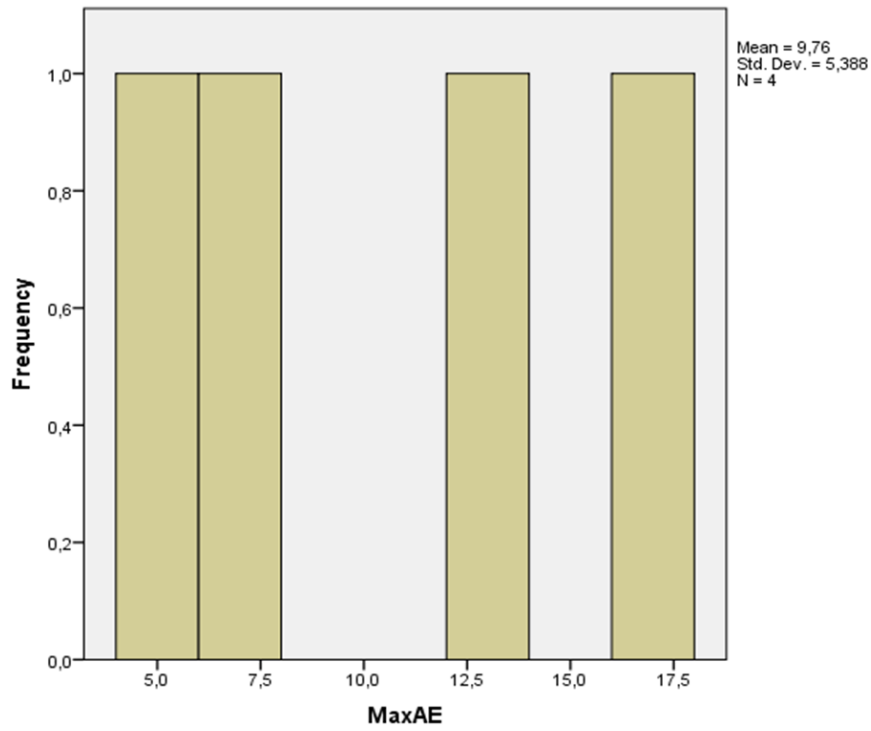
Figure: 125 Model summary – MaxAE

Mean = 3,17
Std. Dev. = 0,943
N = 4
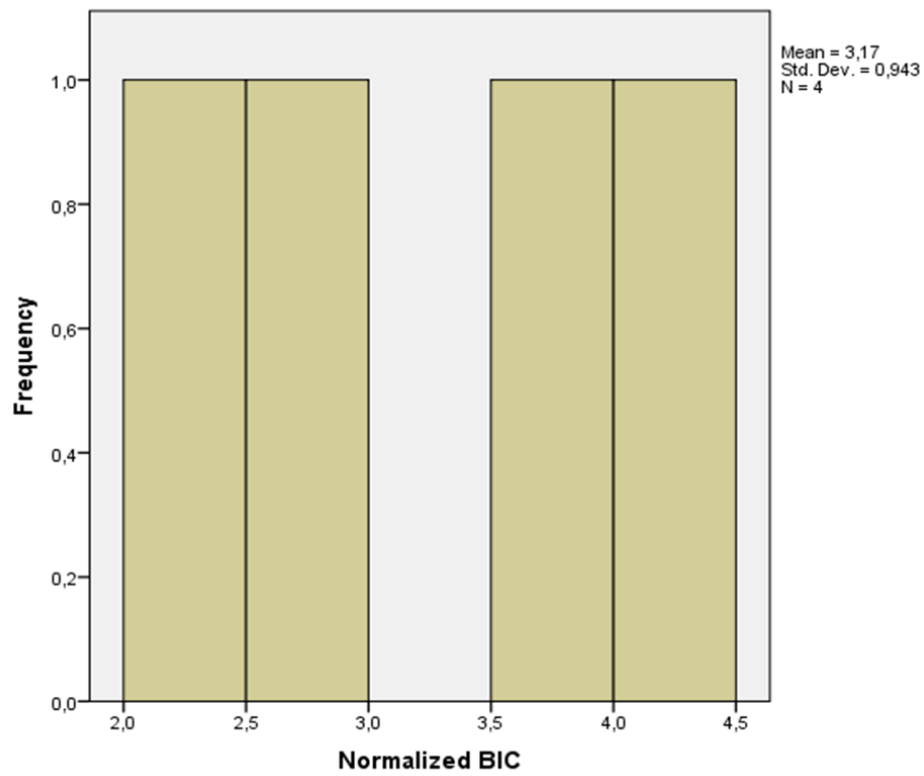
Figure: 126 Model summary – Normalized BIC
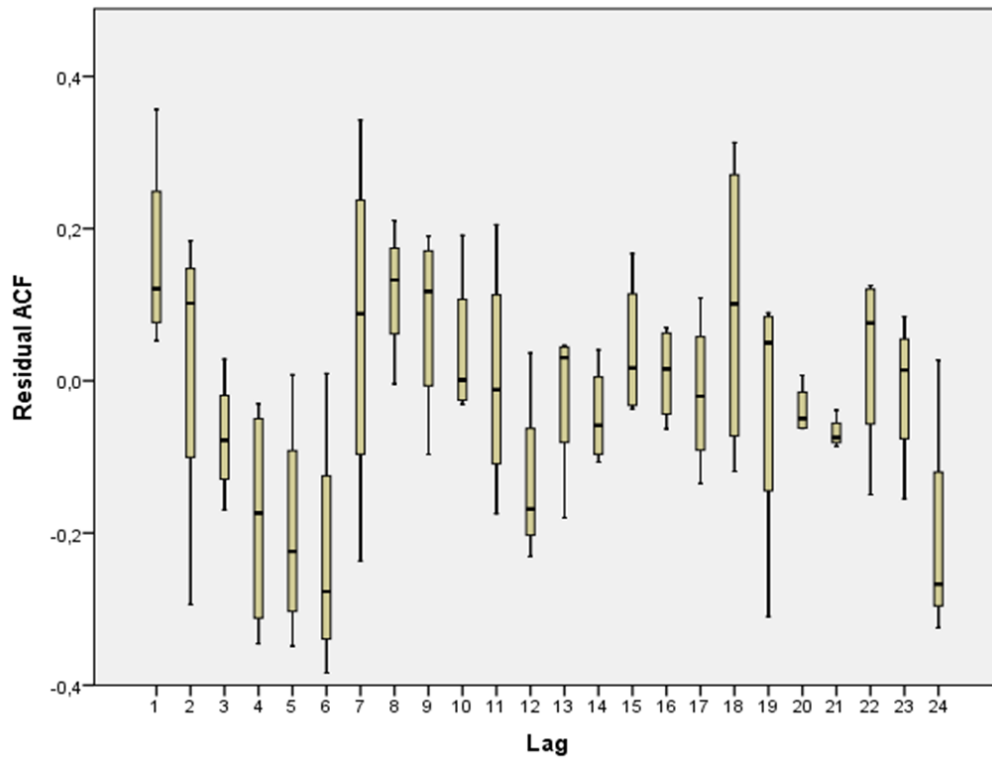
Figure: 127 Model summary – Residual ACF
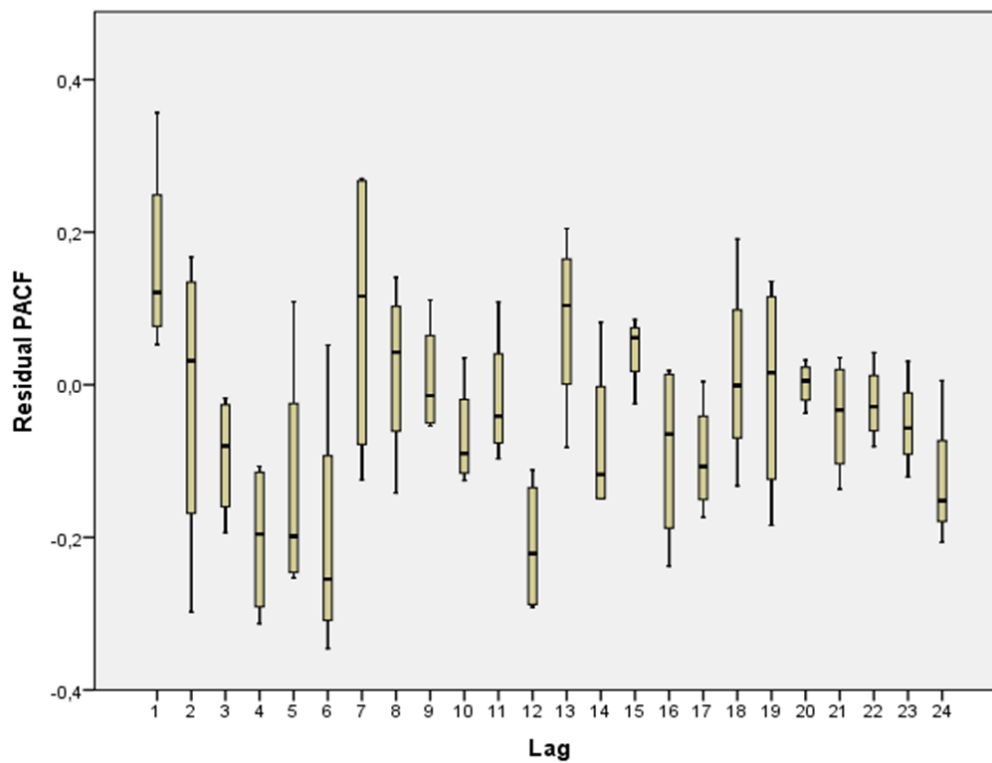
Figure: 128 Model summary – Residual PACF

Model summary

Fit Statistic	Mean	SE	Minimum	Maximum	Percentile						
					5	10	25	50	75	90	95
Stationary R-squared	.526	.222	.194	.663	.194	.194	.301	.623	.653	.663	.663
R-squared	.541	.240	.194	.740	.194	.194	.291	.615	.717	.740	.740
RMSE	4.675	2.280	2.531	7.541	2.531	2.531	2.696	4.314	7.015	7.541	7.541
MAPE	15.440	4.810	11.556	22.356	11.556	11.556	11.905	13.924	20.491	22.356	22.356
MaxAPE	74.751	41.911	47.585	137.158	47.585	47.585	49.265	57.130	117.858	137.158	137.158
MAE	3.663	1.789	2.031	5.993	2.031	2.031	2.153	3.313	5.522	5.993	5.993
MaxAE	9.764	5.388	4.344	16.034	4.344	4.344	4.842	9.340	15.111	16.034	16.034
Normalized BIC	3.175	.943	2.255	4.240	2.255	2.255	2.321	3.103	4.101	4.240	4.240

Residual ACF Summary

Lag	Mean	SE	Minimum	Maximum	Percentile						
					5	10	25	50	75	90	95
Lag 1	.163	.134	.053	.356	.053	.053	.065	.121	.303	.356	.356
Lag 2	.023	.215	-.294	.184	-.294	-.294	-.197	.102	.166	.184	.184
Lag 3	-.074	.081	-.169	.028	-.169	-.169	-.149	-.078	.005	.028	.028
Lag 4	-.181	.155	-.345	-.030	-.345	-.345	-.329	-.174	-.040	-.030	-.030
Lag 5	-.197	.151	-.348	.008	-.348	-.348	-.326	-.224	-.042	.008	.008
Lag 6	-.232	.169	-.384	.009	-.384	-.384	-.362	-.277	-.058	.009	.009
Lag 7	.071	.240	-.237	.342	-.237	-.237	-.167	.088	.290	.342	.342
Lag 8	.118	.089	-.004	.211	-.004	-.004	.029	.132	.192	.211	.211
Lag 9	.082	.127	-.097	.190	-.097	-.097	-.052	.117	.180	.190	.190
Lag 10	.041	.103	-.031	.191	-.031	-.031	-.028	.001	.149	.191	.191
Lag 11	.002	.158	-.175	.205	-.175	-.175	-.142	-.012	.159	.205	.205
Lag 12	-.133	.117	-.231	.037	-.231	-.231	-.217	-.168	-.013	.037	.037
Lag 13	-.018	.108	-.180	.046	-.180	-.180	-.130	.030	.045	.046	.046
Lag 14	-.046	.066	-.107	.041	-.107	-.107	-.102	-.059	.023	.041	.041
Lag 15	.041	.095	-.037	.167	-.037	-.037	-.035	.017	.141	.167	.167
Lag 16	.009	.064	-.063	.070	-.063	-.063	-.053	.016	.066	.070	.070
Lag 17	-.017	.102	-.135	.109	-.135	-.135	-.113	-.020	.083	.109	.109
Lag 18	.099	.205	-.119	.313	-.119	-.119	-.096	.101	.292	.313	.313
Lag 19	-.030	.189	-.310	.089	-.310	-.310	-.227	.050	.087	.089	.089
Lag 20	-.039	.033	-.062	.007	-.062	-.062	-.062	-.050	-.004	.007	.007
Lag 21	-.068	.021	-.086	-.039	-.086	-.086	-.084	-.075	-.047	-.039	-.039
Lag 22	.032	.127	-.150	.125	-.150	-.150	-.103	.076	.123	.125	.125
Lag 23	-.011	.102	-.155	.084	-.155	-.155	-.116	.014	.069	.084	.084
Lag 24	-.188	.189	-.324	.027	-.324	-.324	-.324	-.267	.027	.027	.027

Residual PACF Summary

Lag	Mean	SE	Minimum	Maximum	Percentile						
					5	10	25	50	75	90	95
Lag 1	.163	.134	.053	.356	.053	.053	.065	.121	.303	.356	.356
Lag 2	-.017	.206	-.298	.167	-.298	-.298	-.233	.031	.151	.167	.167
Lag 3	-.093	.082	-.194	-.018	-.194	-.194	-.177	-.080	-.022	-.018	-.018
Lag 4	-.203	.103	-.313	-.107	-.313	-.313	-.302	-.196	-.111	-.107	-.107
Lag 5	-.135	.168	-.253	.109	-.253	-.253	-.249	-.198	.042	.109	.109
Lag 6	-.201	.174	-.346	.052	-.346	-.346	-.327	-.255	-.021	.052	.052
Lag 7	.095	.203	-.125	.270	-.125	-.125	-.101	.116	.269	.270	.270
Lag 8	.021	.119	-.142	.140	-.142	-.142	-.101	.043	.122	.140	.140
Lag 9	.007	.076	-.054	.111	-.054	-.054	-.052	-.014	.088	.111	.111
Lag 10	-.068	.072	-.125	.035	-.125	-.125	-.121	-.090	.008	.035	.035
Lag 11	-.018	.089	-.097	.108	-.097	-.097	-.087	-.041	.074	.108	.108
Lag 12	-.211	.090	-.291	-.112	-.291	-.291	-.289	-.221	-.123	-.112	-.112
Lag 13	.083	.121	-.082	.205	-.082	-.082	-.041	.104	.185	.205	.205
Lag 14	-.076	.109	-.150	.082	-.150	-.150	-.149	-.118	.040	.082	.082
Lag 15	.046	.048	-.025	.085	-.025	-.025	-.004	.062	.080	.085	.085
Lag 16	-.087	.123	-.238	.018	-.238	-.238	-.213	-.065	.016	.018	.018
Lag 17	-.096	.076	-.173	.004	-.173	-.173	-.162	-.107	-.019	.004	.004
Lag 18	.014	.133	-.132	.191	-.132	-.132	-.101	-.001	.145	.191	.191
Lag 19	-.004	.148	-.184	.136	-.184	-.184	-.154	.016	.125	.136	.136
Lag 20	.001	.029	-.037	.032	-.037	-.037	-.029	.005	.028	.032	.032
Lag 21	-.042	.077	-.137	.035	-.137	-.137	-.120	-.033	.028	.035	.035
Lag 22	-.024	.051	-.081	.042	-.081	-.081	-.071	-.029	.027	.042	.042
Lag 23	-.051	.062	-.121	.031	-.121	-.121	-.106	-.057	.010	.031	.031
Lag 24	-.118	.110	-.206	.006	-.206	-.206	-.206	-.152	.006	.006	.006

Table: 116 Model summary 1

| Model | Number of Predictors | Model Fit statistics | | Ljung-Box Q(18) | | | Number of Outliers |
		Stationary R-squared	R-squared	Statistics	DF	Sig.	
Total Teams-Modell_1	0	.663	.647	43.125	16	.000	0
Team 1-Modell_2	0	.622	.583	17.844	16	.333	0
Team 2-Modell_3	0	.624	.740	13.977	17	.669	1
Team 3-Modell_4	0	.194	.194	18.706	17	.346	1

Exponential Smoothing Model Parameters

Model			Estimate	SE	t	Sig.
Total Teams-Modell_1	No Transformation	Alpha (Level)	.100	.072	1.383	.176
		Delta (Season)	6.805E-07	.162	4.210E-06	1.000
Team 1-Modell_2	No Transformation	Alpha (Level)	.999	.184	5.433	.000
		Delta (Season)	.000	141.125	1.884E-06	1.000

ARIMA Model Parameters

					Estimate	SE	t	Sig.
Team 2-Modell_3	Team 2	No Transformation	Constant		1.578	.382	4.135	.000
			AR	Lag 4	-.485	.192	-2.526	.020
			Seasonal Difference		1			
Team 3-Modell_4	Team 3	No Transformation	Constant		21.344	1.625	13.135	.000
			AR, Seasonal	Lag 1	.707	.125	5.633	.000

Outliers

			Estimate	SE	t	Sig.
Team 2-Modell_3	Aug 2012	Additive	11.286	2.366	4.770	.000
Team 3-Modell_4	Nov 2013	Additive	-9.618	3.686	-2.609	.014

Table: 117 Model summary 2

ACF / SE

Model		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Total Teams-Modell_1	ACF	.356	.083	-.089	-.345	-.348	-.384	.044	.211	.180	.180	.021		-.231	-.180	-.107	-.037	.056	.109	.313	.088	-.037	-.076	-.155	-.267
	SE	.167	.167	.188	.189	.206	.222	.239	.240	.245	.249	.253		.253	.259	.262	.263	.264	.264	.265	.275	.276	.277	.279	.281
Team 1-Modell_2	ACF	.053	-.284	-.067	-.030	-.191	-.259	.133	.138	.151	.023	.023		-.175	.018	-.027	-.063	-.047	-.228	.079	-.063	-.073	-.125	-.003	-.324
	SE	.167	.167	.181	.182	.182	.187	.197	.199	.202	.205	.205		.206	.210	.210	.210	.210	.210	.211	.216	.218	.219	.220	.221
Team 2-Modell_3	ACF	.141	.184	.028	-.070	-.257	-.295	-.237	-.004	-.097	-.020	-.020		.037	-.086	.081	-.024	-.135	-.026	.021	.007	-.039	.036	.025	.027
	SE	.204	.208	.215	.215	.216	.228	.244	.253	.253	.255	.255		.261	.262	.263	.264	.264	.267	.267	.267	.267	.267	.267	
Team 3-Modell_4	ACF	.101	.111	-.169	-.278	.008	.009	.342	.127	.084	-.031	-.031		-.162	.046	-.031	.070	.007	-.119	-.310	-.062	-.086	.116	.084	.027
	SE	.167	.168	.170	.175	.167	.167	.187	.204	.206	.207	.207		.211	.214	.215	.218	.219	.219	.221	.232	.233	.234	.235	.236

Residual PACF

Model		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Total Teams-Modell_1	PACF	.356	-.039	-.126	-.313	-.158	-.272	.270	.065	-.047	-.106	-.097		-.291	.082	-.025	-.138	-.087	.191	.095	.032	-.137	-.081	-.121	-.152
	SE	.167	.167	.167	.167	.167	.167	.167	.167	.167	.167	.167		.167	.167	.167	.167	.167	.167	.167	.167	.167	.167	.167	.167
Team 1-Modell_2	PACF	.053	-.298	-.034	-.123	-.239	-.346	-.032	-.142	.111	-.074	-.056		-.284	-.087	.085	-.238	-.173	.005	.136	.013	.005	.042	.031	-.206
	SE	.167	.167	.167	.167	.167	.167	.167	.167	.167	.167	.167		.167	.167	.167	.167	.167	.167	.167	.167	.167	.167	.167	.167
Team 2-Modell_3	PACF	.141	.167	-.018	-.107	-.253	-.238	-.125	.140	-.054	-.125	.108		-.112	-.149	.064	.018	-.127	-.007	-.064	-.003	-.071	-.018	-.052	-.006
	SE	.204	.204	.204	.204	.204	.204	.204	.204	.204	.204	.204		.204	.204	.204	.204	.204	.204	.204	.204	.204	.204	.204	.167
Team 3-Modell_4	PACF	.101	.102	-.194	-.269	.109	.052	.264	.020	.018	.035	-.027		-.158	-.150	-.060	.008	.004	-.132	-.184	-.037	.035	-.040	-.061	.006
	SE	.167	.167	.167	.167	.167	.167	.167	.167	.167	.167	.167		.167	.167	.167	.167	.167	.167	.167	.167	.167	.167	.167	.167

Forecast

Model		Jan 2015	Feb 2015	Mar 2015	Apr 2015	May 2015	Jun 2015	Jul 2015	Aug 2015	Sep 2015	Oct 2015	Nov 2015	Dec 2015	Jan 2016	Feb 2016	Mar 2016	Apr 2016	May 2016	Jun 2016	Jul 2016	Aug 2016	Sep 2016	Oct 2016	Nov 2016	Dec 2016
Total Teams-Modell_1	Forecast	64	50	58	58	55	58	56	36	60	62	63	36	64	67	59	55	58	58	56	36	62	63	70	36
	UCL	79	66	73	71	74	74	72	52	76	78	79	53	80	67	74	72	75	72	72	53	79	80	87	53
	LCL	49	35	42	40	43	43	40	20	46	47	47	20	48	34	41	39	42	39	19	45	45	54	19
Team 1-Modell_2	Forecast	24	19	18	20	22	21	22	22	22	22	24	12	24	19	18	20	22	22	22	24	22	21	24	12
	UCL	30	28	29	33	36	37	39	43	41	42	45	34	47	43	43	46	48	48	50	53	52	52	55	44
	LCL	17	9	6	7	7	5	5	3	3	1	3	-10	-6	-6	-7	-6	-5	-7	-7	-8	-9	-7	-20
Team 2-Modell_3	Forecast	21	22	22	17	21	18	18	18	23	23	28	16	23	24	24	19	23	19	11	19	24	25	30	18
	UCL	27	28	28	22	27	24	24	24	29	29	34	22	30	31	32	26	31	27	27	27	32	33	38	26
	LCL	16	17	17	12	15	12	15	12	17	18	22	11	15	16	11	11	15	12	3	12	16	17	22	10
Team 3-Modell_4	Forecast	25	23	21	19	20	17	12	19	22	23	25	16	24	23	21	20	20	18	15	15	20	22	24	18
	UCL	34	32	30	28	29	26	21	28	31	30	34	25	35	34	32	31	31	29	26	31	31	33	35	29
	LCL	15	14	12	10	11	8	3	10	13	18	15	7	12	11	10	9	7	3	8	10	10	12	6

Table: 118 Model summary 3

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Eurostat Study - Enterprises using software solutions, like CRM to analyse information about clients for marketing purposes

Enterprises using software solutions, like CRM to analyse information about clients for marketing purposes
% of enterprises with at least 10 persons employed in the given NACE sectors. NACE Rev 2 since 2009 (break in series in 2009)

geo\time	2007	2008	2009	2010	2012	2013	2014	2015
EU (28 countries)	17	17	17	17	19	:	20	21
EU (27 countries)	17	17	17	17	19	:	20	21
Euro area (changing composition)	19	19	19	19	21	:	21	22
Euro area (19 countries)	:	:	:	:	:	:	:	:
Belgium	17	: /(u)	30	28	24	:	22	24
Bulgaria	9	9	9	10	13	11	16	13
Czech Republic	15	14	14	10	17	:	16	17
Denmark	17	19	20	18	21	:	24	23
Germany	30	26	26	23	23	:	24	24
Estonia	10	9	9	9	10	11	15	20
Ireland	23	24	21	25	26	25	26	27
Greece	15	17	15	18	:	11	13	15
Spain	15	17	18	20	21	23	27	27
France	9	14	14	15	19	:	15	19
Croatia	10	11	8	11	13	14	12	15
Italy	15	14	13	15	17	17	18	19
Cyprus	14	14	15	16	19	16	22	26
Latvia	10	9	11	11	13	12	10	14
Lithuania	9	8	9	12	14	12	19	23
Luxembourg	13	17	16	19	18	20	22	22
Hungary	5	5	6	7	7	8	9	9
Malta	22	19	19	20	19	:	22	22
Netherlands	14	20	18	16	20	22	27	30
Austria	29	30	27	29	29	26	29	26
Poland	12	12	13	13	13	16	16	18
Portugal	15	16	14	15	18	20	19	22
Romania	14	: /(u)	13	14	13	11	14	15
Slovenia	14	9	11	11	15	17	16	17
Slovakia	11	13	18	25	20	19	16	17
Finland	26	25	24	27	27	31	30	28
Sweden	22	23	23	24	25	:	25	: /(u)
United Kingdom	13	14	14	13	17	:	17	20
Iceland	:	19	:	15	16	11	13	:
Liechtenstein	:	:	:	:	:	:	:	:
Norway	18	21	21	22	24	18	21	21
Switzerland	:	:	:	:	:	:	:	:
Montenegro	:	:	:	:	:	:	:	:
Former Yugoslav Republic of Macedonia	:	:	:	11	14	12	16	14
Albania	:	:	:	:	:	:	:	:
Serbia	11	:	:	:	:	:	12	:
Turkey	6	:	:	21	:	:	:	7

:=not available u=low reliability

Source of Data: Eurostat
Last update: 15.12.2016
Date of extraction: 04 Jan 2017 09:30:01 CET
Hyperlink to the table: http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tin00116
General Disclaimer of the EC website: http://ec.europa.eu/geninfo/legal_notices_en.htm
Short Description: CRM: Customer Relationship Management. January of the survey year.
Code: tin00116

Table: 119 Eurostat Study – Using software solutions

Two-Step cluster analysis by SPSS

Cluster by NACE code and turnover

Categorical variables = NACE code 2012

Continuous variables = Turnover 2012

Cluster Distribution

		N	% of Combined	% of Total
Cluster	1	734	7.7%	7.7%
	2	2680	28.2%	28.2%
	3	2242	23.6%	23.6%
	4	1816	19.1%	19.1%
	5	2047	21.5%	21.5%
	Combined	9519	100.0%	100.0%
Total		9519		100.0%

Table: 120 Cluster Distribution 2012 NACE code

Centroids

		Turnover 2012	
		Mean	Std. Deviation
Cluster	1	33567.4771	235555.33009
	2	6275.5936	17071.06091
	3	5181.4523	11496.29281
	4	4765.5846	12392.76828
	5	5565.3661	14268.03291
	Combined	7681.5360	67198.14498

Table: 121 Centroids 2012 NACE code

Categorical variables = NACE code 2013

Continuous variables = Turnover 2013

Cluster Distribution

		N	% of Combined	% of Total
Cluster	1	726	7.9%	7.6%
	2	2166	23.4%	22.8%
	3	1757	19.0%	18.5%
	4	2596	28.1%	27.3%
	5	1994	21.6%	20.9%
	Combined	9239	100.0%	97.1%
Excluded Cases		280		2.9%
Total		9519		100.0%

Table: 122 Cluster Distribution 2013 NACE code

419

Centroids

		Turnover 2013	
		Mean	Std. Deviation
Cluster	1	36292.0002	264742.09544
	2	5781.8284	13896.42937
	3	5061.0706	13480.01733
	4	6192.1722	17003.80281
	5	5364.8356	12290.32039
	Combined	8067.5500	75909.59492

Table: 123 Centroids 2013 NACE code

Categorical variables = NACE code 2014

Continuous variables = Turnover 2014

Cluster Distribution

		N	% of Combined	% of Total
Cluster	1	1573	19.5%	16.5%
	2	1323	16.4%	13.9%
	3	2031	25.2%	21.3%
	4	1663	20.7%	17.5%
	5	1457	18.1%	15.3%
	Combined	8047	100.0%	84.5%
Excluded Cases		1472		15.5%
Total		9519		100.0%

Table: 124 Cluster Distribution 2014 NACE code

Centroids

		Turnover 2014	
		Mean	Std. Deviation
Cluster	1	18025.30293	153397.21220
	2	10383.31799	30101.87243
	3	6512.62237	14049.85046
	4	4124.97575	8589.98308
	5	5400.38356	15963.77195
	Combined	8704.64282	69873.90833

Table: 125 Centroids 2014 NACE code

Model Summary

Algorithm	TwoStep
Inputs	2
Clusters	5
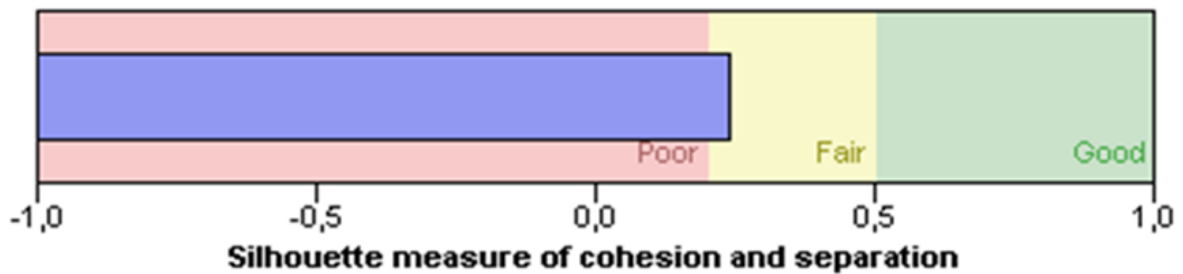
Cluster Quality

Figure: 129 Model summary and cluster quality – 2 inputs NACE code

Categorical variables = NACE code

Continuous variables = Turnover in 2012, 2013, and 2014

Table: 126 Cluster Distribution 2012, 2013 & 2014 NACE code

Cluster Distribution

		N	% of Combined	% of Total
Cluster	1	9	.1%	.1%
	2	7218	89.7%	75.8%
	3	619	7.7%	6.5%
	4	175	2.2%	1.8%
	5	26	.3%	.3%
	Combined	8047	100.0%	84.5%
Excluded Cases		1472		15.5%
Total		9519		100.0%

Centroids

		Turnover 2012		Turnover 2013		Turnover 2014	
		Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	1377465.6922	1672775.12778	1405631.8122	1980613.81272	1211300.9985	1675016.87046
	2	2753.6833	3742.24963	2713.4638	3780.67899	2440.5506	3616.95980
	3	30154.5470	10314.03565	30961.9532	11152.53047	30948.2660	11050.31469
	4	88640.7929	26752.77637	90089.9737	27537.01215	88145.5222	24781.57165
	5	254836.0881	65277.95659	282917.7654	91278.30971	267162.0903	67664.43074
	Com-bined	9081.2500	73000.25947	9261.0320	81270.46554	8704.6428	69873.90833

Table: 127 Centroids 2012, 2013 & 2014 NACE code

Figure: 130 Model summary and cluster quality – 4 inputs NACE code

Cluster by postal code and turnover

Categorical variables = Postal code

Continuous variables = Turnover 2012

Cluster Distribution

		N	% of Combined	% of Total
Cluster	1	612	6.4%	6.4%
	2	2329	24.5%	24.5%
	3	2884	30.3%	30.3%
	4	1957	20.6%	20.6%
	5	1737	18.2%	18.2%
	Combined	9519	100.0%	100.0%
Total		9519		100.0%

Table: 128 Cluster Distribution 2012 postal code

Centroids

		Turnover 2012	
		Mean	Std. Deviation
Cluster	1	34306.0048	257531.08274
	2	5883.2651	14834.11770
	3	5755.5794	14927.19553
	4	5413.8243	12979.17114
	5	6464.7074	17100.03178
	Combined	7681.5360	67198.14498

Table: 129 Centroids 2012 postal code

Categorical variables = Postal code

Continuous variables = Turnover 2013

Cluster Distribution

		N	% of Combined	% of Total
Cluster	1	652	7.1%	6.8%
	2	1937	21.0%	20.3%
	3	2773	30.0%	29.1%
	4	2256	24.4%	23.7%
	5	1621	17.5%	17.0%
	Combined	9239	100.0%	97.1%
Excluded Cases		280		2.9%
Total		9519		100.0%

Table: 130 Cluster Distribution 2013 postal code

Centroids

	Turnover 2013

		Mean	Std. Deviation
Cluster	1	34039.8966	278722.85407
	2	6750.4786	17982.54675
	3	5547.9430	16209.20885
	4	5984.7870	13621.34052
	5	6403.6272	15911.52165
	Combined	8067.5500	75909.59492

Table: 131 Centroids 2013 postal code

Categorical variables = Postal code

Continuous variables = Turnover 2014

Cluster Distribution

		N	% of Combined	% of Total
Cluster	1	608	7.6%	6.4%
	2	2339	29.1%	24.6%
	3	1678	20.9%	17.6%
	4	1463	18.2%	15.4%
	5	1959	24.3%	20.6%
	Combined	8047	100.0%	84.5%
Excluded Cases		1472		15.5%
Total		9519		100.0%

Table: 132 Cluster Distribution 2014 postal code

Centroids

		Turnover 2014	
		Mean	Std. Deviation
Cluster	1	32737.0754	246519.13652
	2	6726.7777	15840.70273
	3	7233.5351	17963.87531
	4	6973.4982	18051.66306
	5	6160.3298	14467.53731
	Combined	8704.6428	69873.90833

Table: 133 Centroids 2014 postal code

Model Summary

Algorithm	TwoStep
Inputs	2
Clusters	5
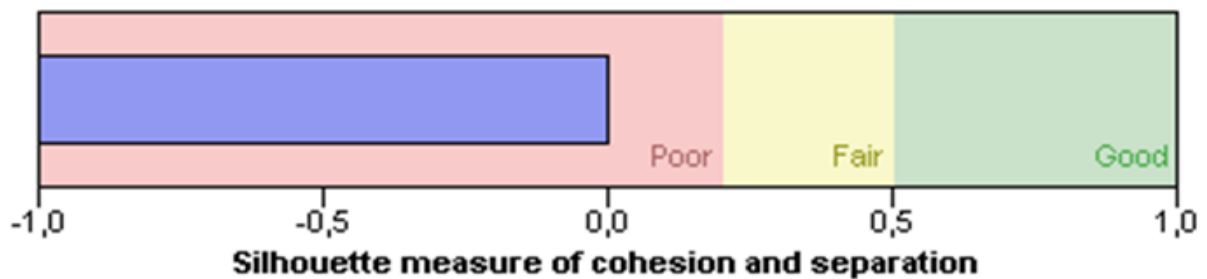
Cluster Quality

Figure: 131 Model summary and cluster quality – 2 inputs postal code

Categorical variables = Postal code

Continuous variables = Turnover 2012, 2013 and 2014

Cluster Distribution

		N	% of Combined	% of Total
Cluster	1	17	.2%	.2%
	2	252	3.1%	2.6%
	3	533	6.6%	5.6%
	4	388	4.8%	4.1%
	5	6857	85.2%	72.0%
	Combined	8047	100.0%	84.5%
Excluded Cases		1472		15.5%
Total		9519		100.0%

Table: 134 Cluster Distribution 2012, 2013 & 2014 postal code

Centroids

		Turnover 2012		Turnover 2013		Turnover 2014	
		Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	887282.6047	1298765.61978	928091.6265	1495200.38291	804994.2447	1265342.18734
	2	88884.2415	46439.68345	91677.3259	50489.61080	89943.6425	47921.05467
	3	25789.6063	10213.10449	26391.2376	10766.71581	26252.2538	10943.74542
	4	18458.1174	6041.97683	18752.7671	6228.68600	18386.1859	6511.14566
	5	2141.8369	2668.13652	2085.5589	2647.64692	1833.0566	2498.31498
	Combined	9081.2500	73000.25947	9261.0320	81270.46554	8704.6428	69873.90833

Table: 135 Centroids 2012, 2013 & 2014 postal code

Model Summary

Algorithm	TwoStep
Inputs	4
Clusters	5

Cluster Quality
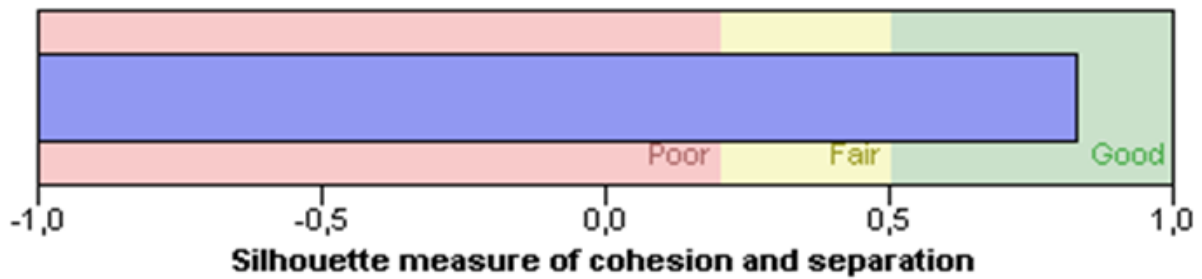
Figure: 132 Model summary and cluster quality – 4 inputs postal code

Discriminant analysis

Discriminant analysis year 2012

Turnover 80/20

Group Statistics				Valid N (listwise)	
Segment		Mean	Std. Deviation	Unweighted	Weighted
1	Turnover 2012	48787.2751	184110.43087	1199	1199.000
2	Turnover 2012	7865.5532	1911.68789	930	930.000
3	Turnover 2012	989.1250	1212.52996	7390	7390.000
Total	Turnover 2012	7681.5360	67198.14498	9519	9519.000

Table: 136 Discriminant analysis - Turnover 80/20 - Group Statistics

Tests of Equality of Group Means					
	Wilks' Lambda	F	df1	df2	Sig.
Turnover 2012	.945	276.063	2	9516	.000

Table: 137 Discriminant analysis - Turnover 80/20 - Group Means

Wilks' Lambda				
Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	.945	536.702	2	.000

Table: 138 Discriminant analysis - Turnover 80/20 - Wilks Lambda

Eigenvalues				
Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	,058[a]	100.0	100.0	.234

Table: 139 Discriminant analysis - Turnover 80/20 – Eigenvalues

Turnover 60/90

Group Statistics

Segment		Mean	Std. Deviation	Valid N (listwise)	
				Unweighted	Weighted
1	Turnover 2012	101526.368	299675.6304	432	432.000
2	Turnover 2012	12949.355	6865.1111	1694	1694.000
3	Turnover 2012	989.408	1212.3652	7393	7393.000
Total	Turnover 2012	7680.459	67198.2137	9519	9519.000

Table: 140 Discriminant analysis - Turnover 60/90 - Group Statistics

Tests of Equality of Group Means

	Wilks' Lambda	F	df1	df2	Sig.
Turnover 2012	.903	512.957	2	9516	.000

Table: 141 Discriminant analysis - Turnover 60/90 - Group Means

Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	.903	974.291	2	.000

Table: 142 Discriminant analysis - Turnover 60/90 - Wilks Lambda

Eigenvalues

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	,108[a]	100.0	100.0	.312

Table: 143 Discriminant analysis - Turnover 60/90 – Eigenvalues

Contribution margin 80/20

Group Statistics

Segment		Mean	Std. Deviation	Valid N (listwise)	
				Unweighted	Weighted
1	DB 2012	14549.604	42594.8258	1422	1422.000
2	DB 2012	2720.692	617.7082	952	952.000
3	DB 2012	361.453	622.8224	7145	7145.000
Total	DB 2012	2716.905	17212.8724	9519	9519.000

Table: 144 Discriminant analysis - DB 80/20 - Group Statistics

428

Tests of Equality of Group Means

	Wilks' Lambda	F	df1	df2	Sig.
DB 2012	.915	440.062	2	9516	.000

Table: 145 Discriminant analysis - DB 80/20 - Group Means

Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	.915	841.770	2	.000

Table: 146 Discriminant analysis - DB 80/20 - Wilks Lambda

Eigenvalues

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	,092[a]	100.0	100.0	.291

Table: 147 Discriminant analysis - DB 80/20 – Eigenvalues

Contribution margin 60/90

Group Statistics

Segment		Mean	Std. Deviation	Valid N (listwise) Unweighted	Weighted
1	DB 2012	26668.018	64689.0499	582	582.000
2	DB 2012	4329.715	2084.8184	1792	1792.000
3	DB 2012	361.453	622.8224	7145	7145.000
Total	DB 2012	2716.905	17212.8724	9519	9519.000

Table: 148 Discriminant analysis - DB 60/90 - Group Statistics

Tests of Equality of Group Means

	Wilks' Lambda	F	df1	df2	Sig.
DB 2012	.866	736.874	2	9516	.000

Table: 149 Discriminant analysis - DB 60/90 - Group Means

Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	.866	1370.191	2	.000

<div align="center">

Table: 150 Discriminant analysis - DB 60/90 - Wilks Lambda

</div>

Eigenvalues

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	,155[a]	100.0	100.0	.366

<div align="center">

Table: 151 Discriminant analysis - DB 60/90 – Eigenvalues

</div>

Discriminant analysis year 2013

Turnover 80/20

Group Statistics

Segment		Mean	Std. Deviation	Valid N (listwise) Unweighted	Weighted
1	Turnover 2013	52256.987	210746.5579	1141	1141.000
2	Turnover 2013	8292.649	2044.4648	899	899.000
3	Turnover 2013	1035.669	1287.0275	7199	7199.000
Total	Turnover 2013	8067.550	75909.5949	9239	9239.000

<div align="center">

Table: 152 Discriminant analysis - Turnover 80/20 - Group Statistics

</div>

Tests of Equality of Group Means

	Wilks' Lambda	F	df1	df2	Sig.
Turnover 2013	.951	235.611	2	9236	.000

<div align="center">

Table: 153 Discriminant analysis - Turnover 80/20 - Group Means

</div>

Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	.951	459.595	2	.000

<div align="center">

Table: 154 Discriminant analysis - Turnover 80/20 - Wilks Lambda

</div>

Eigenvalues				
Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	,051[a]	100.0	100.0	.220

Table: 155 Discriminant analysis - Turnover 80/20 - Eigenvalues

Turnover 60/90

Group Statistics				Valid N (listwise)	
Segment		Mean	Std. Deviation	Unweighted	Weighted
1	Turnover 2013	109111.865	344492.4591	410	410.000
2	Turnover 2013	13708.251	7345.0245	1630	1630.000
3	Turnover 2013	1035.669	1287.0275	7199	7199.000
Total	Turnover 2013	8067.550	75909.5949	9239	9239.000

Table: 156 Discriminant analysis - Turnover 60/90 - Group Means

Tests of Equality of Group Means					
	Wilks' Lambda	F	df1	df2	Sig.
Turnover 2013	.914	436.176	2	9236	.000

Table: 157 Discriminant analysis - Turnover 60/90 - Group Means

Wilks' Lambda				
Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	.914	833.578	2	.000

Table: 158 Discriminant analysis - Turnover 60/90 - Wilks Lambda

Eigenvalues				
Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	,094[a]	100.0	100.0	.294

Table: 159 Discriminant analysis - Turnover 60/90 – Eigenvalues

Contribution margin 80/20

Group Statistics		Mean	Std. Deviation	Valid N (listwise)	
				Unweighted	Weighted
Segment					
1	DB 2013	15594.061	46159.3186	1360	1360.000
2	DB 2013	2821.674	628.0586	938	938.000
3	DB 2013	382.651	577.9603	6941	6941.000
Total	DB 2013	2869.427	18499.1572	9239	9239.000

Table: 160 Discriminant analysis - DB 80/20 - Group Statistics

Tests of Equality of Group Means					
	Wilks' Lambda	F	df1	df2	Sig.
DB 2013	.917	419.263	2	9236	.000

Table: 161 Discriminant analysis - DB 80/20 - Group Means

Wilks' Lambda				
Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	.917	802.618	2	.000

Table: 162 Discriminant analysis - DB 80/20 - Wilks Lambda

Eigenvalues				
Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	,091[a]	100.0	100.0	.288

Table: 163 Discriminant analysis - DB 80/20 – Eigenvalues

Contribution margin 60/90

Group Statistics		Mean	Std. Deviation	Valid N (listwise)	
				Unweighted	Weighted
Segment					
1	DB 2013	28598.644	70188.0065	556	556.000
2	DB 2013	4565.905	2269.4116	1742	1742.000
3	DB 2013	382.651	577.9603	6941	6941.000
Total	DB 2013	2869.427	18499.1572	9239	9239.000

Table: 164 Discriminant analysis - DB 60/90 - Group Statistics

Tests of Equality of Group Means

	Wilks' Lambda	F	df1	df2	Sig.
DB 2013	.868	699.753	2	9236	.000

Table: 165 Discriminant analysis - DB 60/90 - Group Means

Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	.868	1303.099	2	.000

Table: 166 Discriminant analysis - DB 60/90 - Wilks Lambda

Eigenvalues

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	,152[a]	100.0	100.0	.363

Table: 167 Discriminant analysis - DB 60/90 - Eigenvalues

Discriminant analysis year 2014

Turnover 80/20

Group Statistics

Segment		Mean	Std. Deviation	Valid N (listwise) Unweighted	Weighted
1	Turnover 2014	52318.7894	185649.27760	1071	1071.000
2	Turnover 2014	8593.8586	2109.43705	815	815.000
3	Turnover 2014	1137.6144	1371.27130	6161	6161.000
Total	Turnover 2014	8704.6428	69873.90833	8047	8047.000

Table: 168 Discriminant analysis - Turnover 80/20 - Group Statistics

Tests of Equality of Group Means

	Wilks' Lambda	F	df1	df2	Sig.
Turnover 2014	.939	260.554	2	8044	.000

Table: 169 Discriminant analysis - Turnover 80/20 - Group Means

Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	.939	504.924	2	.000

Table: 170 Discriminant analysis - Turnover 80/20 - Wilks Lambda

Eigenvalues

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	,065[a]	100.0	100.0	.247

Table: 171 Discriminant analysis - Turnover 80/20 – Eigenvalues

Turnover 60/90

Group Statistics

Segment		Mean	Std. Deviation	Valid N (listwise) Unweighted	Valid N (listwise) Weighted
1	Turnover 2014	103762.7872	294878.38229	405	405.000
2	Turnover 2014	14188.7167	7617.22623	1481	1481.000
3	Turnover 2014	1137.6144	1371.27130	6161	6161.000
Total	Turnover 2014	8704.6428	69873.90833	8047	8047.000

Table: 172 Discriminant analysis - Turnover 60/90 - Group Means

Tests of Equality of Group Means

	Wilks' Lambda	F	df1	df2	Sig.
Turnover 2014	.897	463.200	2	8044	.000

Table: 173 Discriminant analysis - Turnover 60/90 - Group Means

Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	.897	876.826	2	.000

Table: 174 Discriminant analysis - Turnover 60/90 - Wilks Lambda

Eigenvalues				
Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	,115[a]	100.0	100.0	.321

Table: 175 Discriminant analysis - Turnover 60/90 – Eigenvalues

Contribution margin 80/20

Group Statistics				Valid N (listwise)	
Segment		Mean	Std. Deviation	Unweighted	Weighted
1	DB 2014	16088.9915	42243.38456	1273	1273.000
2	DB 2014	3013.5089	670.07462	850	850.000
3	DB 2014	431.6257	575.93518	5924	5924.000
Total	DB 2014	3181.2750	17729.49923	8047	8047.000

Table: 176 Discriminant analysis - DB 80/20 - Group Statistics

Tests of Equality of Group Means					
	Wilks' Lambda	F	df1	df2	Sig.
DB 2014	.898	454.740	2	8044	.000

Table: 177 Discriminant analysis - DB 80/20 - Group Means

Wilks' Lambda				
Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	.898	861.640	2	.000

Table: 178 Discriminant analysis - DB 80/20 - Wilks Lambda

Eigenvalues				
Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	,113[a]	100.0	100.0	.319

Table: 179 Discriminant analysis - DB 80/20 - Eigenvalues

Contribution margin 60/90

Group Statistics				Valid N (listwise)	
Segment		Mean	Std. Deviation	Unweighted	Weighted
1	DB 2014	28930.8886	63206.10764	531	531.000
2	DB 2014	4824.4139	2332.62017	1592	1592.000
3	DB 2014	431.6257	575.93518	5924	5924.000
Total	DB 2014	3181.2750	17729.49923	8047	8047.000

Table: 180 Discriminant analysis - DB 60/90 - Group Statistics

Tests of Equality of Group Means					
	Wilks' Lambda	F	df1	df2	Sig.
DB 2014	.841	758.220	2	8044	.000

Table: 181 Discriminant analysis - DB 60/90 - Group Means

Wilks' Lambda				
Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	.841	1389.258	2	.000

Table: 182 Discriminant analysis - DB 60/90 - Wilks Lambda

Eigenvalues				
Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	,189[a]	100.0	100.0	.398

Table: 183 Discriminant analysis - DB 60/90 - Eigenvalues